storaenso

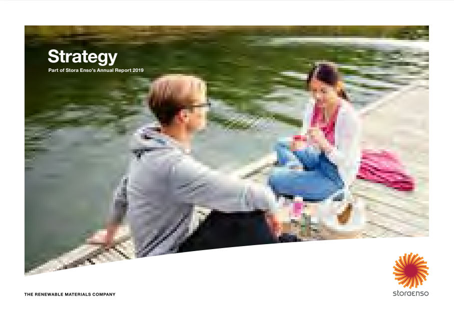
Welcome to read about our contribution to circular bioeconomy. Stora Enso's Annual Report 2019 includes our strategic, sustainability and financial performance, and governance.

THE RENEWABLE MATERIALS COMPANY

Stora Enso
Annual Report 2019

storaenso Annual Report 2019

Contents



Strategy

Sustainability

The GRI index is available at › storaenso.com/gri2019

Financials

Governance

Print optimised
A4

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Stora Enso supports customers to meet consumers' demand for sustainable products based on renewable materials. Our solutions offer low-carbon alternatives to products based on finite resources.

Strategy

Part of Stora Enso's Annual Report 2019

THE RENEWABLE MATERIALS COMPANY

Contents

Our renewable products provide a sustainable alternative to fossil-based materials.

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This is Stora Enso

Part of the bioeconomy, Stora Enso is a leading global provider of renewable solutions in packaging, biomaterials, wooden construction, and paper. We employ some 26 000 people in more than 30 countries and our shares are listed on the Helsinki (STEAV, STERV) and Stockholm (STE A, STE R) stock exchanges.

Our fiber-based materials are renewable, recyclable, and fossil-free. Our solutions offer low-carbon alternatives to products based on finite resources. We believe that everything that is made from fossil-based materials today can be made from a tree tomorrow.

Our products respond to the needs of eco-conscious consumers and producers looking for innovative alternatives to plastic. PureFiber™, a new selection of formed fiber products can be used for single-use food packaging, and DuraSense™ biocomposites for example in cutlery.

We are the renewable materials company

Our raw material is renewable, recyclable and fossil-free.

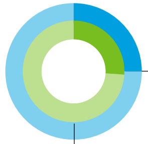
Our products replace fossil-based materials.

Our renewable products contribute to a circular bioeconomy.

Divisions in brief

Consumer Board

The ambition of the Consumer Board division is to be the global leader in high-quality virgin fiber cartonboard. We aim to be the preferred partner of customers and brand owners in premium end-use packaging and graphical segments. Our wide board and barrier coating selection is suitable for consumer packaging for liquid, food, pharmaceutical and luxury goods.

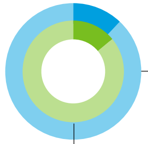


Share of Group sales
25%

Share of Group operational EBIT
26%

Packaging Solutions

The Packaging Solutions division provides fiber-based board materials and corrugated packaging products and services that are designed for a wide array of applications. Our renewable high-end packaging solutions serve leading converters, brand owners and retailers – including those in e-commerce that are looking to optimise performance, drive innovation and improve their sustainability.

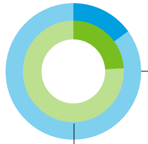


Share of Group sales
12%

Share of Group operational EBIT
14%

Biomaterials

The Biomaterials division offers a wide variety of pulp grades to meet the demands of paper, board, tissue, textile and hygiene product producers. We maximise the business potential of the side streams of our processes, such as tall oil and turpentine from biomass. Based on our strong innovation approach, all fractions of biomass, like lignin and sugars, hold substantial potential for use in various applications.

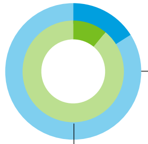


Share of Group sales
15%*

Share of Group operational EBIT
24%

Wood Products

The Wood Products division is a leading provider of innovative wood-based solutions. The product range covers applications for construction, the window and door industry, as well as for the packaging and decoration industries. Biocomposites offer plastic replacement opportunities in e.g. consumer goods, industrial components, cosmetics and packaging. Pellets provide a sustainable solution for heating. The offering includes service concepts such as Building Solutions and e-business. Our solutions meet strict requirements regarding safety, quality, design and sustainability.

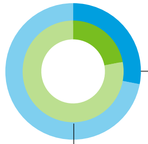


Share of Group sales
16%

Share of Group operational EBIT
11%

Paper

Stora Enso is the second largest paper producer in Europe with an established customer base and a wide product portfolio for print and office use. Customers benefit from Stora Enso's broad selection of papers made from recycled and virgin fiber as well as our valuable industry experience, know-how and customer support.



Share of Group sales
28%

Share of Group operational EBIT
22%

* of which internal sales 19%
As of 1 January 2020, Stora Enso merged its containerboard business previously in the Packaging Solutions division with the Consumer Board division, creating a new Packaging Materials division. The remaining business in Packaging Solutions together with the recently created Formed Fiber unit, will constitute a more focused Packaging Solutions division. The Group also established a new Forest division.
Divisions in 2020: Packaging Materials, Packaging Solutions, Biomaterials, Wood Products, Forest, Paper

Serving markets around the world

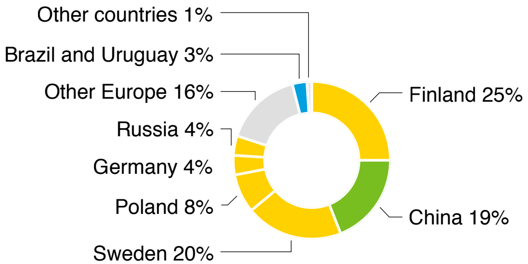
Stora Enso operates worldwide and focuses on utilising expertise in renewable materials and creating value in packaging, pulp, paper and wood. We combine global resources with local presence, service and sustainability.

Sales
EUR 10.1 billion

Countries
30

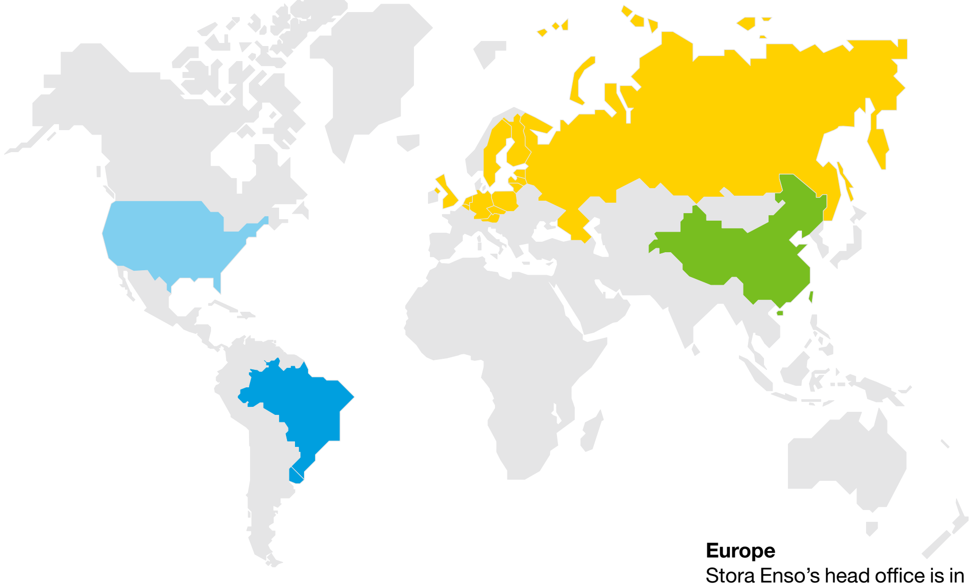
Employees
26 000

Personnel by country[1]

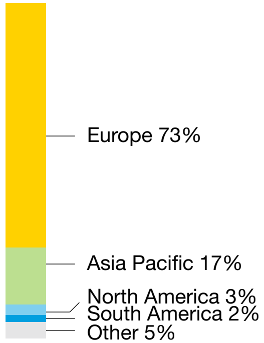


[1] Including 50% of the employees at Veracel in Brazil and Montes del Plata in Uruguay.

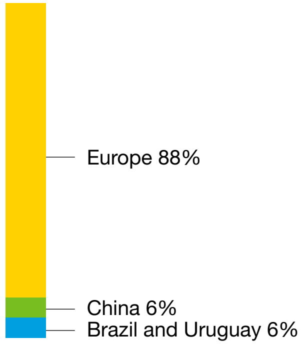
We have production in 17 countries



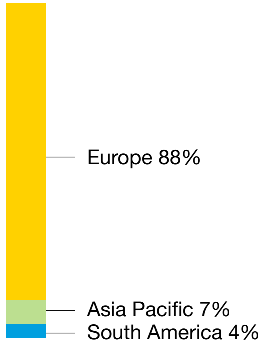
Sales by destination



Sales by origin



Purchases by region



South America
Latin America is important for Stora Enso's strategy of obtaining low-cost pulp from tree plantations. In Brazil, we own 50% of Veracel Celulose pulp mill, with Suzano. Our share of the eucalyptus pulp is mostly used in our paper and board mills. Veracel also owns land, around half of which is former pasture land planted with eucalyptus. The other half is dedicated to protecting local biodiversity by restoring the natural Atlantic rainforest.

The Montes del Plata pulp mill in Uruguay is a joint operation between Stora Enso and Arauco. Stora Enso's share is sold entirely as market pulp, mainly in Europe and Asia. Montes del Plata's tree plantations are also utilised as pasture by local farmers through land rental schemes.

North America
In the United States, Stora Enso has a pilot facility in Danville, Virginia, to develop technologies for the conversion of biomass into highly refined sugars and lignin. In Raceland, Louisiana, there is a demonstration plant for the production of xylose. These new technologies will enable the development of sustainable replacements for fossil-based materials in various industries.

Asia
The demand for Stora Enso's products, especially consumer board, is growing fast in China. Our consumer board mill in Beihai, in the Guangxi region, serves the markets with virgin fiber-based board. In Guangxi our operations also include eucalyptus plantations. In addition, Stora Enso has four packaging plants in China. We divested our stake in the Dawang paper mill in 2019 and no longer have paper production in China.

Europe
Stora Enso's head office is in Helsinki, Finland. Most of the group's sales and operations take place in Europe, where we are a leading producer of packaging board and solutions, pulp, wooden products and paper.

Stora Enso has three research centres, in Imatra (Finland), Karlstad (Sweden) and Mönchengladbach (Germany), and two innovation centres, in Stockholm and Helsinki. In Northern Europe, we source most of our main raw material – wood – from our own forests in Sweden, our forest associate Tornator and private forest owners.

Stora Enso in 2019

Stora Enso is taking the lead in the bioeconomy.

Operational ROCE

9.8%

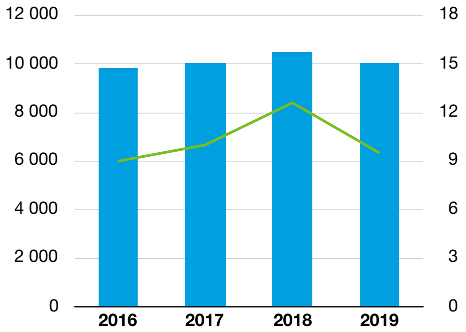
72%

of sales from growth businesses

Average personnel

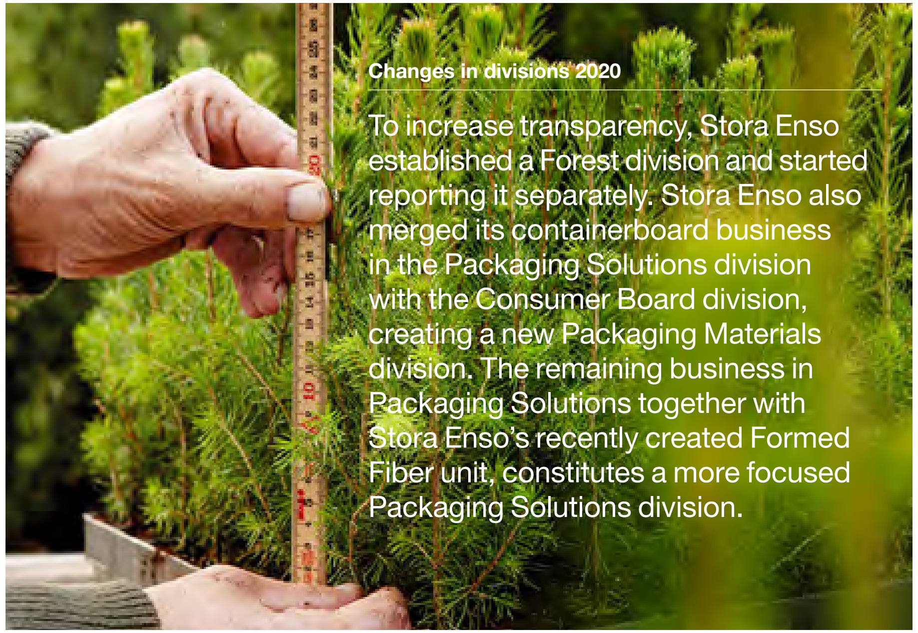
- Consumer Board 16%
- Packaging Solutions 30%
- Biomaterials 7%
- Wood Products 15%
- Paper 19%
- Other 13%

Sales and operational EBIT



- Sales, EUR million
- Operational EBIT, %

Highlights of 2019



Changes in divisions 2020

To increase transparency, Stora Enso established a Forest division and started reporting it separately. Stora Enso also merged its containerboard business in the Packaging Solutions division with the Consumer Board division, creating a new Packaging Materials division. The remaining business in Packaging Solutions together with Stora Enso's recently created Formed Fiber unit, constitutes a more focused Packaging Solutions division.

Bergvik Skog restructuring finalised

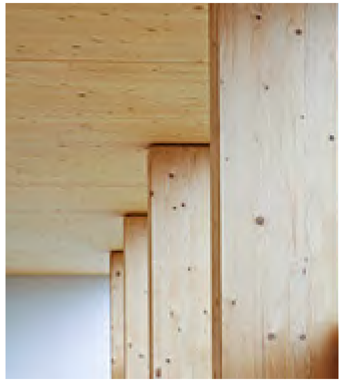
The restructuring of Bergvik Skog, a Swedish forest holding company, was finalised. Stora Enso's forest holdings in Sweden increased to 1.4 million hectares, of which 1.14 million hectares is productive forest land. Prior to the transaction, Stora Enso's indirect share of Bergvik Skog's productive forest land was 936 thousand hectares.

Annica Bresky new President and CEO

Annica Bresky became the new President and CEO of Stora Enso on 1 December 2019. Previously, she was Head of Stora Enso's Consumer Board division. She replaces Karl-Henrik Sundström, who left his position of CEO at the end of November 2019.

Oulu Mill to produce packaging materials

Stora Enso invests approximately EUR 350 million to convert the Oulu paper mill in Finland to produce kraftliner for packing. The conversion will enable us to further improve our position in the growing packaging business. The typical end use for kraftliner is packaging that requires high strength, quality and purity, such as for food, as well as heavy-duty packaging. Production is expected to start by the end of 2020. After the conversion, Stora Enso will no longer manufacture woodfree coated papers.



New production unit for CLT

Stora Enso inaugurated its third production unit for cross-laminated timber (CLT) at Gruvön sawmill in Sweden in May 2019.

Strong cash flow

up 45%

from 2018

Combatting global warming

–25%

lower CO_2e in 2019 than the 2010 base-year level

Ensuring the sustainability of wood

98%

of the lands Stora Enso owns or manages covered by forest certification schemes

Strategy

The future grows in the forest

For our customers, leaders and society, the need for a shift towards a sustainable bioeconomy with positive climate impact is more apparent than ever. Awareness among companies and consumers alike has increased substantially, as well as discussions among policy makers and industries to find solutions supporting change.

Stora Enso is in a unique position to lead a transition from a linear to a circular economy, from dependency on finite or fossil-based materials towards materials and solutions that are renewable, recyclable and with low or zero carbon footprint. Our renewable materials naturally form a circle of their own. We harvest trees and replant in a continuous cycle where trees grow back and the forests are constantly renewed. Growing trees absorb carbon dioxide. Wood and fiber-based products act as carbon storage and can easily be recycled.

Sustainability and innovation at the core

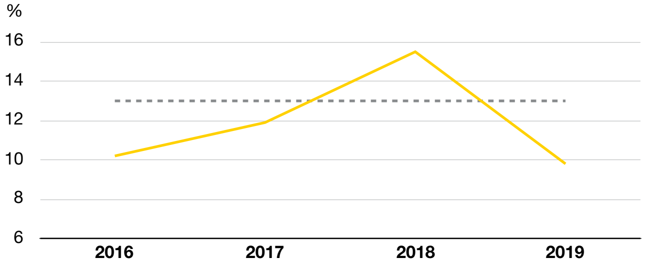
We continue to build a strong portfolio, helping our customers to be more competitive and sustainable – for today and tomorrow. Our promise to society and our foundation for innovation is "Everything that is made from fossil-based materials today can be made from a tree tomorrow." This ambition provides good opportunities for growth, but we cannot do it alone. The products and solutions of the future require collaboration with partners outside of our company and transformation across the value chain. Our strong ecosystem of customers, suppliers, research institutions and start-ups enable our future growth and is key to bring new solutions to the market.

Stora Enso supports all 17 Sustainable Development Goals (SDGs) defined by the United Nations and we have identified the three strategic goals where we contribute most: Responsible Consumption and Production, Climate Action and Life on Land. We have set tough science-based targets regarding the reduction of greenhouse gas emissions and will continue our drive to improve energy efficiency and reduce our use of fossil fuels.

Strategy

Stora Enso is in a unique position to lead a transition from a linear to a circular economy.

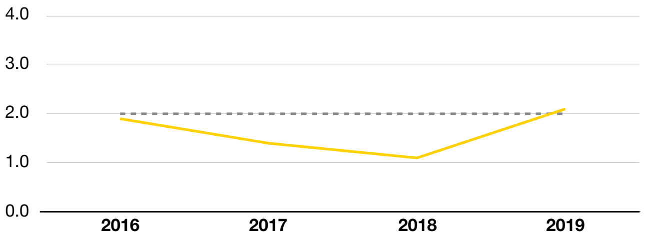
Operational ROCE



Operational ROCE, %

Target >13%

Net debt to operational EBITDA



Net debt to operational EBITDA

Target <2.0

Through our Sustainability Agenda we emphasise social, environmental and economic responsibility in our own operations and throughout our value chain. We are committed to the UN Global Compact's ten principles and the UN's Guiding Principles on Business and Human Rights. Our Community Investment strategy is intended to promote resilient communities close to the sources of our fiber, mills and other units as well as being an attractive and socially responsible employer. You can read more about our agenda and progress in Stora Enso's **Sustainability 2019** report.

In 2019, 72% of sales and 78% of operational EBIT came from our growth businesses of packaging, wood products and biomaterials. Over 7% of our sales came from new products and services. Our operational EBIT was affected by lower prices for our products. I am not pleased with our profitability levels, but we have focused on areas we can influence. I am very satisfied that we delivered a record high cash flow, despite the challenging market conditions.

While megatrends and our customers' needs support our strategic direction, Stora Enso is also affected by today's political and economic instability. To mitigate these effects, we implemented a profit protection programme during 2019 and will continue this into 2021. We have also strengthened our cash flow management and constantly work to improve our balance sheet.

Investments for the future

100% of our wood comes from sustainable sources where biodiversity values are secured. With the acquisition of forests from Bergvik Skog in Sweden, we became one of the largest private owners of biological assets in the world. We issued our first Green Bonds in February 2019, and the proceeds were solely used for financing the acquisition. Since our forest assets represent a sizeable part of our capital, we formed a new Forest division on 1 January this year. One of our biggest decisions during 2019 was to convert the Oulu paper mill into packaging materials. This is another action that shows our determination to grow in the packaging sector and reduce our exposure in the declining paper business. Other milestones of the year include the finalisation of the cross-laminated timber investment at Gruvön sawmill as demand is increasing for building in wood instead of concrete and steel. The conversion of Enocell Mill into dissolving pulp, pulp that can be used for textile applications, is another example where we respond to the global megatrend to replace materials from finite sources with more sustainable alternatives.

We are investing for the future to strengthen our own capabilities to innovate and bring new products and solutions to the market. During 2019, we introduced formed fiber products to replace, for example, plastic plates and bowls in food service. We also started building a pilot facility for bio-based carbon used in energy storage systems. Our co-operation with the start-up community resulted in the launch of a renewable and biodegradable straw to combat the global problem of plastic waste. We have introduced a board for drinking cups and ice cream packaging without a plastic layer and designed for easy recycling and full fiber recovery.

Our work in digitalisation supports us to optimise current business and enabling new business models. Our focus is on digital customer experience, smart operations, transparent supply chains, robotic process automation and intelligent processes.

The circularity of our products

Fibers can be recycled 5–7 times, sometimes over 20 times, depending on the end use. We are taking more steps to develop circular solutions by enabling efficient recycling and reducing carbon footprint across our own and our partners' operations. We are researching and testing how our products perform in different kinds of recycling systems, analysing their lifecycles to reduce carbon footprint or improve material efficiency and looking closely at ways to promote recycling and reduce waste.

Among our circular initiatives, we take back used paper cups and give them second life as magazine paper at Langerbrugge Mill in Belgium. We use recycled paper for corrugated board production at Ostrołęka Mill in Poland as well as operate a biogas plant to turn wastewater effluent into renewable energy at Nymölla Mill in Sweden. You can find more examples of our new projects and solutions later in this report.

Our people drive the change

Our values are "Lead" and "Do What's Right" and our greatest assets are our people and our ecosystems of customers, partners and suppliers. Taking the lead requires courage, a mindset of openness to change and new ways of solving society's challenges. We focus on leadership, engagement and clear communications to empower our committed and talented people and we recognise the importance of inclusion, diversity and equality as prerequisites for a culture characterised by innovation and sustainability.

At the end of 2019, we took further steps to bolster our ability to drive innovation and sustainability with a common agenda. The new Packaging Materials division will provide an even stronger offering for customers utilising virgin and recycled board material. For Packaging Solutions, we are increasing our focus on growing new services and renewable packaging solutions as well as innovation collaborations throughout the value chain.

I'm very proud of leading this fantastic company. We are well equipped to deliver on our strategy and take the challenge of creating a world based on renewable materials. I'd also like to thank Karl-Henrik Sundström, our previous CEO, for all his achievements in Stora Enso. I look forward to continuing our exciting transformation journey.

Annica Bresky
President and CEO

Over 7% of sales came from new products and services.

Dividend proposal per share
EUR 0.50

Earnings per share
EUR 1.12

Reaching key financial targets

EUR million	2019	2018	2017	Target	Performance against target
Payout ratio[1], %	45%	39%	52%	See below[2]	Achieved
Operational ROCE, %	9.8%	15.5%	11.9%	>13%	Not achieved
Net debt/equity ratio	0.43	0.31	0.38	<0.60	Achieved
Net sales growth[3], %	-3.0%	5.9%	8.5%		
Net debt/last 12 months' operational EBITDA	2.1	1.1	1.4	<2.0	Not achieved
Fixed costs/sales	24.3%	23.6%	25.1%	<20%	Not achieved

[1] Dividend per share / EPS.
[2] To distribute 50% of EPS over the cycle.
[3] Excluding the paper business.

● Achieved
● Not achieved

Strategy

How we create value as a renewable materials company

Social

Key inputs

- Investments in Human Rights Due Diligence programme

- 26 000 direct employees in more than 30 countries
- OHS and well-being
- Employee and leadership development
- Partnerships with communities and universities
- EUR 2.7 million voluntary community investments
- Business ethics and compliance

Key outputs

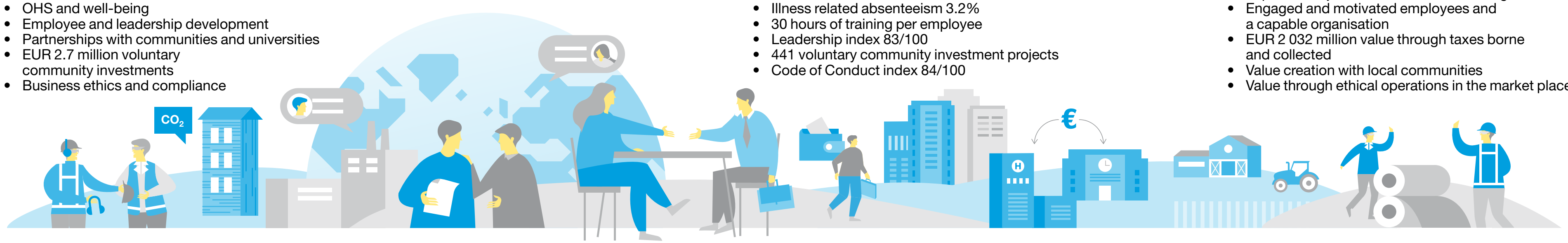
- Development areas mapped against the highest priority human rights during 2019

- Personnel turnover 15.0%
- 7.0 TRI rate
- Illness related absenteeism 3.2%
- 30 hours of training per employee
- Leadership index 83/100
- 441 voluntary community investment projects
- Code of Conduct index 84/100

Key impacts

- Respect for Human Rights in all operations

- EUR 1 331 million salaries and benefits
- Impacts of injuries, illness, and well-being
- Engaged and motivated employees and a capable organisation
- EUR 2 032 million value through taxes borne and collected
- Value creation with local communities
- Value through ethical operations in the market place



Environmental

Key inputs

- 2.35 million hectares of lands under ownership or management
- 37.1 million m³ of wood used
- EUR 54 million environmental investments
- 2.2 million tonnes of Paper for Recycling (PfR)
- 2.3 million tonnes of pigments, fillers and other chemicals
- 599 million m³ water withdrawal
- 41.8 TWh fuels of which 82% biomass
- 7.0 TWh purchased electricity

Our fiber-based materials are renewable and recyclable.

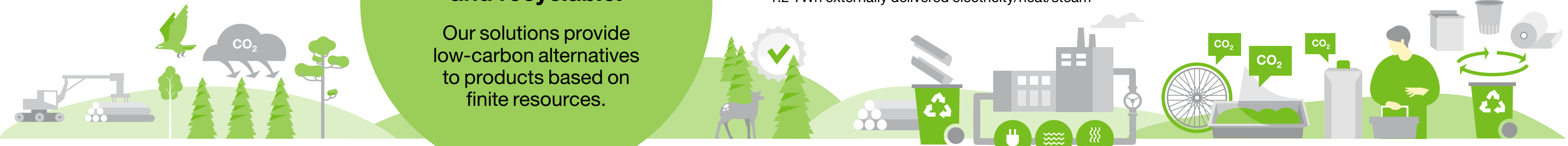
Our solutions provide low-carbon alternatives to products based on finite resources.

Key outputs

- 10.5 million tonnes of board, market pulp, and paper
- 4.9 million m³ of wood products
- Certification coverage 98% for lands in wood production and harvesting and 75% sourced wood
- 25% utilisation rate for Paper for Recycling
- 98% utilisation rate for process residuals and waste
- 96% of water withdrawal returned back to the environment incl. 298 million m³ process water discharges
- 3.04 million tonnes fossil CO_2e emissions from generated and purchased energy
- 1.2 TWh externally delivered electricity/heat/steam

Key impacts

- Total climate benefit 12 million tonnes of CO_2e with our renewable products and forest carbon sinks
- Environmental impacts of operations and along the value chain
- Forests work as carbon sinks and provide ecosystem services



Economic

Key inputs

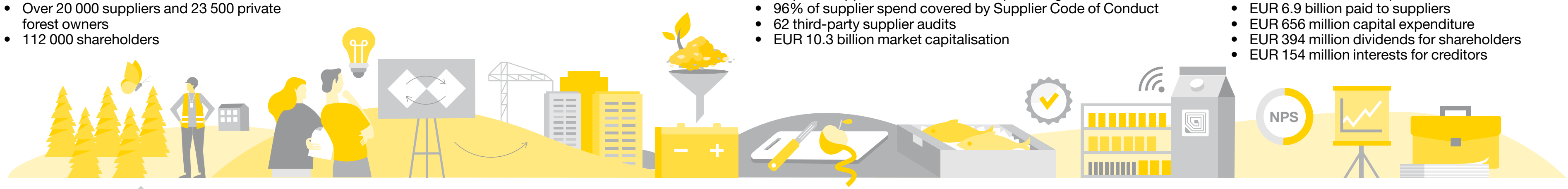
- EUR 10 632 million capital employed
- EUR 141 million R&D investments
- Over 20 000 suppliers and 23 500 private forest owners
- 112 000 shareholders

Key outputs

- Customer satisfaction: Net Promoter Score 56%
- 65 patent applications and over 430 patents granted
- 96% of supplier spend covered by Supplier Code of Conduct
- 62 third-party supplier audits
- EUR 10.3 billion market capitalisation

Key impacts

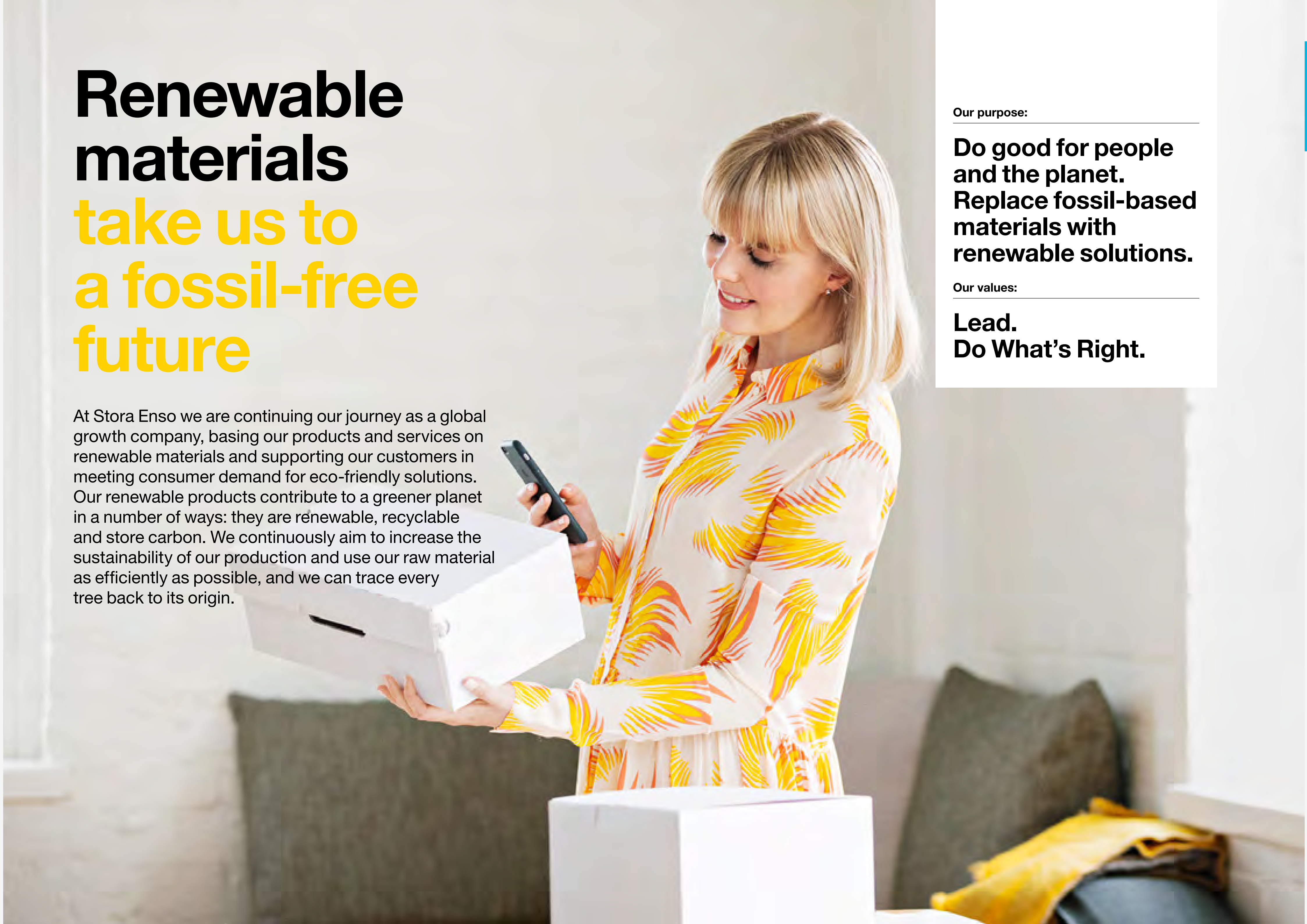
- EUR 10.1 billion sales of products and services
- 7% of sales from new products
- EUR 6.9 billion paid to suppliers
- EUR 656 million capital expenditure
- EUR 394 million dividends for shareholders
- EUR 154 million interests for creditors



Trees absorb CO_2 and store carbon together with wood-based products, which can then be recycled as raw material or used for energy generation.

Read more in **Financials 2019** and **Sustainability 2019**.

Renewable materials take us to a fossil-free future



At Stora Enso we are continuing our journey as a global growth company, basing our products and services on renewable materials and supporting our customers in meeting consumer demand for eco-friendly solutions. Our renewable products contribute to a greener planet in a number of ways: they are renewable, recyclable and store carbon. We continuously aim to increase the sustainability of our production and use our raw material as efficiently as possible, and we can trace every tree back to its origin.

Our purpose:

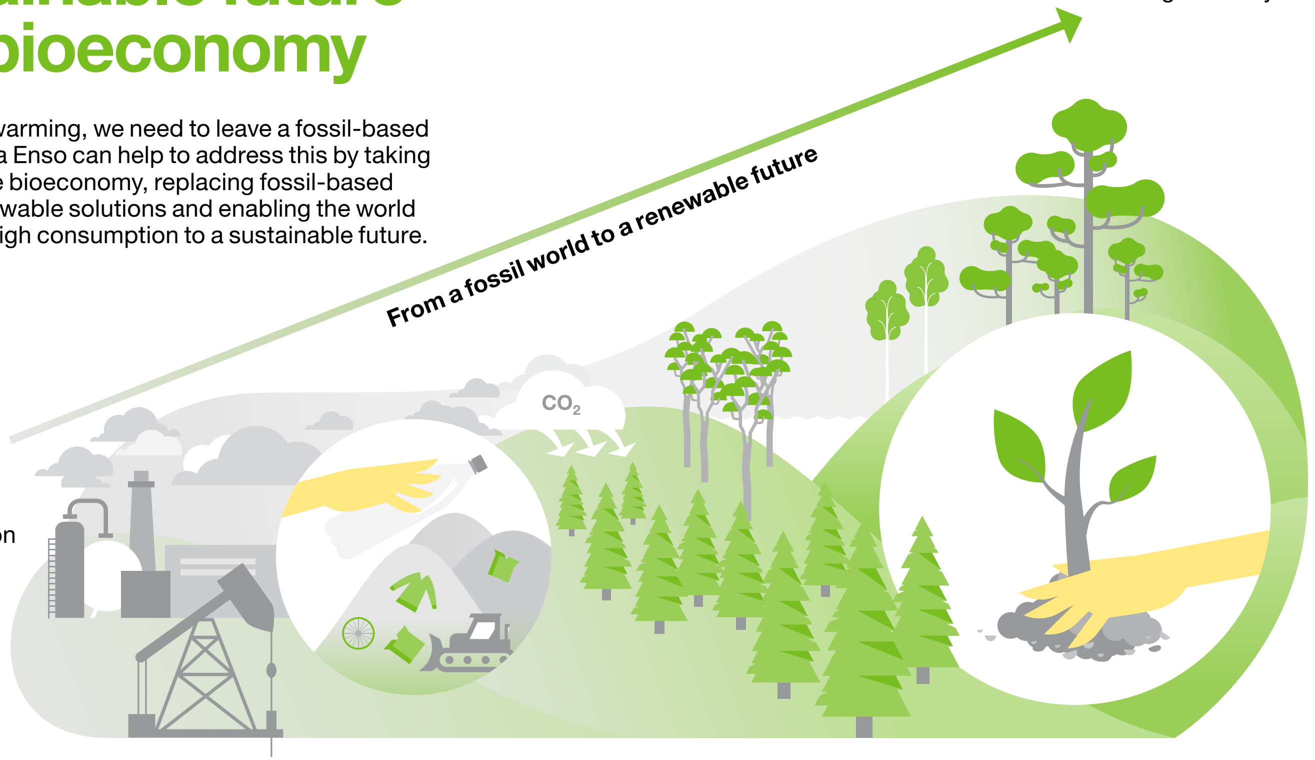
Do good for people and the planet. Replace fossil-based materials with renewable solutions.

Our values:

Lead.
Do What's Right.

The drive for a sustainable future in the bioeconomy

To combat global warming, we need to leave a fossil-based world behind. Stora Enso can help to address this by taking a leading role in the bioeconomy, replacing fossil-based materials with renewable solutions and enabling the world to transition from high consumption to a sustainable future.



By replacing fossil-based materials with our renewable solutions, we help drive the transition from a world that consumes fossil fuels to a sustainable future based on the bioeconomy.

The global megatrends continue to affect industries and businesses around the world. The signposts are quite clear, pointing to an acute need for raw materials that are renewable, recyclable and fossil-free. This is a huge advantage for Stora Enso. The promise that steers our innovation agenda is: "Everything that is made from fossil-based materials today can be made from a tree tomorrow."

From our customers' perspective, the trends influence their choice of materials, utilisation of resources, operations, supply chain and logistics, in order for them to respond to the increasing consumer demand for reduced carbon footprint and eco-friendly products.

Together, we can all make a difference. Many developments are already underway.

In the packaging industry in the European Union, it is already possible to replace about 25 percent of fossil-based materials with existing packaging technologies for renewable materials. EU legislation on single-use plastics is driving up demand for fiber-based materials. With an expanding market for batteries, it is possible to replace graphite with a lignin-based component. Wooden buildings reduce the need for concrete and steel. The apparel industry is looking for raw material alternatives to petroleum-based artificial fibers and to cotton, which requires large amounts of water and arable land. This makes viscose an attractive alternative, as it comes from renewable wood pulp.

Stora Enso has a strong portfolio. We are a market leader in liquid packaging, food service board, fluff and paper, among other products, in Europe and other parts of the world. We have a strong position in containerboard in Europe, and we are first in Europe and fourth in the world in supplying wooden construction material. Overall, four of our divisions are growing while the Paper division is focused on cash generation.

Replacing plastics with renewable materials is a gradual process and will not happen overnight, but we are ambitious. We cannot always completely eliminate use of plastic but we can reduce it. Biocomposites are a good example. They have the same performance, flexibility and strength as plastic but are partly made from renewable materials. It is better to use biocomposites than to use plastic alone.

More people and more consumption mean that the planet's resources are being stretched even further.

Global warming:
Carbon neutrality will create a EUR 6 000 billion market for smart green solutions by 2050.
Source: Sitra Megatrends

Growing middle class:
By 2030, 60 percent of the world's population will be middle class, earning USD 10–100 a day.
Source: UN Development Programme

Eco-awareness:
As many as 70 percent of consumers state that they have purchased an environmentally friendly product, even if it was more expensive. A total of 66 percent have avoided a particular product or brand for environmental reasons.
Source: Millward Brown for TetraPak – Environment Research

Changing lifestyles:
China's demand for packaged food will continue to grow by about 8 percent a year until 2024.
Source: Research and Markets – Packaged Food Markets in China

Urbanisation:
Close to 70 percent of the world's population are expected to live in urban areas by 2050. With pressure on infrastructure and resources, urbanisation is creating significant opportunities for more sustainable living.
Source: Sitra Megatrends

Growing population:
The global population is expected to reach 9 billion by 2050, leading to greater resource shortage. By 2030, the global population of people aged 65 and older will double to one billion.
Sources: Sitra Megatrends; National Institute on Aging

Digitalisation:
Retail e-commerce sales are projected to increase to over USD 4 000 billion, making up 14.6 percent of total retail spending.
Source: eMarketer

Increasing demand for raw material that is renewable, recyclable and fossil-free

Making our mark as the renewable materials company

Our strategy for growth is based on customer insights and innovation, supported by structured processes and motivated employees, and underlined and encircled by sustainability. We will continue to invest in attractive segments and concentrate on offering innovative products and services to our customers.

In 2019

over 7%

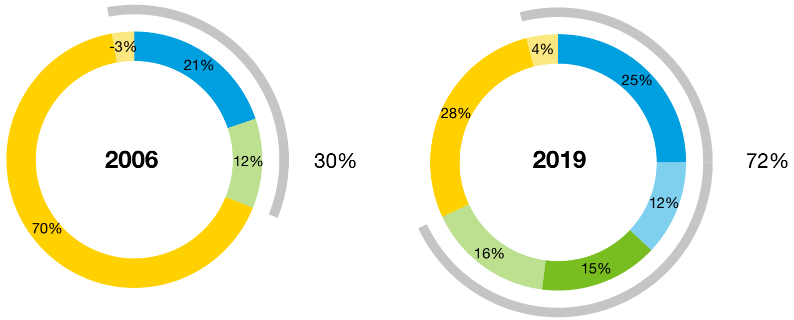
of our sales came from new products and services.

Long-term target

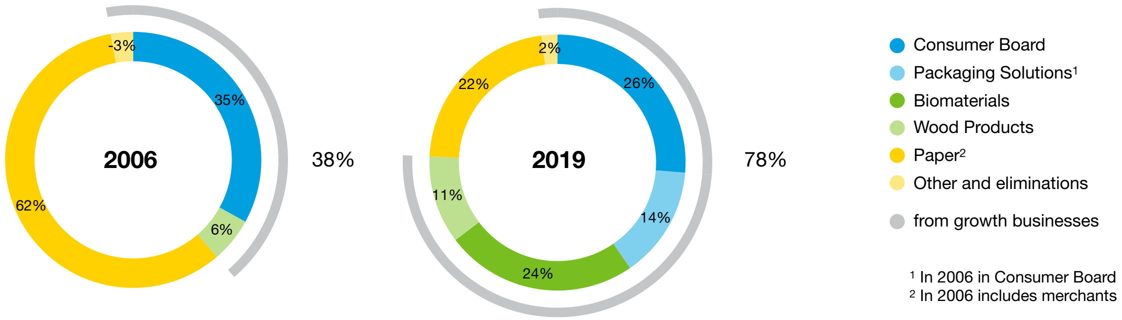
15%

of our sales is expected to come from new products and services.

Sales by business



Operational EBIT by business



[1] In 2006 in Consumer Board
[2] In 2006 includes merchants

Stora Enso is transforming from a traditional paper and board producer to a renewable materials growth company. The capital expenditure for 2012–2019 amounted to 6.1 billion, of which 3.5 billion was strategic capex. As part of the transformation, Stora Enso has closed 5.0 million tonnes of capacity since 2006.

An ecosystem for collaboration and innovation

Through innovation, based on customer insights, Stora Enso works to develop products and services, manage raw materials, build partnerships and collaboration, shape business models, improve value chain and utilise resources in the best possible manner. We do this to offer our customers more value than the competition.

During 2019 we had

1148 ideas

26 campaigns

65 patents filed

Addressing broader markets and different areas in the bioeconomy, our focus on innovation has resulted in a number of recent launches or pilots, including formed fiber, lignin, biocomposites, intelligent packaging and micro-fibrillated cellulose (MFC). The latter, when used in packages, adds strength, reduces weight and can be used as a renewable barrier material. We are working with start-ups such as TRÄ Group, Sulapac and TreeToTextile.

Innovation projects with high potential impact to transformation

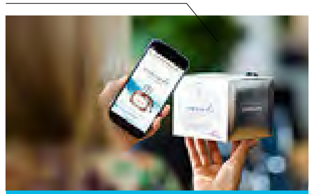
Bio-barriers, MFC films

Liquid and food packaging

Native and modified MFC

Specialty papers, nonwovens, personal and home care, barrier materials

Intelligent packaging



Sophisticated applications to brand owners and supply chains

Lignin for phenol replacement

Reduction of fossil raw materials in adhesives

Carbon fiber

Sports and leisure, wind energy, automotive, aviation

Bio-based carbons for energy storage

Anode material for batteries, activated carbon for double layer capacitors

Bio-based plastics

Chemical intermediates

Dissolving pulp to novel cellulose materials

Textiles and nonwovens

Biocomposites

Replacement of fossil-based plastics in composites

Strategy

- This is Stora Enso
- Stora Enso in 2019
- CEO's overview
- How we create value
- **Transformation**
- Divisions
- Group Leadership Team

Cases

New 2019

Sustainable automated new retail solutions

Stora Enso and the digital transformation company Atos are bringing new automated retail solutions and services to the market. The new service is based on the concept of "Intelligent Cabinets", which are RFID (Radio Frequency Identification) enabled e-kiosks designed for on-the-go purchasing. To buy a product from the intelligent cabinets, the consumer only needs a compatible payment app or payment card. When the cabinet door is closed, the consumer is charged via the app for the items taken out.

The partnership will combine Stora Enso's technologies with the service delivery experience and methodology of Atos. The "new retail solution" by Stora Enso merges in-store and online shopping and uses sustainable RFID tags to track and trace stored items. These tags are paper-based, providing a plastic-free and recyclable solution for packaging authentication.

› Read more about New Retail Solution by Stora Enso

The many applications of lignin: bio-asphalt

Recently, Lineo™ by Stora Enso has proven its excellence in replacing a fossil-based binder, bitumen, in asphalt. Stora Enso's customer H4A (Holding de Vier Ambachten) has successfully been using Lineo™ in Central Europe in several asphalt projects – from bike lanes to heavy load transportation roads.

Awarded 5G technology solution in mill maintenance

Stora Enso has been one of the first companies in the industry to implement 5G technology to enable HD 360° camera solutions in production. This solution was recognised in the Industry of Things World Awards 2019.

New 2019

Next generation eco-products designed for purpose

In 2019, Stora Enso announced an investment of EUR 5 million to build a new production line and related infrastructure to manufacture formed fiber products at Hylte Mill in Sweden. Formed fiber products are manufactured by pressing various wood-based pulps into a three-dimensional shape in a moulding machine. This enables a broad range of applications, including plastic-free cups, bowls and plates.

Stora Enso entered into a strategic collaboration with HS Manufacturing Group (HSMG), a producer of plant-based barrier coatings, to develop sustainable barriers for formed fiber products. Stora Enso will apply the PROTĒAN™ barrier technology to its renewable and recyclable PureFiber™ by Stora Enso product offering. This enables the manufacture of single-use products that are renewable, recyclable, biodegradable and plastic-free. The PROTĒAN™ barrier coating can be applied to produce a wide range of high-quality cellulose-based paper products, including single-use food service items.

› Read more about formed fiber

Building competencies in leadership, sales, innovation and data analytics

Success in delivering sustainable profitable growth depends greatly on our people and culture. Leadership is a key factor in strengthening Stora Enso's position as the renewable materials company. We continuously invest in the development of our leaders through programmes such as Lead Through People, which targets all managers in the organisation. Since 2015, approximately 3 200 managers have participated in this programme.

Valuable insights from global employee survey
Stora Enso conducts an annual global survey (Your Voice) of all employees. In 2019, the survey was conducted for the eighth time and had a response rate of 86% (88%). The survey follows progress in areas that impact our ability to deliver on our strategic agenda, steering activities and priorities. It also supports managers and teams as they continuously improve their work methods. In 2019, the results remained at a high level in the leadership index and engagement index. After many consecutive years of positive development there was a slight downturn on other indices compared to the previous year's results.

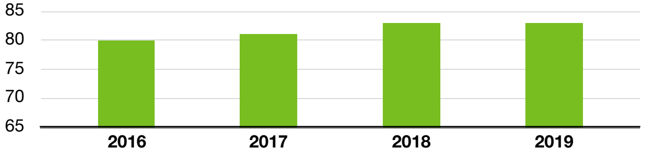
Our Commercial Excellence Programme focuses on developing capabilities in sales and commercial acumen. We conducted a common Sales Academy programme for more than 300 sales leaders, front-line sales persons and business developers during 2017–2019. In total, more than 400 people have gone through the training. In addition to sales organisation, people from other areas such as supply chain, product management, marketing, sourcing and logistics, customer service, human resources, and sustainability have participated in the programme. Other outcomes from the Commercial Excellence Programme are harmonised sales processes and common systems such as Customer Relationship Management.

Combining work with start-up companies and executive training, the Stora Enso Accelerator programme aims at further strengthening the capabilities required for our transformation. The focus has been placed on deepening competencies and skills in innovation, entrepreneurship, customer insight and change management as well as developing new business opportunities with start-ups. In 2019, the programme focused specifically on solutions in the area of the circular economy. The selected six start-ups for the programme teamed up with Stora Enso participants to co-create and innovate for new solutions with renewable materials as the foundation.

Stora Enso aims at further strengthening its operational competitiveness by making data analytics an integral part of its business operations. In 2019, a training programme was conducted for employees working in operations, mainly within production and maintenance, with focus on developing competencies and skills in data analytics. By training our own employees in data analytics, with experience of the business and its operations, we will be able to bring relevant data analytics insights to the business and support our company transformation agenda.

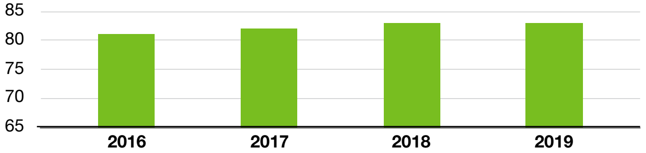
To further promote new talent and diverse perspectives, Stora Enso runs the GROW Global Trainee Programme in which graduates are initiated into the Stora Enso organisation globally during their first 16 months of employment. In 2019 we welcomed 24 new GROW trainees to the programme. The GROW 2019 programme focuses on strengthening our cabapilities in customer insights and operational efficiency, and it supports in strengthening our position as the renewable materials company.

Leadership



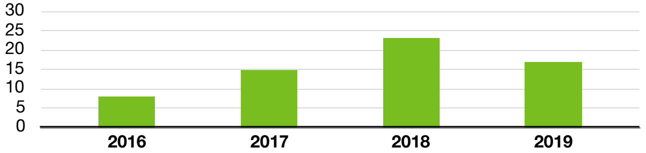
Leadership Index is measured annually in Stora Enso's Your Voice employee survey, and consists of numerical answers to 16 questions related to the respondent's view of the direct manager.

Engagement



Employee Engagement Index is measured annually in Stora Enso's Your Voice employee survey, and consists of numerical answers to seven questions related to engagement indicators including, but not limited to motivation, pride and goal orientation.

Employee Net Promoter Score

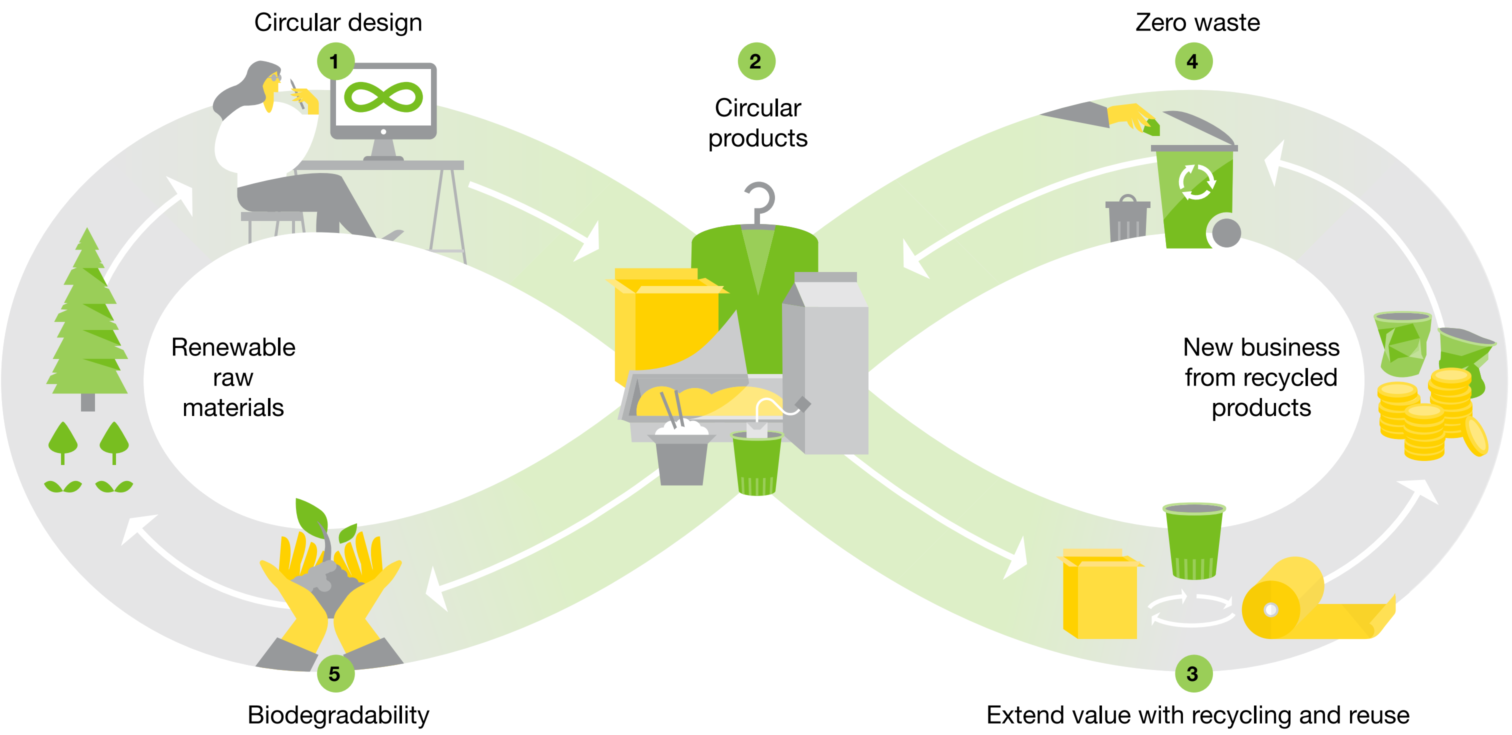


Employee Net Promoter Score is measured annually in Stora Enso's Your Voice employee survey, and consists of one question related to the likelihood of recommending Stora Enso as a workplace to a friend. A positive score indicates that there are more promoters than detractors, while a negative score indicates the opposite.

Strategy

A circular view for a better and brighter world

A leader in the bioeconomy, Stora Enso also wants to contribute to a circular economy where resources are kept in use for as long as possible, reusing and finally recovering materials for other purposes. Altogether, the circular bioeconomy is a good formula for keeping the planet healthier.



The circular economy requires partnerships across the value chain

Stora Enso, along with other members of CEPI, the European association representing the forest fiber and paper industry, has joined forces with companies across the value chain to drive the recycling of fiber-based packaging. This collaboration in circular design brings about positive change in the circular economy. The initiative, 4evergreen, aims to increase awareness of innovation in fiber-based packaging materials and recycling, and to set guidelines for product design that enable circularity and the secondary use of fibers. It also aims to support the development of optimised collection systems as well as critical recycling infrastructures and technologies adapted for fiber-based packaging.

Wood fibers lend themselves to the circular bioeconomy very well. They are renewable, fossil-free and can be recycled at least 5–7 times.

1 Circular design
Circular design refers to designing for the whole system and all stages of the product lifecycle instead of just designing the product. It considers the materials used, the manufacturing process, the distribution and the potential for reuse, refurbishment, remanufacturing or recycling. Our aim is to maintain the value of products and materials for as long as possible through product design, innovation and recycling.

2 New business from circular products and solutions
In the circular bioeconomy, products are bio-based. They are also shared, reused, remanufactured and finally recycled. Creating new products and business models is all about collaboration. We are forming partnerships to build circular value chains for the future.

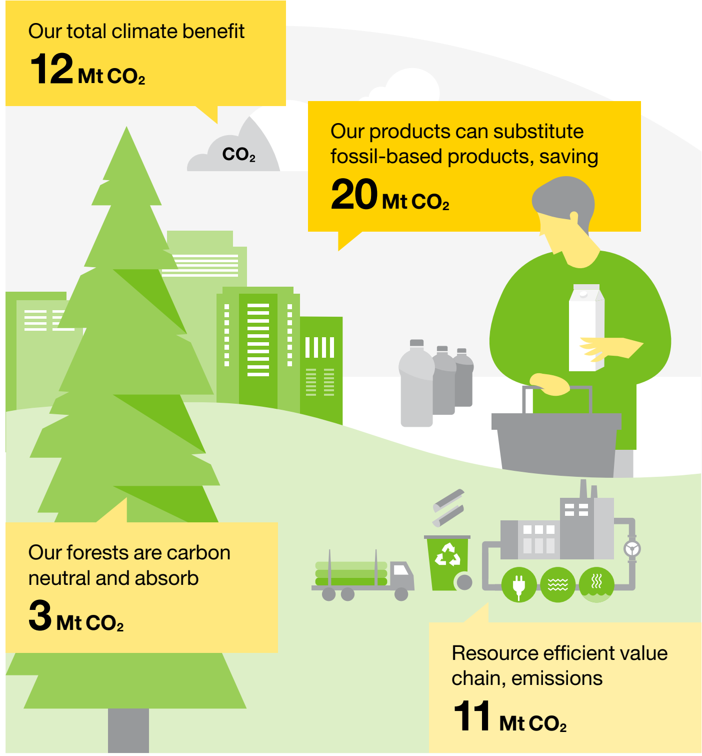
3 Extend value with reuse and recycling
To this end, we are collaborating with customers and partners to develop circular solutions to replace plastics and cut down on waste along the supply chain. We are testing how our products perform in different kinds of recycling systems, analysing lifecycles in terms of their carbon footprint, and looking closely at directives regarding recycling and waste. This work is supported by joining different alliances and commitments, such as CEPI's 4evergreen initiative and the New Plastics Economy Global Commitment, led by the Ellen MacArthur Foundation in collaboration with the UN Environment Programme.

4 Zero waste
As the renewable materials company, we work to minimise waste and resource use overall. In our own operations, we focus on optimising our use of resources and on creating value out of by-products through innovation and collaboration.

5 Biodegradability
When a material or product has reached the end of its life, we promote recycling and energy recovery to create further value. At the end of the life cycle, many of our products are biodegradable or can be burned for energy.

Strategy

Substituting materials from finite resources is our key competitive advantage



Best climate benefit comes from combining forest-based products and sustainable forestry with a resource efficient value chain. › Read more about the calculation method.

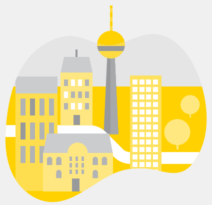
As a company, Stora Enso contributes to a better climate. Trees in our sustainably managed forests absorb CO_2 from the atmosphere and when harvested act as a store. Carbon stays in the fibers when they are made into products, and even through recycling. Carbon storage can be increased by substituting materials from finite resources with renewable alternatives. This is a significant and growing opportunity for us. By substituting fossil-based materials, Stora Enso's products saved an estimated 20 million tonnes of CO_2 in 2019 which is comparable to the average annual CO_2 emissions of 5.1 million cars.

Our business is a net contributor to prevent global warming.

Fiber-based products have a lower carbon footprint

Subsititute plastic trays

Trayforma paperboard trays for ready-meal packaging offer up to 64% lower carbon footprint than plastic trays.



If all plastic trays in Germany were replaced with Trayforma, the savings in CO_2 emissions would equal to heating all houses in Berlin in January.

Substitute plastic fish boxes

EcoFishBox by Stora Enso offers up to 30% lower carbon footprint than a traditional polystyrene fish box.

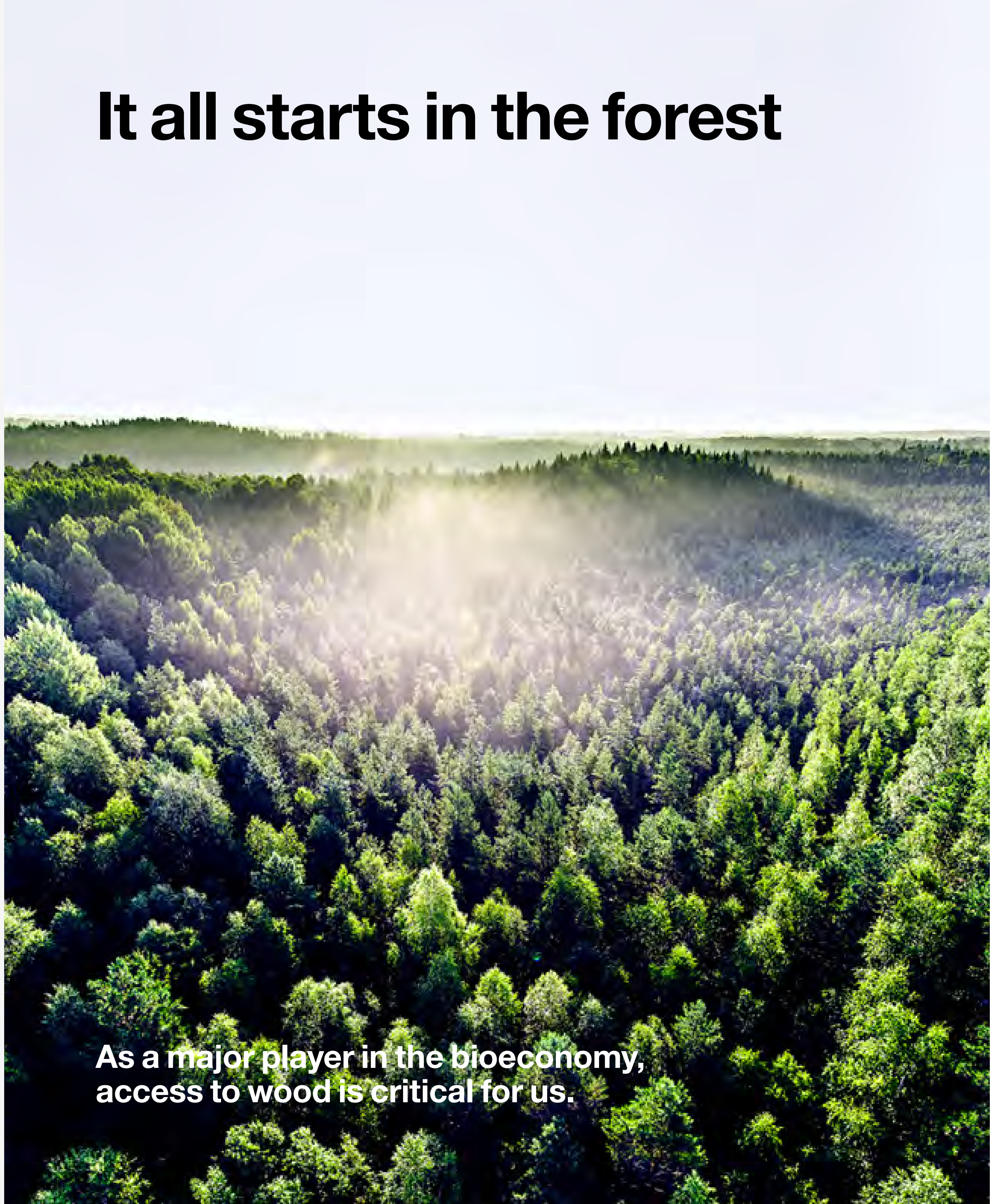
Switching to EcoFishBox in the Nordics would save fossil CO_2 emissions equal to the annual emissions of 76 000 cars.

Substitute plastic PET bottles

In Europe, a fiber-based beverage carton has up to 45% lower carbon footprint than a PET plastic bottle.*

* According to studies made by Ifeu for SIG Combibloc

It all starts in the forest



As a major player in the bioeconomy, access to wood is critical for us.

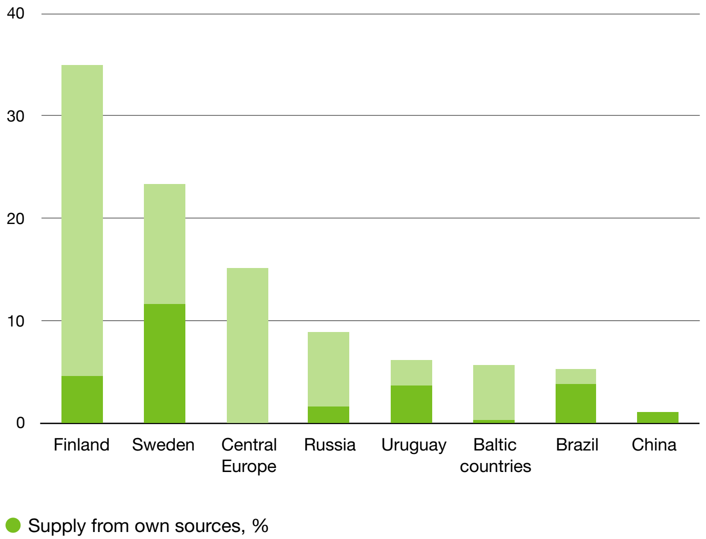
Our products are made of wood

Sustainable forest and plantation management is essential for Stora Enso in securing long-term availability of wood – our most important renewable raw material.

Stora Enso owns forest lands in Sweden, and has biological assets also in Finland, Brazil, Uruguay, China and Laos through subsidiaries, joint operations and indirectly through equity accounted investments. These biological assets are used as raw material in pulp and mechanical wood production and as biofuels.

Today, Stora Enso is one of the largest private forest owners in the world with forest assets valued at more than EUR 4.9 billion (land and biological assets) in its balance sheet the highest value being of biological assets of EUR 3.9 billion in Northern Europe. Globally, Stora Enso owns or manages lands covering a total area of 2.35 million hectares. About 30% of the Group's wood raw material needs are covered from own sources or long term supply agreements globally.

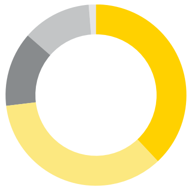
Wood procurement by region, %



We control about 30% of our wood raw material consumption globally. In 2019, we harvested in own forests and sourced from long-term agreements 11 million m³ in total. Our deliveries to our own mills were 37.1 million m³ in total.

Sustainable forestry is the foundation for long-term carbon neutral raw material from forests.

The distribution of species



Forest growth in 2019

Forest growth	million m³ fo.*
Forest growth	10.8
Annual harvesting	9.4
Productive standing stock at the end of 2019	193.9

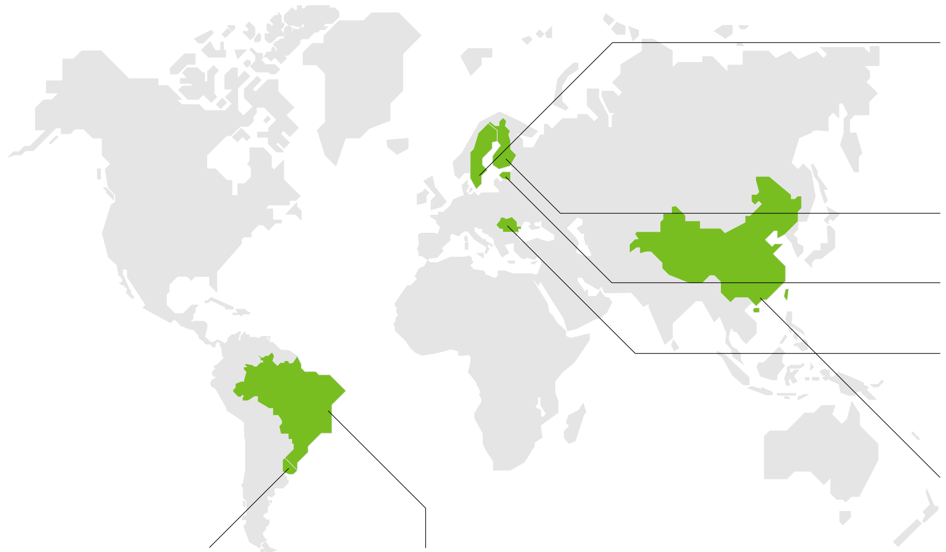
* Forest cubic metres

In 2019 we increased our forest holdings in Sweden in connection with the restructuring of Bergvik Skog, from indirect share of 936 thousand hectares to direct ownership of 1.4 million hectares of forest, of which 1.14 million hectares are productive forest land with standing stock of 143 million m³. The transaction increased Stora Enso's net debt by about EUR 1.0 billion, and the Group issued its first green bond of EUR 600 million dedicated to finance the acquisition.

With direct ownership, we can increase the security and flexibility of wood supply. This gives us better opportunities to further develop sustainable forest management, thus strengthening our competitiveness. We strongly believe in the bioeconomy and want to secure our competitive raw material supply for the long term.

Our wood supply was substantially strengthened after the Bergvik Skog acquisition

Total biological asset value in balance sheet EUR ~4.4 billion



Swedish forests
1 408 000 ha
of forest land
Fair value: EUR 3 133 million
(31 Dec 2019)

Tornator
Stora Enso's share
255 000 ha
in Finland,
27 000 ha
in Estonia, and
5 000 ha
in Romania
Fair value: EUR 740 million
(31 Dec 2019)

Guangxi,
Southern China (leased)
81 000 ha
of forest land
Fair value: EUR 181 million
(31 Dec 2019)

Montes del Plata,
Uruguay
Stora Enso's share
131 000 ha
of forest land
Fair value: EUR 222 million
(31 Dec 2019)

Veracel,
Brazil
Stora Enso's share
112 000 ha
of forest land
Fair value: EUR 86 million
(31 Dec 2019)

In addition:
Laos: trial plantation,
3 900 ha (leased land)
Russia: 369 500 ha
(long-term harvesting rights)

In addition land book value totals EUR 548 million in the balance sheet at the end of 2019.

Attractive valuation for the Bergvik Skog acquisition

	Hectares	Price per ha (EUR)	Value (EUR billion)
Productive forest holdings in Sweden	1 139 853	3 020	3.4
Forest value based on BillerudKorsnäs/AMF	1 408 245	3 700*	5.2
Forest value based on LRF Konsult	1 139 853	5 700**	6.5

* Swedish packaging materials company BillerudKorsnäs sold 89.9% of Bergvik Skog Öst AB to Swedish pension insurance company AMF in June 2019 for an enterprise value of EUR 1.2 billion on a debt free basis. The valuation corresponds a price of approximately EUR 3 700 per hectare of forestland.
** The average price for forest land in Central Sweden based on LRF Konsult statistics generally for smaller forest deals.

Focus on sustainable forestry

We established the Forest division to add transparency and visibility of our forest operations.

The new Forest division, which started operations in the beginning of 2020, includes Stora Enso's Swedish forest assets and the 41% share of Tornator with the majority of its forest assets located in Finland. The division also includes wood supply operations in Finland, Sweden, Russia, and Baltic countries. Tree plantations in South America and Asia, linked to local pulp mills, continue to be reported in the Biomaterials and Packaging Materials divisions. Forest division provides support to management and development of tree plantations in South America and Asia.

As a major player in the bioeconomy, access to wood is critical for us. Wood is the single most important raw material and the biggest share of our costs, as well as a large part of the balance sheet. Forest operations are an integrated part of our value chain.

Creating additional value through forests

1. **Competitive wood supply:** Sources wood to Stora Enso mills, in a competitive and sustainable way
2. **Innovation:** A platform for innovations and development. There are several opportunities with innovation to improve our forestry operations. Examples include remote sensing techniques, including laser scanning; digital images of the forest simulating e.g. the impact of our operations to the forest.
3. **Sustainable forest management:** The climate benefits and economic values from growing forests are reached without compromising biodiversity and other environmental aspects.

Forest growth represents an important component of the annual operative return for long-term rotation forest assets, where the typical annual wood sales and related costs do not reflect the total profitability of the forest assets. The long-term value change of the standing forests is an important component of the forestry business's profitability.

Our aim is to increase long term yield of our forests and plantations without compromising biodiversity. We can further increase the yield by accurate and professional forest management utilising new digital technologies, with tree breeding as well as with R&D especially in the field of biotechnology.

See also:
- **Financial Report**: Note 12 Biological assets
- **Sustainability Report**: Forests, plantations, and land use

Key figures

Stora Enso regenerated forest by planting

65.5 million

seedlings in 2019.

The total amount of wood (including roundwood and wood chips) delivered to Stora Enso's mills was

37.1 million m^3

sub in 2019.

Stora Enso invested

EUR 72 million

in 2019 in future growth through silviculture and fertilisation.

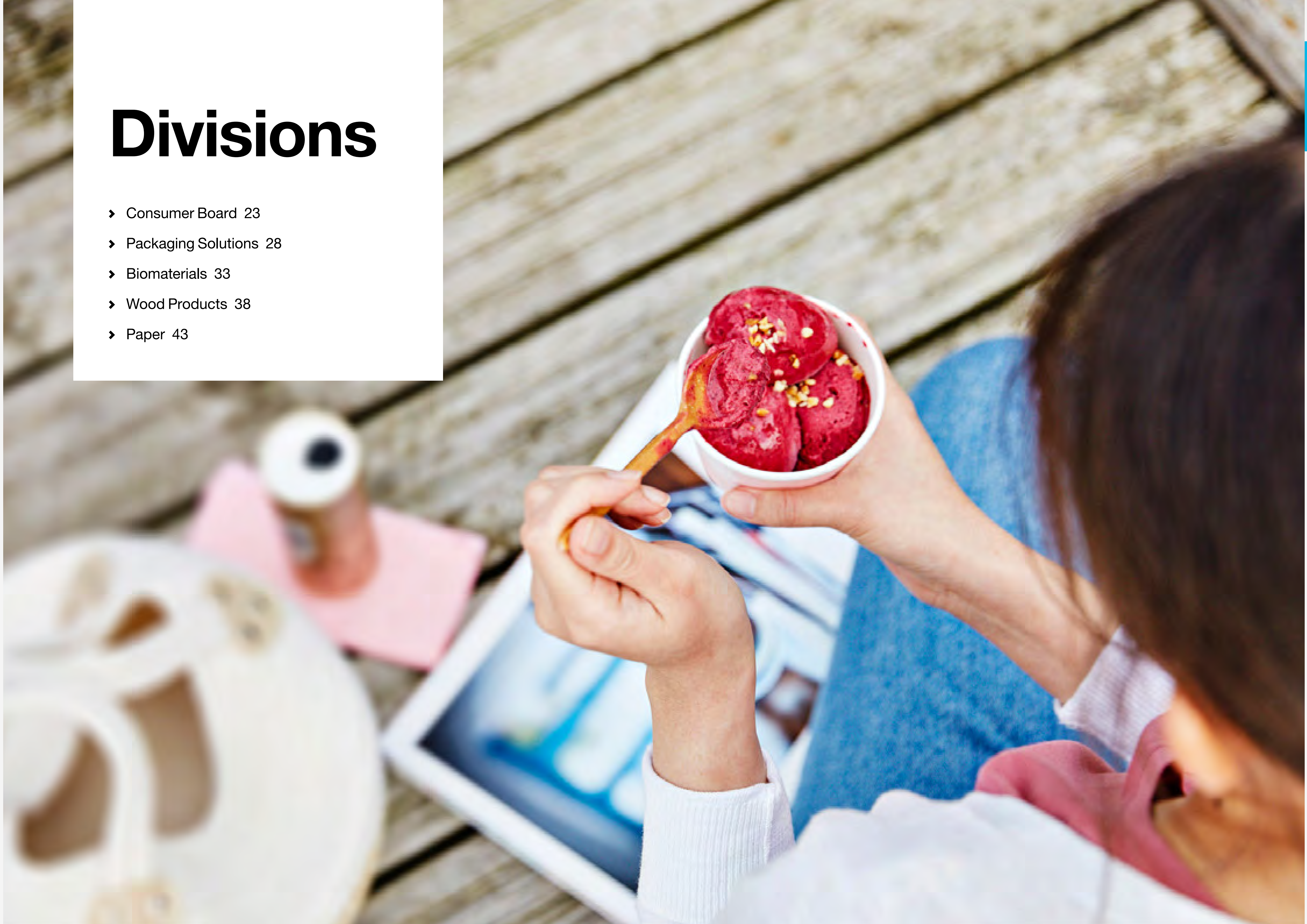
98%

of the lands Stora Enso owns or manages were covered by forest certification schemes.

Share of fiber costs of Group's total costs:

34%

Divisions



Consumer Board

The ambition of the Consumer Board division is to be the global leader in high-quality virgin fiber cartonboard. We aim to be the preferred global partner for customers in premium consumer board segments. Our wide board and barrier coating selection is suitable for consumer packaging for liquid, food, pharmaceutical and luxury goods. Our products enable fossil-based materials in packaging to be replaced by renewable and recyclable alternatives.

"The new Packaging Materials division has an industry leading product portfolio of virgin and recycled packaging materials. This combined with our innovation and sustainability capabilities will create a very attractive total offering and allow us to take advantage of the call of consumers, customers and legislators for a transition to a circular economy. As the requirements for packaging renewability and recyclability are increasing, we see significant opportunities to replace other packaging materials with low carbon footprint, fiber-based solutions. We are focusing our innovation efforts on constantly improving the recyclability of our products and, together with our partners, developing solutions able to replace fossil-based packaging."

Hannu Kasurinen
Executive Vice President
Consumer Board Division
As of 1 January 2020 EVP Packaging Materials Division

As of 1 January 2020, Stora Enso merged its containerboard business in the Packaging Solutions division with the Consumer Board division, creating a new Packaging Materials division.

Offering in 2019

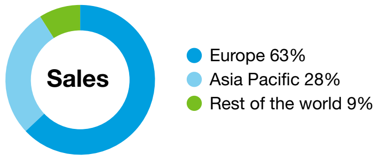
- **Liquid packaging board** for milk, yogurt, juice, soups, wine, soft drinks, water, etc.
- **Food service board** for hot and cold drinking cups, fast food, ice cream, catering, etc.
- **Carton board** for dry, frozen and chilled food, beverages, chocolate and confectionery, pharmaceuticals, cosmetics, luxury goods, cigarettes, etc.
- **Graphical board** for book and notepad covers, greeting cards, tickets, tags, etc.
- **Speciality paper** for bags, pouches, labels, banderols, etc.

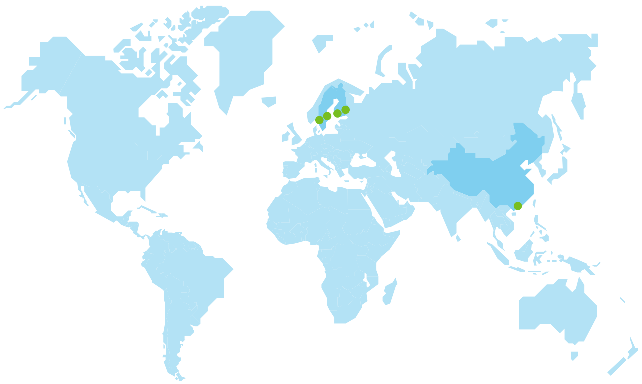
Business environment

The premium consumer board market is expanding globally, providing growth opportunities for us in CUK (Coated Unbleached Kraft), FBB (Folding Boxboard), FSB (Food Service Board) and LPB (Liquid Packaging Board). Our SBS (Solid Bleached Sulphate) board serves the demanding niche of cosmetics and luxury packaging. Our growth is faster than the global packaging market, accelerated by our renewable materials and innovations that can replace fossil-based packaging materials.

Our strategy is built on three pillars: being the global leader in attractive end-use segments; customer-driven innovations based on renewable materials; and competitive assets well positioned in our key markets.

Leading market position in core segments





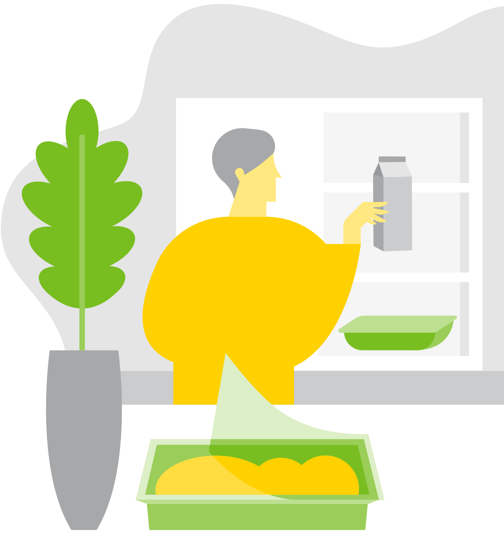
Consumer Board mills

Stora Enso is one of the largest producers of virgin fiber board in the world. We are the global leader in liquid packaging and the biggest producer of food service board and carton board in our strategic segments in Europe.

Consumer Board division has a strong foundation in European markets, where our main competitors are BillerudKorsnäs, Metsä Board and Holmen. The main competitors outside Europe include Klabin, Evergreen, Georgia-Pacific and International Paper. Apart from other paperboard manufacturers, one of our biggest competitors is the plastic packaging industry. EU legislation around single-use plastics is driving up demand for fiber-based materials. Substituting plastic packaging with fiber can make a substantial contribution to meeting the EU's CO_2 targets. Even with the existing packaging technologies, 25% of European plastic packaging could be replaced with renewable solutions.

Strategy

Advantages



Our innovation efforts are targeted to develop packaging materials and business models that can replace fossil-based non-renewable materials and meet the demands of the circular bioeconomy.

Wide portfolio based on renewable and recyclable materials

Consumer Board offers the widest portfolio of premium, virgin fiber board in Europe. Thanks to our wide selection of barrier coatings, paperboard can be used in far more end-use applications compared with paperboard as such. We also offer plant-based coating for fully renewable barrier packaging.

Strong assets with further development potential

Our asset base is strong, with cost-competitive integrated mills in Imatra and Skoghall, specialised mills in Fors and Ingerois, and a state-of-the-art mill in Beihai. We also are the industry leader in micro-fibrillated cellulose (MFC).

Global footprint geared for growth

Our mill in Beihai, China, allows us to expand our offering to new customers and geographical markets. It continues to be a key growth initiative for the division because the most significant growth in virgin fiber-based consumer board is taking place in China and the Asia Pacific region.

Innovations to replace plastics and improve circularity

Our innovation efforts are targeted to develop packaging materials and business models that can replace fossil-based non-renewable materials and meet the demands of the circular bioeconomy. The key focus areas of our innovation work are: bio-barriers based on MFC; source reduction by adding MFC to the board; and sustainable biocomposite packaging components such as screwcaps and straws with less plastic.

Strong customer relations and a leading position in attractive segments

We work throughout our value chain with external partners, customers and start-ups to accelerate innovation. Together we find new solutions to improve the quality, efficiency, functionality and recyclability of packaging by using renewable materials. We have a strong market position in all our product segments, and we collaborate with our long-term customers to understand the drivers behind consumer needs to create the packaging of the future.

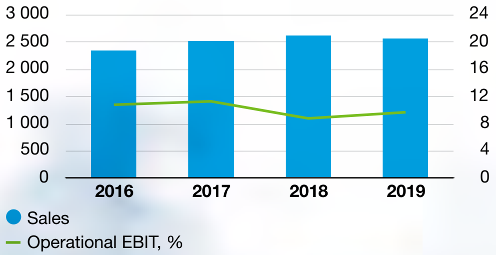
Financial performance

Operational ROOC

12.3%

(Target >20%)

Sales and operational EBIT



Highlights of 2019

Accelerating MFC product development

Production and commercialisation of MFC was further enhanced following the completion of an investment at Imatra Mills in Finland.

New cosmetics tube to replace plastic

A paperboard tube to reduce plastic in the primary packaging of cosmetics is a new application area for our paperboard. The body of the tube is made of Natura Shape™ by Stora Enso, which is 70% based on renewable raw material and thus reduces the need to use fossil-based raw material.

At the forefront of innovation

New products' share of Consumer Board division's total sales was 17% in 2019, which already exceeds the group's target level of 15% and is expected to grow in the coming years.

Serving our customers with a number of new products launched in 2019

In 2019, we launched several new products to meet our customers' increasing demands for product safety, functionality, sustainability and recyclability. Our materials increase the opportunities for renewable packaging and for replacing fossil-based materials:

- Stora Enso and Sulapac launched a renewable and biodegradable straw to combat the global problem of plastic waste. The straw has strong usability and works just like a traditional straw. The new straws entered the market in late 2019 and are available to brands and consumers looking for more eco-friendly solutions.
- A premium quality board, Arctic Deer™ by Stora Enso, was launched in China. Produced at Beihai Mill, Arctic Deer is suitable for applications in food and pharmaceutical packaging, as well as in publications.
- A strong kraft board, CKB Jade™ by Stora Enso, was launched in China to meet the packaging requirements of the growing online food business.
- Cupforma Natura™ by Stora Enso with dispersion coating is a new material for hot and cold drinking cups, and for ice cream packaging. It is produced without a traditional plastic coating layer and designed for full fiber recovery in a recycling process.
- Wood-based biocomposites, DuraSense™ by Stora Enso, were introduced to new customer segments including premium cosmetics, food and luxury brands seeking alternatives to plastic packaging.

Strategy
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Strategy

Driving the change towards more efficient recycling of packaging

Stora Enso enhances the circularity of its products through innovative material solutions. In addition to this, the Consumer Board division develops partnerships for the collection and recycling of paperboard packaging.

We work with our value chain partners, participate in industry collaboration and co-create with our customers for circular design. One example of this is the aim to start recycling used paper cups on a large scale at Langerbrugge paper mill in Belgium. Bringing paper cups into the recycling scheme represents a new business opportunity as cups are such an underutilised source of quality recyclable fiber.

Today, Stora Enso is one of the world-leading suppliers of food service board to cup makers. We are now looking into partnerships for the collection and sorting of used paper cups to ensure that this high-quality fiber material is captured and given a second life. The plan strengthens Stora Enso's role as a driver of circular business.

In a trial run at the Langerbrugge mill, half a million baled post-consumer paper cups collected from fast food restaurants and coffee houses were recycled into magazine paper.

The result confirmed that the fibers from the paper cups are well suited for other paper applications. The paper board for cups is made of high-quality, renewable fibers which can have several lives due to recycling. Recycling a paper cup can reduce its life-cycle carbon footprint by half.

› Read more about the trial at Langerbrugge Mill

Main focus and targets for 2020

- Safety – aiming at zero accidents
- Grow faster than the global packaging market and leverage the potential of joint packaging materials portfolio
- Develop new business through customer- and consumer-driven innovation
- Increase sales generated by new products and services
- Maintain market position for our core segments in Europe, and grow in the Chinese and South East Asian market
- Leverage the potential of our existing assets

Packaging Solutions

The Packaging Solutions division provides fiber-based board materials and corrugated packaging products and services that are designed for a wide range of applications. Our renewable high-end packaging solutions serve leading converters, brand owners and retailers – including those in e-commerce – that are looking to optimise performance, drive innovation and improve their environmental footprint.

In 2019, our strategy focused on growing significantly in containerboard and expanding selectively in corrugated packaging. The global trends of sustainability and e-commerce favoured market growth and our current footprint included markets with high growth rates, attractive profitability and low risk level. Moreover, we continue to focus on growing through product innovation, design and operational excellence whilst leveraging digitalisation to create competitive advantages.

As of 1 January 2020, Stora Enso is merging its container board business in the Packaging Solutions division with the Consumer Board division, creating a new Packaging Materials division. The remaining business in Packaging Solutions together with Stora Enso's recently created Formed Fiber unit, will constitute a more focused Packaging Solutions division.

Offering in 2019

- **Kraftliner**: corrugated box liner, e.g. for food, fruit, vegetables and consumer electronics
- **Recycled liner**: corrugated box liner, e.g. for furniture, electronics and e-commerce boxes
- **Semi-chemical fluting**: corrugated box fluting, e.g. for fruit, vegetables and heavy-duty goods
- **Recycled fluting**: corrugated box fluting, e.g. for industrial and consumer goods
- **Corrugated packaging**: corrugated boxes, e.g. for food, retail, e-commerce and industrial goods
- **Packaging automation**: packaging machines, such as box formers, case packers and palletising robots
- **Design services**: packaging design development services
- **Technical services**: equipment optimisation services
- **Intelligent packaging**: RFID-based packaging solutions for track-and-trace possibilities, including plastic-free RFID tags
- **Kraft papers**: high-strength paper, e.g. for bags for grocery and construction materials

Business environment

The customer base in containerboards and corrugated packaging is fragmented as it encompasses converters, brand owners, retailers, industrial and e-commerce companies. This offers opportunities for differentiation as customer expectations evolve and for leveraging packaging as a tool for brand building and engaging with end-consumers.

Total retail e-commerce sales are forecast to grow by

15% annually.

This is driving growth in corrugated packaging, which accounts for most of the e-commerce packaging.

Leading market position in core segments

As an industry leader in renewable packaging, the Packaging Solutions division holds a strong position in the corrugated packaging focus markets: a leading status in the Nordics, second in the Baltics and Poland, third in China and fifth in Russia. The main competitors are Smurfit Kappa, Mondi, DS Smith and International Paper.

In containerboard, we have world-class assets and provide high-end products. The market is fragmented in both containerboard and corrugated packaging with many larger and smaller players.

In 2019, the Packaging Solutions division operated three containerboard mills, four rigid box plants, 17 corrugated box plants, 10 design studios and one innovation centre.

Strategy

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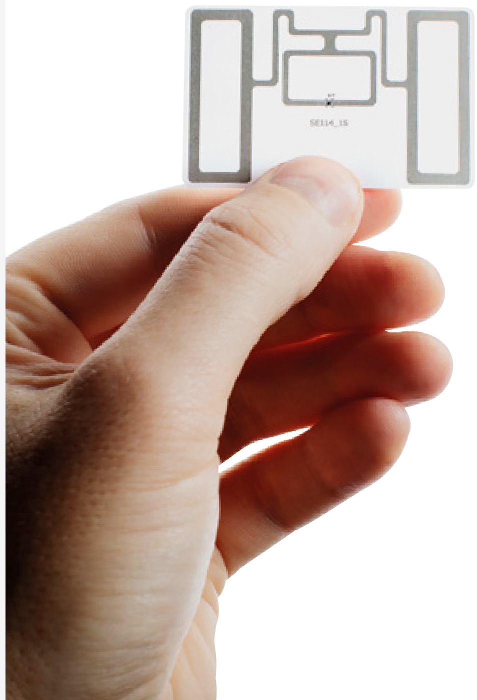
Advantages

Positive growth trends

In containerboard, we see continued demand and growth for kraftliner for use in the areas of fresh produce and food and demanding industrial and retail applications. Our focus is to be a strategic supplier and deliver high-performing products and services within these segments.

In corrugated packaging, we strive to build partnership positions with larger brand owners and retailers, helping them add value to their offerings through innovation and sustainability advantages. The e-commerce segment is especially attractive due to its anticipated fast market growth (15% CAGR 2018–2022). Corrugated packaging is fossil-free, renewable, recyclable and compostable and therefore well positioned in versatile application areas.

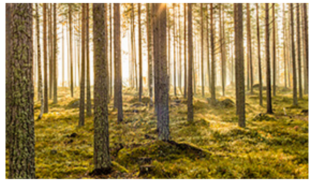


Innovation and design capabilities

We bring added value to our customers through experienced packaging designers in our design studios for the development of innovative packaging, for example for traditional retail and e-commerce, high-quality printing facilities, market-leading containerboard products and intelligent packaging. This includes e-commerce packaging to replace plastics, as well as RFID (Radio Frequency Identification) enabled boxes that allow digital interactions with end-consumers.

Integrated supply chains

Packaging Solutions maintains a vertically integrated position in the supply chain. In 2019, our operations ranged from paper collection for recycling to the purchase of wood, to the production of lightweight containerboards and versatile solutions for corrugated packaging.



Access to virgin fiber

Stora Enso has, partly through direct forest holdings, good access to the wood necessary for producing virgin containerboard.

Sustainable packaging

We offer low material weight, optimised transport and a fully recyclable product made from a renewable raw material, so that our customers can reduce their environmental footprint.

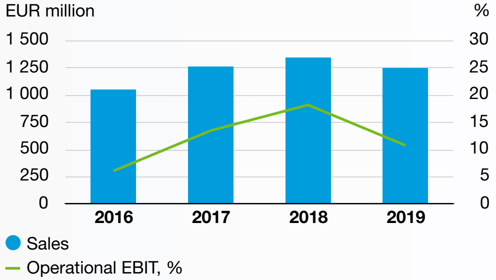
Financial performance

Operational ROOC

14.4%

(Target >20%)

Sales and operational EBIT



Highlights of 2019

Biofuels through energy-efficient technology

An industrial-scale pilot plant built at the Heinola fluting mill in Finland will turn sludge from the mill's water treatment plant into renewable fuel. The plant will test new energy-efficient technology. The new biofuels will reduce the carbon dioxide emissions at the mill's power plant, and support Stora Enso's goal of further reducing its dependence on fossil fuels.

Award-winning packaging for knitting equipment

Our innovative packaging design "Wool locker" was awarded the German Packaging Award 2019. Wool locker is a packaging designed for knitting equipment, keeping the yarn and needles organised. It can later be used for storing knitting tools, giving it a second life. The packaging is made of 100% renewable corrugated board and is well suited for e-commerce.

New capacity for packaging at Oulu Mill in a cost-efficient way

The Oulu paper mill will be converted for kraftliner production in 2020 to strengthen the Group's position in the growing packaging business. The longer-term market outlook for kraftliner products is positive – with a structural growth of roughly 2% per annum. This is largely driven by the growing demand for sustainable packaging in retail and foods as well as the growth of e-commerce and industrial applications. At Oulu Mill, we plan to produce virgin fiber-based linerboards. The product will have many advantages over standard kraftliner boards, namely higher strength, improved printability and food safety due to being made of 100% virgin fibers.

Awarded corrugated ice cream packaging

In 2019, a packaging solution developed by Stora Enso in Lahti for the Finnish artisan ice cream manufacturer Vanhan Porvoon Jäätelötehdas was given two awards; the ScanStar 2019 by the Scandinavian Packaging Association and the WorldStar 2020 by the World Packaging Organisation.

The corrugated packaging replaces plastic and metal containers and is aimed at bulk sales from fixed and mobile sales points.

"The idea came up when I saw the EcoFishBox by Stora Enso. After DesignStudio workshops, we settled on the final version. A corrugated bulk package works very well for ice cream as a sales package and in logistics, and it also has an insulating effect which helps keep the ice cream frozen," says **Samuli Wirgentius**, Ice Cream Specialist and Managing Director at Vanhan Porvoon Jäätelötehdas.

The new packaging solution also saves on storage and time. Previously the containers had to be returned and washed. The new packaging is delivered as flat sheets and assembled on site and can be sent for material recycling after use. It is made of 95% renewable material with a PET film barrier approved for food contact.

The ice cream package is a good example of how Packaging Solutions division's design studios work closely with customers to co-create new and innovative product packaging.

› Read more about the awarded package

Main focus and targets for 2020

- Safety – aiming at zero accidents
- Expand the corrugated business in selected markets
- Commercialise innovations that contribute to profitable growth
- Leverage digitalisation for better customer experience and operational efficiencies
- Capitalise on completed investments and upgrades

Annual Report 2019

Biomaterials

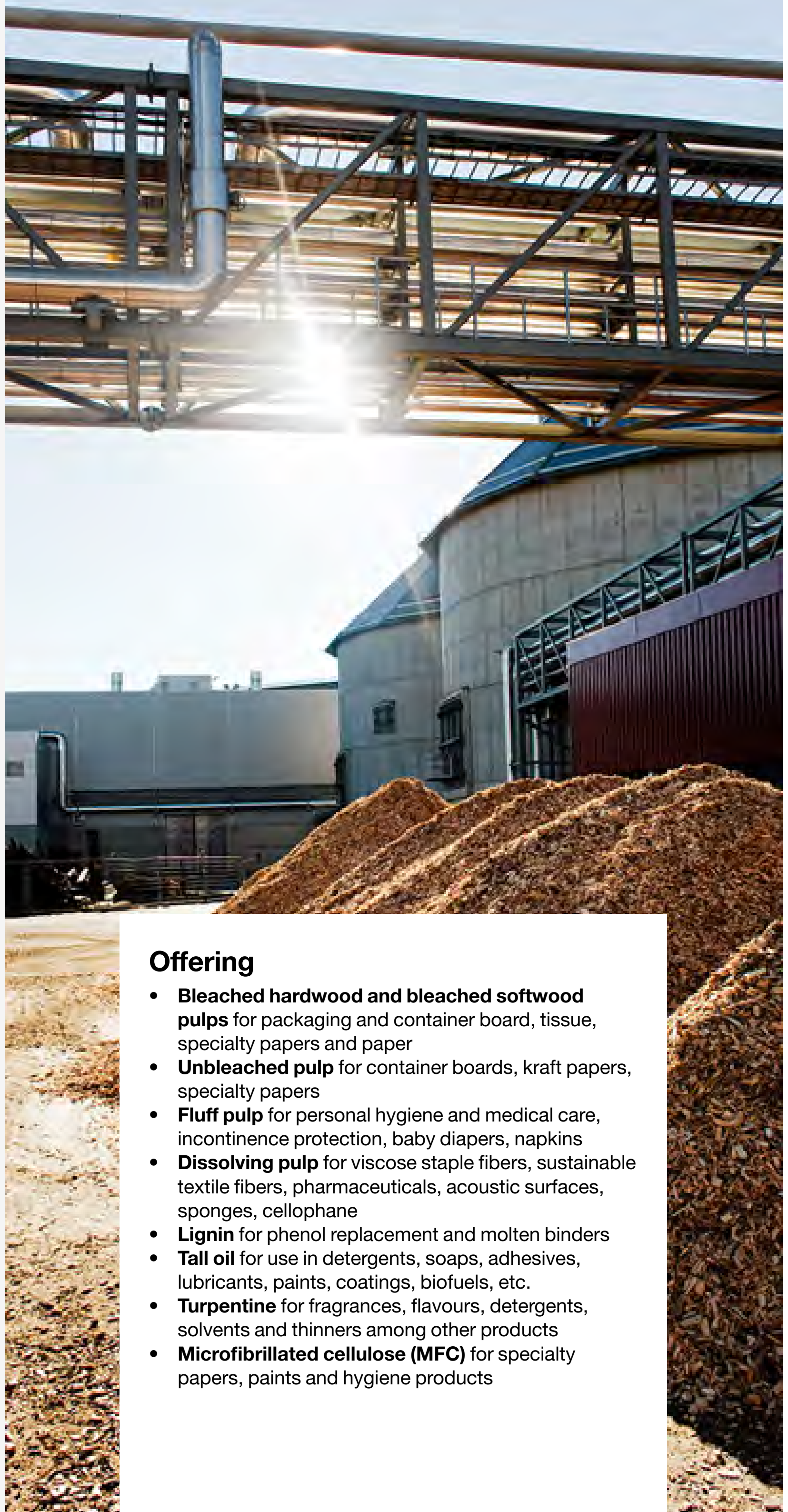
The Biomaterials division offers a wide variety of pulp grades to meet the demands of paper, board, tissue, textile and hygiene product producers. We maximise the business potential of the side streams of our processes, such as tall oil and turpentine from biomass. Based on our strong innovation approach, all fractions of biomass, like lignin and sugars, hold substantial potential for use in various applications.

"Biomaterials aspires to meet the growing demand for replacing products made from fossil-based and hazardous materials with bio-based solutions. Through our world-class innovation work, we aim at building and developing viable businesses from new opportunities. As a strong and specialised chemical pulp producer, we focus on maximising the value of hardwood eucalyptus pulp in Latin America, differentiating our Nordic mills' softwood pulp production to grow existing business, and generating profitable growth from emerging businesses."

Markus Mannström
Executive Vice President
Biomaterials Division

Our dissolving pulp, Pure by Stora Enso, can be used in production of cellophane – a true renewable alternative to plastics.

Strategy



Offering

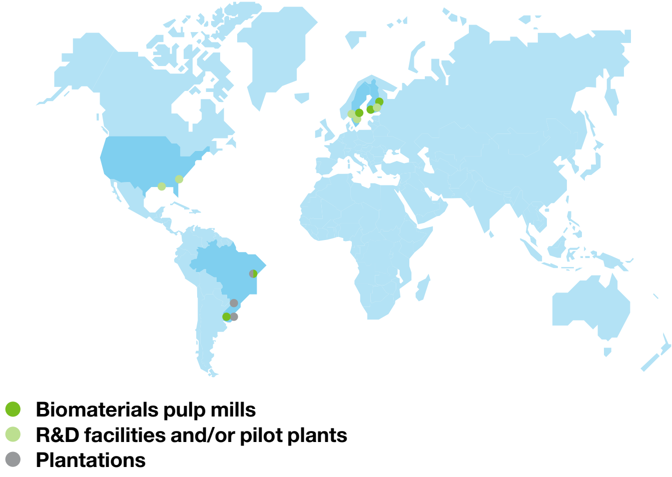
- **Bleached hardwood and bleached softwood pulps** for packaging and container board, tissue, specialty papers and paper
- **Unbleached pulp** for container boards, kraft papers, specialty papers
- **Fluff pulp** for personal hygiene and medical care, incontinence protection, baby diapers, napkins
- **Dissolving pulp** for viscose staple fibers, sustainable textile fibers, pharmaceuticals, acoustic surfaces, sponges, cellophane
- **Lignin** for phenol replacement and molten binders
- **Tall oil** for use in detergents, soaps, adhesives, lubricants, paints, coatings, biofuels, etc.
- **Turpentine** for fragrances, flavours, detergents, solvents and thinners among other products
- **Microfibrillated cellulose (MFC)** for specialty papers, paints and hygiene products

Business environment

The nature of the global pulp business continues to remain cyclic. However, its long-term growth is strongly supported by megatrends such as growth of the middle class in developing countries and progress in digitalisation, urbanisation, eco-awareness, and changing lifestyles. The market for renewable textiles, nonwoven materials, carton boards for packaging, hygiene products, and specialty and tissue papers continues to grow. This in turn generates demand for our various pulp grades, particularly with the aging population driving demand for fluff pulp.

Our aim is to maintain our competitive position through differentiation and innovation, and to extract the maximum value from our joint operations at Veracel and Montes del Plata in Latin America.

Leading market position in core segments



The Biomaterials division has own operations in Finland and Sweden and the United States, and joint operations in Brazil and Uruguay.

In our Nordic mills, the aim is to increase the share of specialised pulp, i.e. fluff and dissolving pulps, to address the changing paper pulp demand and to ensure the right product mix and customer base. This responds to the increasing demand for sustainable fibers in the textile industry and for renewable hygiene products, for example. We are also exploring areas where digitalisation can help us improve efficiency and safety in our value chain while reducing cost.

Other major pulp makers on the market include, for example, Metsä Fibre, International Paper, Sappi, and Suzano (our partner in Veracel).

In terms of new potential markets for renewable solutions, the Biomaterials division faces competition from biochemical companies and the chemical industry.

Advantages

In addition to pulp products, the Biomaterials division develops a strong business portfolio for lignin, regenerated cellulose in textiles, MFC and bio-based chemicals.

Largest portfolio of pulp grades with the right pulp mix for customer needs

Unlike many other suppliers that are focused on one specific pulp grade, we offer the widest pulp portfolio on the market. Our customers value the ease of having access to a broad selection of products of stable quality.

Superior customer service and strong customer relations

We have been working closely with our customers to understand their business challenges and to identify and develop unique or innovative value offerings that respond to those challenges. Our technical experts advise customers on the best usage of our pulp in order to achieve the desired functionality and quality of their products. The foundation for our customer relations is our aim to be involved downstream in the value chain, thus making optimal use of our fibers. This allows us to build solid, regular and long-term relationships with our customers.

Fiber knowledge and innovation

World-class experts in fibers and chemistry work for the Biomaterials division and continually advance our know-how of what wood as a raw material can make possible. Their daily mission is to transform biomass into renewable solutions on our selected emerging and existing business growth platforms. We are proud to work with top scientists who link us to global research and thus also add value to our customers' businesses. Biomaterials innovation sites are located in Finland, Sweden and the US.

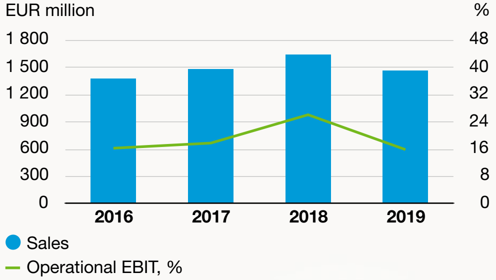
Financial performance

Operational ROOC

9.4%

(Target >15%)

Sales and operational EBIT



Highlights of 2019

Replacing fossil-based packaging materials with renewable alternatives

Stora Enso has decided to invest EUR 9 million in a pilot facility for producing renewable material (FDCA) for enabling bio-based plastic packaging. The facility will convert plant-based sugars into FDCA, the renewable building block required to make PEF. PEF is a bio-based alternative suitable for different packaging applications in the food and beverage industry, in pharmaceuticals and for aerosol bottle and can manufacturers, for instance. With the investment, Stora Enso continues to build its long-term R&D work while targeting new markets with innovative, renewable materials that replace fossil-based materials. The pilot plant will be located at Stora Enso's Langerbrugge Mill in Belgium and run by the company's Biomaterials division. The plant is estimated to be ready in the first quarter of 2021.

Bio-based carbon materials for energy storage

Stora Enso is investing EUR 10 million to build a pilot facility for producing bio-based carbon materials based on lignin. Wood-based carbon can be utilised as a crucial component in the batteries typically used in consumer electronics, the automotive industry and large-scale energy storage systems. The investment further strengthens Stora Enso's opportunities to replace fossil-based and mined raw materials as well as to connect sustainable materials with ongoing technology innovations.

More dissolving pulp capacity to fulfil market demand

Enocell Mill in Finland has been converted to focus entirely on the production of dissolving pulp, used as a raw material in the textile industry, for example, to replace cotton and fossil-based materials, such as polyester. Demand for dissolving pulp is growing at above the industrial average, driven by increased demand for viscose-type fabrics in the textile industry and non-woven applications. The production of softwood pulp, used mainly for papers and boards, will gradually be discontinued at Enocell Mill.

NaturaFluff by Stora Enso for disposable hygiene products

Fluff pulp, made from long fiber softwood, is used as a raw material in disposable hygiene products and as the main component in air-laid nonwoven materials such as table-tops and napkins.

Disposable hygiene products can be divided into the sub-segments of Baby, Adult, and Feminine Care products. While producers try to meet the specific needs of each sub-segment, generally consumers want products that are highly absorbent, do not leak, are comfortable, thin and flexible, and that also come at an attractive price. The natural and organic segment for hygiene products is growing strongly – all major brands have launched products in recent years with some sort of natural claim.

Stora Enso has been producing fluff pulp for the past 50 years at Skutskär Mill in Sweden and is today the largest producer of fluff pulp in Europe. At full capacity, the mill will be able to produce some 415 000 tons of fluff pulp annually.

We believe the trend towards more sustainable, environmentally friendly, disposable hygiene products will continue. Many of our customers have set ambitious targets to reduce the carbon footprint of their products in the years to come. Currently, we are running innovation projects to help our customers further reduce their carbon footprint by using our raw material, without sacrificing the performance of the end-product.

› Read more about fluff pulp

Main focus and targets for 2020

- Safety is our priority number one, aiming at zero accidents
- Creating a customer-centric operational and business culture
- Accelerating market entry for new products and services
- Continuous production, output and operational efficiency improvement
- Helping our customers to become more sustainable

Wood Products

The Wood Products division is a leading provider of innovative wood-based solutions. The product range covers applications for construction, the window and door industry, and wood processing industries, as well as for the packaging and interior or exterior decoration industries. Accelerated development of biocomposites addresses plastic replacement opportunities in segments ranging from consumer goods to industrial components, cosmetics and packaging in a cost-competitive way. Pellets provide a sustainable solution for heating. The offering includes service concepts that complement each other, such as Building Solutions, integrated distribution operations and e-business. Our solutions meet strict requirements regarding safety, quality, design and sustainability.

"Our accelerated growth is based on new, innovative building solutions as well as a successful expansion of biocomposites. We are well positioned for growth due to our strong focus on building the right capabilities in the organisation. This enables us to develop new applications and services as well as to maximise the benefits of our investments in automation and digitalisation."

Jari Suominen
Executive Vice President
Wood Products Division

Rising close to 50 metres, Lighthouse Joensuu building in Finland was granted the 'Puupalkinto' Wood Award 2019 for pioneering work to develop the construction of wooden high-rise buildings.

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Offering

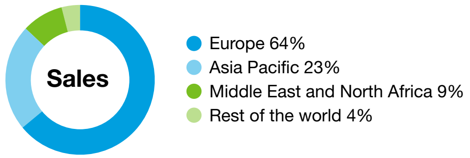
- **Building solutions**
- **Building components**
- **Digital tools: Calculatis, CLT360, Prodlib and Track&Trace**
- **Cross laminated timber (CLT)**
- **Laminated veneer lumber (LVL)**
- **Window and door components**
- **Construction beams**
- **ThermoWood**
- **Classic sawn and classic planed**
- **Pellets**
- **Biocomposites**
- **Digital R&D lab HEAL**

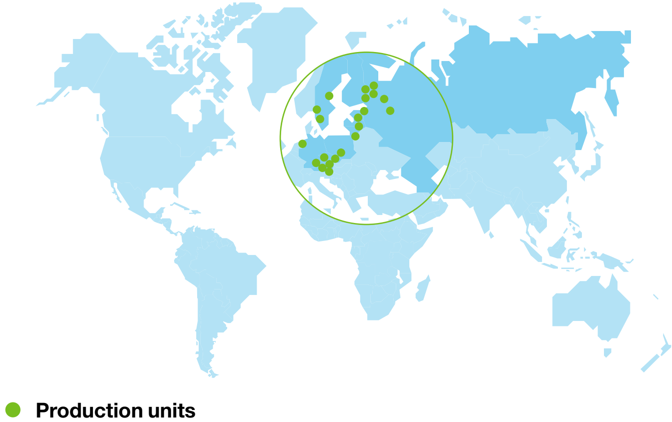
Business environment

Wood Products division has close to 2 500 customers in 60 countries. The customer and supplier market is highly fragmented, competitive and volatile because it is mainly connected to the construction market. For a developed player like Stora Enso, this means opportunities to bring agile solutions to the otherwise traditional commodity market. It also enables us to steer, automate and digitalise the total value chain: from the forest to end-use segments such as construction, packaging, furniture, pellets and bioenergy.

The world needs a new approach to materials, and wood is part of the solution.

Leading market position in core segments





Stora Enso is the largest supplier of wooden construction material in Europe and the fourth largest in the world with 21 production units in 11 different countries.

Most of Wood Products division's sales go directly to industrial manufacturers, merchants or retailers, with the remaining channels being wholesalers and trading houses. Our aim is to increase the share of value-added products and services while also developing our distribution centres. This means that the share of direct sales will grow in the future. The global market growth for sawn softwood is estimated to be 2–3% annually.

Competition is varied and strong, ranging from other sawmills to manufacturers of construction and interior materials. Wood pellets face competition from other heating systems, whereas for biocomposites the main competitor is conventional plastic. In the construction market the new end-uses of wood are increasing their market share and offering alternatives to replace non-renewable materials.

Other significant sawmilling and wooden material providers include: Binderholz, Pfeiffer, SCA Timber, Metsä Fibre and Holzindustrie Schweighofer.

Advantages

Competitiveness through digitalisation

We are developing digital solutions throughout the complete value chain. We see significant opportunities in digitalisation and automation, from identifying and harvesting the right tree in the forest to adding digital solutions such as scanners, robotics and automation to our production process for optimal quality and efficiency. We are also developing intelligent attributes to the products to enable utilisation and analysis of the data that is collected.

Building Information Modelling (BIM) tools and digital solutions enable improved transparency and communication between all players in the construction process. Our digital tools make the construction process smoother. For example, structural designs for CLT and LVL buildings can be created online with Calculatis, and the CLT360 mobile app shows where individual CLT components should be located on a construction site.

Digitalisation and automation will take our wood-based solutions to the next level.

Renewable wood as a raw material

Wood is the only construction material suitable for large-scale construction that is both fully renewable and recyclable. Wood stores carbon for its entire lifetime, while sustainable forest management guarantees the growth of new trees. Trees grow by absorbing carbon dioxide from the atmosphere and the longer the carbon is stored, the greater the environmental benefit. Building with wood can help reduce embodied fossil carbon dioxide emissions up to 50% during the building life cycle compared with other, non-renewable materials.

European-wide sawmill network

Our 21 production units are well positioned close to a high-quality raw material supply in 11 different European countries. Our sawmill network gives us a unique opportunity to optimise the wood sourcing and production efficiency and continuously develop our product range. It also enables us to utilise the benefit of efficient logistics and harmonise ways of working to further enhance Stora Enso's position as a global provider of wood-based solutions.

Broad product and service offering

Our high-quality wood-based products and services target the end-user segments of construction, packaging, furniture and bioenergy. We utilise our wooden materials to the fullest for our high-quality products. The parts not utilised for production are used to produce energy. On average, the utilisation rate of wooden raw material is over 99%.

Global sales network combined with local presence

Our global know-how and broad product portfolio are our competitive advantages. We are close to our customers and serve them locally through our extensive sales network. We also differentiate through innovative services such as integrated distribution centres, building applications and building concepts, as well as through eBusiness solutions.

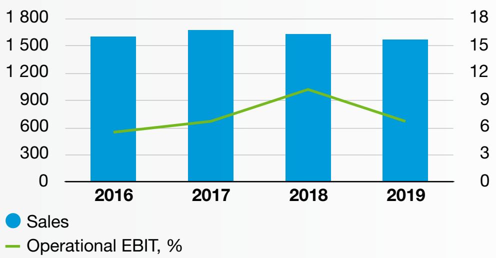
Financial performance

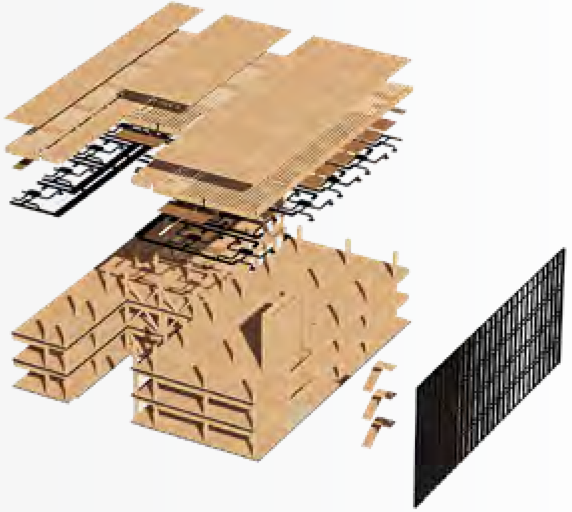
Operational ROOC

16.6%

(Target >20%)

Sales and operational EBIT





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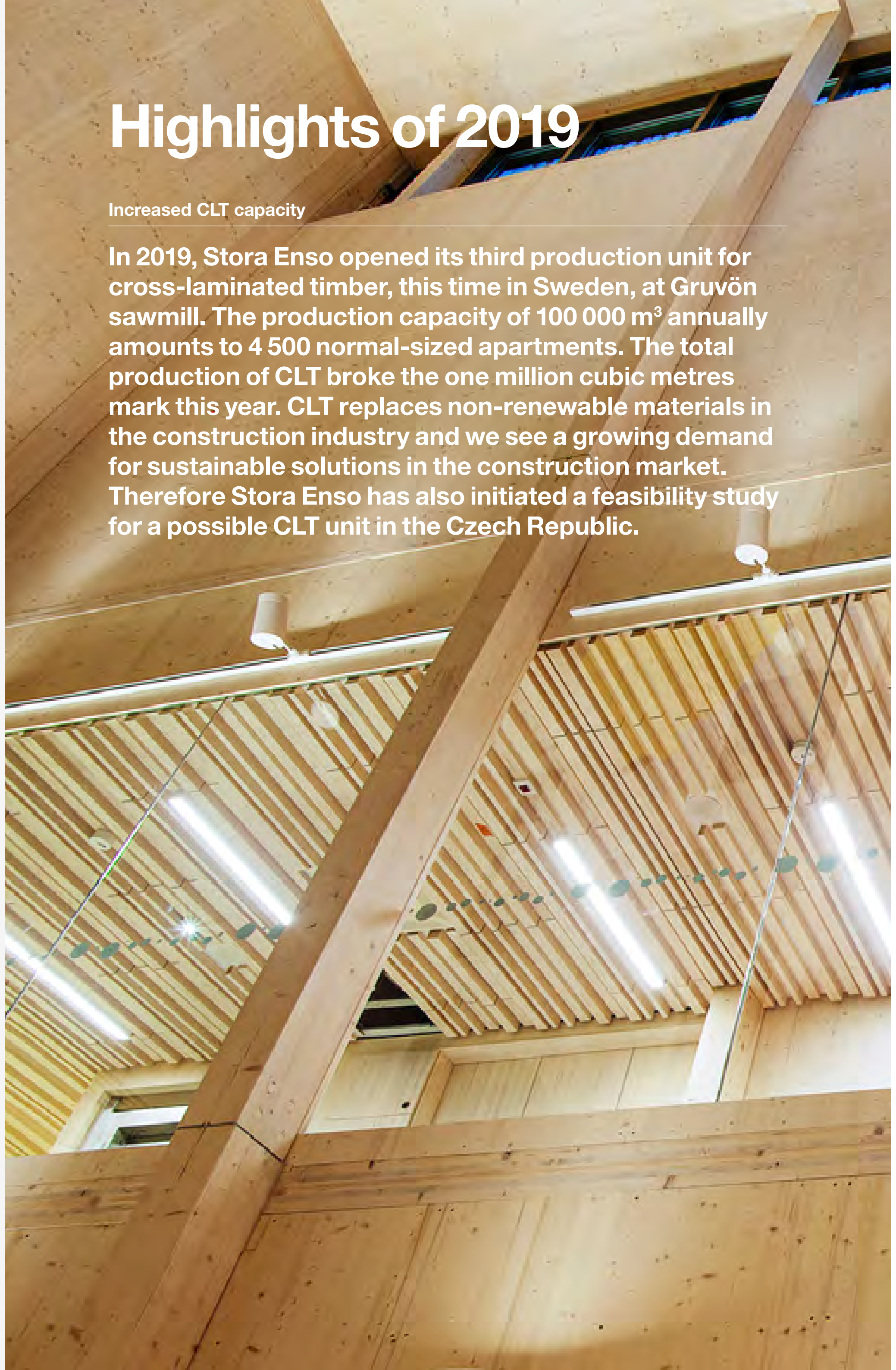


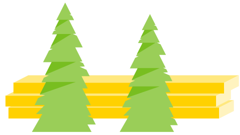
Highlights of 2019

Increased CLT capacity

In 2019, Stora Enso opened its third production unit for cross-laminated timber, this time in Sweden, at Gruvön sawmill. The production capacity of 100 000 m³ annually amounts to 4 500 normal-sized apartments. The total production of CLT broke the one million cubic metres mark this year. CLT replaces non-renewable materials in the construction industry and we see a growing demand for sustainable solutions in the construction market. Therefore Stora Enso has also initiated a feasibility study for a possible CLT unit in the Czech Republic.

Building Concepts – construction solutions with all the benefits of wood

Building Concepts by Stora Enso are basic guidelines and tools for building a modern construction with wood. The Concepts are intended for all players in the construction value chain, i.e. architects, structural engineers, developers, landowners, city planners, etc. Building Concepts by Stora Enso allow the creation of cost-competitive buildings based on the best-performing combination of our prefabricated building components and wood products. The concepts cover residential buildings, eco-schools and offices. In November 2019, the building concept for offices was launched and Stora Enso announced its plan to move its headquarters in Helsinki into a new wooden building – following this very office concept.



Consolidation of Finnish spruce production at Varkaus sawmill

Aligned with the strategy to focus on cost-competitive and integrated production, Stora Enso will consolidate its Finnish spruce timber production at Varkaus Mill. This is to create synergies with the existing LVL (laminated veneer timber), pulp and paperboard mills. Using the full potential of the sawmill gives a wider range of products, enhanced R&D and innovation work, and increased efficiency in production. As a result of this consolidation, the Kitee sawmill in Finland was closed by the year end.

New 2019

Biocomposites offer an affordable way to go green

The growing market for bio-based products creates opportunities for both raw material suppliers and product manufacturers alike, as sustainability and the environment rise up on consumer agendas.

DuraSense® by Stora Enso is a blend of wood fibers and polymers, offering our customers an affordable way to go green. The DuraSense® product family is suitable for a wide range of applications, from consumer goods to industrial applications for manufacturing by injection moulding, extrusion and 3D printing.

The re-usable and durable cutlery made from our biocomposites has a significantly lower carbon footprint than conventional plastic cutlery.

Building with wood

Stora Enso was selected as the provider of wooden raw material for several new buildings around the world, including:

- SMU (Singapore Management University), a five-floor teaching hub building completed with a hybrid solution of a steel frame and CLT floor structures.
- The new “Bø” student campus for the University i Sørøst-Norge in Telemark, Norway: CLT and glulam were used to build two new five-floor houses including 290 apartments, together with our partner Woodcon A/S.
- Astor in Geel, Belgium: The highest hybrid timber and concrete structure in Belgium for a senior housing project consisting 2 buildings 4 and 11 floors completed with our partner CLT-S.
- A vertical and horizontal extension of an old Victorian-era worker’s cottage, House Windsor, in Melbourne, Australia, with large CNC processed re-glued LVL elements delivered by Stora Enso.
- Lapinmäki kindergarten, the first kindergarten in Helsinki, Finland completed with CLT by Stora Enso. Use of the CLT360 scanning service for the correct order of panel installation enabled the smooth construction process with our partner Puurakentajat.

Digitalisation and sustainability go together in a wooden building for BOKU

"At the new BOKU seminar centre, sustainability, efficiency and digitalisation are perfectly integrated in the construction process. This makes this project a true showcase," says **Hans-Peter Weiss**, Managing Director of the Austrian state real estate company (BIG).

The project benefits from the latest digital tools by Stora Enso, for example track-and-trace for on-time logistics and sensors reporting the condition of the wooden elements during the construction phase. The installers can locate the construction elements on-site with a 3D model tool and shorten the construction time with enhanced accuracy. The indoor air quality in the newly constructed building will also be measured digitally.

The sustainability proof of new seminar centre for Austrian University of Natural Resources and Life Sciences (BOKU) means that the wood used in this building has removed 596 tons of carbon dioxide from the atmosphere, equivalent to the annual emissions of 340 cars. The building was awarded the "klimaaktiv GOLD" timber construction certificate as early as during the construction process.

The four-storey building located in centre of Vienna and completed with CLT by Stora Enso contains 10 seminar rooms, one floor for the library, and the top two storeys provide shared office space for the institute. The building is expected to be completed in September 2020.

› Read more about BOKU

Main focus and targets for 2020

- Safety – aiming at zero accidents
- Increasing the CLT capacity by ramping up the new Gruvön CLT production line and finalising the feasibility study for a new CLT mill in Ždírec, Czech Republic
- Finalise the establishment of a new building solutions beam production facility in Ybbs, Austria
- Further develop biocomposites properties for different conversion types and increase the use of recycled plastics
- Successfully launch building concepts for various building types and continuously develop new applications and components
- Continue the successful implementation of the digital roadmap and increased automation in operations

Paper

Stora Enso is the second largest paper producer in Europe with an established global customer base and a wide product portfolio for print and office use. Customers benefit from Stora Enso's broad selection of papers made from recycled and virgin fiber, as well as from our valuable industry experience, know-how and customer support.

"We believe that paper will continue to play an important role in media, advertising and the office in the future. We work closely with our customers to enhance value for their business. At the same time, we strengthen our competitiveness by further lowering costs and improving our efficiency and processes throughout our operations. Our paper products are inherently recyclable, and our processes are optimised for the highest level of resource-efficiency. Our fit-for purpose product offering and service concepts are designed to meet our customers' requirements regarding quality, reliability and sustainability."

Kati ter Horst
Executive Vice President
Paper Division

More than 90% of our own paper brands have been awarded the European Ecolabel, the official EU recognition for greener products.

Offering

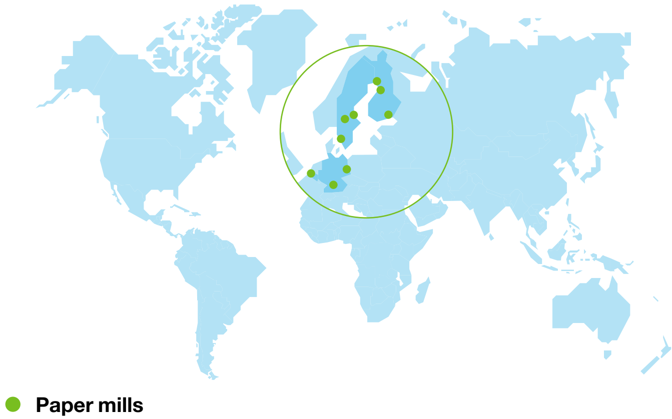
- **Newsprint and book papers**
- **Uncoated magazine papers (SC)** for magazines and retail advertising
- **Coated papers** for magazines, brochures, catalogues and art books
- **Office papers** for notepads, envelopes, printing and copying
- **Technical services**
- **eBusiness solutions**
- **Sustainability support**

Business environment

During 2019, the decline in European demand for paper has accelerated and global trading conditions have been challenging. This has resulted in an unfavourable demand and supply balance for paper producers, as industry capacity reductions have been inadequate. One of the most challenged paper segments is woodfree coated (WFC), which Stora Enso will exit towards the end of 2020 after Oulu Mill is converted to produce new generation kraftliner. This will not impact Stora Enso's other paper businesses and will further contribute to reducing complexity and costs.

We provide our customers with a wide range of products and services for print and office use. By providing our customers with products with superior environmental performance, we also help them to improve their sustainability performance.

Leading market position in core segments



Print and digital media complement each other: flyers and folders are used in advertising, and online retailers publish printed magazines and catalogues and establish physical store locations to improve customer experience. Digital companies use direct mail to proactively promote subscriptions to online services.

Publishers still generate most of their revenue from print, and print media remains the most trusted source of information. Print advertising brings consumers into stores.

Book paper sales have remained quite stable as many people prefer reading books in the traditional paper format. Copy paper is performing relatively well as people continue to print in offices and at home.

With its comprehensive product range, Stora Enso's Paper division is the second biggest paper manufacturer in Europe where the main competitors are UPM, Sappi, Holmen, Norske Skog, Mondi and the Navigator company.

Strategy
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Financials
Governance

Advantages

Strong assets serving global paper markets

The Paper division reviews and develops its key assets – pulp mills, paper machines, and energy set-ups – continuously. We ensure that asset and sales strategies are aligned to increase our competitiveness in changing market conditions. We thrive for operational excellence in everything we do and utilise digitalisation to improve customer experience, safety and efficiency throughout our operations.

Sustainability as a competitive advantage

We use our sustainability expertise to help our customers perform better on sustainability measures. Our performance in different areas of sustainability has been recognised by many stakeholders, for example WWF's Environmental Paper Company Index. More than 90% of our own paper brands have been awarded one or more ecolabels, providing independent third-party evidence of their superior environmental performance. The European Ecolabel is the official EU recognition for greener products, and we are one of only a few companies that can claim this level of ecolabel performance.

Further, to provide a common platform for sustainability information, Paper division has registered all its European mills in the Supplier Ethical Data Exchange (Sedex) online database, used by more than 50 000 members in over 150 countries.

Focused innovation

Operational excellence is about having competitive assets and a sound cost structure. Our process innovations improve the division's efficiency and ways of working. The investments in green energy solutions at our Maxau and Nymölla Mills are examples of improved competitiveness and reduced environmental impact.

New or improved paper grades aiming at higher product quality to fit customer needs. Many of our products have been developed together with our customers. For instance, our new thin printing paper LumiLeaf meets the demands of Optical Character Recognition (OCR), crucial for optical reading of bar codes.

Non-paper related new businesses utilising our knowhow and infrastructure. Our paper assets and professional expertise offer an excellent platform for innovation. Hylte Mill, for example, hosts the Wood Products division's biocomposite business and will also have a pilot plant for formed fiber.

Commercial excellence through long-term customer relationships

Key focus areas in our commercial excellence include optimising sales by product and mill through product management. In addition, we focus on pricing as well as solid business intelligence and the commercial competence of our global sales network.

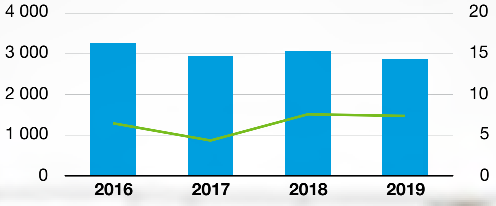
Financial performance

Cash flow after investing activities to sales

9.3%

(Target >7%)

Sales and operational EBIT



Our paper assets and professional expertise offer an excellent platform for innovation and development of renewable solutions.

Strategy

Highlights of 2019

A new life for take-away – exploring recycling of paper cups for magazine paper production

Stora Enso successfully tested recycling used paper cups at its Langerbrugge Mill in Belgium. Based on production trials, Stora Enso possesses the technical capability to recycle paper cups for use in other paper applications. Stora Enso is now looking into partnerships for the collection and sorting of used paper cups to ensure that this high-quality fiber material is captured and given a second life.

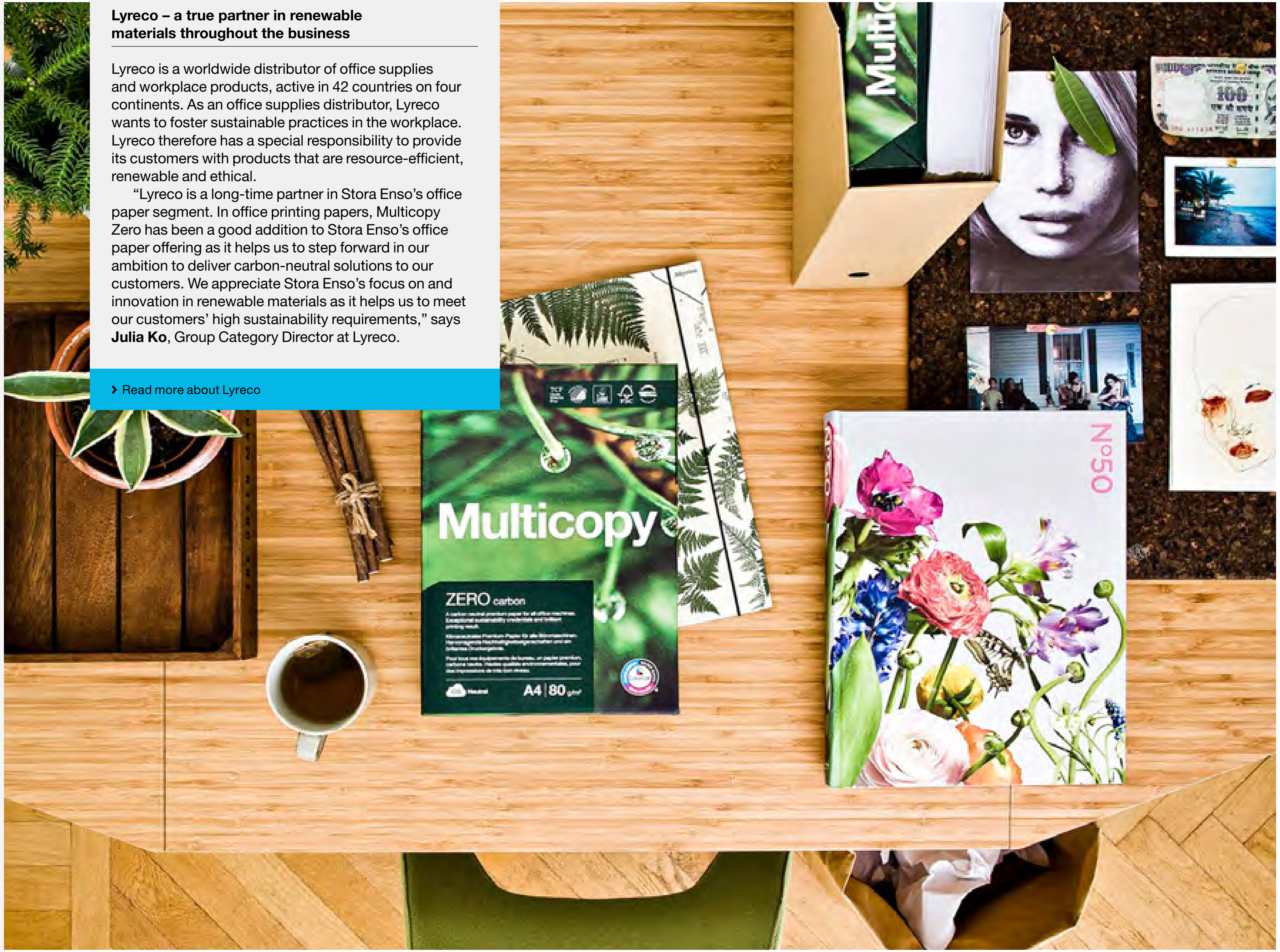
› Read more about the trial

Light as a leaf, Stora Enso's LumiLeaf is a new thin printing paper

LumiLeaf is a thin printing paper for offset printing, launched in 2019. It is a premium paper grade tailored especially for pharmaceutical and cosmetic product information that requires good readability and a lot of information to be folded up in small packages. LumiLeaf is also great for making thick technical manuals and books lighter to transport.

PrimaPlus

Launched in 2019, PrimaPlus has already been received with enthusiasm. It is a lightweight uncoated paper that combines the gloss and brightness of PrimaPress, but is bulkier. It is an excellent alternative to lightweight coated papers, with a pleasant touch and feel.



Lyreco – a true partner in renewable materials throughout the business

Lyreco is a worldwide distributor of office supplies and workplace products, active in 42 countries on four continents. As an office supplies distributor, Lyreco wants to foster sustainable practices in the workplace. Lyreco therefore has a special responsibility to provide its customers with products that are resource-efficient, renewable and ethical.

"Lyreco is a long-time partner in Stora Enso's office paper segment. In office printing papers, Multicopy Zero has been a good addition to Stora Enso's office paper offering as it helps us to step forward in our ambition to deliver carbon-neutral solutions to our customers. We appreciate Stora Enso's focus on and innovation in renewable materials as it helps us to meet our customers' high sustainability requirements," says **Julia Ko**, Group Category Director at Lyreco.

› Read more about Lyreco

Main focus and targets for 2020

- Safety – aiming at zero accidents
- Delivering excellent customer experience – measured by net promoter score
- Product mix and margin optimization
- Continuous improvement in operational efficiency, fixed costs and variable costs, as well as working capital management to remain competitive
- Focused innovation and digitalisation in customer service, supply chain and operations

Strategy

Group Leadership Team

1. **Johanna Hagelberg**
Executive Vice President, Sourcing and Logistics

2. **Hannu Kasurinen**
Executive Vice President, Consumer Board Division. Executive Vice President, Packaging Materials Division as of 1 January 2020.

3. **Markus Mannström**
Executive Vice President, Biomaterials Division

4. **Kati ter Horst**
Executive Vice President, Paper Division

5. **Jari Suominen**
Executive Vice President, Wood Products Division. Executive Vice President, Forest Division as of 1 January 2020.

6. **Seppo Parvi**
Chief Financial Officer (CFO), Deputy to the CEO, Country Manager Finland

7. **Noel Morrin**
Executive Vice President, Sustainability

8. **Ulrika Lilja**
Executive Vice President, Communications

9. **Annica Bresky**
President and Chief Executive Officer (CEO)

10. **Per Lyrvall**
Executive Vice President, Legal, General Counsel, Country Manager Sweden

Karl-Henrik Sundström, CEO, was a member of the Group Leadership Team until 30 November 2019.
Gilles van Nieuwenhuyzen, EVP, Packaging Solutions Division, was a member of the Group Leadership Team until 6 December 2019.
David Ekberg, acting Head of Packaging Solutions Division as of 6 December 2019. Not a member of GLT.
Seppo Toikka, acting Head of Wood Products Division as of 1 January 2020. Not a member of GLT.
Malin Bendz, EVP HR, was a member of the Group Leadership Team until 15 January 2020.

For more detailed information about the Group Leadership Team, see **Governance 2019**, or storaenso.com/investors/governance.

Annual Report 2019

Our sustainability work covers social, environmental, and economic responsibility throughout our value chain, with human rights integrated into everything we do.

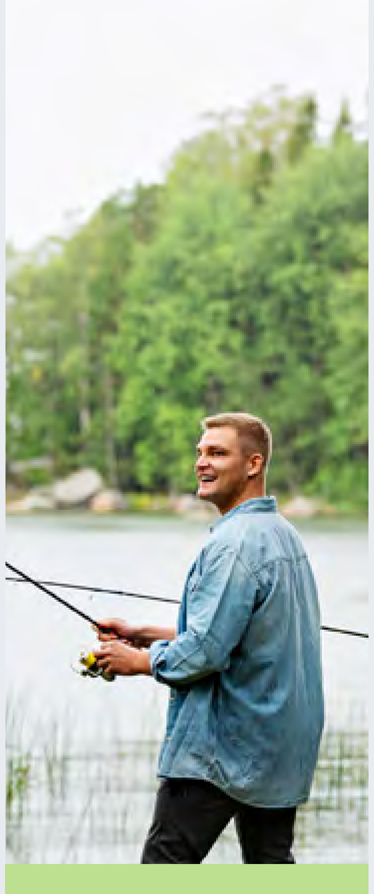
Sustainability

Part of Stora Enso's Annual Report 2019

THE RENEWABLE MATERIALS COMPANY

Contents

We create a renewable future with sustainable forestry.



The report contents have been assured by an independent third-party assurance provider with a level of Limited Assurance. A level of Reasonable Assurance has been provided for our direct and indirect fossil CO_2e emissions.

The GRI index is available at storaenso.com/gri2019

Print optimised
A4

Download printable PDF of Stora Enso's Annual Report 2019

Strategy
Sustainability
Financials
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Sustainability at Stora Enso

At Stora Enso, sustainability covers the social, environmental, and economic responsibility of our operations. We care for people and the planet – from the forest to innovation, manufacturing, product use, and end-of-life, with human rights integrated into all that we do.

We are the renewable materials company

Our raw material is renewable, recyclable, and fossil-free.

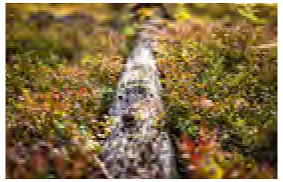
Our products replace fossil-based materials.

Our renewable products contribute to a circular bioeconomy.

Sustainability

Our year 2019

In 2019, we continued to innovate for a renewable future and supported our customers in meeting consumer demand for sustainable products. Here are some of the highlights of our year throughout our value chain.



Sustainable forestry

100% of our wood comes from sustainable sources where biodiversity values are secured.

› Read more on page 48

Employee volunteering

1 771

of our employees were involved in community investment activities during working hours.

› Read more on page 22

Working together for safety

Stora Enso arranged a global Safety Week.

› Read more on page 19

Leadership performance

84% of our employees reported that their manager was able to create diverse teams.

› Read more on page 20

Combatting global warming

Our CO_2e emissions were 25% lower than the 2010 base-year level.

› Read more on page 42

Reusing waste

Our utilisation rate for process residuals and waste was

98%

› Read more on page 32

Strengthening our human rights due diligence

We identified development areas related to our priority human rights and defined actions to address them.

› Read more on page 12

Enhanced culture of speaking up

Our formal grievance mechanism was opened to all stakeholders globally.

› Read more on page 27

Supply chain sustainability

We conducted three deep dives to better understand specific supply chains and support suppliers in improving their operations.

› Read more on page 60

Integrating sustainability and finance

Stora Enso issued its first Green Bonds in February 2019 collecting

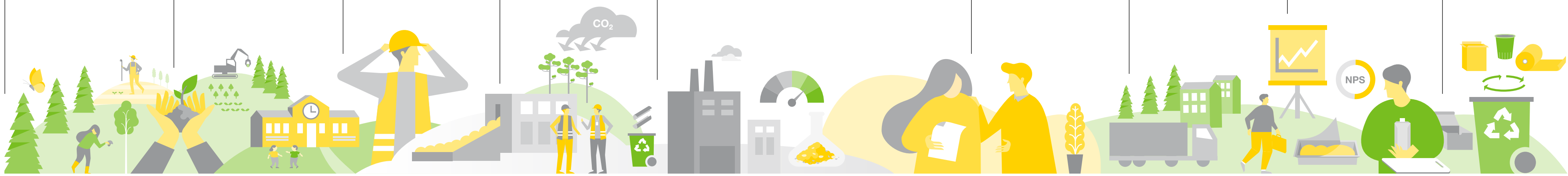
SEK 6 billion

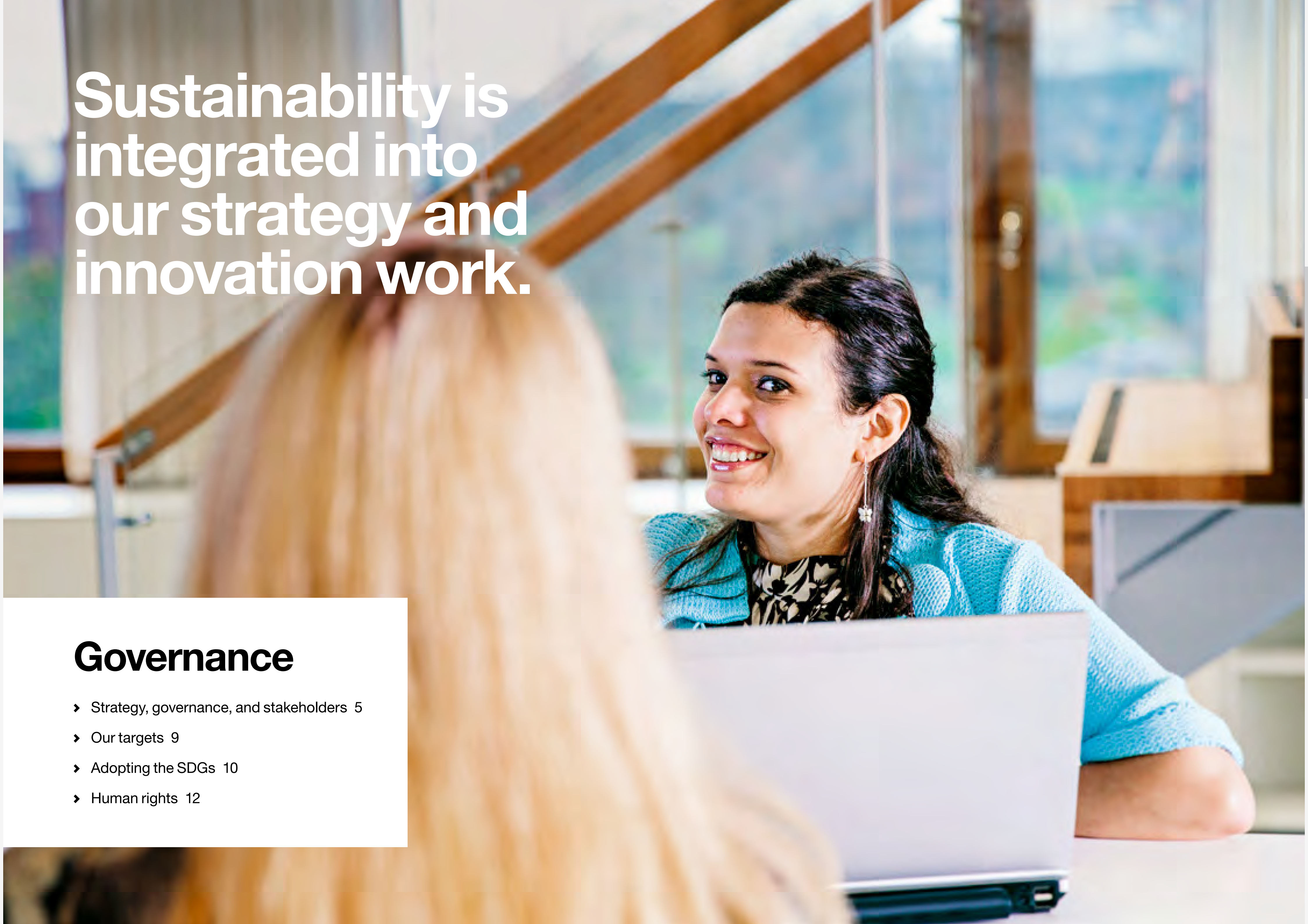
› Read more on page 64

Sustainable innovations replacing fossil-based materials

Innovations published during 2019 will replace fossil-based materials in lithium-ion batteries, food packaging, and cosmetics packaging.

› Read more on page 56





Sustainability is integrated into our strategy and innovation work.

Governance

Strategy, governance, and stakeholders

The world needs a new approach to materials. Forests play an important role in the transition to a fossil-free, more sustainable world.

Stora Enso's strategy for growth is based on customer insights and innovation, supported by structured processes and motivated employees, and underlined and encircled by sustainability. The demand for food, clothing, housing, energy, infrastructure, and consumer products continues to increase, driven by global megatrends such as population growth, urbanisation, rising incomes, and changing lifestyles. More people and more consumption mean that the planet's resources are being stretched even further. By replacing fossil-based materials with Stora Enso's renewable solutions, we will help drive the transition from a fossil fuel consuming world into a sustainable future based on the bioeconomy.

By responding to today's challenges and demands for a greener planet, we bring value to our customers, employees, investors, suppliers, and other stakeholders. Sustainability is central to our strategy, innovation framework, and how we support customers with renewable products based on raw materials from sustainably managed forests.

Our Sustainability Agenda encompasses the social, environmental, and economic responsibility of our operations throughout the value chain. The agenda is based on the Triple Bottom Line framework widely used in corporate responsibility work. It addresses the ten sustainability topics identified as material to Stora Enso and our key stakeholders: Employees and wider workforce; Community; Business ethics; Materials, water, and energy; Carbon dioxide; Forests, plantations, and land use; Customers; Suppliers; and Investors. Respect for human rights is considered so integral to our long-term success that it is an overarching theme of our Sustainability Agenda.

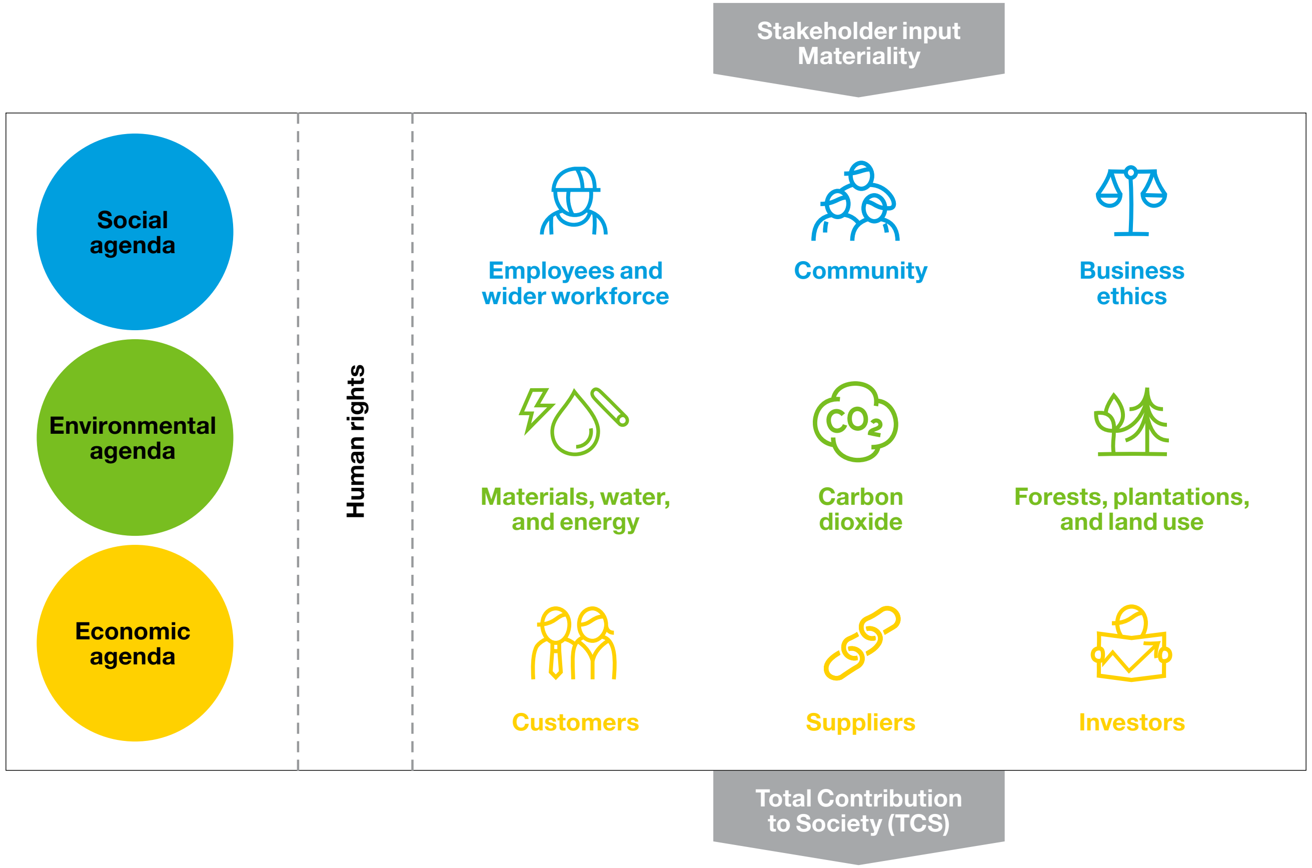
In line with the agenda, we have set targets and defined key performance indicators (KPIs) for our sustainability work. Progress is regularly monitored at Group level and via division-level business reviews. Consolidated results on our performance are reported annually in our Sustainability report. Selected sustainability indicators are also reported quarterly in our Interim Reports.

Stora Enso acknowledges the importance of the United Nations Sustainable Development Goals (SDGs) as part of a commonly agreed global ambition to end poverty, protect the planet, and improve the lives and prospects of everyone, everywhere. Read more about our approach to the SDGs on pages 10–11.

Sustainability governance

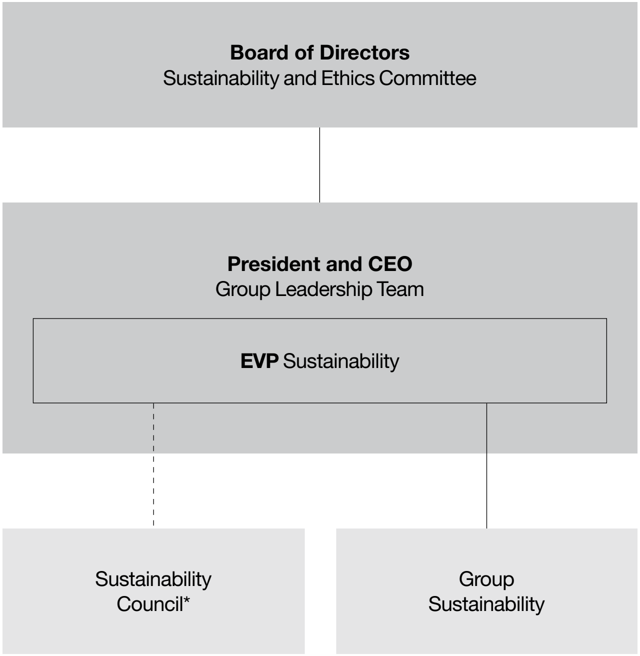
At Stora Enso, sustainability is promoted by the Board of Directors, the President and CEO (CEO), and the Group Leadership Team (GLT). The CEO holds the ultimate responsibility for the successful implementation of our sustainability strategy.

The Board of Directors' Sustainability and Ethics Committee oversees the implementation of our sustainability strategy and the ethics and compliance strategy. The committee met four times in 2019 and has reviewed the disclosures in this report. The main focus areas of the committee during the year are described in our **Governance report**.



Our Sustainability Agenda is based on the classic Triple Bottom Line model. It addresses the ten sustainability topics identified as material to Stora Enso.

Sustainability governance at Stora Enso



* Stora Enso's operational sustainability work is steered by our Sustainability Council, which includes members from our divisions, Sourcing and Logistics function, and subject matter experts from our Group Sustainability team.

– – EVP Sustainability chairs the Sustainability Council. Members of the Council report directly to their respective EVP.

At Stora Enso, sustainability work is led by the Executive Vice President (EVP), Sustainability, who reports directly to the CEO and is part of the Group Leadership Team (GLT). Everyday sustainability topics are managed by our Group Sustainability team together with our Human Resources, Legal, Wood Supply, and Sourcing and Logistics functions, and our divisions. Each of our business divisions has its own Head of Sustainability, who reports directly to the EVP of the division. Other key functions, such as Sourcing and Logistics, have sustainability organisations to support their management teams. The everyday implementation of Stora Enso's Sustainability Agenda is the responsibility of line management supported by functional experts at all levels.

Stora Enso's sustainability work is steered by our Sustainability Council, which includes members from our divisions, our Sourcing and Logistics function, and subject matter experts from our Group Sustainability team. Chaired by the EVP, Sustainability, its work involves sharing good practices and identifying longer-term opportunities and challenges that may require a Group-wide response. The Sustainability Council met ten times during 2019. The GLT is periodically informed of specific sustainability developments, as is the Board of Directors when appropriate, through its Sustainability and Ethics Committee.

Sustainability is one of the performance metrics in the remuneration of GLT members through Short Term Incentive programmes. Members of the GLT can be assigned appropriate sustainability indicators. For more information on remuneration, see our Remuneration Statement.

Sustainability governance of joint operations

Our joint operations in Brazil (Veracel) and Uruguay (Montes del Plata) have their own sustainability teams, and sustainability topics are regularly discussed by their boards, which include representatives from their parent companies. Sustainability is also covered by Stora Enso's joint operation steering committees for Veracel and Montes del Plata. In addition, Stora Enso is represented on the board of its equity-accounted investment company Tornator in Finland.

We are creating a renewable future in the bioeconomy.

Our purpose and values commit us to doing business responsibly.

Structured sustainability processes

Our Sustainability Policy describes our overall approach to sustainability. At the same time, our code of conduct – **the Stora Enso Code** – and other policies and guidelines on specific sustainability topics further elaborate our approach, while also guiding our employees in their everyday work. As an example, our internal Sustainability Assessment checklist ensures that sustainability is considered in all research and development initiatives and the development of new products. The checklist was developed based on existing sustainability policies, guidelines, and instructions, and it highlights the consideration of sustainability impacts throughout a product's life cycle – from sourcing to end-of-life.

Our policies and guidelines are available at storaenso.com/sustainability.

Stakeholder engagement

Open dialogue with our key stakeholders is crucial if we are to successfully identify concerns, global trends and market expectations. Our stakeholder engagement work is based on both structured and ad hoc interaction, as well as regular surveys on topics such as customer and employee satisfaction and investor expectations. We also obtain important information through formal grievance channels. Engaging with stakeholders on social media is important for us in understanding their opinions and concerns locally around our units, as well as on a divisional and Group level. We actively monitor social media discussions and respond, where appropriate, to stakeholder queries through suitable channels.

Materiality review

Truly material issues do not change annually within our operations, and therefore our Sustainability Agenda and targets are set for the long term. To deepen our understanding of stakeholder perceptions, we carry out specific stakeholder surveys at relevant frequencies.

The consolidated results from our 2017 materiality review confirmed the topics in our current Sustainability Agenda to be the most material for the company. The most important topics for our stakeholders were:

- Global warming
- Sustainable forestry
- Sustainable materials and products
- Human rights
- Business ethics, and
- Responsible sourcing.

Other elements in our existing Sustainability Agenda were also considered important. The results were largely in line with previous materiality reviews. This Sustainability report reflects these results.

We use investor and other stakeholder feedback as well as continuous media and social media monitoring, to identify new or emerging topics for our annual sustainability reporting. These topics, often of high interest to certain stakeholders, may change year-on-year. Through focused in-depth stakeholder consultations, our materiality review complements our Enterprise Risk Management (ERM) process with a broader scope of sustainability topics than those identified as the Group's key financial risks and opportunities. Whereas our statutory Non-Financial Reporting in the Report of the Board of Directors includes those sustainability topics that relate to the Group's key risks and opportunities, our longer Sustainability report also covers topics considered important by stakeholders in our broader materiality review process.

We also prepare our reporting in accordance with the GRI Sustainability Reporting Standards. Our reporting covers all the General Disclosures, as well as the topic-specific GRI Standards we deem material. For more information, see our online GRI Content Index.

Stora Enso supports the concept of purpose-driven disclosure (PDD) in sustainability reporting in order to address the topics most important to the company. PDD draws on the concept and principles of professional judgement applied in accounting and offers a step-by-step process to help companies consider why, for whom, what, how, how much and where to report. Through our representation on WBCSD's Redefining Value Board we support and help develop processes and tools for PDD. The objective is to help companies prioritise in order to disclose relevant, useful ESG (environmental, social, and governance) information to investors, and thus to encourage the flow of capital to more sustainable companies and outcomes. So far, Redefining Value PDD achievements include guidance on materiality and the publication of the 'ESG Disclosure Judgement Handbook,' launched in 2019.

Collaboration with non-governmental organisations
Stora Enso actively cooperates with prioritised international and non-governmental organisations (NGOs) and industry associations. We are involved in developing industry practices related to combatting global warming, the circular and bioeconomy, sustainable forestry, human rights, and business ethics, as well as the development of sustainability reporting and assurance. Examples of our collaboration during 2019 can be found below and in the relevant sections of this report.

Stora Enso engages with people and communities all over the world through its operations, sales, and supply chains. We have a range of positive financial, social, and environmental impacts on society, such as direct and indirect employment, taxes and dividends, and products providing renewable alternatives to non-renewable materials. For more information about how we create value and contribute to society, see **Strategy 2019**. For details on Stora Enso's annual tax footprint in the countries we operate, see **Financials 2019**.

Stora Enso continues to explore ways to define and report on the monetary value associated with the company's non-financial sustainability impacts and actions.

The Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD) recommends a framework for disclosing climate related risks and opportunities that goes beyond current practices. In 2019, Stora Enso joined the WBCSD Food, Agriculture & Forest Products TCFD Preparer Forum. The TCFD Preparer Forums bring leading companies together to develop disclosure roadmaps and seek investor perspectives on TCFD disclosures, including how market participants use the information. Stora Enso continues to support Accounting for Sustainability (A4S) to promote better disclosure of climate risks and opportunities. A4S aims to inspire action by finance leaders to drive a fundamental shift towards resilient business models and a sustainable economy. In addition to investors and regulators, leading companies are also communicating their support for the recommendations through Statements of Support by Accounting for Sustainability (A4S). For more information, see page 44.

Significant stakeholder groups for Stora Enso include:
- Consumers
- Customers
- Employees
- Forest owners
- Policy makers
- Investors
- Local communities
- Media
- NGOs
- Partners and suppliers
- Trade unions

In 2019, Stora Enso actively collaborated with international organisations including:
- Science Based Targets initiative, page 42
- The Ellen MacArthur Foundation, page 34
- The Prince of Wales's A4S Accounting for Sustainability, page 65
- The Prince of Wales's Corporate Leaders Group (CLG), page 45
- Transparency International, page 28
- UN Global Compact, page 68
- We Mean Business Coalition, page 45
- World Business Council for Sustainable Development (WBCSD), pages 7, 10, 14, and 34
- World Green Building Council, page 45
- WWF, pages 49 and 52

About this report
Stora Enso's Sustainability report 2019 is structured to reflect our Sustainability Agenda, with its ten elements addressed through a common four-tier framework:

Opportunities and challenges

These sections examine the external factors and global trends currently affecting the topics included in our Sustainability Agenda. Please note that our corporate risk management assessment appears in **Financials 2019**.

Our policies

These sections set out the strategies and policies we use to address key opportunities and challenges.

How we work

These sections describe the processes, procedures, and systems we deploy to realise our strategies and policies.

Progress

These sections report on our performance during 2019.

External assurance
This report has been assured by an independent third-party provider with a level of Limited Assurance. Given our commitment to combat global warming and related emission data reliability, a level of Reasonable Assurance has been provided for our direct and indirect fossil CO_2e emissions (Scope 1 and 2). For more information on assurance, see page 72.

Our sustainability targets and key performance indicators (KPIs)

Key performance indicator (KPI)		2019	2018	2017	Targets	Progress
Human rights	Implementation of Human Rights due diligence programme	Development areas mapped against the highest priority human rights	Eight highest priority human rights defined	88% of the human rights actions completed and 100% resolved[1]	Actions to address the development areas to be completed by the end of 2020	**In progress**
Employees and wider workforce	Total Recordable Incident (TRI) rate[2]	**7.0**	6.1	7.4	5.3 milestone by the end of 2019	**Not achieved**
					New milestone will be communicated in the Interim Report for Q1 2020	
	Leadership Index[3]	**83**	83	81	85 by the end of 2022	**In progress**
Community	% of working hours and in-kind in community investments (CI)[4]	**46%**	50%	43%	70% by end of 2023 while also increasing the total CI	**In progress**
Business ethics	Code of Conduct Index[3]	**84**	85	83	Positive trend	**Not achieved**
Materials, water, and energy	Number of significant environmental incidents[5]	**9**	8	10	Zero significant incidents	**Not achieved**
	Materials: Process residuals utilisation rate (%)[6]	**98%**	98%	98%	Maintain the high utilisation rate of 98%	**Achieved**
	Water: Total water withdrawal per saleable tonne of board, pulp, and paper (m^3/tonne)	**61**	56	56	Decreasing trend	**Not achieved**
	Water: Process water discharge per saleable tonne of board, pulp, and paper (m^3/tonne)	**29**	26	26	Decreasing trend	**Not achieved**
	Energy: Reduction in electricity and heat consumption per saleable tonne of board, pulp, and paper (kWh/tonne)	**-2.9%**	-3.6%[7]	-3.9%[7]	-15% by the end of 2020 from a 2010 base-year	**Not achieved**
Carbon dioxide	Reduction in CO_2 equivalents per saleable tonne of board, pulp, and paper (kg/tonne)	**-25%**	-18%	-21%	-31% by the end of 2030 from a 2010 base-year	**In progress**
Forests, plantations, and land use	% of the lands owned or managed by Stora Enso that are in wood production and harvesting covered by forest certification schemes	**98%**	96%	97%	Maintain the high coverage level of 96%	**Achieved**
Suppliers	% of supplier spend covered by our Supplier Code of Conduct	**96%**	95%	95%	Maintain the high coverage level of 95%	**Achieved**

[1] Stora Enso carried out a Group-wide Human Rights Assessment during 2014. Action plans to address the findings were defined during the first half of 2015. At the end of 2017, process for completion was in place for three Group-level actions, but the completion was carried forward into 2018.

[2] Number of incidents among our own employees per one million hours worked. Including joint operations Veracel and Montes del Plata.

[3] Measured in the annual employee survey.

[4] New KPI implemented in 2019. Excluding joint operations. Community investments cover cash donations, employee working hours for voluntary community work, and in-kind.

[5] Environmental incidents involving a non-compliance with environmental legislation or a permit, or a significant stakeholder concern related to environmental performance. For more details, see page 41.

[6] Utilisation rate for process residuals excluding, for example, tall oil, turpentine, and wood chips.

[7] Calculation principles for electricity and heat consumption were revised during 2019. The figures for 2018 and 2017 have been restated for comparability.

Adopting the Sustainable Development Goals

The seventeen United Nations Sustainable Development Goals (SDGs) 2030 address social and economic development issues on a global scale, each with their own set of related targets. All sectors of society, including businesses, are encouraged to work and collaborate on these goals. For business to deliver its contribution, the SDGs must be integrated into company agendas and business strategies.

Integrating the SDGs into our strategy

In 2018, Stora Enso's Group Leadership Team confirmed the SDGs most strategic to Stora Enso's business: SDG 12, 13, and 15. These are the goals that we have the biggest impact on, and to which our KPIs and targets contribute.

In 2019, we participated in the preparation of the SDG Sector Roadmap as part of our co-chairing of the Forest Solutions Group (FSG) at the World Business Council for Sustainable Development (WBCSD). The roadmap describes the forestry sector's current level of alignment with the SDGs and identifies the key impact opportunities and actions that the sector should take. The Forest Sector Roadmap was launched at the United Nations high-level political forum in New York City in July 2019.

In this chapter, we outline our key impacts in relation to our most strategic SDGs. Stora Enso recognises that it has both positive impacts that contribute to these targets but also negative impacts that it needs to mitigate. Scaling up positive and minimising negative impacts from our operations and value chain is the key to our contribution.

Our reporting on the sub-targets of our priority SDGs is in a separate online appendix.

Our priority SDGs

Stora Enso supports all seventeen SDGs, and the following three goals were identified as the most strategic to our business:

SDG 15
Life on land

SDG 13
Climate action

SDG 12
Responsible consumption and production

SDG 12 – Responsible consumption and production

Our operations are based on renewable raw materials and sustainable forest management, which contribute to responsible consumption and resource use.

Our wood and fiber-based products help to replace fossil-based materials in society. We promote the circular bioeconomy with new and innovative products. We are investing in innovation and R&D and increasing sales in new applications, products and services. For more information about our new products, see page 59.

Our offering helps to reduce food waste, which is one of the sub-targets for SDG 12, with packaging that is based on renewable and recyclable materials. With safe and intelligent packaging, we can extend product shelf-life and design right-sized packaging for smaller households to help reduce food waste. We actively work with our customers to improve material efficiency and decrease the environmental impact of our products and related processes.

According to the Confederation of European Paper Industries (CEPI), Europe's overall Paper for Recycling (PfR) recycling rate was 71.6% in 2018. By focusing on EU countries with collection rates below 60%, Stora Enso and the paper industry are actively supporting best practices while these countries establish sustainable collection systems. At the same time, circular design facilitating recyclability is part of our innovation and product development agenda.

Our mills promote material efficiency and enable circular resource use such as PfR as a raw material. Our operations also generate emissions and discharges that account for our greatest negative impacts related to SDG 12. We work continuously to reduce emissions and discharges from our operations through Best Available Technologies (BAT), our management systems, and our environmental targets.

Our current key Group sustainability target in relation to SDG 12 drives the utilisation of process residuals and waste at our production units, as measured as a process residuals utilisation rate.

Target:	Performance in 2019:
98% (ongoing target)	98%

Read more in the Materials, water, and energy, and Customers chapters.

13 CLIMATE ACTION

SDG 13 – Climate action

Global warming entails physical challenges and opportunities relating to forests and plantations due to changing patterns of temperature, wind, and rainfall, which can all be expected to impact our operational environment. Well-managed forests and plantations can make entire ecosystems more resilient to negative impacts, and even benefit from the positive effects. Trees in sustainably managed forests absorb carbon dioxide (CO_2) from the atmosphere and together with wood-based products act as carbon storage.

Global warming has been identified as one of the Group's key financial risks and opportunities. Stora Enso is committed to the implementation of the recommendations from the Task Force on Climate-related Financial Disclosures.

Our products help our customers and society at large to reduce CO_2 emissions by providing low-carbon alternatives to solutions based on fossil fuels and other non-renewable materials. During 2019, we worked to calculate our total climate impact including avoided emissions by product substitution and forest sequestration. Read more about our product substitution potential and total climate impact in **Strategy 2019**.

We actively reduce the energy intensity of our operations – and in many places also our dependency on fossil fuels. As the first in our industry, we set ambitious science-based targets in 2017 for reducing our greenhouse gas emissions by 31% from operations per tonne of board, pulp, and paper produced compared to a 2010 base-year, and engaging with our customer-facing staff and suppliers on global warming. We contribute to raising awareness of climate action, as global warming is a central topic in our stakeholder communications.

Target:
–31%

Performance in 2019:
–25%

Read more in the Carbon dioxide, Forests, plantations, and land use, and Customers chapters.

15 LIFE ON LAND

SDG 15 – Life on land

Through the forests we own or manage, the responsible sourcing of wood, as well as our broader influence on forest management practices, we have a direct and substantial ability to drive positive change and make a significant contribution to SDG 15. Well-managed forests and plantations can make entire ecosystems more resilient to negative impacts, and even benefit from the positive effects. In addition to global warming, biodiversity loss due to unsustainable land use is a global challenge that highlights the need to conserve natural ecosystems.

Sustainable forest management safeguards forest health and productivity, helps combat global warming, and protects biodiversity while securing the long-term availability of our renewable resources. All roundwood, chips, sawdust, and externally purchased pulp supplied to our mills come from sustainable sources. We use a range of tools to ensure this, and to guarantee the sustainability of each part of the forest management cycle. These tools include forest certification and third-party traceability systems.

As wood is our most important raw material, our Group's key risks cover forests and land use.

Our current Group sustainability target in relation to SDG 15 is to maintain the high coverage of forest certification in our owned or managed land for wood production and harvesting.

Target:
96%
(ongoing target)

Performance in 2019:
98%

Read more in the Forests, plantations, and land use chapter.

Forests are key to global sustainability

To ensure the forest sector continues to grow in line with the SDGs, the World Business Council for Sustainable Development's Forest Solutions Group (FSG) in consultation with key stakeholders published the Forest Sector SDG Roadmap in 2019 to help the sector navigate the challenges and unlock the opportunities that lie ahead.

"The forest sector is in a unique position to significantly influence the global response to many of the challenges that sit at the heart of the Sustainable Development Goals (SDGs), in particular Climate change (SDG 13), Life on Land (SDG 15) and Sustainable Production and Consumption (SDG 12)," says **Filippo Veglio**, Managing Director at the WBCSD.

The Roadmap presents specific actions that forest sector companies can take to ensure forests continue to thrive in 2030 and beyond, while providing low-carbon, renewable, and recyclable solutions to everyday needs.

"In addition to outlining what the sector can do, the Roadmap provides a platform for continued dialogue and aims to inspire and foster collaboration within the sector and across sectors to ensure the potential is realised at the required scale (SDG17)," Veglio says.

As a leading company and co-chair of the FSG, Stora Enso actively contributed to the development of the Roadmap by sharing best practices and providing content expertise and insights throughout the 18-month development process.

Download the full document at › wbcsd.org

Sustainability

Governance

Strategy, governance, and stakeholders
Our targets
Adopting the SDGs
Human rights

Social agenda

Employees and wider workforce
Community
Business ethics

Environmental agenda

Materials, water, and energy
Carbon dioxide
Forests, plantations, and land use

Economic agenda

Customers
Suppliers
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Data and assurance

Reporting scope
Data by production unit
Auditor's assurance report

↗GRI Index

Human rights

Our human rights work is guided by international principles and standards, local regulation, and our company values of 'Lead' and 'Do what's right'.

We identified development areas related to our highest priority human rights and defined actions to address them.

Opportunities and challenges

Proactively responding to global expectations

We always strive to ensure that human rights are respected in all our operations and activities. Many of the human rights challenges we face are deeply rooted in local society and can only be effectively addressed through a long-term commitment and close cooperation with global and local stakeholders.

The UN Guiding Principles on Business and Human Rights highlight that companies have an ongoing responsibility to respect human rights, even where government actions and regulatory frameworks are inadequate. Compliance with these principles requires companies to conduct human rights due diligence procedures to identify, assess, and remedy the human rights risks and impacts of their operations, products, and services. In addition, new legislation is being explored and developed in numerous countries to address human rights due diligence by companies, with modern slavery being one widely covered aspect. Stora Enso supports human rights regulation that puts companies on an equal standing.

Our policies

Embedded in our strategy

Human rights are integrated into our Sustainability Agenda, which is aligned with the ten principles of the UN Global Compact. Relevant Stora Enso policies on human rights include:

- **Stora Enso Code** – our code of conduct that expresses our respect for human and labour rights.
- **Supplier Code of Conduct** – imposes strict contractual requirements on our suppliers regarding human rights.
- **Human Rights Policy** – sets out our commitment to fully respect human rights throughout our operations and in all relationships involving Stora Enso and expresses our respect for international human rights instruments.

Human rights are also a fundamental part of several internal policies and guidelines such as our **Environmental Guidelines**, **Diversity Policy**, and our **Minimum Human Resources Requirements** for labour conditions.

How we work

Systematic assessment of human rights impacts

Our commitment to respect human rights covers all our operations, including our employees, contractors, suppliers, and neighbouring communities. We require that human rights risks and impacts are taken into account throughout our operations, including investment decisions related to mergers, acquisitions, and divestments. Our investment guidelines stipulate that environmental and social risks and impacts, including those related to human rights, must be duly identified, assessed, and addressed prior to approval in projects with business-critical risks.

Stora Enso's key tools for human rights due diligence

Continuous or periodic monitoring with
- Stora Enso Code
- Business Practice Policy
- Minimum Human Resources Requirements for labour conditions
- Supplier Code of Conduct
- Safety standards and tools for all units
- Grievance mechanisms

Project-specific human rights due diligence with
- Investment guidelines
- Environmental and social due diligence for mergers and acquisitions
- Environmental and Social Impact Assessments (ESIAs)
- Community consultations, including Free, Prior, and Informed Consent (FPIC)
- Sustainability Assessment checklist for innovation projects

Environmental and Social Impact Assessments (ESIAs)
We conduct ESIAs for new projects that could directly or indirectly cause significant adverse effects in local communities. Such projects include board, pulp, paper, or sawmills built on greenfield sites, industrial scale plantation projects, and any large-scale investments in or expansions of existing facilities.

An important element of any ESIA involves assessing the operational context from a social impact perspective, including human rights, and establishing dialogues with local residents, members of local organisations, experts, and other stakeholders. This is done through interviews, meetings, workshops, and public hearings. ESIA results give us valuable information on how local communities may be affected by changes in their socio-economic situation and any impacts on cultural heritage, while also setting out implications for community health and safety.

Community consultations
Respecting human rights in land acquisition and management is one of our priority human rights. Community consultations, including Free, Prior, and Informed Consent (FPIC), continue to be a key element in our human rights due diligence and forestry operations in Brazil, Uruguay, China, and Laos, especially concerning land leasing and indigenous peoples' rights. Our forestry employees in Guangxi, China, work in dialogue with local communities to maintain good relations, and to understand the potential social impacts of our operations. For more information, see page 24.

In southern Laos, in the Saravane and Savannakhet provinces, our trial eucalyptus plantations are located near culturally and ethnically diverse villages. It is essential for us to engage in dialogues in a culturally appropriate way, based on informed consultation and participation, and to obtain community consent for our projects. FPIC is integrated into land identification and acquisition processes, which are implemented together with local communities and authorities. Together with partners, we have developed various FPIC tools to ensure that communities understand the information that is shared with them, and regularly train our employees in community engagement and consultation. We also continue to enhance gender inclusion in land acquisition processes and community consultation meetings, which is an important part of FPIC.

Access to remedy and grievance channels
In accordance with the UN Guiding Principles on Business and Human Rights and our own Human Rights Policy, Stora Enso is committed to remedy situations where our activities have caused or contributed to adverse human rights impacts. Where violations are committed by third parties with links to Stora Enso through our operations, products, or services, we strive to use our influence together with the relevant stakeholders to ensure that those impacts are remedied. For example, our 50/50 joint operation Veracel in Brazil has worked closely with landless movements and authorities for several years to find and implement solutions to land distribution disputes. Veracel has also helped stakeholders understand their rights to various services, including access to legal support. For more information, see page 25.

Access to grievance mechanisms is one of Stora Enso's highest priority human rights. Our formal grievance mechanism, formerly open to employees in all units and external stakeholders in selected locations, was opened to all stakeholders globally in 2019 to further improve access to anonymous reporting of potential non-compliance. The channel enables any stakeholder to report instances where their rights may have been infringed, or where they have observed potential violations of the Stora Enso Code, including those related to human rights. This service is independently administered by an external service provider. For more information, see page 29.

Community consultations are an important part of our human rights due diligence as they support mutual understanding and build trust.

We have also established grievance channels in local languages for communities and other external stakeholders associated with our plantations and mill in Guangxi, China. We encourage anyone with concerns to call our anonymous hotline number, write to us, visit us, or talk to our field personnel. Stora Enso's employees are trained to distribute information about our operations in local villages, and to duly process any grievances, even in villages not engaged in any kind of business relationship with the company.

Similar local grievance channels exist for our project in Laos, and our joint operations Veracel in Brazil and Montes del Plata in Uruguay. In Laos, Stora Enso works with communities to raise awareness of villager rights and the channels they can use if concerns arise.

Reporting on our performance

Stora Enso reports on its human rights work annually. We also follow the legal requirements of the UK and, as of 2019, the Australian Modern Slavery Acts. Our annual Slavery and Human Trafficking Statement, which covers the requirements of both Acts, is available at storaenso.com/sustainability. We also follow developments in national legislation to ensure we are compliant with all regulations.

Progress

Updated human rights due diligence

While we respect and consider all human rights important, our highest priority human rights remain the primary focus of our work:

- Health and safety
- Fair employment conditions
- Forced labour
- Freedom of association
- Non-discrimination and non-harassment
- Land and natural resource rights acquisition and management
- Grievance mechanisms
- Children's rights (relevant to the forest sector).

We continued to develop our human rights due diligence programme in 2019. As a first step, to strengthen our strategic focus, we mapped our Group function processes to identify development areas related to our highest priority human rights. Actions to address the findings are expected to be completed by the end of 2020. In addition, we began updating our internal guidelines to better align them with our eight priority human rights.

Due diligence helps us understand and address our impacts on people.

How our business impacts people

When Stora Enso grows and harvests trees, makes renewable products, transports materials, or works with suppliers, it has an impact on people. Due diligence is the key to understanding how we can benefit local communities, minimise the risk of negative impacts, and also be prepared to right any wrongs.

"It's our responsibility to understand the impacts our business may have on people. Respecting human rights is not a complicated concept. It's about treating people with decency and respect and asking ourselves 'Does this feel like the right thing to do?'," says **Ylva Stiller**, Human Rights Director at Stora Enso.

Read the full article at › storaenso.com/sustainability

In 2019, Stora Enso was one of the first companies to sign the WBCSD's CEO Guide to Human Rights, in which leading companies in the field of human rights encourage their peers to take action. We also signed the guide's Finland-specific version, which was published by the Finnish corporate responsibility network FIBS. During the year, we also joined a campaign calling for human rights due diligence legislation in Finland, led by the Finnish NGO Finnwatch.

In 2019, we further clarified how human rights are connected to the other topics of our Sustainability Agenda. The related table can be found at storaenso.com/sustainability.

Actions related to our highest priority human rights in 2019 included:

Health and safety

It is our goal that all employees, on-site contractors, and our wider workforce return home safely from a healthy workplace every day. For detailed information on our progress in health and safety, including accident rates, absenteeism, and safety observations, see pages 19–21.

In Guangxi province, **China**, we continued to focus on road safety in rural areas in 2019. For more information, see page 24.

Our joint operation Montes del Plata in **Uruguay** works closely with its transportation contractors to raise awareness of and improve road safety. For more information, see page 26.

Fair employment conditions

We set strict standards for our operations to ensure fair employment conditions for all employees, on-site contractors, and our suppliers' employees. This covers topics such as wages, working hours, and overtime compensation. For detailed information about compensation, see pages 20–21.

For several years, Stora Enso has been monitoring labour rights in its bagasse supply chain in the United States to ensure that working hour schedules do not have adverse impacts on contractor health and safety. For more information, see page 63.

Forced labour

Our commitment to combat modern slavery is expressed in our Human Rights Policy and the Stora Enso Code. We take action to prevent all forms of modern-day slavery, including forced labour and human trafficking, in our operations and supply chains. For more information about how we manage potential forced labour and human trafficking, see our annual Slavery and Human Trafficking Statement.

Freedom of association

We strive to avoid activities that could interfere with the right of our employees, on-site contractors, and our wider workforce to freedom of association and to engage in collective bargaining.

Stora Enso signed a global framework agreement with the labour unions IndustriAll, UniGlobal, and BWI in 2018. Stora Enso and the unions held one collaboration meeting in 2019. For more information, see page 18.

Non-discrimination and non-harassment

Stora Enso does not tolerate any form of discrimination or harassment and we encourage anyone who experiences or witnesses such behaviour to report it. Fostering a culture of diversity and inclusion at Stora Enso addresses these themes and raises awareness within the company. For detailed information about our progress in diversity, inclusion, and gender equality, see pages 20–21.

Land and natural resource rights acquisition and management

We strive to ensure that when acquiring and managing rights to use land and natural resources connected to our operations and supply chains, the rights of stakeholders are respected, with a special focus on those of indigenous people.

With the acquisition of Swedish forest assets, Stora Enso is a major forest owner in Sweden (see page 51), and we recognise our responsibilities regarding the rights of Sámi people living in areas that are located on our lands. Stora Enso maintains good relations and cooperation with indigenous Sámi communities in **Sweden** and **Finland**. Over the years, we have, for example, established special agreements on land use with several Sámi communities in Sweden. For more information on our land use and wood procurement, see pages 48–54.

In **Brazil**, Veracel, our 50/50 joint operation with the Brazilian company Suzano, manages a pulp mill, eucalyptus plantations, and related logistics in southern Bahía State. In 2019, Veracel continued its dialogue with the landless movements and the Bahía State government to address land distribution disputes, and its ongoing implementation of special agreements in response to this issue. Read more on page 25.

Veracel maintains good relations with local indigenous villages, and supports educational, infrastructure, and cultural programmes for 30 Pataxó and three Tupinambá communities. Some of these communities are calling for the expansion of the Barra Velha Indian Reserve. The extension would include hundreds of land properties, including 3 219 hectares of land acquired by Veracel before the indigenous peoples first made claim to the land. At the end of 2019, this case was still being processed by the regional federal court. Veracel remains committed to fully comply with the court's eventual decision.

Grievance mechanisms
Our grievance hotline is available to all employees, on-site contractors, suppliers, and any other external stakeholders that seek access to a confidential grievance mechanisms and effective remedy. For detailed information about our grievance channels and reports received through them in 2019, see page 29.

Children's rights (relevant to the forest sector)
In accordance with the Convention of the Rights of the Child, children younger than 18 years old enjoy special protection of their human rights. Stora Enso supports the Children's Rights and Business Principles developed by UNICEF, Save the Children, and the UN Global Compact, and considers six of these principles directly material to its business: principles 2, 3, 4, 5, 6, and 7. Stora Enso's work on children's rights and business is integrated into our implementation of the UN Guiding Principles of Business and Human Rights framework. In practice, this means that we strive to:

- contribute to the elimination of child labour;
- ensure decent work for young workers, parents, and caregivers;
- ensure the protection, health, and safety of children in all operations and activities;
- ensure that marketing and advertising respects children's rights; and
- prevent or minimise risks and impacts on children's rights due to environmental impacts or the acquisition and management of rights to land and natural resources.

For several years, Veracel has successfully cooperated with the NGO Childhood Brasil to combat child abuse and exploitation in the local municipalities of Belmonte, Porto Seguro, Santa Cruz de Cabralia, and Eunápolis. The goal is to improve the capacity of the municipalities to handle cases of child abuse and adolescent violence through strengthening public policies and providing training to professionals. The outcomes are documented in municipal plans. The municipal plan for Belmonte was completed and delivered to the relevant administrative bodies in 2019.

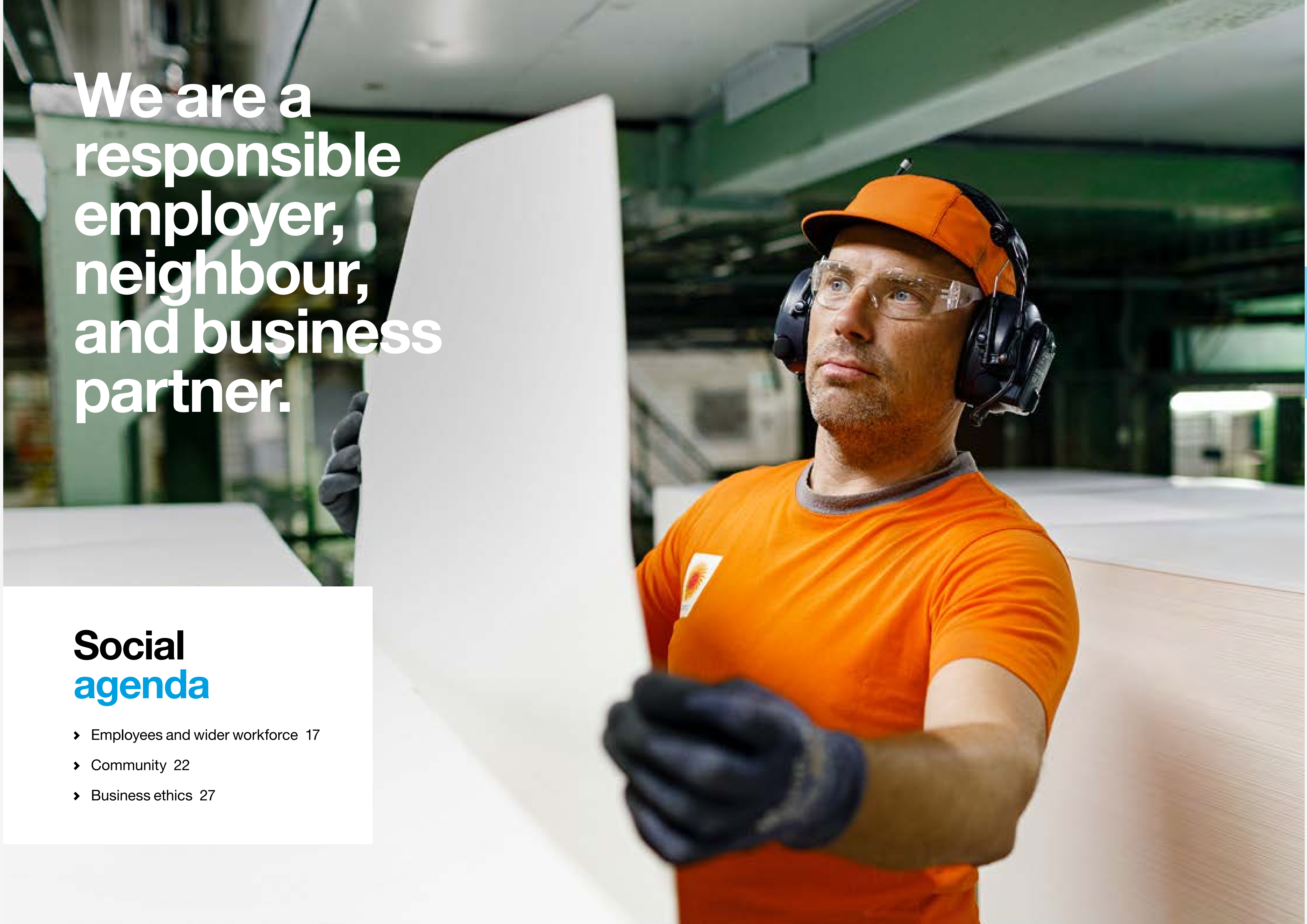
Stora Enso has a Group-wide internal guideline for the responsible use of children's images and for organising photoshoots involving children. This guideline was updated in 2019.

In 2019, Stora Enso continued to support six schools in cooperation with the Pakistani non-governmental organisation Idara-e-Taleem-o-Aagahi (ITA) in Pakistan. These schools were set up in 2015 to provide education for the 640 children identified as child workers in the supply chain of our previous 35% minority holding in the equity accounted investment Bulleh Shah Packaging (Private) Ltd. (BSP). The divestment of BSP was completed in 2017 but the school programme, together with Stora Enso's funding for ITA, will remain in place until 2023 when the youngest children will complete compulsory primary school education as required by the state of Pakistan.

Providing training in human rights
In 2019, Stora Enso supported WWF Russia in providing three human rights-related training sessions to various forest sector actors. The goal was to raise awareness of effective interaction with indigenous people and local communities, and to introduce key concepts such as Free, Prior, and Informed Consent (FPIC). For more information about our long-standing cooperation with WWF Russia, see page 52.

In Brazil, Veracel continues training, auditing, and follow-up procedures related to its supplier code of conduct. Additional human rights training is provided to employees working as guards for Veracel's security service provider when they begin employment and then every two years.

Our 50/50 joint operation Veracel supports schools and educational programmes for local indigenous and landless people in Bahía, Brazil.



We are a responsible employer, neighbour, and business partner.

Social agenda

Employees and wider workforce

People are our most important asset when converting our competence in renewable materials into customer benefits. We promote inclusion, diversity, and knowledge sharing and are committed to ensuring that our workplaces are healthy and safe.

TRI rate	Leadership Index
7.0	83/100

TRI = Total recordable incident

Opportunities and challenges

Change through people

Stora Enso continues its transformation journey as the renewable materials company. Engaged and motivated employees and a capable organisation will enable us to deliver our business strategy.

The development of capabilities in customer insight, innovation, and operational efficiency, as well as the ability to utilise new technologies will be critical for our future success. We need to ensure we have competent and engaged employees when managing our employee turnover and the demographic structure of our workforce in various markets. This will require careful workforce planning and responsible leadership. To be successful and to promote a safe working culture, we need to develop our leadership, organisation, competencies and processes.

Employing people comes with a responsibility to respect human rights. This means, for example, that we must provide a safe workplace free from harassment and discrimination, and support wellbeing at work.

Our policies

Motivated employees and a capable organisation

Stora Enso's People Agenda guides our efforts in creating engagement and motivation among our employees, and to build a capable organisation that can help us realise our business strategy. Key areas in our People Agenda include: strategic workforce planning, talent acquisition, talent management, competence development, leadership development, performance management, people ethics, and health and wellbeing. Read more in **Strategy 2019**.

Stora Enso's Health and Safety Policy defines the objectives for our safety management as well as our governance model on how we manage health and safety topics in practice and how we integrate them into annual planning and reporting.

Other key documents applied in our people and safety management include our:

- **Stora Enso Code** – our code of conduct
- **Supplier Code of Conduct**
- **Minimum Human Resources Requirements** for labour conditions
- **Global Framework Agreement**
- **Diversity Policy**

How we work

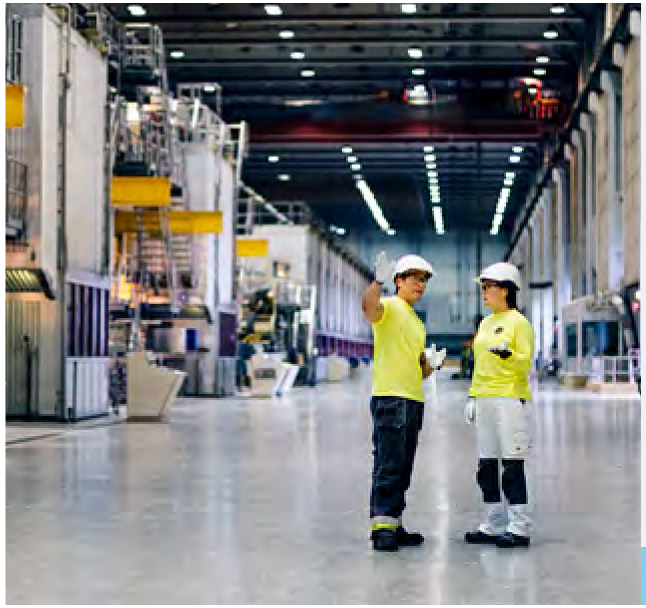
Everybody home safe, every day

Stora Enso's goal is to provide an accident-free workplace. Encouraging a company-wide safety culture means that everyone is responsible for making every workday healthy and safe – from our top management and throughout the company.

Safety management at Stora Enso is based on international standards such as OHSAS 18001 and ISO 45001 but our processes go beyond these requirements. Responsibility for implementing each safety tool and programme in our units lies with line management, supported by local staff and OHS professionals.

Safety and industrial hygiene are managed by the Group Sustainability function. Occupational health including wellbeing is managed by our Group Human Resources function. Stora Enso's Safety Steering Group directs strategic long-term planning at Group level and oversees the work of the Safety Management Team, which develops and aligns Group-wide safety programmes. Our country-level OHS networks in Finland, Sweden, Germany, and China also share good practices and organise training to enhance our safety procedures and competencies. Local OHS committees and working groups at our units provide forums for raising safety-related topics and suggestions.

Our units report monthly on safety performance data, including incidents, absenteeism statistics, and safety observations. Stora Enso also monitors the number of safety incidents among on-site, logistics, and forestry contractors.



Working together for safety

At Stora Enso, we believe that safety starts at the top but that we are all responsible for working safely. In 2019, the importance of safety was reinforced during a company-wide Safety Week, with plenty of different safety activities in Stora Enso units, divisions and offices.

"Our ambitious but reachable goal is zero accidents in all operations," says **Noel Morrin**, Executive Vice President Sustainability at Stora Enso. "We have come far by halving our total accident rate in the past five years – and compared to a few decades ago, the improvement is tremendous. But we still have a lot of work to do."

Read the full article at › storaenso.com/sustainability

Safety training for contractors

Stora Enso's approach to safety extends to contractors, suppliers, and on-site visitors. We encourage everyone to give feedback and provide ideas on how to further improve safety. Additionally, we promote safety among our contractors and suppliers through a dedicated e-learning called Safety Trail. We also emphasise the importance of safety by asking suppliers for information on their safety performance in our tendering process. For more information about our supplier approach, see pages 60–63. We also cooperate closely on safety work with our joint operations in Brazil and Uruguay.

Leadership – driving company culture

Leadership is a key enabler of our strategy as it is the strongest driver for performance, wellbeing and company culture. Our culture is based on our values 'Lead' and 'Do what's right', which we expect our leaders to embrace and demonstrate through their actions and behaviour. We measure our progress on leadership by using a Leadership Index, which is based on the responses of our annual employee survey.

Performance management

Performance management is an important part of engaging and motivating our employees. We set and communicate clear targets for our employees, help them understand how they contribute to our company's success, and provide development opportunities and regular feedback. Our annual employee performance appraisals are an important component of our performance management.

Diversity

We believe diversity strengthens our competitiveness and we aim to reflect the societies in which we operate. Diverse working teams enable us to explore different perspectives and challenge our way of thinking, contributing to better decision-making. To benefit from diverse working teams, we need inclusive work environments that respect and appreciate individual differences and allow us to embrace the diversity of backgrounds and perspectives of our employees. Dimensions such as skills and experiences, gender, age, cultural background, and personality are important to Stora Enso when we strive for diversity.

Fair working conditions

We care for all our employees and are committed to fully respecting human rights throughout our operations. All Stora Enso units are expected to work systematically to ensure that employees are treated with respect and fairness. Units should also comply with a set of minimum requirements for labour conditions in order to create an environment where employees are both motivated and able to perform their work. These requirements address areas such as working hours, basic employee rights, working conditions, and non-discrimination. Based on a self-assessment conducted in 2019, the vast majority of our production units are in compliance with these requirements, and units with improvement needs will establish action plans to become fully compliant with the requirements. The next self-assessment will be conducted in 2021.

During the year, we continued to address areas in the Global Framework Agreement that we have signed with the labour unions IndustriAll, UniGlobal, and BWI to strive for a working environment where all our employees are treated with respect and in a fair manner. Stora Enso and the unions held one collaboration meeting in 2019 to review Stora Enso's practices related to the agreement, including labour rights and our Supplier Code of Conduct.

Support in restructuring situations

In organisational restructuring situations, it's important that the impacted employees understand the reasons for the change. Our ambition is to support leaving employees in finding work elsewhere. Support initiatives are often developed on a country or local level to best suit the local circumstances and requirements. Every employee is treated with respect and has access to support throughout the restructuring process.

Leadership is a key factor in strengthening our position as the renewable materials company.

Health and wellbeing

We believe that the foundation for physical and mental health and wellbeing in the workplace is based on people management, organisation of work, and an inclusive work environment that promotes both physical and mental health. All these factors impact the health and wellbeing, including stress levels, of our employees and need to be addressed to create wellbeing in the organisation. In 2019, we added a new Wellbeing Index to our annual employee survey. The index measures inclusion and organisational factors impacting health and wellbeing in the workplace. During the year, we also launched inclusion workshops which our teams throughout the company are expected to carry out to raise understanding of topics such as inclusive behaviour and diversity in the workplace.

Progress

Enhancing safety performance

Stora Enso reports incidents and accidents using the international Occupational Health and Safety (OHSA) definitions when reporting Total Recordable Incident (TRI) and Lost-Time Accident (LTA) rates. This allows the reported rates to be better aligned with international standards and to enable future benchmarking with peers and companies in other sectors. Since 2018, Stora Enso has used the Total Recordable Incident (TRI) rate instead of the Lost Time Accident (LTA) rate as its main key performance indicator (KPI). The TRI rate gives a more comprehensive picture of safety performance as it also includes less severe accidents.

In 2019, our TRI rate increased to 7.0 (6.1 in 2018). Despite our ambition to improve our safety performance, the milestone for 2019 was not achieved. There was a fatal accident at a Stora Enso unit when a contractor was killed during an equipment maintenance activity in Poland in March. An occupational fatality occurred at Ždírec sawmill in Czech Republic in November involving one of our own employees. The investigation is ongoing. In addition, a fatality occurred at Skutskär Mill in Sweden in November involving a customer's contractor employee. An investigation by the authorities concluded that the fatality was due to a fall from the top of a tanker. The learnings from these tragic events will be acted upon at Stora Enso.

Regarding occupational health, Stora Enso measures illness related absenteeism with a focus on encouraging units to invest in proactive health management. In 2019, illness-related absenteeism amounted to 3.2% (3.0%) of total theoretical working hours.

For Stora Enso, developing trust with employees is critical when it comes to safety issues and discussing safety incidents. In 2019, we introduced the 'Fair and Just' programme, which provides a transparent process to manage the outcome of safety investigations. It also serves as a tool to facilitate the review and discussion of safety incidents and other unsafe behaviour. The aim of the programme is to create a blame-free working environment and a learning organisation to ensure that all our employees are treated in a fair and just manner.

Stora Enso also encourages employees and contractors to identify and report unsafe situations or actions. In 2019, the average number of safety observations reported per employee was 12.7 (10.5).

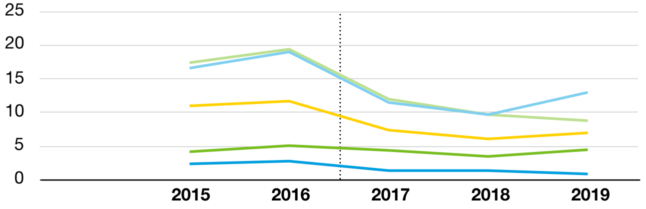
In November 2019, Stora Enso arranged its first Group-wide Safety Week. The theme was 'Working together for safety' and the aim was to engage our management, employees, contractors and the surrounding community to cooperate in safety actions. Safety Week resulted in a range of activities across all divisions, including first aid training, emergency rescue training with local fire departments, ergonomics training, as well as health and wellbeing activities.

In 2019, Stora Enso also implemented a global programme to ensure greater consistency in visitor safety inductions at all Stora Enso units.

During the year, Stora Enso developed and implemented a safety audit programme to verify the implementation of our safety standards and tools. The programme promotes a common approach, content, and methodology for safety audits. During the year, 43 internal safety audits were conducted throughout Stora Enso units. The audits highlighted common areas of concern such as the 'Logout-Tagout' procedure, risk assessments, permits to work, and the operating of heavy machinery.

Total recordable incident rates (TRI)[1 2]

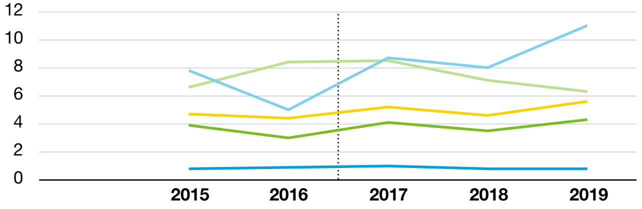
Number of incidents among our own employees per one million hours worked



	2015	2016	2017	2018	2019
China	2.4	2.8	1.4	1.4	0.9
Finland	16.6	19.0	11.5	9.7	13.0
Poland	4.2	5.1	4.4	3.5	4.5
Sweden	17.4	19.4	12.0	9.7[3]	8.8
Group	11.0	11.7	7.4	6.1	7.0

Lost-time accident rates (LTA)[1 2]

Number of lost-time accidents among our own employees per one million hours worked



	2015	2016	2017	2018	2019
China	0.8	0.9	1.0	0.8	0.8
Finland	7.8	5.0	8.7	8.0	11.0
Poland	3.9	3.0	4.1	3.5	4.3
Sweden	6.6	8.4	8.5[3]	7.1[3]	6.3
Group	4.7	4.4	5.2[3]	4.6	5.6

[1] For Stora Enso employees, including joint operations. Figures for the four largest countries in terms of the total number of employees.
[2] Since January 2017, Stora Enso has applied Occupational Safety and Health Administration (OSHA) definitions in the reporting of TRI and LTA rates. Due to this change, the 2015 and 2016 figures are not comparable with 2017–2019 figures.
[3] Recalculated due to additional data after annual reporting for 2018.

We encourage everyone to share feedback and ideas on how to improve safety.

Other focus areas in our safety management work during 2019 included:

- Establishing a formal programme to increase the sharing of learnings from previour accidents within the company and to prevent similar accidents from happening again. The learnings are discussed in different forums throughout the company, such as in the Group Leadership team, Safety Steering Group, Safety Management team, and division and mill management teams. In 2019, Stora Enso also adopted a root cause analysis methodology at some of its mills.
- Reviewing resources for safety management and developing the competence of our safety professionals. The review resulted in additional time allocated to the safety work at certain units.

Contractor accidents

Stora Enso's reporting of contractor accidents has been developed in recent years. Since 2017, contractor accidents are reported in separate categories for on-site accidents and logistics incidents, to allow better comparability with statistics from other companies. Since 2018, proactive measures have been taken when identifying statistically more accidents with some contractors than others. Read more on pages 62–63.

Leadership and performance management

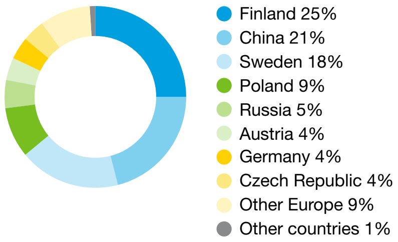
Stora Enso's KPI for leadership is the Leadership Index, which is calculated based on our annual employee survey. Our target is to achieve an index of 85/100 by 2022. In 2019, the Leadership Index remained stable at 83 (83). The response rate to our employee survey remained high at 86% (89%).

We continuously invest in the development of our leaders through programmes such as 'Lead Through People' which targets all managers in the company. The Lead Through People programme supports our leaders in developing their leadership skills to drive performance, wellbeing, and company culture. Since 2015, approximately 3 000 managers have participated in this programme. During the year, we continued the implementation of Lead Through People training and launched three new modules covering the areas of change management, customer focus, and innovation.

All Stora Enso employees should be involved in at least one formal performance appraisal meeting with their manager each year. In 2019, 90% (91%) of our employee survey respondents stated that they had taken part in a performance review during the past twelve months.

To benefit from diverse working teams, we encourage inclusive work environments that respect and appreciate individual differences.

Employee distribution by country[1]



[1] Excluding employees of our 50%-owned joint operations Veracel in Brazil and Montes del Plata in Uruguay.

Employee diversity

When asked about diversity in the annual employee survey, 84% (83%) of our employees reported that their management was able to create diverse teams. As for gender diversity among our senior management, 76% were male and 24% female at the end of 2019 (80% and 20% in 2018). The Group Leadership Team had five female and six male members in 2019. In the 2019 report by Equileap, which assessed gender balance and equality among 3 000 public companies, Stora Enso was ranked number 29 globally and number 1 in Finland. During the year, Stora Enso also received the highest scores in the FINDIX report, which examined the diversity of management teams and board of directors in 89 Finnish companies.

Living wages

Every other year, the global non-profit organisation BSR supports us in defining and calculating living wages in relevant locations. In 2019 we reviewed the current situation in our production units in Brazil, China, Estonia, Laos, Latvia, Lithuania, Poland, Russia, and Uruguay. The results of this study indicate that our units' minimum compensation in these countries is above the living wages defined by BSR.

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  - Business ethics
- Environmental agenda
  - Materials, water, and energy
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  - Forests, plantations, and land use
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  - Data by production unit
  - Auditor's assurance report

↗GRI Index

Compensation and equal opportunity[1]

	Ratio of highest individual compensation to median compensation[2]		Female employees' compensation compared to male employees[3]	
	2019	2018	2019	2018
China	106	89	91%	101%
Finland	13	15	95%	97%
Poland	19	24	94%	87%
Sweden	42	43	99%	99%

[1] Figures for the four largest countries in terms of the total number of employees.
[2] The ratio shows how many times larger the highest individual annual total compensation, including incentives, is compared to median compensation.
[3] Calculated using weighted averages based on gender comparisons within each country's employee categories as applicable. The China 2018 figure based on sample due to data availability and thus not comparable with the 2019 figure.

Share of female employees at Stora Enso

	2019	2018
Total number of employees at year-end[1]	24 390	25 880
Share of women among all employees (%)	26%	26%
Share of women among senior managers (%)	24%	20%
Women in the Group Leadership Team	5 out of 11	5 out of 12
Women in the Board of Directors	2 out of 9	3 out of 9

[1] Excluding employees of our 50%-owned joint operations Montes del Plata and Veracel.

Employee distribution and turnover[1]

	China[4]		Finland		Poland		Sweden		Group total
	Female	Male	Female	Male	Female	Male	Female	Male	
Number of employees	**2 120 (49%)**	**2 190 (51%)**	**1 240 (20%)**	**5 000 (80%)**	**420 (20%)**	**1 690 (80%)**	**1 070 (21%)**	**4 030 (79%)**	**24 390**
Up to 30	640	820	110	550	80	310	150	510	18%
31–50	1 460	1 310	680	2 520	230	930	520	1 570	52%
51 and over	20	60	450	1 930	110	450	400	1 950	29%
Number of hires[2]	**580 (45%)**	**700 (55%)**	**70 (23%)**	**230 (77%)**	**30 (27%)**	**80 (73%)**	**120 (27%)**	**320 (73%)**	**2 860**
Up to 30	340	440	30	70	10	30	50	130	50%
31–50	240	260	40	140	20	40	60	150	44%
51 and over	0	0	0	20	0	10	10	40	5%
Number of leavings[3]	**1 080 (46%)**	**1 260 (54%)**	**60 (20%)**	**240 (80%)**	**40 (24%)**	**130 (76%)**	**60 (23%)**	**200 (77%)**	**3 670**
Up to 30	580	810	0	20	10	30	10	40	46%
31–50	490	440	40	80	20	60	30	70	41%
51 and over	10	10	20	140	10	40	20	90	13%
Employee turnover	**51%**	**58%**	**5%**	**5%**	**11%**	**8%**	**5%**	**5%**	**15%[4]**

[1] Figures for the four largest countries in terms of the total number of employees. Rounded to the nearest 10.
[2] Hires: numbers of permanent employees joining the company. Excludes hires due to acquisitions.
[3] Leavings: numbers of permanent employees leaving voluntarily or due to restructuring, retirement or death. Excludes leavings due to divestments.
[4] The employee turnover in China is mainly due toStora Enso China Packaging units where packaging manufacturing operations are relatively labour intensive and the number of employees vary according to seasonality. The high employee turnover in China Packaging units also has a significant impact on the Group employee turnover. The Group employee turnover excluding China Packaging units was 6% in 2019 (7% in 2018).

Our lowest wages compared to local minimum wages[1]

Ratio of our lowest wage to the local minimum wage

	2019	2018
Brazil[2]	1.1	1.2
China[3]	1.5	1.2
Estonia	1.0	1.1
Laos	1.2	1.2
Latvia	1.6	1.1
Lithuania	1.5	1.4
Poland	1.2	1.0
Russia	1.4	1.5
Uruguay[4]	1.5	1.6

[1] In most relevant locations based on internal assessment and human rights risks, compared to minimum wage levels set at national, state, or provincial level as applicable. The ratio shows how many times larger our lowest wage is compared to the local minimum wage.
[2] Including employees of our 50%-owned joint operation Veracel. Ratio for 2018 recalculated for comparability.
[3] Due to variations in regional minimum wages, the ratio is calculated as a weighted average for Stora Enso's units in China. The weighting is based on the units' total number of employees.
[4] Including employees of our 50%-owned joint operation Montes del Plata. Ratio for 2018 recalculated for comparability.

Community

We depend on resilient and thriving local communities wherever we operate, and strive to be a good corporate citizen.

Total voluntary community investment
EUR 2.7 million

Opportunities and challenges

Benefitting local communities

Companies can improve the quality of life of local communities through active corporate citizenship. Over the long term, such voluntary investments can also generate business benefits for the company in the form of community support and competitive advantage.

Stora Enso's operations depend heavily on resilient local communities for a motivated and competitive workforce, as well as the sourcing of our most important raw material – wood. Therefore, these communities must be able to thrive economically, socially, and environmentally in the long term.

While Stora Enso is a significant employer and taxpayer in many communities, our operations also generate emissions and our tree plantations influence land use in ways that may adversely impact the rights of those communities. Our socio-environmental impacts must be managed responsibly in order to minimise negative impacts, maximise our positive influence, and maintain a constructive community dialogue that ensures our long-term license to operate.

Our policies

A robust framework for our community work

Policies that guide Stora Enso's community relations include our:

- **Sponsorship and Donations Policy**
- **Community Investment Guidelines**
- **Volunteering Guideline** – published in 2019 to encourage our employees to volunteer during their working hours to support charitable causes.
- **The Stora Enso Code** – our code of conduct
- **Business Practice Policy**
- **Human Rights Policy**
- **Tax Policy**

Our joint operations in Brazil and Uruguay have each developed formal procedures for their respective community work to reflect Stora Enso's requirements.

How we work

Managing social responsibility

In many locations, Stora Enso benefits the local economy as a major employer, taxpayer, and partner to local entrepreneurs. We apply precautionary management actions to mitigate and remedy potential adverse environmental and social impacts on neighbouring communities. These include:

- Environmental and Social Impact Assessments (ESIAs), which are conducted for all new projects that could cause significant adverse effects in local communities. For more information, see page 13.
- Due diligence assessments, which are realised as part of Stora Enso's acquisition and investment processes prior to any critical decision. These assessments cover relevant factors related to environmental, social, and business practices. They play an important role in building our understanding of local operating environments, while also helping us to develop constructive relationships with stakeholders such as governments, business partners, local communities, and NGOs. Any subsequent investment decision must consider our ability to mitigate and manage identified adverse impacts.
- Third-party certified management systems at our production units that apply international standards such as ISO 14001, OHSAS 18001 and ISO 50001.
- Third-party forest management certification for our own forestry operations and suppliers, such as the Forest Stewardship Council (FSC[1]) and the Programme for the Endorsement of Forest Certification (PEFC).
- When necessary, restructuring processes and closure of operations realised in cooperation with the authorities to support the communities through related changes, and to create opportunities for new business initiatives.

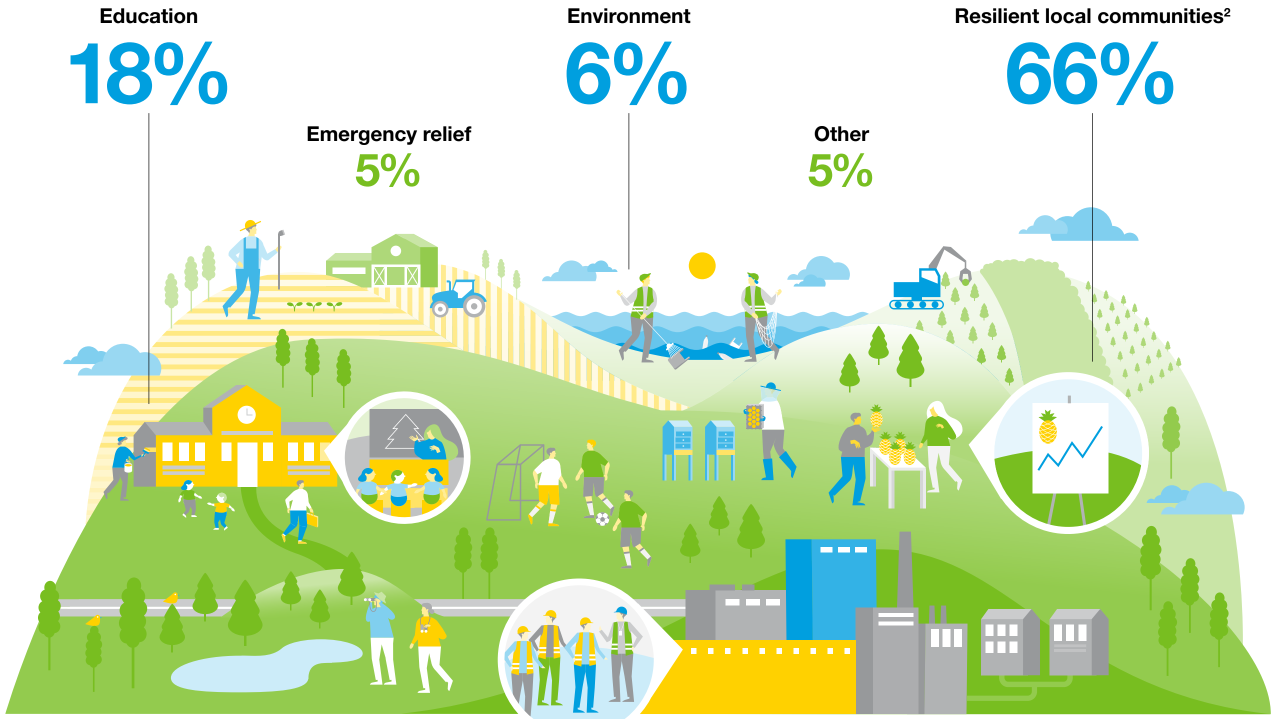
Community investment

In addition to implementing mandatory and regulated contributions to communities, voluntary community investment is an essential part of building a sustainable future for our business. Stora Enso defines voluntary community investment as contributions that involve engaging with local communities beyond our core business and legal responsibility. This is carried out in the form of voluntary donations of cash, working hours, and in-kind for non-profit purposes or non-profit community organisations in accordance with the LBG framework, which is a globally recognised framework for measuring such activities. Stora Enso's community investment projects are managed and funded locally to ensure that the community is the main beneficiary.

Our Group-wide framework for community investment builds on the local community work Stora Enso has carried out over many years. During 2019, we defined the Group's community investment focus areas: Education, Environment, and Resilient local communities. These focus areas will guide our community investment going forward.

We are also starting to more systematically monitor the impact our operations may have on local communities. Our goal is to ensure that we have a positive impact on the communities near our operations.

Voluntary community investment by investment area[1]



[1] Total community investment including cash, working hours, and in-kind as defined in the LBG framework. Including 50% of joint operations Veracel in Brazil and Montes del Plata in Uruguay. [2] Resilient local communities include LBG framework areas of Economic development, Social welfare, Healthy lifestyle and Arts and Culture.

Encouraging employee volunteering

In 2019, Stora Enso published Group-wide Volunteering Guidelines to enable Stora Enso employees to volunteer eight hours of paid work time annually to charitable causes. Our aim is for this volunteering to be aligned with at least one of our three community investment focus areas.

Progress

Measuring our contribution

Our key performance indicator (KPI) for community investment, developed in 2019, monitors the proportion of inputs made in working hours or in-kind compared with cash donations, excluding our joint operations, with continued growth in our community investment over time. Our target is to increase the proportion of working hours and in-kind contributions to 70% by 2030, excluding joint operations. In 2019, this proportion amounted to 46% (50% in 2018). When including joint operations, the proportion was 22% (24%).

The difference is explained by the nature of community investment projects in Brazil and Uruguay, where programmes tend to be longer-term and often cover wider societal issues with investment needs.

In 2019, the proportion of community investment related to Education was 18%, while the proportion of those related to Environment and Resilient local communities was 6% and 66%, respectively. Total volunteered hours amounted to 8 372 and the number of employees involved in community investment activities during working hours amounted to 1 771 in 2019. The total contribution to communities as defined by LBG was EUR 2.7 million (EUR 2.7 million), including 50% of the community investments by our 50/50 joint operations in Brazil and Uruguay. The total number of Stora Enso's voluntary community investment projects was 441 (453 in 2018), including those facilitated by our joint operations.

[1] Stora Enso Communications' FSC® trademark license number is FSC-N001919


Together with local schools, Stora Enso employees organised four volunteering activities in Europe in 2019 to plant trees in their communities.

In many locations, Stora Enso is a major employer, taxpayer, and a partner to local entrepreneurs.

Communities are important stakeholders

During 2019, we engaged with the communities close to our operations in various ways, including agroforestry programmes, educational support, and volunteer activities.

Europe

In Europe, the aim of Stora Enso's community investments is to support local communities in enhancing their attractiveness, with the aim of benefitting our existing and potential future employees. To grow and support our potential labour pool, we participate in programmes that promote education and youth work training, and provide internships and public research opportunities. We also strive to promote local workforce diversity by participating in programmes that facilitate the employment of disadvantaged people and refugees.

To contribute to the everyday vitality of communities, we also financially support local associations, including sports clubs and cultural activities.

In 2019, employees from Stora Enso units in Finland and Austria volunteered their working hours in four tree planting events with the international NGO Plant-for-the-Planet and local schools. The goal was to educate school children on the role of forests in combatting global warming, and to offer them an opportunity to take climate action by planting tree seedlings. Over the course of the year, a total of 2 100 seedlings were planted during nine planting events around the world.

Employees at Stora Enso units regularly organise and participate in nature clean-up events together with local communities. In 2019, six such events were organised in Europe, with 130 Stora Enso employees participating. The amount of collected waste was measured and reported where feasible, according to type, count, and weight.

In 2019, we continued to voluntarily support the Finnish Forest Foundation (FFF) by matching voluntary donations from forest owners, which are linked to the purchase of wood. These donations contribute to FFF's community investment funds that focus on the social aspects of the forestry sector. Activities include inspiring young people to pursue a career in forestry and funding relevant research projects. Stora Enso has supported the foundation since 1995.

Guangxi, China

Stora Enso leases 81 000 hectares of land in Guangxi province, China, of which 27 000 hectares (29 000 hectares in 2018), or 34% (36%) of the total area, is social land leased from village collectives, individual households, and local forest farms. Stora Enso's field staff and social engagement officers speak regularly with local communities impacted by our plantations and mill, and along our transportation routes, to inform them about our operations and to enable them to express their concerns and contribute ideas. Our aim is to identify and understand concerns and risks, so that we are prepared to properly mitigate and remedy them when necessary. For more information about our community consultation work, see page 13.

In 2019, our Beihai Mill's community work included sponsoring the reconstruction of a basketball court, donating supplies to local school children, and organising a beach clean-up. Our forestry operations in Guangxi continued the socio-economic profiling and mapping of local villages. The goal is to identify the needs and characteristics of the communities near our operations to be able to maximise our positive impacts and mitigate any negative ones.

Our forestry operations also run community projects to address challenges in rural villages near our plantations. During 2019, Stora Enso supported 19 community projects that benefitted over 40 000 people. The projects had three main focus areas: drinking water and sanitation, road construction and safety, and sports and cultural development.

In 2019, an agroforestry programme, managed together with the local government and a rural cooperative to alleviate poverty in the area, piloted a poultry farm on part of Stora Enso's plantations. About 23 000 free-range chickens are kept on 3.4 hectares of our plantation land, providing profit for the cooperative which supports over a thousand residents from 487 households. Some residents also receive direct income through employment at the farm.

In 2019, Stora Enso invested in two drinking water projects in neighbouring rural communities. Since 2017, similar projects have benefitted nearly 2 800 people and enabled a significant reduction in the instances of water-related illnesses and the consumption of bottled water in the communities.

Our forestry operations also continued to focus on road safety by providing defensive driving skills to drivers, trialling GPS monitoring of potential aggressive driving, and developing a checklist for regular vehicle inspections.

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Veracel, Brazil

Veracel, our 50/50 joint operation owns 213 000 hectares of land in Bahía, Brazil, of which about half has been reserved for rainforest restoration and conservation and about 79 000 hectares are planted with eucalyptus trees. Veracel also leases 10 000 hectares of land. Supporting income generation and employment in local communities are the top priorities of Veracel's sustainability agenda.

The Pact for the Development of the Discovery Coast, in force since 2012, where the government committed to reimburse the ICMS tax credits paid by Veracel in return for investments in local development programmes, was completed in 2019. Veracel continues to support two local cassava processing plants, which were originally projects within the Pact, to help them become and remain successful, sustainable business units.

For information on Veracel's engagement with indigenous communities, see page 15.

Fighting fire with knowledge in China

Qing Ming ('Tomb-sweeping festival') is a national holiday in China and includes the tradition of setting off fireworks and burning paper money. This tradition is particularly strong in a part of Guangxi where Stora Enso manages eucalyptus plantations.

This year, Stora Enso employees were able to join forces with the local government in order to help raise awareness about the prevention of fires. As a result, forest fires were reduced by 90%.

"The biggest learning for us is that preventing a problem is always better than fixing one. Working together – internally but also with so many external stakeholders – is the best long-term solution," says **Tao Shan**, Head of Land Management at Stora Enso's forest operations in China.

Read the full article at › storaenso.com/sustainability

Continuous dialogue with the landless people's movement

Illegal land invasions of private property are a long-running challenge in Brazil that has affected various actors who use land, such as mining companies and farming businesses. In 2019, some stakeholders criticised Veracel for its land use and evictions of landless people from its lands that were illegally occupied. Some areas have been occupied since 2008. While Veracel is not the root cause of the problems that landless people face, it aims to be part of the local solution without taking on the role of the state.

Veracel strives to maintain continuous dialogue with these movements and supports land allocations through the Sustainable Settlements Initiative, launched in 2012. In 2019, the initiative continued to provide farmland and technical and educational support to hundreds of families to improve their incomes. The Sustainable Settlements Initiative is facilitated by the Government of the State of Bahía, and is conducted in cooperation with the National Institute of Colonisation and Agrarian Reform (INCRA) and the representatives of six officially recognised landless people's social movements:

- The Movement of Landless Workers (MST)
- The Federation of Agricultural Workers (Fetag)
- The Movement for the Struggle for Land (MLT)
- The Peasant Resistance Movement (MRC)
- The Front of Free Workers (FTL)
- The Association Unidos Venceremos (Aprunve)

The social movements involved in the initiative have pledged to leave areas occupied since July 2011, while Veracel has agreed not to seek to repossess areas occupied before this date. The initiative relates to a total area of approximately 16 500 hectares of Veracel's lands designated for the settlements to be purchased from the company by INCRA.

Veracel continues to support the transition of families from these settlements to more permanent residencies on the same land, as the legal processes regarding their claim to the land are resolved over time. In 2019, this support included preparing the land for farming purposes, supplying seeds, as well as building and renovating nurseries, flour mills, and cocoa production units. The goal is to gradually transfer full responsibility of the area to the families by 2022.

Veracel signed a new agreement with social landless movements in 2018 to complement the earlier Sustainable Settlements Initiative. In line with the agreement, Veracel sold 3 300 hectares, under market price, and donated 225 hectares of previously occupied lands to the movements and related associations in 2019. In turn, as agreed, the movements will leave 800 hectares of Veracel's land.

Since 2012, Veracel has voluntarily given up approximately 20 000 hectares of land to benefit landless people. By the end of 2019, 469 hectares of productive land owned by Veracel remained occupied by movements not involved in the Sustainable Settlement Initiative or in the new agreement. Veracel will continue to seek repossessions of the remaining occupied areas through legal processes. Stora Enso also reports on the occupied areas in the Group's Interim Reports.

Supporting local livelihoods

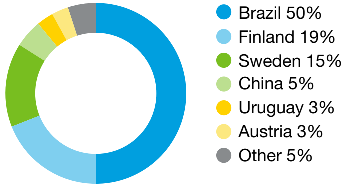
Veracel also supports local livelihoods by making some of its land available to family farmers, and by providing training and technical support. The Agrovida and Roça do Povo farming programmes, for instance, aim to support local farmers, produce food for local communities, and trade surplus production in regional markets. During 2019, the two initiatives assisted a total of 192 families cultivating 168 hectares of land in total.

To safeguard biodiversity and to help provide additional income to local families, Veracel allows beekeepers to keep hives on company land. It also provides training in beekeeping as well as technical and material support. During 2019, a total of 161 beekeepers, mostly working through local cooperatives, produced 114 tonnes of honey.

In 2019, Veracel also continued to support local fishing communities near Belmonte. The cooperation includes support for establishing local fisheries, providing infrastructure for their commercialisation, and offering safety training. A shellfish collection programme empowers women by creating a profitable livelihood, developing the women's professional skills, and improving their opportunities to take part in community decision-making. During the year, Veracel cooperated with partners to renovate and expand a production unit for storing, cooking, and selling the shellfish, and to provide training in entrepreneurial

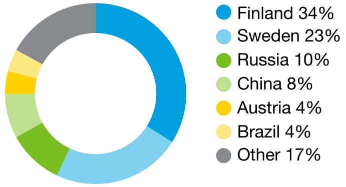
Voluntary community investment by country[1]

EUR 2.7 million



Voluntary community investment projects by country[2]

By number of projects (441 projects in total)



[1] Total community investment includes cash, working hours, and in-kind as defined in the LBG framework. Including 50% of joint operations Veracel in Brazil and Montes del Plata in Uruguay. [2] Including joint operations.

The Bioparque M'Bopicuá, operated by Montes del Plata, promotes environmental education. It has, for example, successfully reintroduced Collared Peccaries, a mammal species extinct in the wild in Uruguay, into their natural habitat.

management. By the end of 2019, 150 fishing community members benefitted from Veracel's support, including 48 women participating in the shellfish collection programme.

To further support the local economy, Veracel gives preference to local businesses when sourcing goods and services.

Montes del Plata, Uruguay
Montes del Plata, our 50/50 joint operation owned together with the Chilean company Arauco, runs a pulp mill in Punta Pereira in southwestern Uruguay, together with associated eucalyptus plantations mainly located in central and north-western parts of the country. Montes del Plata owns 190 000 hectares and leases 72 000 hectares (Alianzas programme) of land. The Alianzas programme provides additional income for local farmers by enabling them to integrate eucalyptus plantations into their farms on suitable lands. At the end of 2019, 475 (426 in 2018) farmers participated in the programme with 53 000 (48 500) hectares planted with eucalyptus.

Alianzas also promotes the diverse use of Montes del Plata's lands for purposes such as cattle grazing and honey production. The diverse use of land enhances local livelihoods, reduces the risk of forest fires, and helps to build stronger relationships with the community. During 2019, 184 farmers kept cattle on Montes del Plata's land and 39 farmers produced honey from approximately 6 100 beehives situated on the company's land to supplement their incomes. During the year, Montes del Plata began cooperation with a national NGO to promote the sustainable management of natural grasslands, which are considered a conservation priority in South America. The results, including suggestions on soil improvements and developing cattle grazing, will be shared with Alianzas producers. Over 65 000 hectares of grassland coexist with Montes del Plata's plantations.

Montes del Plata also seeks to benefit local communities by fostering local employment opportunities, maximising local hiring, participating in mentoring programmes, and promoting entrepreneurship among young people. During 2019, the company supported projects that introduce students to working life and encourage them to continue their studies, and sponsored an annual teenager entrepreneurial skills competition. Montes del Plata also supports development initiatives carried out by local community groups. The aim is to boost local social cohesion and strengthen community organisations.

Montes del Plata continued to invite visitors into its tree nursery and the company-owned Bioparque M'Bopicuá environmental centre in 2019. The centre, which hosts about 2 000 visitors annually, promotes education and enables visitors to experience native wildlife at first hand.

Mitigating negative impacts from logistics
Montes del Plata has a long-term strategy for the safe transportation of wood, including annual action plans involving truck drivers, transport companies, and local communities. The company's wood supply is operated by approximately 680 truck drivers from different transport companies. Montes del Plata trains all drivers before they start working for the company, organises quarterly workshops for drivers on safety and social responsibility, and follows up on safety indicators. In 2019, Montes del Plata launched an awareness raising campaign on road safety, targeted at its transport providers.

Montes del Plata, together with transport companies and their truck drivers, also strives to raise awareness of traffic safety in the communities most severely affected by the company's traffic. In 2019, this work included cooperation with 12 schools and numerous community members.

Laos
Stora Enso's eucalyptus plantations in Laos have been established in a way that enables local farmers to grow rice and cash crops between the trees. Before establishing plantations, Stora Enso makes the land safe by removing unexploded bombs dropped over Laos during the Vietnam War.

In 2019, our village development fund continued to support local development and livelihoods in the provinces where we operate. The projects are designed together with the villagers and based on their needs, and they are all endorsed by the local authorities. Most of the 2019 funding was directed to projects related to electricity provision, enhancing food security, and improving water supply.

Community consultations, including Free, Prior, and Informed Consent (FPIC), continue to be a key element of our operations in Laos. For more information, see page 13.

The diverse use of land supports local livelihoods and helps build stronger relationships with communities.

Business ethics

We believe that fostering an ethical company culture strengthens employee engagement and helps them make the right decisions.

Code of conduct index
84/100

Opportunities and challenges

Broad ethical approach beyond compliance

Stora Enso operates in locations including high-risk markets that offer good business opportunities but may also entail exposure to serious risks relating to topics such as corruption and fraud. The US Foreign Corrupt Practices Act, the UK Bribery Act, and the French Loi Sapin II are all examples of effective legislation that governments and authorities have introduced to combat corruption. These laws place high demands on companies' controlling mechanisms, but they also help to build accountability and trust among stakeholders. Competition law is also an area where lawmakers and competition authorities are increasingly active in their efforts to preserve a competitive economy. Complying with international trade sanctions may also require companies to take new measures.

Digitalisation brings great opportunities for organisations but it also presents challenges regarding cybersecurity and the treatment of stakeholders' personal data. Legislation such as the EU General Data Protection Regulation (GDPR) sets requirements concerning the processing of personal data, with heavy fines imposed for infringements. While compliance with laws and regulations is always the highest priority for us, we believe that adopting a wider ethical approach is also crucial.

Our policies

Comprehensive approach to ethics and compliance

Our code of conduct, **the Stora Enso Code**, is a single set of values for all our employees that explains our approach to ethical business practices, human and labour rights, as well as environmental values. These values are applied wherever we operate.

Other policies relevant to ethics and compliance include our:

- **Business Practice Policy**
- **Data Privacy Policy**
- **Supplier Code of Conduct**

Trainings help employees and partners respond to ethical dilemmas.

A culture of ethical behaviour is key to our long-term success.

How we work

Combatting misconduct on all fronts

Stora Enso's Ethics and Compliance function is a sub-function operating within our Legal team, headed by our General Counsel who reports directly to the CEO. Our Ethics and Compliance Management Committee, a governance body appointed by the CEO, monitors Stora Enso's legal compliance and ethical business conduct by following up on our Ethics and Compliance Action List. The Committee met four times during 2019.

Stora Enso's Ethics and Compliance Strategy forms the basis for annual action plans. The strategy has five focus areas:

- Top-level commitment
- Improved communication and training
- Intensified efforts in countries with heightened concerns
- Developing our grievance channels
- Ethics and compliance as a competitive edge.

Stora Enso is represented in Transparency International's (TI) Steering Committee for Business Principles for Countering Bribery, where we actively participate in the network's efforts to combat corruption globally and nationally. We are also a member of TI Sweden's Corporate Supporters' Forum.

Top-level commitment

In our efforts to make Stora Enso a more value-driven organisation, we highlight the importance of top-level commitment. All managers in key positions are required to participate in training and make a personal commitment to the Stora Enso Code and our Business Practice Policy, and to share related information with employees in their respective organisations.

In line with workshops organised for employees in managerial positions in recent years, a dedicated ethics and compliance workshop was arranged with the Group Leadership Team during 2019. The workshop provided training in and promoted discussions on ethical issues.

Training our employees

We strive to ensure that Stora Enso's employees and business partners all understand what ethical behaviour is, and how they should respond to any ethical dilemmas that arise. Communications and training are a crucial part of this work.

Our employees receive Stora Enso Code training, either through an e-learning tool or through face-to-face training for those who do not have direct computer access. We aim to ensure that our new employees receive such training within their first month of employment.

In addition, an in-depth e-learning course on anti-trust, anti-corruption, and other compliance related topics is mandatory for all members of our Group Leadership Team, for divisional and mill management teams, and for employees dealing with competitor contacts, purchasing, marketing, and sales. The training has been run since 2013 and was updated in 2018 to be more interactive and to better reflect the challenges of today's work environment. All relevant employees will be invited to complete the updated training during 2020.

The Stora Enso Data Privacy Policy aims to protect the company against risks related to breaches of data privacy, to let our employees know how Stora Enso collects and uses their personal data, and to ensure that the privacy rights of our employees, business partners, and other stakeholders are protected. All white-collar Stora Enso employees are required to complete our e-learning training on data privacy. By the end of 2019, 88% of white-collar employees had been trained.

During 2019, we also developed new e-learnings on the areas of dawn raids, trade associations, gifts and hospitality, and the onboarding of critical business partners.

In 2019, we took several actions to enhance the culture of speaking up and listening at Stora Enso.

Comprehensive risk assessments on compliance

Operating in high-risk markets and entering into joint ventures can entail exposure to serious risks. Our risk assessment procedures on compliance cover all our units. The most significant compliance risks in our global operations relate to anti-trust and corruption.

Overall risk assessment at Stora Enso follows the Risk Management Process and is outlined in our Enterprise Risk Management instructions. In recent years, ethics and compliance has been considered one of Stora Enso's key risks. In 2019, our Ethics and Compliance function implemented an additional risk assessment tool as part of the Ethics and Compliance Self-Assessment Tool (T.E.S.T.). The purpose of the additional tool is to provide a more detailed understanding of compliance risks as well as support our Enterprise Risk Management process.

The management and employees of our fully and jointly owned operations in China, Brazil, and Uruguay receive training on our Business Practice Policy. Employees in our joint operations in Brazil and Uruguay additionally receive training on their respective Codes of Conduct and Business Practice Principles, covering topics such as human rights, environmental impacts, safety, and ethical practices. Anti-trust guidelines designed for our joint operations are implemented with the help of related training globally.

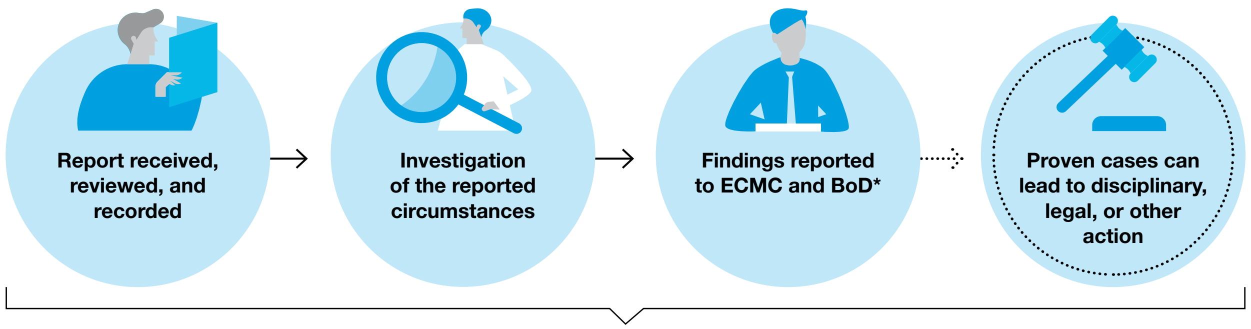
During 2019, our Ethics and Compliance team continued to provide training on topics related to ethics and compliance in our operations globally. This training involved meetings with local employees and managers face-to-face to gain a better understanding of local ethical dilemmas, and to train local personnel on key topics.

Grievance channels

Our employees are encouraged to report suspected cases of misconduct or unethical behaviour. Other stakeholders may also want to seek ways to raise concerns over our activities. To ensure that rights to privacy and effective remedy are respected, we must ensure that our grievance channels operate without fault and are accessible to all relevant stakeholders.

Stora Enso uses an external service through which our employees and external stakeholders can anonymously report potential non-compliance cases by phone, mail, or online. This service is available 24/7. In 2019, the grievance channel was opened to all stakeholders globally. Our operations in China and Laos have established internal grievance channels in local languages for stakeholders with inadequate knowledge of the main language.

How we investigate suspected non-compliance cases



Internal Audit and Ethics and Compliance functions are responsible for the overall process.

* ECMC = Ethics and Compliance Management Committee
BoD = Board of Directors' Sustainability and Ethics Committee and Board of Directors' Financial and Audit Committee

All potential non-compliance cases are duly investigated. Any findings are recorded and reviewed by the heads of our Internal Audit and Ethics and Compliance functions, and reported both to our Ethics and Compliance Management Committee, and to our Board of Directors' Financial and Audit Committee and Sustainability and Ethics Committee. Proven cases of non-compliance can lead to disciplinary or legal action.

Our joint operations Veracel in Brazil and Montes del Plata in Uruguay each have their own local grievance mechanisms.

In 2019, a total of 57 reports received through Stora Enso's various grievance channels were identified as potential non-compliance cases (68 in 2018). Based on the investigations finalised by the end of 2019, proven cases leading to disciplinary action, legal action, and/or process improvements were identified in 26 (20) of the completed investigations. In addition, 12 of the potential non-compliance cases were still under investigation.

Based on our assessments, nine of the proven cases can be considered related to corruption and/or fraud (two in 2018). Seven of these cases resulted in employee dismissal or disciplinary process (two in 2018).

Competitive advantage from business ethics

Being value-driven gives Stora Enso a competitive advantage at a time when stakeholder interest for business ethics is growing, as it builds trust both within Stora Enso and with external stakeholders such as customers and potential employees. We are committed to conducting our business ethically and strive to ensure that our business partners are aware of and share our commitment.

Progress

Comprehensive monitoring

We use an index to monitor and evaluate employee perceptions of our work on topics covered by our Stora Enso Code. The index is based on our annual employee survey responses to questions related to the Stora Enso Code, Stora Enso's values, fair and equal treatment of employees, safety, and responsibility. The index is used as a management tool to understand the ethics and compliance culture of our different teams. After five years of continuous improvement, the index decreased by one unit to 84 in 2019 (85 in 2018). Our objective is to continue the previous positive trend by increasing our efforts in communications and training during 2020.

Breakdown of potential non-compliance cases

	2019	2018
Anti-trust	0	1
Conflict of interest	4	7
Corruption	4	9
Fraud	12	2
General human resources	26	33
Health and safety	3	3
Miscellaneous	8	13
Total	**57**	**68**

During 2019, we continued the work of the Divisional Compliance Forums and the Group Function Compliance Forum to bring together the heads of key functions and divisions to assess risks, monitor compliance, and contribute to a value driven organisation. By the end of 2019, there were eight established forums in total.

Our Ethics and Compliance Self-Assessment Tool (T.E.S.T.), introduced in 2015, was run once in 2019. This tool has been designed to give our divisions and functions a better overview of the progress their units are making in implementing our policies and compliance measures, while also identifying possible gaps and risks related to compliance. In 2019, the tool was further developed to include a separate risk assessment that better identifies, measures, monitors and controls the relevant risks. The results are addressed through the Compliance Forums with action plans subsequently developed, implemented, and monitored as necessary. Since 2018, the results have been cross-checked between more people within each unit to gain a deeper understanding of their reliability.

Encouraging employee discussions on ethics

We support our managers in discussing ethics topics in their teams by providing them with ethical dilemmas and related instructions on amonthyl basis. We also support managers with topic-related communication materials to facilitate the discussions. In 2019, topics included the Stora Enso Code, money laundering and tax havens, inclusion in the workplace, and unconscious bias in decision-making.

Compliance rules can be complicated and ensuring that all our employees know Stora Enso's purpose, values, goals, and policies can be challenging. In 2019, our Ethics Ambassadors, consisting of Stora Enso employees, continued their work in voluntarily supporting our Ethics and Compliance function by running training sessions, clarifying our rules, and answering questions in their respective units. During the year, the Ethics Ambassadors programme was further developed to better respond to individual and organisational needs in the field of ethics and compliance.

In 2019, we created an Ethics and Compliance Case book featuring several compliance cases to serve as reference and training material for our employees. The example cases presented in the book will help to illustrate ethics and compliance issues in practice and facilitate discussions and training on important topics.

During 2019, we also began developing an artificial intelligence based virtual agent to help guide our employees in certain ethics and compliance related issues.

Enhanced compliance control processes

Making sure that laws, regulations, and company rules are complied with, not only by us but also by our business partners, is an essential part of our business. In 2019, we began developing a new critical third-party management tool for conducting due diligence and onboard critical business partners to ensure better compliance control.

In 2019, we established a screening process when recruiting for certain top management positions at Stora Enso. The aim is to identify potential hiring risks and make sure we hire people who live by Stora Enso's values.

We provide several different communication materials to our employees to facilitate discussions and training on important business ethics topics.

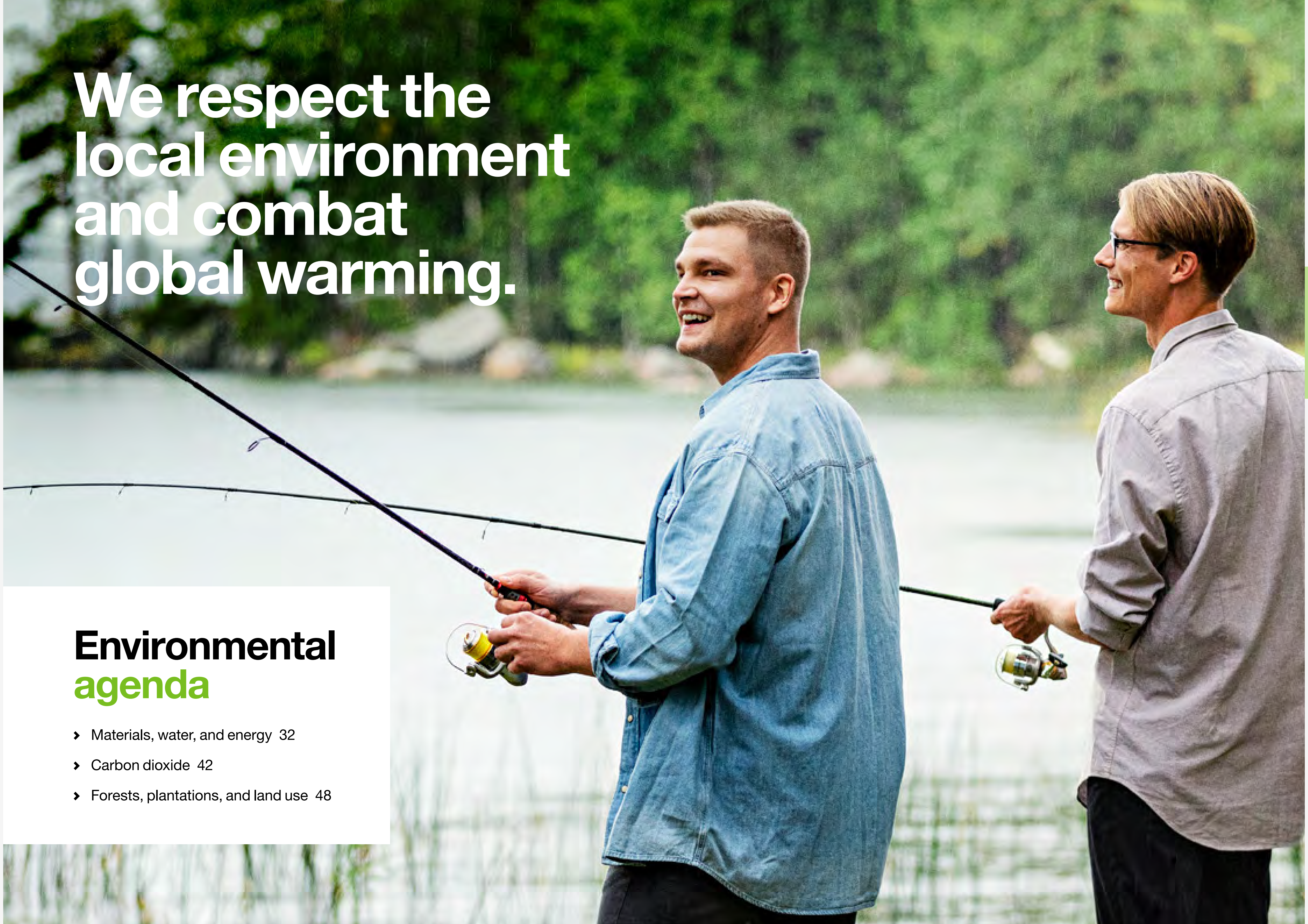
The power of inclusive workplaces

One of the biggest fears for human beings has always been to be excluded. Today, exclusion can present itself as discrimination and bullying, which are serious threats to a healthy and productive workplace.

"We are each other's work environment: if it's not safe, it's just as dangerous as if a machine doesn't work properly," says **Per Lyrvall**, Executive Vice President, HR and Legal at Stora Enso. "We must be ready – and feel safe – to speak up when we see excluding or inappropriate behaviour. But at the end of the day, it doesn't need to be complicated: inclusion can start with a smile."

Read the full article at › storaenso.com/sustainability

We respect the local environment and combat global warming.



Environmental agenda

Sustainability

Materials, water, and energy

Stora Enso is in a unique position to drive society's transition to a circular bioeconomy. In our operations, we always look for ways to make more from less.

Share of biomass in our internal energy production	Process residuals utilisation rate
82%	98%

Opportunities and challenges

Reduced waste, maximum value
Global megatrends such as global warming, population growth, eco-awareness, and urbanisation are affecting consumer and corporate decision-making around the world. We respond to these trends by developing circular products and solutions based on materials that are both renewable and recyclable.

Materials
As a renewable materials company, Stora Enso operates at the heart of the bioeconomy and contributes to a circular economy. In a circular economy, waste is minimised as materials are reused and recycled to maximise environmental and financial value. The European Commission (EC) has adopted several legislative proposals within its Circular Economy Package, including the EU directive on single use plastics. The objectives of these ambitions create a need for new innovations and provide business opportunities for Stora Enso.

Water
Water plays a central role in Stora Enso's production, heating, cooling, and cleaning processes, and in generating renewable electricity from the hydropower we purchase. We clean process water in our high-performance water treatment plants before discharging it back to the local environment. Sustainably managed forests and plantations have a key role in maintaining natural water cycles, absorbing CO_2 and therefore increasing resilience to the impacts of global warming. We consider water in the planning and management of our forest and plantation operations. Our forests and plantations need rainwater for growth, and active water management in plantations contributes to positive effects on total water balance as well as water storage, purity, and quality.

The EU Water Framework Directive sets the objective to protect and enhance water resources, thereby achieving a good quality status for lakes, rivers, groundwater, and transitional and coastal waters. Other key directives linked to the Water Framework Directive are the Groundwater Directive and the Environmental Quality Standards Directive. These requirements are implemented in the environmental legislative framework of each member state to which we must comply via our environmental permits.

Our operations affect the environment but may also impact people. Keeping our employees and surrounding communities safe and healthy is a top priority for us.

While water is relatively abundant in most of our production locations, water scarcity may still impact operations locally and through our wider supply chains, as controls on pollution, recycling, and water pricing are tightened. Occasionally, some mills have been impacted by water stress in terms of availability or increased water temperatures. We therefore consider water stewardship to be an area of increasing importance. At the same time, such challenges give us opportunities to reduce costs by using water more efficiently.

Energy

The EU has stepped up its ambitions with the European Commission proposing a 'European Green Deal' in 2019, which includes the announcement of a European Climate Law to be presented in 2020. As an overall ambition level, the EU should achieve net zero greenhouse gas emissions and climate neutrality by 2050. To fulfil the ambition, contributions are also requested from energy intensive industries in terms of further emission reductions and providing carbon sinks.

The Energy Efficiency Directive II sets new targets for 2030 that require annual energy savings of 0.8% of energy consumed. Additionally, the Renewable Energy Directive II sets member states a binding collective target on an EU level to derive 32% of their final energy consumption from renewable sources by 2030. With its high proportion of biomass-based energy, the forest industry can help the EU achieve its targets.

We aim to maintain product value for as long as possible through innovation and recycling.

Our policies

Guidance throughout the supply chain

Stora Enso's policies relevant to our use of materials, water, and energy include our:

- **The Stora Enso Code** – our code of conduct guides us on issues related to resource use.
- **Supplier Code of Conduct** – includes practical instructions for Stora Enso's suppliers, Purchasers' Instructions, Sourcing Policy, and Sourcing Guidelines: a guiding framework for the responsible sourcing of materials and energy.
- **Policy on Wood and Fiber Sourcing, and Land Management** – our commitment to the responsible integration of forestry, land use, sourcing, and water stewardship into our sustainable forest management and land use practices.
- **Policy on Energy and Carbon** – a policy stating our ambitions in combatting global warming.
- **Environmental Guidelines** – a comprehensive overview of our policy objectives and how we work to achieve them.

How we work

External initiatives guide our work

We apply precautionary management actions to mitigate and remedy potential adverse impacts on the environment and people. The environmental work at our mills, including water and energy management and resource efficiency, is supported by third-party certified environmental management systems. All our sawmills and board, pulp, and paper mills are certified to the ISO 14001 environmental management system standard, along with all but one corrugated packaging unit, which is expected to be certified in 2020.

Using materials, water, and energy in our production affects the environment but may also have an impact on people. At Stora Enso, keeping employees and surrounding communities safe and healthy is a top priority. The interests of local communities and forestry operations are respected in our approach to systematic Environmental and Social Impact Assessments (ESIAs) in due diligence executed in conjunction with mergers, acquisitions, and divestments (see page 13).

By the end of 2019, 95% of our total energy consumption was certified to the ISO 50001 energy management system standard (95% in 2018). For unit-specific information on certificates, see pages 69–71.

The emissions generated by each of our mills are regulated by the relevant authorities, with limits set through environmental permit processes that consider local environmental conditions, stakeholders, and legislation. Compliance with legislation and permits is monitored by the environmental authorities and by the mill in question. Non-compliances and incidents are reported by mills to Group management on a quarterly basis, and significant incidents are reported immediately. For details of significant incidents and violations of environmental permits in 2019, see page 41.

Environmental improvements and investments at our production units are driven by regional and local conditions. The EU's Best Available Techniques (BAT) Reference Documents have limits for effluents and emissions to air, and the BAT conclusions for pulp and paper, as well as for medium and large combustion plants, apply to our board, pulp, paper, and sawmills in Europe. The related investments are proactively planned as part of Group investment processes. These investments fit into Stora Enso's normal capital expenditure framework and policy.

Contributing to the circular bioeconomy

We help our customers become circular: our products are renewable, recyclable, and in many cases compostable. We minimise waste and resource use and aim to maintain the value of products and materials for as long as possible through product design, innovation, and recycling. When a material or product has reached its end-of-life, we promote recycling and energy recovery to create further value. Read more in **Strategy 2019**.

We are a signatory to the New Plastics Economy Global Commitment led by the Ellen MacArthur Foundation, in collaboration with UN Environment. In 2019, our progress was disclosed in the Ellen MacArthur Foundation's Global Commitment Progress Report. As a founding board member of WBCSD's circular economy initiative, Factor10, we worked to develop the 'CEO Guide to Circular Bioeconomy' publication.

In 2019, Stora Enso and other member companies of the Confederation of European Paper Industries (CEPI) launched the 4evergreen alliance to promote fiber-based packaging across the value chain. This alliance brings together companies involved in the life cycle of fiber-based packaging to raise awareness about innovation in fiber-based packaging, set guidelines for circular product design, and support the development of optimised collection systems and critical recycling infrastructure.

For information about how our divisions worked to advance the circular bioeconomy in 2019, see page 59.

Value from waste and residuals

In addition to our traditional products as well as lignin, tall oil, turpentine, and energy pellets, Stora Enso's production processes generate other residuals and wastes, including ash, sawdust, bark, and wastewater treatment sludge. Many of these materials are used in our internal bioenergy generation and pulp production or supplied to third parties to be used in applications such as agriculture, cement and concrete products or land and road construction. We constantly innovate to improve resource efficiency and make profitable use of material streams that would otherwise end up as waste.

We ensure that hazardous waste is safely processed at suitable facilities, and we report on hazardous waste disposal in accordance with relevant regulations. Our third-party certified ISO 14001 systems comprise of on-site management procedures for handling chemicals and waste at our mills. Expertise and best practices related to optimising material streams are shared throughout Stora Enso by networks focusing on environmental management, materials, Paper for Recycling, chemical safety, and product safety.

Replacing plastics with renewable materials

Stora Enso has joined the New Plastics Economy Global Commitment to eliminate plastic waste and pollution at the source, led by the Ellen MacArthur Foundation. Plastic waste is a global problem as it pollutes our seas and the environment, enters our food chains, and affects our health negatively.

"The world is running out of raw materials and fossil plastics come from a finite source. Using materials that are renewable means you use an alternative that grows back. But replacing fossil-based plastics with renewable materials is a journey that will not happen overnight," says **Eija Hietavuo**, SVP Sustainability, Stora Enso Packaging Materials.

Read the full article at › storaenso.com/sustainability

We aim to maximise the value of our material streams and work towards zero process waste. We work to achieve this through circular material flows in our value chain, while reducing our own process waste to landfill to as close to zero whenever legally, technically and commercially possible. The Group target is to maintain the high level of a 98% process residuals utilisation rate. The target covers all Stora Enso production units.

Since 2016, Stora Enso has partnered with the Swedish government agency for innovation, Vinnova, with the aim to recycle our materials containing carbon and calcium in the steel industry. Successful trials have explored the beneficial use of fly ash, lime mud, bio sludge and fiber sludge.

Paper for Recycling

Wood and fiber are the main raw materials in Stora Enso's production processes. Materials made with virgin fiber are used for products with special safety requirements such as food packaging and pharmaceuticals. For more information about our wood procurement, see pages 48–52.

In 2019, Stora Enso and other CEPI member companies launched the 4evergreen alliance.

While wood-based fibers can be recycled for 5-7 times, in some cases over 20 times, virgin fiber is also needed in the paper recycling process. After several recycling rounds, paper fibers eventually become too short to be reused but can be burned for bioenergy, which drives the need for new virgin fiber. Stora Enso also uses paper for recycling (PfR) wherever it makes environmental and economic sense. Recycled newspapers and magazines are used to produce certain paper grades at Langerbrugge Mill in Belgium (where they account for 100% of sourced fiber), Sachsen Mill (100%) and Maxau Mill (approximately 75%) in Germany, and Hylte Mill in Sweden (55%). Recovered board is used to make specific containerboard grades at Ostrołeka Mill in Poland (90% of fiber sourced for containerboard production) and at Varkaus Mill in Finland.

Through cooperation with local authorities and waste management companies, and our own collection facilities, we secure sufficient PfR from industrial, commercial and domestic sources. In Poland, we own and manage a network of 18 depots where PfR is collected and baled for transportation to our Ostrołeka Mill.

According to CEPI, Europe's overall PfR recycling rate has been high for many years. In 2018, the rate was 71.6%, and the collection was 56.7 million tonnes of PfR (-0.3% compared to 2017). This is a noteworthy achievement as not all paper can currently be recycled, such as tissue paper. While overall collection rates within the EU are relatively high, certain central and southern European countries still have potential to improve. Focusing on EU countries with collection rates below 60%, Stora Enso and the paper industry are actively supporting best practices while these countries establish sustainable collection systems to support the EU goal of a 74% paper recycling rate by 2020.

We recycle water within our mills whenever possible, to reduce the need for water intake.

Stora Enso's water withdrawal and consumption

Almost **96%** of the water we withdraw is recycled back to the local environment after being carefully purified.

Some **4%** of the water we withdraw is consumed in our production.

Responsible water use

Production at Stora Enso's mills requires large amounts of water. However, only around 4% is consumed in our production processes while almost 96% is recycled back to the local environment. Process water is purified by our treatment plants and then discharged, whereas cooling and other non-process water can be safely released without treatment.

Our strategic approach to water stewardship builds upon six pillars:

- Assessment of conditions at mills and in the water basins where we operate,
- Setting ambition levels and goals,
- Investments,
- Mapping water use at mills to identify saving potential,
- Performance measurement, and
- Communication and engagement with stakeholders.

Stora Enso withdraws 98.5% of its total water from surface water, 1.4% from municipal sources and 0.1% from groundwater. We have previously applied the WBCSD Global Water Tool to assess the related risks at our production units, which identified five mills operating in water basins where water stress occurs. It also calculated the total proportion of our water withdrawn from water-stressed basins to be 2%. In 2019, we took the next step to improve our Enterprise Risk Management (ERM) procedures geared towards local water stress. The improved ERM, based on local conditions, method will enhance proactive measures in the water stewardship work at our mills. Water is by definition always a local environmental challenge or opportunity. As a public commitment to water resource management and the development of sustainable water strategies, Stora Enso signed the United Nations Global Compact's CEO Water Mandate in 2009 and the Finnish Water Stewardship Commitment in 2018.

Our strategic water goals are to reduce impacts on water use, to minimise impacts on quality, and to recycle water within mills when possible to reduce the need for water intake. Our Group targets are to decrease both total water withdrawal and process water discharges per saleable tonne of board, pulp and paper. In line with Group targets and to drive continuous improvement, our units set their own quantified water targets based on their local context as part of our mill environmental management systems.

The new Group water target setting towards 2030 will be evaluated in 2020 based on the outcome of the Sunila Mill pilot, which will be run in 2020.

Approximately 2% of our water use is recycled internally by reusing cooling and non-contact water as process water. Optimising our water use also reduces the need for water pumping and heating, which creates energy savings and makes the purification of the remaining wastewater more efficient.

We continue to explore the potential to use refined wastewater residue in new products. For example, our Skoghall Mill in Sweden is working with the University of Karlstad to create bio-based products such as bioplastics and hydrogen gas from biosludge.

Long-term energy supply contracts

Board, pulp, and paper production processes are the most energy intensive phases in Stora Enso's value chain, which makes it essential for our mills to have access to a reliable energy supply at a reasonable cost. Stora Enso's energy supply is managed under long-term contracts, direct market access through energy exchanges, efficient combined heat and power production, and shareholdings in power generation companies such as Pohjolan Voima Oyj and Teollisuuden Voima Oyj in Finland. For more information on these partnerships, see **Financials 2019** (Note 14).

Stora Enso is committed to continuous improvement in energy efficiency and energy self-sufficiency. We assess the opportunities to use fuels from biomass residual streams or other low-carbon options in connection with energy investments.

Structured approach to energy management

Stora Enso's Energy Services team is responsible for procuring energy and managing the implementation of our energy strategy. This work involves the hedging of energy prices, managing the trading of emission rights, green certificates, and guarantees of origin, consulting our mills on a wide range of energy topics, and monitoring our carbon dioxide allowance balance. The team also monitors and contributes to developments in energy legislation.

A high proportion of biomass is used in the internal energy production at most of our mills. This renewable energy is generated from by-products and residuals from our own production processes, harvested residues, recovered wood, and waste streams.

The harvesting residuals used for energy within Stora Enso's operations are mainly purchased by our wood supply organisation in connection with wood purchases. Each mill is individually responsible for the procurement of most other fuels. Mills are also responsible for optimising their energy efficiency using internal tools and certified environmental and energy management systems, with support from our energy efficiency teams.

Progress

Materials

Value from waste

During 2019, we continued to monitor our financial value creation from process waste and residuals and the commercialisation of new product applications.

Stora Enso's utilisation rate for process residuals and waste across the Group, including internal and external uses, amounted to 98% in 2019 (98% in 2018). During the year, Stora Enso's revenue from residuals amounted to EUR 30 million (EUR 34 million in 2018). We continued the commercialisation and product development applications for fly ash from several paper mills such as Hylte and Sachsen. A prerequisite for launching fly ash as a product is the registration of the product according to the EU regulation for chemicals (REACH), which was completed during the year. This registration also ensures that the material will be used in a safe and controlled manner according to performed risk assessments.

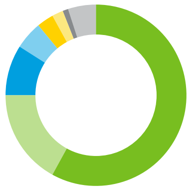
Stora Enso's fly ash with a product certification will be marketed under the brand VersaLime™ for a broad range of applications. VersaLime™ is a recycled mineral from paper and board production and can replace non-renewable materials to help our customers' become more circular and reduce their carbon footprint. At Sunila Mill in Finland, there has been ongoing work for several years to construct a new wood yard with a load bearing stabilisation layer consisting of a mixture of fly ash from the mill's bark boiler and clay from the ground. When finalised, a total of 37 000 tonnes of fly ash and 6 200 tonnes of green liquor dregs will have been used and covered by asphalt as the top layer.

Other examples of material efficiency and circularity include the beneficial use of fly ash at our Langerbrugge Mill in Belgium and Oulu Mill in Finland. Together with contractors, Langerbrugge Mill recycled approximately 60 000 tonnes of calcium-rich fly ash for road construction and for the cement manufacturing industry in 2019.

Bark is used in our internal bioenergy generation.

At our Oulu Mill, 3 000 tonnes of fly ash from the solid fuel boiler was granulated onsite by Rakeistus Oy for forest fertilization purposes in 2019, and 8 000 tonnes was used for land construction.

Utilisation of process waste and residual materials[1]

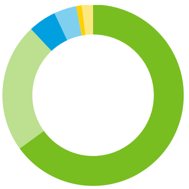


- Energy generation 58%
- Wood pellet, chipboard, and low grade paper manufacturing 17%
- Landscaping, landfill and road construction 9%
- Brick and cement manufacturing 5%
- Pulp manufacturing 3%
- Process waste to landfill 2%
- Agricultural use 1%
- Other 5%

[1] Covers all Stora Enso production units, as dry tonnes. Excluding joint operations.

Process waste to landfill[1]

68 222 tonnes

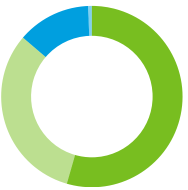


- Fly ash 65%
- Green liquor dregs 23%
- Bottom ash 5%
- Wood handling waste 4%
- Lime mud 1%
- Other process related waste 2%

[1] Covers all Stora Enso production units. Excluding joint operations. In addition to process waste to landfill, Stora Enso's production units created a total of 2 343 tonnes of non-process waste, and 78 674 tonnes of process waste was sent to on-site storage facilities.

Paper for Recycling: procurement by origin

Thousand tonnes[1]



- Western Europe 1,202 (54%)
- Central Europe 702 (32%)
- Nordic countries 300 (13%)
- Other countries 15 (1%)

[1] Total amounts of Paper for Recycling (recovered paper and board) procured within these regions for delivery to our mills.

Hazardous waste

During 2019, Stora Enso's production units generated a total of 4 816 tonnes of hazardous waste, up from 4 123[1] tonnes in 2018. This waste includes oils, solvents, paints, laboratory chemicals, and batteries and is transported and processed by authorised contractors. In addition, 8 575 tonnes of sludge classified as hazardous waste was generated at the disused Falun copper mine in Sweden (8 309 tonnes) and handled by an authorised contractor.

Paper for Recycling

Stora Enso used 2.2 million tonnes of paper for recycling (PfR) in 2019 (2.5 million tonnes), making us one of the largest PfR consumers in Europe. The PfR utilisation rate in our paper and board production was 25% (26%). The figures exclude Dawang Paper Mill in China as the divestment of the mill was completed in October 2019.

In 2019, Stora Enso explored the recycling of paper cups for magazine paper production on a large scale at its Langerbrugge Mill in Belgium. Based on production trials, Stora Enso possesses the technical feasibility to recycle paper cups for use in other paper applications. The trial confirmed that paper cups can be recycled at the mill without any additional process equipment, and that the fibers are well suited for magazine paper production. Stora Enso is now looking into partnerships for the collection and sorting of used paper cups to ensure that this high-quality fiber material is captured and given a second life.

During the year, Stora Enso also conducted a trial with its external partner Fiskeby Board in Sweden to explore possibilities to recycle used paper cups into white-lined chipboard (WLC). The trial confirmed that paper cups can be utilised as a valuable raw material to produce WLC board without any investments or changes to the process conditions at the Fiskeby Board mill.

Chemical safety management

During 2019, Stora Enso continued to roll out a Group-wide Chemicals Management Guideline, which outlines the minimum requirements for all our units globally, including occupational health and safety and environmental safety. The guideline is a part of the internal management systems at our operational units and auditing will be conducted within their existing structures.

Water

Promoting water efficiency

The objective of our KPIs on total water withdrawal and process water discharges is to drive a downward trend from our 2016 baselines of 57 m^3 and 27 m^3 per saleable tonne of product, respectively. In 2019, our total water withdrawal was 61 m^3 per saleable tonne (56 in 2018) and our process water discharges amounted to 29 m^3 per saleable tonne (26 in 2018). Despite increasing focus on water efficiency, lower production of board, pulp, and paper partly affected our specific water performance normalised as per tonnes.

We continued to identify mill-specific water-related challenges and opportunities in 2019. Our EUR 25 million investment at Maxau Mill in Germany to install a new steam turbine with a closed-loop cooling system and additional biomass storage is expected to be completed in 2020. The cooling system will relieve pressure on the Rhine River through a lower thermal output and by withdrawing considerably less water.

Recovered fiber is a valuable raw material for many of our mills.

Recovered board is used to make specific containerboard grades.

With 2.2 million tonnes of paper for recycling (PfR) used in 2019, Stora Enso is one of the largest PfR consumers in Europe.

Effluents to water

The wastewater treatment facilities that treat process water from our production processes release effluents to water. These effluents include phosphorus (P), nitrogen (N), chemical oxygen demand substances (COD), and adsorbable organic halogen compounds (AOX). The facilities ensure that discharged water is ecologically safe. Discharging process water that has not been properly treated can contribute to local environmental impacts. Excessive concentrations of phosphorus compounds in water, together with nitrogen compounds and organic substances, can lead to increased biological activity in natural watercourses through eutrophication. AOX is a collective term for the amount of chlorine or other halogens bound to organic matter such as wastewater. In 2019, Stora Enso's Group-wide nitrogen effluents to water amounted to 1 150 tonnes (1 180 tonnes), phosphorus effluents to 113 tonnes (110 tonnes), and AOX to 307 tonnes (300 tonnes).

In 2019, Stora Enso began implementing a EUR 3.6 million investment in wastewater treatment improvements at Anjala Mill in Finland. The investment will improve the operation of the biological treatment plant during the winter months and reduce effluent emissions from potential disturbances. The investment will be completed in 2020.

New instructions for legionella

In 2019, Stora Enso rolled out new Group instructions for the management of legionella risks at all production facilities. Legionella is a bacteria that commonly appears in ground and surface waters, and is considered potentially dangerous to humans when inhaled as aerosols (water mist). Legionella can cause respiratory infections such as legionnaires' disease that can lead to pneumonia. Legionella can exist in the pulp and paper industry's biological wastewater treatment facilities, cooling towers, and water ponds.

[1] Restated -1 106 tonnes due to a reporting error.

In 2019, an outbreak of legionnaire's disease affected a municipality close to Ghent, Belgium. The Flemish Care and Health Agency identified the cooling tower of the power plant at Langerbrugge Mill as one possible source of the infection. The cooling tower was stopped for cleaning and disinfection, and measures were carried out in cooperation with the authorities and international legionella experts. After approval by the Flemish Care and Health Agency, the cooling tower was started again. Investigations are still ongoing. Stora Enso's instructions for legionella were reviewed to capture best practices to manage legionella.

Energy

Our Group-wide target is to reduce specific electricity and heat consumption per tonne of pulp, paper, and board production by 15% by 2020, compared with the baseline year of 2010. In 2019, this indicator was 2.9% lower than the 2010 baseline (3.6%[1] in 2018). Specific energy consumption has been affected by structural factors such as production line closures or conversions to new products at our mills, as well as our changing product portfolio.

In 2019, the share of biomass in energy generation at our own mill sites was 82% (81%). Our total energy self-sufficiency rate was 67% (66%[2]) and our electricity self-sufficiency rate was 61% (58%[2]).

Energy accounted for 9% of Stora Enso's variable costs in 2019 (10% in 2018).

Energy efficiency high on the agenda

Stora Enso continued to enhance energy efficiency throughout the Group's operations in 2019.

We are committed to the voluntary Energy Intensive Industries Agreement managed by the Finnish Forest Industries Federation (FFI), which aims for a national 4% energy use reduction among its signatories between 2017 and 2020, and a 3.5% reduction (cumulative, in MWh) during 2021–2025.

We also participate in groups that share industry best practice on energy efficiency in Finland and promote energy efficiency at our mills.

[1] Calculation principles for electricity and heat consumption were revised during 2019. The figures for 2018 and 2017 have been restated for comparability.
[2] Electricity from Pohjolan Voima Oy (PVO), where Stora Enso is a minority shareholder, is considered as own electricity production in the figures.

From hard-to-handle waste to pure bioenergy

Sludge is a by-product of processes carried out in industry and agriculture. It is very wet, so disposing of it is difficult. A pilot project at Stora Enso's Heinola Mill in Finland addresses this challenge in the spirit of bio-based circular economy.

"Using a new technology, bio sludge can now be dried in an energy efficient way and becomes clean and odourless biofuel - without the need for additional fossil-based fuel," says **Mikael Sillfors**, Development Manager at Heinola Mill.

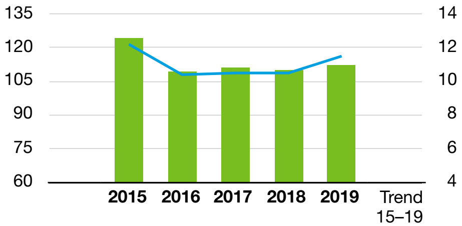
Read the full article at › storaenso.com/sustainability

Water withdrawal and consumption[1]

Million m³	2015	2016	2017	2018	2019	Trend 2015–2019
Process water	306	297	291	291	298	-3%
Cooling water (net)	283	301	304	297	297	5%
Total water withdrawal	589	598	595	587	595	1%
m³/tonne	58	57	56	56	61	5%
Water consumption	23	23	25	23	22	-4%
m³/tonne	2.2	2.2	2.3	2.2	2.2	0%
Process water discharges	272	280	272	273	283	4%
m³/tonne	27	27	26	26	29	9%

[1] Figures from board, pulp, and paper production units. Normalised figures are reported per unit of sales production.

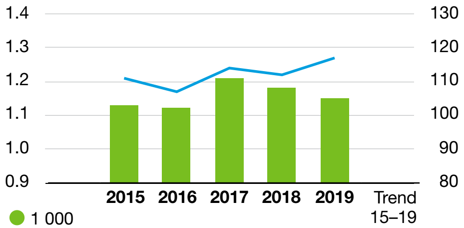
Phosphorus[1]



	2015	2016	2017	2018	2019	Trend 15–19
tonnes	124	109	111	110	112	-10%
g/tonne	12.2	10.4	10.5	10.5	11.5	-6%

[1] Figures cover board, pulp, and paper production units. Excluding joint operations. Normalised figures are reported per unit of sales production.

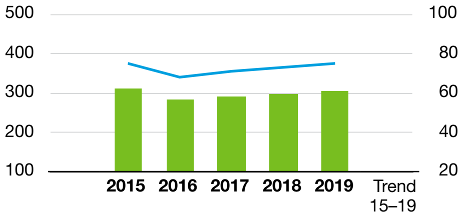
Nitrogen[1]



	2015	2016	2017	2018	2019	Trend 15–19
1 000 tonnes	1.13	1.12	1.21	1.18	1.15	2%
g/tonne	111	107	114	112	117	5%

[1] Figures cover board, pulp, and paper production units. Excluding joint operations. Normalised figures are reported per unit of sales production.

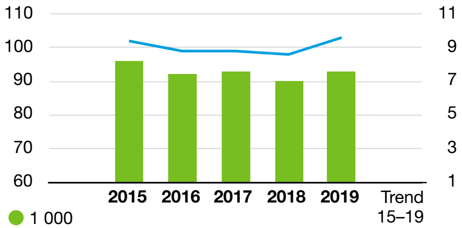
Adsorbable organic halogen compounds (AOX)[1]



	2015	2016	2017	2018	2019	Trend 15–19
tonnes	312	282	290	296	303	-3%
g/tonne	75	68	71	73	75	0%

[1] Figures from bleached chemical pulp production units only. Excluding joint operations. Normalised figures are reported per unit of bleached chemical pulp production.

Chemical oxygen demand (COD)[1]



	2015	2016	2017	2018	2019	Trend 15–19
1 000 tonnes	96	92	93	90	93	-3%
kg/tonne	9.4	8.8	8.8	8.6	9.6	2%

[1] Figures cover board, pulp, and paper production units. Excluding joint operations. Normalised figures are reported per unit of sales production.

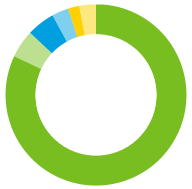
Stora Enso's Energy efficiency fund
Stora Enso's central energy efficiency investment fund is another important part of our work. In 2019, this fund amounted to EUR 10 million (EUR 10 million in 2018) and was earmarked for energy efficiency investment projects at our mills. The fund financed 47 (55) projects in 2019, including an air compressor development project at Hylte Mill in Sweden, the installation of a new paper machine drying hood at Sachsen Mill in Germany, and a power boiler operational range improvement project at Varkaus Mill in Finland. When fully implemented, the projects financed in 2019 are estimated to generate annual energy savings of at least 201 GWh (41 GWh electricity and 160 GWh heat). These figures are equivalent to 0.4% of our annual electricity consumption and 0.5% of our annual heat consumption. The projects are estimated to eliminate over 22 000 tonnes of annual direct fossil CO_2 emissions. To support the Group's enhanced focus on water management and water savings, the Energy efficiency fund will more explicitly also support water saving projects starting in 2020, and has been renamed the Energy and water efficiency fund.

Emissions to air
Our atmospheric emissions primarily result from the combustion of fuels used to generate energy. These emissions include carbon dioxide (CO_2), sulphur dioxide (SO_2), nitrogen oxides (NO_x), and fine particles. When not properly managed, CO_2 contributes to global warming while SO_2 and NO_x emissions affect air quality and can cause acid rain and soil acidification. We work to reduce our air emissions by using more renewable energy, improving energy efficiency, and using advanced technologies such as scrubbers and boiler process control systems.

In 2019, Stora Enso's Group-wide SO_2 emissions amounted to 2 870 tonnes (2 900 tonnes in 2018), NO_x emissions totalled 10 180 tonnes (10 840 tonnes), and emissions of fine particles amounted to 1 660 tonnes (1 740 tonnes).

All Stora Enso's board, pulp, and paper mills are part of an energy efficiency best practice network.

Fuels[1 2]



Our total annual fuel consumption was 41.8 terawatt hours (TWh) in 2019 (42.7 TWh in 2018).

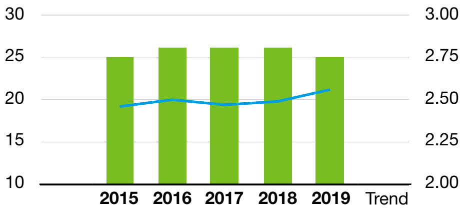
[1] Figures cover board, pulp, and paper mills. Excluding joint operations.
[2] As of Sustainability report 2019 use of fuels is expressed as watt hours.

Electricity generation and sourcing[1]

During 2019 we generated and purchased 12.0 terawatt hours (TWh) of electricity and consumed 11.6 TWh (12.6 and 12.3 during 2018). 0.4 TWh was sold (0.3).

[1] Figures cover board, pulp, and paper mills. Excluding joint operations.
[2] Including electricity from Pohjolan Voima Oyj (PVO), where Stora Enso is a minority shareholder.

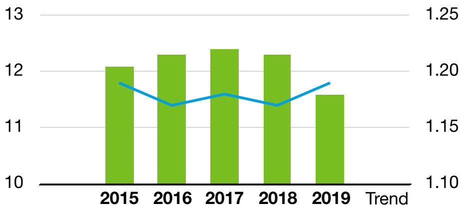
Heat consumption[1 2]



	2015	2016	2017	2018	2019	Trend 15–19
TWh	25.0	26.1	26.1	26.1	25.0	0.0%
MWh/tonne	2.46	2.50	2.47	2.49	2.56	4.1%

[1] Heat consumed by board, pulp, and paper mills, excluding sold heat and heat used for electricity generation. Excluding joint operations. Normalised figures are reported per unit of sales production.
[2] As of Sustainability report 2019 heat consumption is expressed as watt hours.

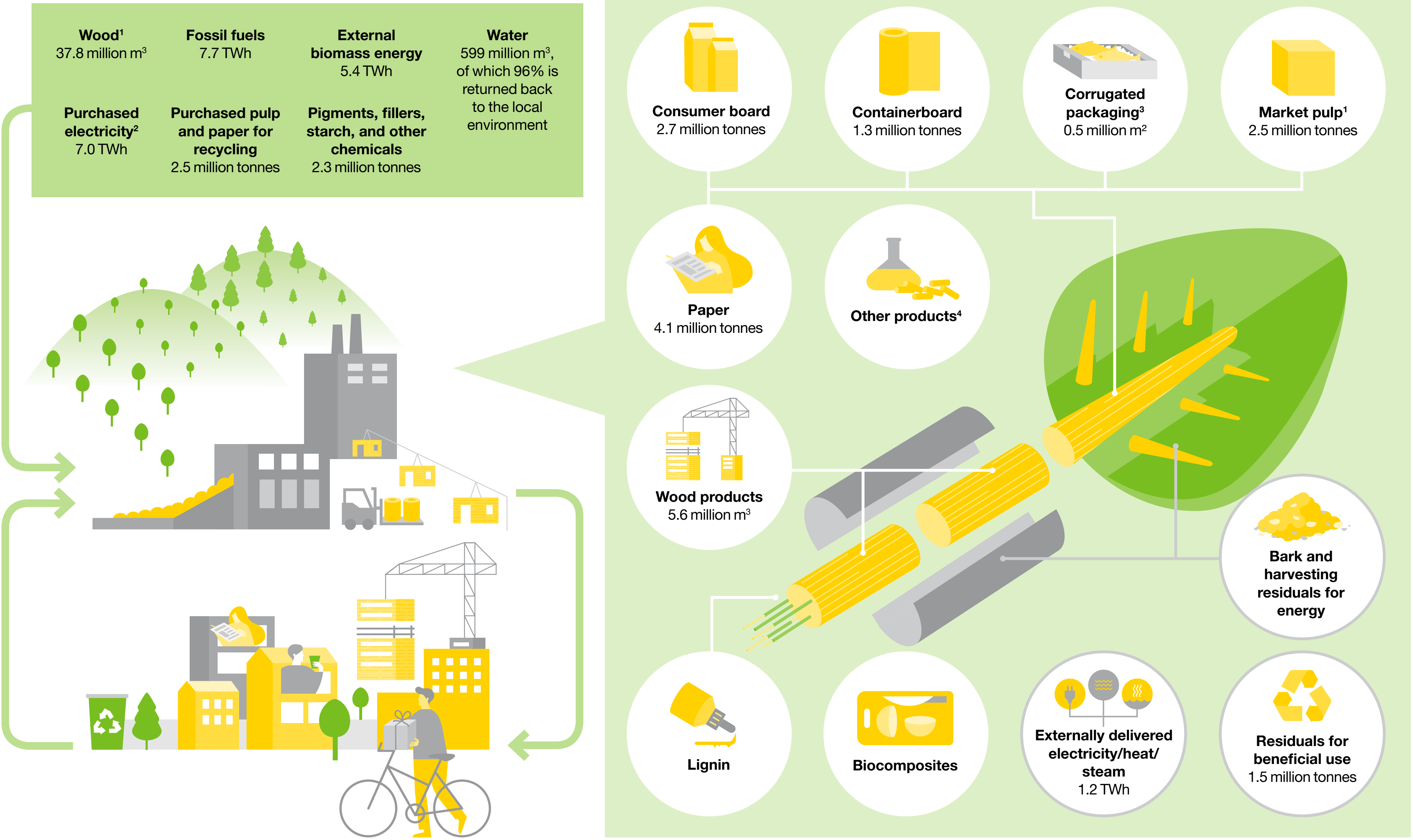
Electricity consumption[1]



	2015	2016	2017	2018	2019	Trend 15–19
TWh	12.1	12.3	12.4	12.3	11.6	-4.1%
MWh/tonne	1.19	1.17	1.18	1.17	1.19	0.0%

[1] Electricity consumed by board, pulp, and paper mills, excluding sold electricity. Excluding joint operations. Normalised figures are reported per unit of sales production.

Efficient use of materials in circular bioeconomy[1]



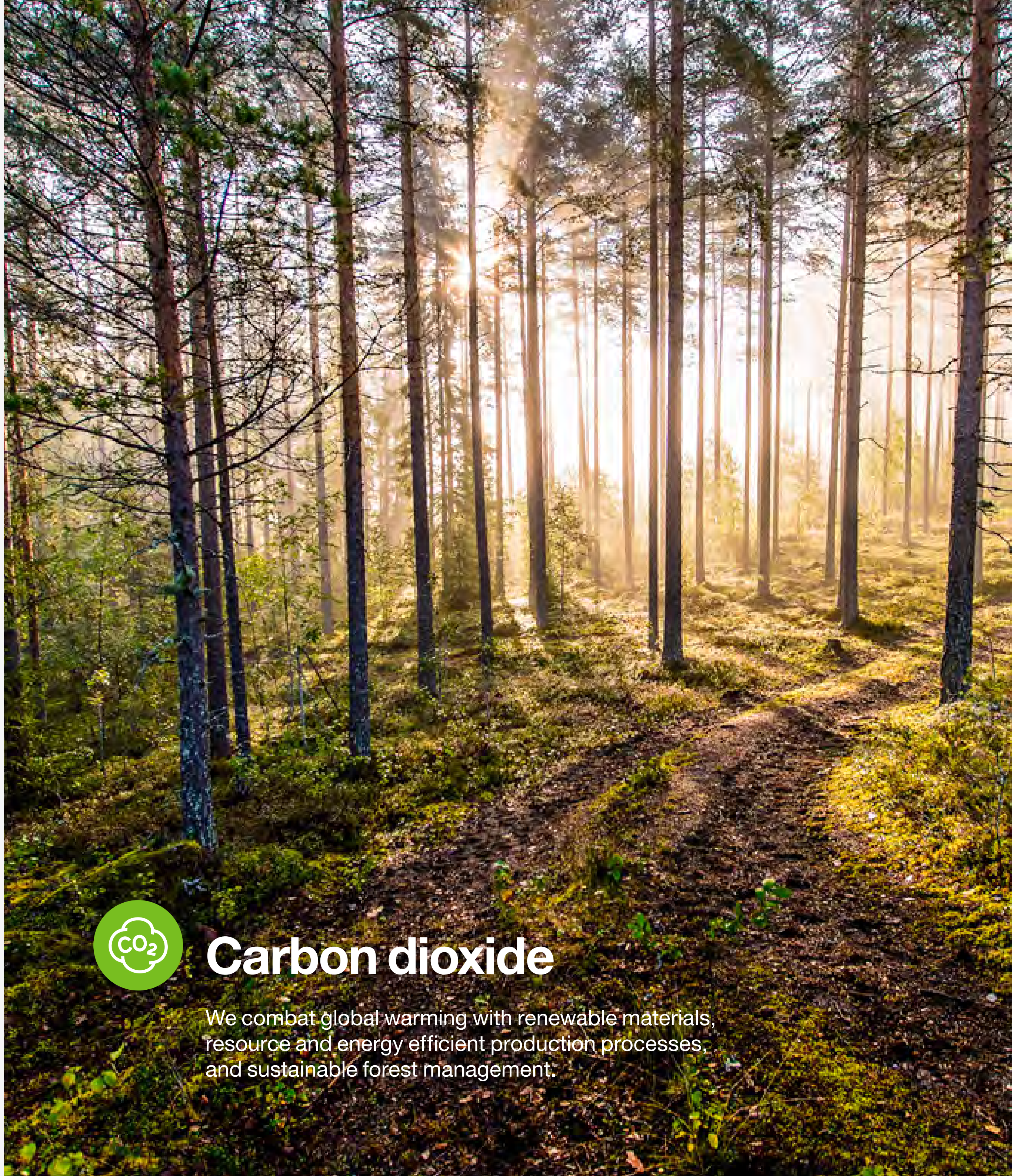
[1] Covers all Stora Enso production units. Excluding 50%-owned joint operations Veracel and Montes del Plata, except Wood use and Market pulp production figures in which 50% of the joint operations included. The illustration shows the key materials used in our processes, together with our production figures as reported in our environmental reporting system. For a comprehensive illustration on how we create value see our Strategy 2019. [2] Electricity from PVO included in purchased electricity. [3] Corrugated packaging production partly based on own containerboard production. [4] Other products include mainly pellets, wood chips, tall oil, and turpentine.

Environmental incidents in 2019

The table below provides details of environmental incidents involving a non-compliance with environmental legislation or permits, or a significant stakeholder concern related to environmental performance.

Unit	Incident	Corrective actions
Ostrołęka Mill	SOx air emissions exceeded the mill's environmental permit between October 2018 and Q4 2019. These emissions were caused by insufficient sulphur capture in the recovery boiler bed. The dimethyl disulphide permit limit and the NOx limit from the mill's lime kiln were also exceeded in periodical air measurements made in June and July. These breaches were caused by an insufficient burner on the lime kiln and a lack of continuous measurement. In addition, the night-time noise level was increased between April and July due to a damaged silencer on the exhaust gas channel.	A recovery boiler modernisation project and the implementation of a computerised process control system for the operation of the evaporator and the recovery boiler. New burners were installed in September to ensure the NOx emissions from the lime kiln remain within agreed limits. Investigations are ongoing into the dimethyl disulphide breach, which will be followed up with corrective actions. In addition, frequency of off-line measurements will be increased. Temporally, a plan to use back-up boilers during night hours and weekends was prepared. A new silencer was later installed on the exhaust gas channel.
Anjala/Ingerois integrated mill	Suspended solids in water discharges exceeded the permit limit in February due to previously identified problems in the wastewater treatment plant.	An investment has been approved to overcome the issue with the wastewater treatment plant.
Lahti Mill	A leakage of approximately 15 tonnes of starch glue powder mixture used for corrugated board production onto the factory roof occurred in March due to a pipe breakage. A small quantity of the powder was blown by the wind outside the factory area, but there were no environmental impacts or risks to human health.	The pipe was repaired, stakeholders were informed, and preventive actions were taken to avoid similar incidents from occurring in the future.
Enocell Mill	Suspended solids in effluents to water exceeded the mill's permit twice in 2019, in July and November. The occurrence in July was due to a recovery boiler logic failure and sudden steam loss causing unstable conditions in the mill. The exceeding in November was caused by runnability problems in pulp washing in connection to the start-up of the mill after a major rebuild, resulting in a high COD load to wastewater treatment.	July: The flow from the wastewater plant buffer pond was stopped and procedures how to manage sudden mill shutdowns were improved focusing on the evaporation tank farm. November: The runnability of pulp washing in fiber line no.2 was stabilised and improved.
Heinola Fluting Mill	NOx emissions from the recovery boiler exceeded the annual permit limit due to issues in the chemical system occurring after changes in the boiler.	Corrective measures in air distribution and the position of the black liquor sprays were implemented during the annual shutdown in September 2019.

Sustainability



Carbon dioxide

We combat global warming with renewable materials, resource and energy efficient production processes, and sustainable forest management.

Our CO_2e emissions were 25% lower than the 2010 base-year level

Opportunities and challenges

Contributing to a low-carbon economy

Global warming is one of the greatest challenges of our time, impacting the environment and people through natural disasters, and the loss of ecosystems and livelihoods. As a leading renewable materials company with access to carbon-neutral biomass, Stora Enso is in a unique position to combat global warming. We have an opportunity to pioneer the transition to a fossil-free world. Trees in sustainably managed forests absorb carbon dioxide (CO_2) from the atmosphere and together with wood-based products act as carbon storage. Our products help our customers and society at large to reduce CO_2 emissions by providing low-carbon alternatives to solutions based on fossil fuels and other non-renewable materials.

The first truly global climate agreement was approved at the Paris Climate Conference (COP21) in 2015 and entered into force in November 2016. Ahead of COP21, Stora Enso signed a pledge to combat global warming with science-based reduction targets for greenhouse gas (GHG) emissions. In December 2017, we became the first forest products company to have its climate targets approved by the Science Based Targets initiative. Our targets, which address significant emissions throughout our value chain, were announced in January 2018 and are well below the 2°C limit set by the Paris Agreement.

The Science Based Targets initiative is a collaboration between CDP, World Resources Institute (WRI), the World Wide Fund for Nature (WWF), and the United Nations Global Compact (UNGC). It is also one of the commitments of the We Mean Business Coalition to drive ambitious corporate climate action.

The EU's Emissions Trading System (ETS) is the largest mandatory international system for trading greenhouse gas emission allowances, and a major element of the EU's efforts to combat global warming. The ETS grants 'carbon leakage' status to industries where it is considered that costs related to climate policies might cause businesses to transfer production to countries outside the EU with less demanding requirements. The forest industry in the EU currently has carbon leakage status for its main end products during the current period 2013-2020. It will also continue to enjoy this status for the next 2021–2030 period. The number of free emission allowances will be reduced gradually in the next trading period. This led to further increases to emission allowance prices during 2019.

The European Commission has presented its strategy for a carbon neutral EU by 2050. The strategy relies on the circular economy, natural carbon sinks, and lifestyle changes and suggests emission cuts from all main sectors including power generation, industry, transport, buildings, construction, and agriculture. As an overall ambition level, it states that by 2050, the EU should achieve net zero greenhouse gas emissions. The role of a competitive EU industry is considered a key enabler in the strategy, and it specifically refers to reaping the full benefits of the bioeconomy. As a result, the European Commission proposed a 'European Green Deal,' which includes the announcement of a European Climate Law to be presented in 2020.

Our policies

A resilient carbon strategy

Agreed in 2016, our carbon strategy states that it is our firm intention to drive down our fossil fuel use, so that we get as close to zero as possible within a decade using technically and commercially feasible means. Relevant policies guiding and steering our efforts to combat global warming include our:

- **Policy for Energy and Carbon**
- **Environmental Guidelines** – a more comprehensive overview of our policy objectives and how we work to achieve them.
- **Supplier Code of Conduct and Practical Guide for Suppliers** – guides us on how CO_2 emissions can be reduced in our supply chain.

How we work

Scenario-driven work

We actively reduce the energy intensity of our operations – and in many places also our dependency on fossil fuels. We measure our progress to reduce greenhouse gas (GHG) emissions as a key performance indicator (KPI). Stora Enso's science-based target is to reduce greenhouse gas (GHG) emissions from our operations by 31% per tonne of pulp, paper and board produced by 2030 compared with the 2010 base-year. We report on our progress in our Sustainability report and quarterly Interim Reports.

A key tool in the GHG scenario assessment and the establishment of reduction targets was the Stora Enso Carbon Neutrality Roadmap, which guides our long and short-term fossil CO_2 reduction actions. Read more about our actions in the Progress section of this chapter.

Our Carbon Neutrality Roadmap guides our long and short-term fossil CO_2 reduction actions.

Our mills work systematically to improve energy efficiency, which is one of the most effective ways to reduce our fossil CO_2 emissions.

Improving our energy efficiency

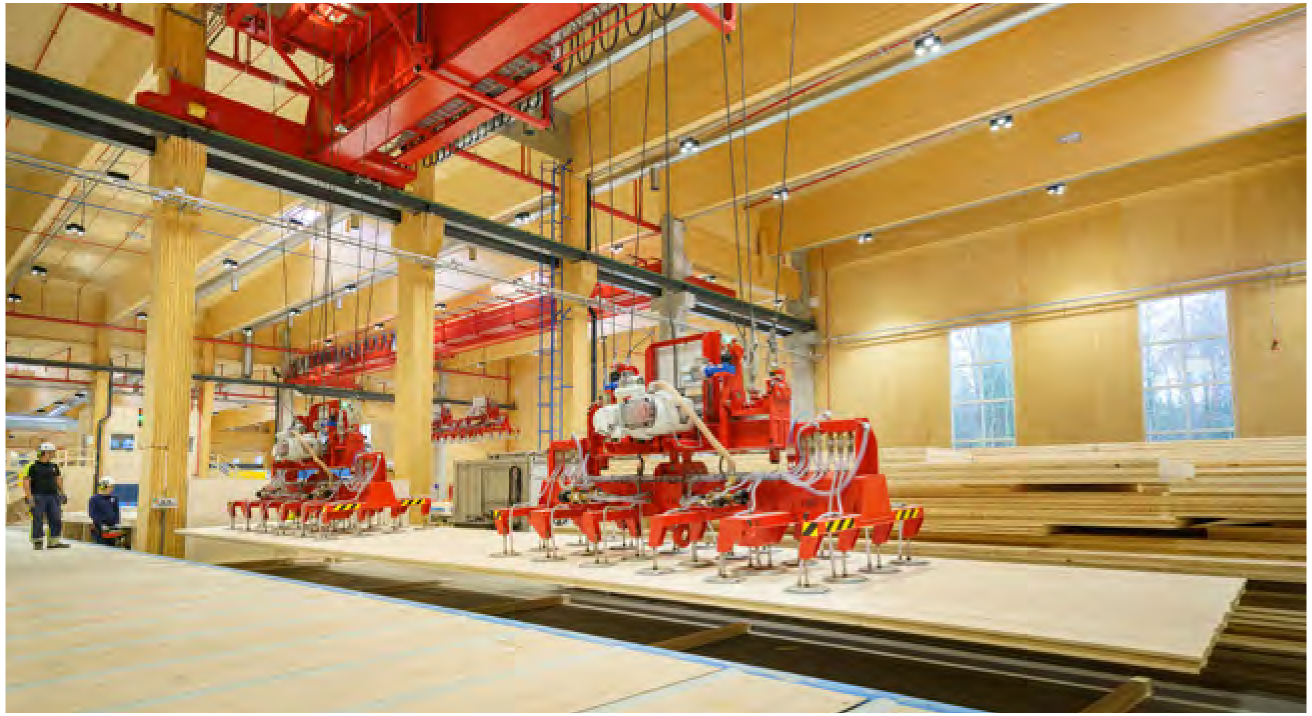
Greenhouse gases emitted by our operations include carbon dioxide, methane and nitrous oxide – with carbon dioxide being by far the most significant. The most effective ways to reduce our direct fossil CO_2 emissions are to further improve our energy efficiency, and to continue to increase our use of biomass fuels from residuals. Significant investments in recent years, particularly in multi-fuel boilers, have achieved large reductions in our fossil CO_2 intensity.

Calculating the climate benefits of our products

Growing trees absorb carbon dioxide from the atmosphere, and the carbon is stored in renewable, fiber-based products even through recycling. Our products help our customers and society at large to reduce CO_2 emissions by providing low-carbon solutions to fossil-based alternatives. During 2019, we worked to calculate our total climate impact including avoided emissions by product substitution and forest sequestration. Read more about our product substitution potential and total climate impact in **Strategy 2019**. We cooperate with the Swedish University of Agricultural Sciences (SLU) to further develop the scientific methods for calculating climate impact.

Stora Enso regularly carries out Life Cycle Assessments (LCAs) to understand and develop product environmental footprints, including carbon footprints. The LCAs show great potential for renewable products in substituting fossil-based alternatives to cut carbon emissions.

For example, based on our product-specific LCAs, the Trayforma paperboard tray by Stora Enso has a carbon footprint that is up to 64% lower than plastic trays and Stora Enso's EcoFishBox™ climate change impacts and fossil resource depletion is at least 40% lower than traditional polystyrene fish boxes.



Massive wood elements such as Cross-Laminated Timber (CLT), pictured here at our Gruvön Mill in Sweden, can store carbon for decades. They also have a smaller carbon footprint than non-renewable alternatives.

Bringing climate reporting to the forefront

Climate reporting is an essential way for companies to show how they are doing their share to combat global warming. Having one set of reporting standards for all, such as the TCFD recommendations, should make it easier for investors and lenders to compare industries and companies. The challenge is that some companies have better resources and expertise available than others, and the work may seem intimidating.

"But the climate challenge on which our survival depends is also intimidating so this is necessary work that must get done. Reporting in line with the TCFD recommendations will help society at large to judge whether companies are truly making decisions for the long-term survival of our planet," says **Lois Guthrie**, Director of Redefining Value at the World Business Council for Sustainable Development (WBCSD).

Read the full article at › storaenso.com/sustainability

Substituting fossil-based materials with renewable materials helps combat global warming.

Evaluating risks and opportunities

Stora Enso evaluates the risks and opportunities related to global warming through its annual Enterprise Risk Management (ERM) process, which forms an integral part of the Group's management approach (for more information, see **Financials 2019**). We routinely calculate the financial impacts of potential cost increases in relation to emission allowances, including the impacts of possible increases in energy prices. Our production units systematically work to meet their environmental regulatory requirements and to improve their energy efficiency. Their work is supported by international third-party certified systems such as the environmental management standard ISO 14001 and the energy management standard ISO 50001. For unit-specific information on certifications, see pages 69–71.

Detailed carbon reporting

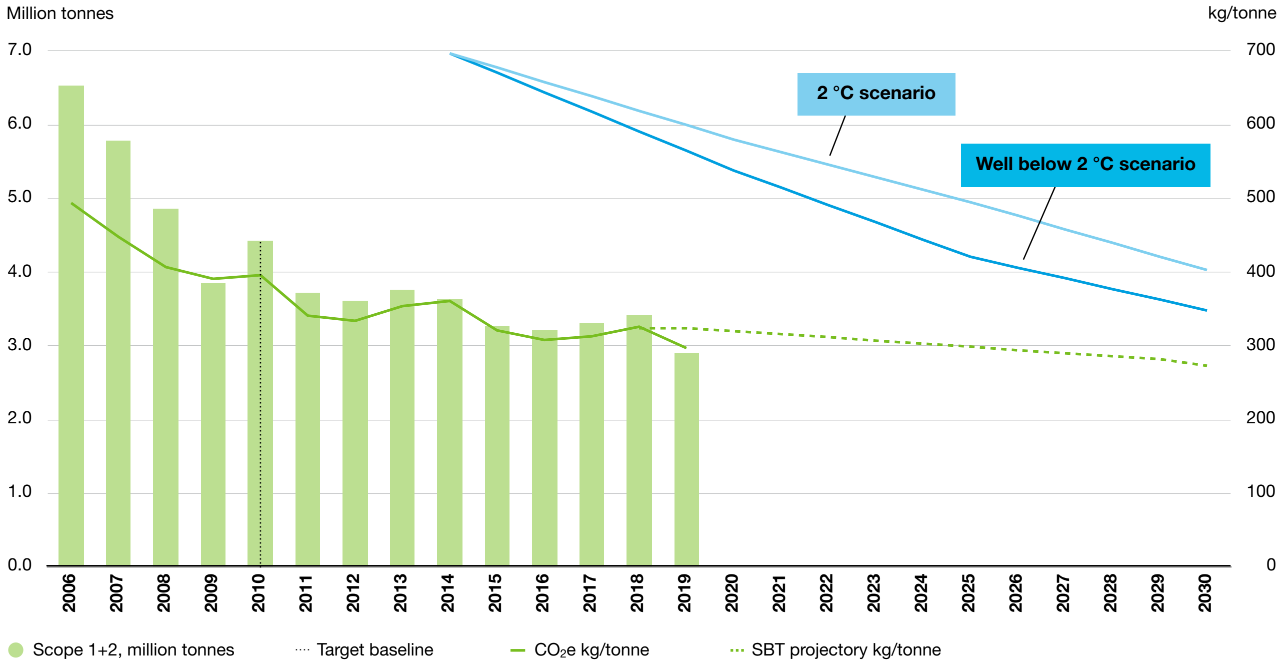
We publicly report on our greenhouse gas emissions in three categories:

- Carbon dioxide equivalent (CO_2e) emissions from operations we directly own or control, including on-site energy generation facilities and our own processes, power boilers, lime kilns, and on-site vehicles (Scope 1).
- CO_2e emissions related to the electricity and heat we purchase externally for use in our operations (Scope 2).
- Estimated CO_2e emissions from other indirect sources along our value chain (Scope 3).

Reporting according to TCFD

The Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD) recommends a framework for disclosing climate-related risks and opportunities that goes beyond current practices. The TCFD recommendations respond to a growing demand for improved financial disclosures from companies in relation to climate risks. In addition to investors and regulators, Stora Enso together with other leading companies have communicated their support for the recommendations through Statements of Support by Accounting for Sustainability (A4S). For more information on Stora Enso's reporting according to TCFD recommendations within the categories of governance, strategy, risk management and metrics, see **Financials 2019**.

Stora Enso's GHG performance[1 3] and scenarios for the forest industry[2]
Greenhouse gas emissions (GHG) in relation to production



Scope 1+2	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016[4]	2017	2018[5]	2019	Target 2030
Million tonnes	6.52	5.78	4.86	3.85	4.42	3.72	3.62	3.75	3.63	3.27	3.21	3.31	3.42	2.90	
kg/tonne	494	448	407	391	396	341	334	354	361	321	308	313	326	297	273

[1] Covering direct and indirect emissions as fossil CO_2 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. Includes trading of Guarantees of Origin of electricity.

[2] GHG reduction pathways for 2 °C scenario and well below 2 °C scenario as CO_2e kg/tonne, based on information from the Transition Pathway Initiative (TPI)* including scenarios data from the Energy Technology Perspectives report by the International Energy Agency.

[3] Fossil CO_2e emissions data from our operations (scope 1+2) have been verified at reasonable assurance level since 2015 and calculated according to the GHG protocol.
[4] Since 2016 our CO_2e performance has been adversely affected by the coal-based energy generation at our Beihai Mill in China.

[5] 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

All our units report quarterly on carbon emissions for Scopes 1 and 2. A Group-level estimate for Scope 3 emissions is updated biannually. Our carbon footprint accounting is based on guidelines provided by the Greenhouse Gas Protocol of the World Resource Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). In 2019, we continued to have the reporting of our direct and indirect fossil CO_2e emissions (Scopes 1 and 2) externally assured to a Reasonable Level. For more information, see page 72.

External recognition and partnerships to combat global warming

In February 2020, Stora Enso was top-ranked in greenhouse gas management for the third time in a row. The Transition Pathway Initiative (TPI) is an asset owner-led initiative supported by the Grantham Research Institute and London School of Economics. It evaluates and tracks the quality of a company's management of greenhouse gas emissions and of risks and opportunities related to the low-carbon transition. It also evaluates how a company's future carbon performance would compare to the international targets and national pledges made under the Paris Agreement. In its assessment of how 18 of the largest paper producers globally are preparing for the transition to a low-carbon economy, TPI top-ranked Stora Enso in both management quality and carbon performance. Stora Enso 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 endorses the Corporate Leaders Group (CLG) policy statement on net-zero strategies. The CLG brings together European business leaders to accelerate progress towards a low-carbon, sustainable economy. In 2019, we contributed to the CLG report 'Forging a carbon-neutral heavy industry by 2050: How Europe can seize the opportunity.'

Stora Enso is a member of the We Mean Business coalition. The coalition brings together non-profit organisations, businesses, and investors who recognise that transitioning to a low-carbon economy is the only way to secure sustainable economic growth.

As a partner of the World Green Building Council in Europe, we supported the launch of the 'Bringing Embodied Carbon Upfront' report, with the vision of net zero embodied carbon for the construction industry.

Progress

Our science-based targets

In 2019, our CO_2e emissions per saleable tonne of board, pulp, and paper were 25% lower than the 2010 benchmark level (18% lower in 2018). The performance improved mainly due to a significant new contract to purchase certified renewable electricity from the national pool in Poland and to the use of less fossil-intensive purchased electricity at our Finnish mills and Beihai Mill in China. In absolute terms, our direct and indirect CO_2e emissions were 34% lower than in 2010. Direct CO_2e emissions per unit of sales production were 16% lower than in 2010. The CO_2e emissions resulting from the generation of purchased electricity and heat during 2019 were 66% lower than in 2010 per unit of sales production.

The total direct and indirect CO_2e emissions from Stora Enso's board, pulp, and paper mills amounted to 2.90 million tonnes in 2019 (3.42 million tonnes in 2018).

Sixteen of Stora Enso's mills use production process residuals to generate renewable energy and distribute it to local district heating systems (approximately 90%) and industrial partners (approximately 10%). In most cases, the heat supplied from our production units directly reduces the local use of oil and other fossil fuels. In 2019, a total of 0.9 TWh of heat was sold to these district heating systems serving thirteen communities (1.1 TWh in 2018). Using this amount of renewable energy instead of, for example, light fuel oil for heating resulted in estimated emission reductions amounting to 0.23 million tonnes of fossil CO_2 (0.29 million tonnes).

Investing in a low-carbon future

We strive to increase the proportion of biomass in our internal energy generation. In line with our policy to give preference to energy from low-fossil carbon sources, Stora Enso has invested EUR 25 million to boost green energy generation at Maxau Mill in Germany. The project will be completed during 2020. The investment is expected to annually save 50 000 tonnes of CO_2 emissions from 2020. For more information, see page 37.

In 2019, an industrial scale pilot plant was built at Heinola Mill in Finland, to convert biosludge into renewable biofuel. The facility will recycle 16 000 metric tonnes of biosludge a year and reduce annual carbon dioxide emissions. For more information, see page 38.

Another important part of our work is our central energy efficiency investment fund. When fully implemented, the projects financed in 2019 are estimated to eliminate over 22 000 tonnes of direct fossil CO_2 emissions annually. For more information, see page 39.

Investigating non-fossil fuel alternatives for Beihai Mill

At our Beihai Mill in Guangxi province, China, coal is currently the only feasible energy source for an industrial project of this scale in the region, as there are inadequate sustainable supply chains for non-fossil fuels at present. We continue to investigate long-term options to gradually move away from coal to biomass and other non-fossil fuels. The power boiler at Beihai Mill is technically able to use a variety of fuel mixes. In 2019, modest amounts of wastewater sludge, forest residuals and other side streams from our production processes were used in the boiler. The medium-term objective is to replace 10 000 tonnes of coal in annual fuel use with these steps. A power supply contract with low-carbon nuclear electricity has reduced the CO_2 emissions from purchased electricity by over 50 000 tonnes compared with 2018. For more information about our coal sourcing, see page 63.

Carbon neutral emissions

Carbon neutral CO_2 emissions are fossil-free emissions generated during the combustion of biomass-based fuels sourced from sustainably managed forests[1]. These emissions are carbon neutral as the forests are regenerated and the new generation of trees absorb CO_2 while growing. When forests are sustainably managed, this cycle can continue indefinitely. Stora Enso's operations utilise renewable biomass fuels from forest and process residuals to a large extent, which means that the proportion of carbon neutral CO_2 emissions in our total emissions is high. In 2019, 81% (80%) of the total direct and indirect CO_2 emissions from our own operations were carbon neutral.

Our carbon footprint

Direct emissions from our operations account for 23% (22% in 2018) of our carbon footprint, while emissions related to the electricity and heat that we purchase for use in our operations account for 6% (9%) of our total carbon emissions.

We estimate that 71% (69%) of the emissions in our carbon footprint are generated elsewhere along our value chain. The majority of our emissions are generated in the sourcing and manufacturing of our raw materials and services (37% of the total Scope 3 emissions); in the further processing of our products by customers (43%); and in the transportation of raw materials to our mills and our final products to our customers (20%). To identify potential for further reducing our emissions in Scopes 1, 2, and 3, we have strengthened our internal steering processes in accordance with the actions agreed in our science-based targets.

We continued to implement methodologies for calculating the quantities of carbon sequestered in forests and plantations owned and managed by Stora Enso and our associate companies. We also continued our work with external experts to identify a credible methodology to calculate the positive substitution effect our renewable products have when compared with fossil CO_2 intensive alternatives.

Value chain emissions

The CO_2 emissions generated during the transportation of our raw materials and products, which is the most significant environmental impact associated with our logistical operations, are mainly produced by external service providers. Transportation accounts for 20% of all our Scope 3 CO_2 emissions. In 2019, we introduced High Capacity Transport (HCT) in our logistics in Finland and Sweden. These longer and more efficient trucks reduce fuel consumption and emissions per unit of cargo transported and the number of trips required to move the same amount of freight. With High Capacity Transport, there is potential to halve CO_2 emissions from road transportation. In 2019, we introduced HCT in Finland for a limited number of routes and achieved a 10% reduction in CO_2 emissions for transportation when using HCT transport compared with normal truck deliveries.

Sea transport accounts for approximately 89% of all our product transportation by weight and distance, while road and rail transportation account for 9% and 2% respectively.

Our commitment to science-based targets includes engagement targets for Scope 3. To reduce emissions in the value chain, Stora Enso commits to having 70% of its non-fiber raw material suppliers and downstream transportation suppliers in terms of spend set their own greenhouse gas (GHG) reduction targets by 2025, towards the aim of adopting science-based GHG reduction targets by 2030.

We use sustainability criteria in the tendering phase of our sourcing process and collecting data on supplier performance. Suppliers now need to respond to a set of questions about their financial stability, CO_2 emissions, and accident rates. These criteria are part of every tender, regardless of previous contracts with the same supplier. For more information, see page 61.

In addition, we will educate 100% of our customer-facing staff on the advantages of setting science-based targets by 2020.

[1] Recommendations on Biomass Carbon Neutrality, WBCSD 2015.

In 2019, 81% of the total CO_2 emissions from our own operations were carbon neutral.

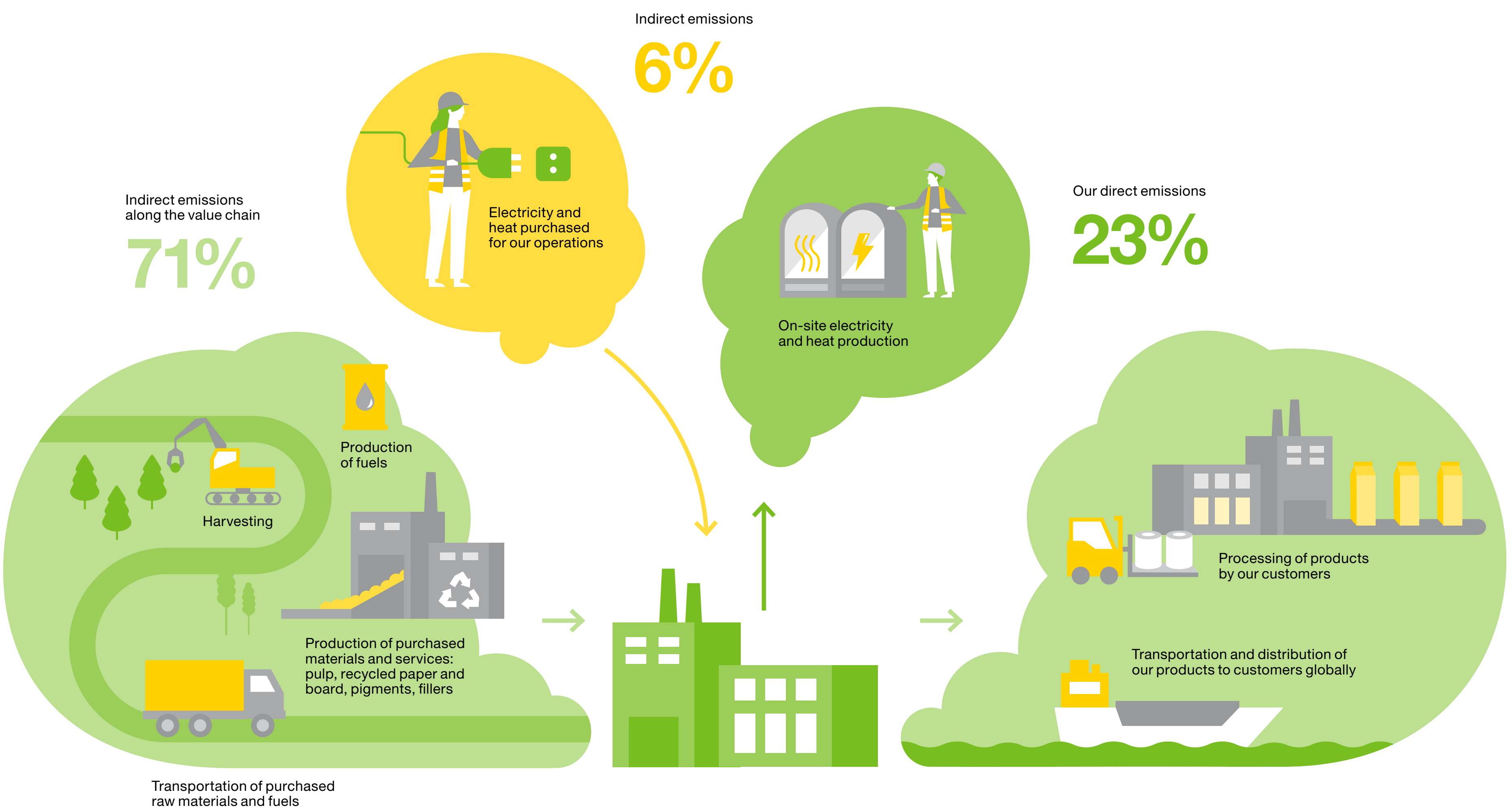
With High Capacity Transport, there is potential to halve CO_2 emissions from the road transportation of our materials and products.

Stora Enso's carbon footprint 2015–2019[1]

	Fossil CO_2 equivalent (million tonnes)[3]					
	2015	**2016**	**2017**	**2018[2]**	**2019**	**Trend 15–19**
Scope 1: Direct emissions from our operations.	2.24	2.40	2.34	2.48	2.38	6%
Scope 2: Emissions from purchased energy consumed in our operations.[3]	1.19	0.97	1.10	1.08	0.66	-45%
Scope 3: Emissions from other sources along our value chain.[4]	7.26	7.65	7.97	7.89	7.42	2%
Total	**10.69**	**11.02**	**11.41**	**11.45**	**10.46**	**-2%**

[1] Covers all Stora Enso production units. Excluding joint operations. Includes the trading of Guarantees of Origin for electricity.
[2] Historical figures for 2018 recalculated due to accuracy improvements.
[3] The CO_2 factors we use for purchased energy (scope 2) largely follow the market-based methodology, which means that almost all our units apply CO_2 factors provided by their energy suppliers. When applying currently available location-based factors our scope 2 emissions for 2019 are 1.08 million tonnes of CO_2 equivalents (1.30 million tonnes in 2018).
[4] Historical scope 3 emissions recalculated bi-annually against the most recent methodology in order to ensure comparability.

Stora Enso's carbon footprint[1]



- Scope 1: Direct emissions from our operations.
- Scope 2: Emissions from purchased energy consumed in our operations.
- Scope 3: Emissions from other sources along our value chain.

[1] Covers all Stora Enso production units, a total of 10.46 million tonnes of fossil CO_2 equivalent (11.45 million tonnes in 2018). Excluding joint operations.

Forests, plantations, and land use

Sustainable forest management safeguards forest health and productivity, helps combat global warming, and protects biodiversity. Forests have an important role to play in the transition to a fossil-free world.

Forest certification coverage for lands owned or managed by us

98%

Opportunities and challenges

Combatting global warming with forestry

Forests and plantations are an increasingly important part of the wider global sustainable development agenda, particularly in relation to combatting global warming. As a renewable natural resource, wood represents a favourable alternative to fossil-based and other non-renewable materials. Growing trees absorb carbon dioxide (CO_2) from the atmosphere, and together with wood-based products act as carbon storage. Sustainable forest management ensures that new generations of trees replace those that are logged.

The role of forests in combatting global warming has been broadly recognised. The Intergovernmental Panel on Climate Change issued the 'Climate Change and Land' report in 2019 that emphasised sustainable land management. For Stora Enso, it is essential that any regional or national policy fully utilises the potential of sustainable renewable materials and supports the transition towards a circular economy.

Global warming entails physical challenges and opportunities in relation to forests and plantations but also people, which highlights the importance of sustainable forestry as a solution to climate change. Changing patterns of temperature, wind, and rainfall can all be expected to impact our operational environment. Well-managed forests and plantations can make entire ecosystems more resilient to negative impacts, and even benefit from the positive effects.
In addition to global warming, biodiversity loss due to unsustainable land use is a global challenge that emphases the need to conserve natural ecosystems.

Using forests or land for tree plantations may also impact the human rights of forestry workers and local communities. Maintaining good dialogue with community members helps to ensure that their rights to, for example, property, self-determination, and cultural activities, are respected.

Global challenges such as population growth, the increasing demand for agricultural land, and the widening gap between the supply and demand for wood, all require us to use natural resources even more efficiently, and to produce more raw materials from less land.

We established the new Forest division to add transparency and manage our forest assets.

We always ensure that forests and tree plantations are duly regenerated. Regeneration is usually done through active planting or sowing.

Our policies

Committed to sustainable wood and fiber sourcing

Stora Enso's policy on **Wood and Fiber Sourcing, and Land Management** covers the entire cycle of forest and tree plantation management. The policy requires sustainable forest management through responsible sourcing and land use – to safeguard the health and ecological functions of ecosystems and to help conserve biodiversity, soil, and water resources. To achieve this, we maintain open dialogue with our stakeholders.

Other relevant policies that promote sustainable forestry include our:

- **Environmental Guidelines** – a more comprehensive overview of our policy objectives and how we work to achieve them.
- **The Stora Enso Code** – our code of conduct.
- **Supplier Code of Conduct** – our demands on suppliers.

How we work

Ensuring the sustainability of fiber

Stora Enso's approach to responsible forest and tree plantation management is based on the economic, social, and environmental aspects of sustainability. Compliance with national legislation and regulatory obligations is only the starting point for our work. We actively support and implement voluntary forest conservation and restoration measures on lands owned, leased, and managed by Stora Enso, and in other areas where we purchase wood.

Stora Enso continued its cooperation with the World Wildlife Fund for Nature (WWF) in several countries in 2019. Initiatives included the New Generation Plantations (NGP) platform, which focuses on the institutional and technological aspects of responsible plantation management.

We are active members in numerous local and global forestry associations, networks, and programmes. Stora Enso has been a member of the Forest Solutions Group (FSG) of the World Business Council for Sustainable Development (WBCSD) since the late 1990s and has co-chaired it since 2018. During 2019, we actively participated in the implementation of the Forest Sector SDG Roadmap. For more information, see page 10. We also continued to support and participate in The Forests Dialogue (TFD), which is a platform for multi-stakeholder discussion and collaboration on the most pressing local and global issues facing forests and people.

Stora Enso and the Forest Stewardship Council (FSC) have an international partnership agreement to establish a long-term strategic collaboration to develop and promote sustainable forestry. During 2019, the focus was on expanding FSC group certification among private forest owners in Finland. Stora Enso promotes all main forest certification systems and is committed to the responsible sourcing of wood and fiber from only sustainably managed forests and tree plantations.

Strategic approach to forestry operations

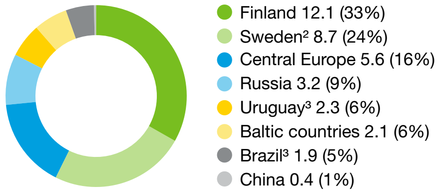
Our wood supply strategy is based on competitive wood supply, innovation, and sustainable forest management (read more in **Strategy 2019**). To cover all aspects of sustainability in our forest and plantation operations, we apply the same comprehensive wood procurement process in all our operating regions. Our wood supply organisation consists of regional units that source wood for Stora Enso mills. Key elements in this work include knowledge sharing, personnel rotation, contractor support, centralised coordination of innovation projects and the use of digitalisation. Our wood procurement process covers the entire management cycle in forests and plantations – from planning to harvesting and regeneration.

We use long-term planning to ensure our forestry operations are preparing and adapting to the changing climatic conditions. Stora Enso evaluates risks and opportunities related to global warming, and forest and land use through the annual Enterprise Risk Management (ERM) process, which forms an integral part of the Group's management approach (for more information, see **Financials 2019**).

Responsible forestry

Stora Enso's wood comes from three sources: company-owned forest; company-owned plantations; and third-party suppliers. In 2019, 87% (89%) of Stora Enso's wood came from managed semi-natural forests in Europe, most of which are privately owned. We work together with forest owners to identify sensitive forest areas in need of protection. Our experts are trained to identify such areas and we regularly consult the authorities on these matters. Forest planning involves finding ways to optimise wood production and conservation.

Wood procurement by region[1]
36.3 million m³



[1] Total amounts of wood (roundwood and chips) procured within these regions for delivery to our mills (million m³, solid under bark). Excluding internal wood chip deliveries.
[2] Including wood procured from Norway.
[3] Figures for Brazil and Uruguay include 50% of the wood procurement of our joint operations Veracel and Montes del Plata.

In 2019, 13% of Stora Enso's wood came from tree plantations (11%). When establishing new plantations, we use internationally approved principles such as the Food and Agriculture Organisation's (FAO) Voluntary Guidelines on Planted Forests. Our commercial plantations are also certified to ensure all aspects of sustainability are taken into consideration. Stora Enso never establishes plantations in natural forests, protected areas, or water-sensitive locations. We only use land with low biodiversity value, such as former pasture land. Stora Enso's employees and forestry contractors are given on-the-job training in ecological management, and we regularly monitor the impacts of our operations on biodiversity, soil, and water resources.

As we recognise that our plantations are an integral part of local land use, we evaluate and define sustainable land use practices specifically for each location. After determining the scope of expected impacts and possible remedies, we decide whether or not to proceed with a proposed project. Stora Enso subsequently remains in constant dialogue with stakeholders and strives to ensure that land contracts are legitimate and fair. For more information about human rights in land acquisition and management, see pages 14–15.

Forest regeneration

We always ensure that the forests and plantations where we harvest wood are duly regenerated. This is often done through active planting or sowing, although in many areas active regeneration is complemented by natural seed dispersal from nearby forests, by leaving seed trees standing in the harvesting area, or by coppicing. Whatever the methods used, we always ensure the forest will regenerate.

Protecting biodiversity

Sustainable forest management safeguards forest health and productivity and protects biodiversity – while securing the long-term availability of our renewable resources. Therefore, we closely monitor the management of the forests and plantations from which we source wood. Wood harvesting is planned to suit the particular characteristics of each harvesting site, making use of appropriate harvesting methods and technologies. Harvesting volumes are aligned with the long-term carrying capacity of particular forests and plantations.

In Northern managed semi-natural forests, biodiversity is maintained and enhanced in both areas for wood production and set-aside areas. As trees take many years or decades to mature, long-term forestry planning is essential. This involves ecological landscape plans and biodiversity assessments to identify, conserve, and restore vital ecosystems and ecological features. For examples on how we implement biodiversity management practices in Northern forests, see page 53.

Stora Enso is also cooperating with WWF Finland to promote the conservation and sustainable use of forests. This work includes promoting alternative harvesting practices among private forest owners.

In 2019, Stora Enso established a long-term co-operation with the Swedish University of Agricultural Sciences (SLU) to further develop biodiversity management in Nordic forests.

In fast growing tree plantations, the landscape typically consists of a mosaic of areas for both intensive wood production and biodiversity conservation.

In Brazil, our joint operation Veracel goes beyond regeneration by conserving and restoring areas of natural Atlantic Rainforest. All Veracel's tree plantations were established on degraded pasture lands, and no rainforest has been converted into plantations. When Veracel's plantations were established in 1991, less than 7% of the original Atlantic rainforest was left in the region following extensive logging and clearing for cattle ranching between the 1950s and 1980s. Since the plantations were established, Veracel has worked systematically to protect and restore local biodiversity.

In forestry operations, the amount of deadwood is increased to maintain biodiversity by leaving decaying trees untouched and avoiding the removal of forest floor deadwood.

Approximately half of Veracel's 213 000 hectares of land are dedicated to rainforest preservation and restoration. Veracel aims to restore approximately 400 hectares of rainforest habitat every year by planting native species. In total, 6 600 hectares of forest have been restored between 1994 and the end of 2019. This work is part of a regional restoration programme that helps connect the remaining areas of valuable natural habitat to each other with forest corridors that enable wildlife to move more freely from one area to another. Veracel's significant contribution to the conservation of natural Atlantic rainforest and its rich biodiversity has been recognised by both the Brazilian authorities and international stakeholders.

The Veracel Station visitor centre, established in an area of preserved rainforest habitat, conducts research, conserves native and endangered ecosystems, and raises environmental awareness among visitors. Since 2015, the visitor centre has also developed ecotourism, with a special focus on birdwatching.

In 2019, Montes del Plata signed a cooperation agreement with Uruguayan NGO Aves Uruguay. Through this agreement, both organisations will promote the sustainable management of natural grasslands. For more information, see page 26.

In 2019, Stora Enso supported a migratory bird protection project in Beihai, China, which is an important flyway for birds.

Promoting sustainable forestry management through forest certification

All roundwood, chips, sawdust, and externally purchased pulp supplied to our mills come from sustainable sources. We use a range of tools to ensure this, and to guarantee the sustainability of each part of the forest management cycle. These tools include forest certification and third-party traceability systems such as the Forest Stewardship Council's (FSC) Chain of Custody/Controlled Wood scheme, the Chain of Custody/Due Diligence System of the Programme for the Endorsement of Forest Certification (PEFC), and the ISO 14001 environmental management standard. In addition, our Supplier Code of Conduct complements these tools by imposing strict contractual requirements on our suppliers.

We work actively with our stakeholders to promote sustainable forest management and the wider use of certification systems. As certification programmes cover all three aspects of sustainability (environmental, social, and economic), they are an important indicator of responsible forestry.

We regularly audit our suppliers and work together with respected local institutions to ensure everything is done according to the standards set by certification schemes and our own policies.

We work with our stakeholders to promote sustainable forest management and the wider use of certification systems.

Approximately half of Veracel's 213 000 hectares of land is dedicated to the conservation and restoration of rainforest.

Tree breeding

Stora Enso continuously works towards the long-term goal of improving the productivity and quality of the eucalyptus trees grown in our plantations, so as to sustainably enhance wood production per unit of land. Tree breeding primarily targets increased biomass production (i.e. volume and density) and cellulose yield. Other objectives might include improved rooting or resistance to frost, drought, pests, or diseases, depending on local conditions and the species in question. We test and apply modern scientific tools for tree improvement and the management of genetic diversity. This may involve selecting 'elite trees' or conducting marker-assisted breeding and genetic engineering.

Our genetic engineering activities are in the research phase. As with traditional clone improvements, it will take many years to develop genetically engineered clones for commercial use. During 2019, we continued the process to establish field trials in areas totalling less than five hectares in Brazil. These trials fully comply with relevant national regulations. Stora Enso will not carry out any trials considered by the authorities to be unsafe or otherwise not permitted. We currently have no plans to plant genetically engineered trees in any of our commercial plantations.

Progress

Wood from sustainable sources

In 2019, the shareholders of Bergvik Skog AB, a Swedish forest holding company, finalised the previously announced restructuring of its ownership. Stora Enso's forest holdings in Sweden are 1.41 million hectares, of which 1.14 million hectares is productive forest land. Stora Enso's Swedish forest assets are 100% covered by forest certificates. In 2019, Stora Enso also announced that it will establish a Forest division as of 1 January 2020. The new division includes Stora Enso's Swedish forest assets and its 41% share of Tornator with the majority of its forest assets located in Finland. The Forest division also includes wood supply operations in Finland, Sweden, Russia and the Baltic countries.

Globally, Stora Enso owns or manages lands covering a total area of 2.35 million hectares. We follow our progress on responsible forestry with a key performance indicator (KPI) that measures the proportion of land in wood production and harvesting owned or managed by Stora Enso that is covered by forest certification schemes. Our target is to maintain the high level of 96%. In 2019, coverage amounted to 98% (96% in 2018).

We work together with forest owners to identify sensitive forest areas in need of protection.

The proportion of third-party certified wood in our total wood supply was 75% in 2019 (76% in 2018). We know the origin of all the wood we use and 100% comes from sustainable sources.

In 2019, the total amount of wood (including roundwood, wood chips, and sawdust) delivered to our mills was 36.3 million m³ (solid under bark) (38.7 million m³ in 2018).

In Russia, we continued to work with WWF. In 2019, Stora Enso and WWF Russia celebrated 20 years of cooperation for the development and wide implementation of sustainable forestry practices in the country. During the year, with Stora Enso's support, WWF Russia organised training related to the social aspects of forestry. The total area covered by group forestry certifications in Russia was 1.31 million hectares (1.31 million hectares in 2018). Our Russian subsidiaries have been FSC certified since 2006, and the lands managed by Stora Enso in Russia through long-term harvesting rights are included in the total certified area. For further details, see the table on page 54. We also continued our support for the Boreal Forest Platform (BFP), a stakeholder forum organised by WWF Russia.

In Finland, Stora Enso offers FSC forest certification services to private forest owners. In 2019, the number of members in Stora Enso Wood Supply Finland's FSC group grew to 285 private forest owners (135 in 2018) corresponding to 54 000 hectares (over 30 000 hectares at the end of 2018).

Since 2011, Veracel has promoted group certification among its tree farmers in Brazil. In 2014, Aspex, an association representing certified tree farms, took over the management of the certification process, using certificates granted by both FSC and Cerflor (PEFC). By the end of 2019, dual forest certificates had been obtained by 75 farmers (73 at the end of 2018) for areas totalling 38 000 hectares (38 000), including 16 000 hectares (16 000) planted with eucalyptus.

Stakeholder concerns and dialogues

Stora Enso recognises that the areas where we operate are of value to different stakeholders. We have therefore adopted an integrated approach to land use around our plantations. This includes applied innovative land use models in Laos, Uruguay, and Brazil to benefit local farmers and communities as well the company. For more information on these integrated land use practices, see pages 25–26.

In 2019, sustainable forestry was of stakeholder interest, with environmental NGOs widely calling for increased forest protection. In our stakeholder communications during the year, we stressed our commitment to forest certification, wood traceability, biodiversity conservation, and open stakeholder dialogues, and that we always ensure that all the wood we use comes from sustainably managed sources. We believe that the most sustainable way to protect high conservation values is through national and regional multi-stakeholder processes. During the year, Stora Enso engaged in regular dialogues with NGOs and other stakeholders. We also encouraged our business partners and NGOs to participate in such engagements.

Building models for sustainable forestry

In 2019, WWF-Russia and Stora Enso celebrated 20 years of cooperation in Russia. The Pskov Model Forest project is one of the landmarks of the joint efforts to improve sustainable forestry. Why was that project established and what have we learnt?

"From the beginning, our goal in cooperating with WWF was to improve sustainable forestry practices in Russia, to ensure that wood procurement is responsible and that environmental and social aspects are taken into account in forestry," says **Olga Rogozina,** Sustainability Manager at Stora Enso Wood Supply Russia. "For example, conserving biodiversity in forests is an important part of sustainable forest management."

Read the full article at › storaenso.com/sustainability

Biodiversity management practices in Northern forests

Read more at storaenso.com/biodiversity.

Forests, plantations, and land owned by Stora Enso[1] as of 31 December 2019

Unit	Area	Certification coverage	Details of local landscapes and protected areas
Swedish forest holdings	1 408 000 ha, of which 1 140 000 ha productive forest land	PEFC and FSC for 1 408 000 ha	Protected areas consist of low productive areas, voluntary set-aside areas and forests in high altitudes.
Wood Supply, Estonia	140 ha, of which 120 ha productive forest land		No protected areas within this area.
Montes del Plata plantations and lands, Uruguay (joint operation with Arauco)	190 000 ha, of which 103 000 ha planted	PEFC and FSC for 190 000 ha	Mainly pasturelands and agricultural fields. Remnants of native ecosystems, such as grasslands and riparian forests, are protected within the company's lands.
Veracel plantations and lands, Bahia, Brazil (joint operation with Suzano)	213 000 ha, of which 79 000 ha planted for pulp production	CERFLOR (PEFC) for 188 000 ha; FSC for 188 000 ha	Dominated by pasturelands cleared from the Atlantic rainforest between the 1950s and 1980s. 108 000 ha of Veracel's lands are protected, including a 6 000 ha Private Natural Heritage Reserve. These protected areas mostly consist of native forest remnants at different stages of regeneration.

[1] Including operations where Stora Enso's shareholding is at least 50% and size of the area exceeds 100 hectares. In addition to the forest and plantation areas listed above, Stora Enso owns 41% of Tornator, which owns 0.6 million hectares of forestland in Finland, 66 000 hectares in Estonia, and 12 000 hectares in Romania.

Forests and plantations managed by Stora Enso[1] as of 31 December 2019

Unit	Area	Certification coverage	Details of local landscapes and protected areas
Wood Supply, Russia[2]	369 000 ha, of which 323 000 ha productive forest land	FSC group certificate	In Russia, protected areas are generally excluded from lease agreements. Areas amounting to 8000 ha are protected as natural monuments, including genetic pine reserves and watercourses.
Plantations and lands, Guangxi, China	81 000 ha, of which 76 000 ha planted	Chinese Forest Certification Council certificate (PEFC) for 81 000 ha; FSC for 81 000 ha	Mosaic landscape including agricultural crop fields, forest plantations, and settlements. No native ecosystems are found in the leased lands. Areas total at around 2 000 ha, consisting of steep slopes, buffer zones, and other important areas for watershed protection.
Montes del Plata	72 000 ha, of which 53 000 ha planted	PEFC and FSC for 63 000 ha	Mainly pasturelands and agricultural fields. Protected and sensitive areas are not included in lease agreements.
Veracel	10 000 ha, of which 4 000 ha planted	CERFLOR (PEFC) for 9 000 ha; FSC for 9 000 ha	4 000 ha of leased lands are protected. They mostly consist of native forest remnants at different stages of regeneration.
Trial plantations, Laos	4 000 ha, of which 3 000 ha planted	FSC for 4 000 ha	The plantations are located within a mosaic of intensive shifting cultivation lands and traditionally protected remnants of native forests. One plantation area is located close to a National Biodiversity Conservation Area. The majority of the total area is covered by agroforestry production schemes.

[1] Areas managed through leasing or long-term harvesting rights. Including operations where Stora Enso's shareholding is at least 50% and size of the area exceeds 100 hectares. [2] Long-term harvesting right.

We help our customers meet consumer demands for sustainable products.

Economic agenda

Customers

Our renewable products and innovations help society to replace fossil-based materials.

25
of our production units were registered in Sedex

Opportunities and challenges

Demand for sustainable solutions

The global middle class is growing at an unprecedented pace, leading to an increase in lifestyles that can seriously burden the planet. At the same time, consumer awareness of limited natural resources, the environmental and health impacts of products, and social responsibility, including human rights, is growing. These megatrends place pressure on brand owners to pay more attention to product and supply chain responsibility. Combined with regulations and economic incentives, they are also driving our customers to favour renewable and recyclable raw materials.

The European Commission's Circular Economy Package, including the EU directive on single use plastics, creates needs for new innovations and provides business opportunities for Stora Enso. According to a study conducted by Material Economics, it has been estimated that 25% of European plastic packaging could be replaced with existing wood fiber solutions[1] such as Trayforma and EcoFishBox™ by Stora Enso, without significant compromise on functionality.

Substituting plastics with wood fiber can also make a significant contribution to the EU's targets for greenhouse gas emissions[1]. Our massive wood elements are examples of solutions that store carbon and have a smaller carbon footprint than non-renewable alternatives.

In the long term, we believe societies will increasingly choose to replace fossil-based and other non-renewable materials with renewable alternatives such as those offered by Stora Enso.

Our policies

Guided by our values

The Stora Enso Code – constitutes a single set of values for all our employees and explains our approach to ethical business practices, human and labour rights, and environmental values. These values are applied wherever we operate and in all customer relations.

As of 1 January 2020, Stora Enso merged its containerboard business in the Packaging Solutions division with the Consumer Board division, creating a new Packaging Materials division.

[1] Material economics

How we work

Value from customer engagement

Our expertise in renewable materials and products with high sustainability performance helps us meet the needs of our current and future customers. Our divisions have specific focus areas and products that cater to a broad range of customers. Their product portfolios include various boards for packaging and printing, several pulp grades, wood and fiber-based products for construction, biocomposites, energy pellets, paper products made from virgin and recycled fiber, lignin, formed fiber, and intelligent packaging. We foresee many possibilities for bio-based chemicals, bio-barriers, lignin, and biocomposites to meet industry and consumer demands for solutions that can replace fossil-based materials.

Stora Enso promotes and participates in successful recycling schemes, particularly for paper and board. We also sell and reuse a variety of valuable by-products and residuals from our production processes. For more information, see page 34.

We actively work with our customers to improve material efficiency and decrease the environmental impact of our products and related processes through circular programmes and life cycle analyses, for example. In 2019, our Consumer Board division also established an 'animal origin free' programme, which helps our customers with potential vegan certification.

We collaborate with stakeholders to find sustainable solutions for the entire value chain. As a member of the Tree-to-Textile initiative, we have joined IKEA and H&M in developing a new sustainable textile fiber for the consumer market.

We also share our sustainability expertise with customers. In 2019, Stora Enso conducted four Paper & Print Academy training sessions with over 160 participants from customer companies. The sessions enable participants to follow the entire supply chain from forest management to the final paper product.

We systematically measure customer satisfaction. In 2019, our Net Promoter Score, which measures the willingness of our customers to recommend our products and services to others, was 56% (51% in 2018).

Safety and sustainability certifications

Ensuring the safety of all our products is essential in everything we do, in order to safeguard the environment as well as the health and safety of our employees, customers, and product end-users. Our in-house product safety and quality control systems cover product development, raw material sourcing, and the manufacturing and delivery of products. We demand that our suppliers comply with our product safety requirements.

We collaborate with customers and other stakeholders to find sustainable solutions for the entire value chain.

According to studies, children in wooden schools experience less stress, have fewer conflicts, and concentrate better. Wooden interiors can also have a calming effect on blood pressure.

Our products covered by specific safety regulations include food contact materials, materials for toys, packaging for pharmaceuticals, and construction materials. Our units producing these sensitive materials follow Good Manufacturing Practices, which are a set of widely recognised guidelines incorporated into EU regulations. During 2019, these practices were implemented at two Paper division mills, enabling the division to offer specialty papers for food packaging. In addition to following Good Manufacturing Practices, all Consumer Board mills and most Packaging Solutions mills are certified according to recognised hygiene management standards. Food safety compliance for essential raw materials is also verified with our suppliers prior to any purchasing decision. We provide our customers with information on product hygiene and safety aspects through compliance declarations.

We also follow legislation designed to protect human health and the environment. These include the EU's REACH, Biocidal Products, the Classification, Labelling, and Packaging Regulation, as well as relevant food contact legislation and demands concerning food safety. When producing food contact materials, we only use chemicals that have been specifically approved for this purpose, after evaluating their safety and legal compliance. Our divisions have Product Safety Networks in place, and all our mills work to ensure that their products meet the relevant safety requirements. The ISO 22000, FSSC 22000, and FDA product safety certificates issued to many of our units further ensure that we apply a systematic approach to food safety issues.

ISO 9001 and ISO 14001 certified systems help our units to identify and meet customer requirements and to systematically improve product quality and environmental management. Many of our wood products are also CE marked to guarantee that they comply with the relevant EU legislation.

Many Stora Enso products are sold as FSC or PEFC certified or with other verification for responsible chain of custody and due diligence. These tools validate that the wood used in the products comes from responsibly managed sources, and that the entire journey of the raw material – from forest to end-user – has been verified by a third party. For more information about our responsible forestry and forest certification work, see pages 48–54.

When a material or product has reached the end of its life, we promote recycling and energy recovery to create further value.

Invaluable information for customers

Life Cycle Assessments (LCAs) analyse the selected life cycle stages of a material, product, or service, revealing its potential environmental or human health impacts. A Stora Enso customer, for example, can use the information to study the environmental performance of different packaging or construction materials, and to make decisions that help them reach their own sustainability goals.

"An LCA study is a vigorous process of gathering and processing data, interpreting results, and evaluating our work as we go," says **Tiina Keskisaari**, Senior Manager of LCA at Stora Enso. "But it gives us and our customers invaluable information about product features and process parts."

Read the full article at › storaenso.com/sustainability

Life cycle assessments and ecolabels

We collect product-specific life cycle inventory (LCI) data, which is typically used in life cycle assessments (LCAs) conducted by our own experts, our customers, or brand owners. Third-party verified Environmental Product Declarations (EPDs) offer transparent information about the footprint of a product throughout its life cycle. Most of Stora Enso's wood products, such as Classic Sawn Timber and Cross Laminated Timber (CLT), have EPDs. EPDs are used by our customers to help optimise the environmental performance of buildings and to achieve green building certification.

In 2019, new LCAs were conducted by two Stora Enso divisions. Our Wood Products division published an LCA on a wooden residential building in Finland, which was built using CLT and Laminated Veneer Lumber (LVL) by Stora Enso. The LCA shows that wood significantly contributes to achieving net zero carbon buildings. Our Consumer Board division co-commissioned a comparative LCA on single-use coffee cups. The LCA, conducted by the Technical Research Centre of Finland (VTT), shows that when paper cups are collected and recycled into new products after use, they have the lowest carbon footprint compared to reusable plastic, steel, and ceramic cups.

More than 90% of our Paper division's own brands are covered by one or more recognised ecolabel, including the EU Ecolabel, the Nordic Ecolabel, and the German Blue Angel (Blauer Engel). Many of our graphical board brands are also available as EU Ecolabel certified. Ecolabel criteria cover the entire life cycle of a product, from the extraction of raw materials to production, product use, and disposal. The EU Ecolabel criteria for graphic paper were revised in 2019, setting stricter demands for elements such as fiber certification. Our related products received renewed certificates during 2019.

The environmental performance of our paper and board products is reported in line with the voluntary Paper Profile initiative. Paper Profiles have been calculated for all our paper and containerboard products and all main paperboard products.

Progress

Sustainability through co-creation

Customer needs play an important role when we develop products, services, and processes. We identify these needs by exchanging expertise with our customers on various sustainability topics. In 2019, our Packaging Solutions division conducted a customer study to identify business opportunities emerging from sustainability.

During the year, our Wood Products division also surveyed their customers to find new ways to improve the sustainability and recyclability of its product packaging. Based on the results, the division will compile case studies on replacing fossil-based plastic packaging with fiber-based, recyclable alternatives and on avoiding packaging completely. In addition, a packaging line was established at our Näpi sawmill in Estonia where energy pellets are now packed in corrugated board instead of plastic.

Advancing the circular bioeconomy

As the renewable materials company, Stora Enso operates at the heart of the circular bioeconomy. With our expertise, we can help our customers achieve their targets concerning circularity and renewability.

In 2019, our Consumer Board division established a circular economy programme to drive circularity in the value chain together with customers, brand owners, and recyclers. The programme focuses on circular innovations, industry collaboration to increase the collection and recycling of cardboard products, circular design and co-creation with customers, and work with start-ups (see our **Strategy 2019**). Our Wood Products division established an action plan to enhance the circularity of the building value chain and to understand circular design parameters for wood products. The action plan also seeks to find potential uses for recycled wood from construction and demolition waste.

Our products continued to replace plastics during 2019. Products from our Consumer Board division replaced plastic in ice cream and liquid packaging for major brand owners. EcoFishBox™ by Stora Enso replaced a Finnish fish wholesaler's expanded polystyrene (EPS) packaging to provide renewable, recyclable packaging for around a thousand tonnes of fish annually. Our Intelligent Packaging unit introduced the plastic-free ECO RFID Retail Collection to provide retailers with a renewable and more sustainable alternative to traditional hangtags and stickers.

Our Consumer Board division also works with the Paper Cup Alliance to actively facilitate the recycling of paper cups in the UK, together with many of our customers. In addition, the division is an active member of the Alliance for Beverage Cartons and the Environment (ACE), EXTR:ACT, a platform for increasing beverage carton recycling in Europe, and GRACE, an alliance launched in 2019 for advocating, communicating, and improving the recycling of beverage cartons globally.

Sustainability embedded in innovation

In 2019, over 7% of Stora Enso's sales came from new products (see more in **Strategy 2019**). We continued to innovate new renewable and recyclable solutions, and introduced an internal checklist that ensures that sustainability is considered at all stages of every research and development initiative. Stora Enso's expenditure on innovation, research, and development in 2019 was EUR 141 million (EUR 149 million), which was equivalent to 1.4% (1.4%) of sales. Read more about our approach to innovation in **Financials 2019**.

Our new production line at Hylte Mill in Sweden began the manufacturing of formed fiber products in 2019. The products are manufactured using various chemical pulps and chemi-thermomechanical pulp (CTMP) by pressing them into a desired shape in a moulding machine. Potential end-uses include single-use food packaging items such as plastic-free cups, bowls, and coffee cup lids.

In 2019, Stora Enso began the construction of a pilot facility at Sunila Mill in Finland for converting lignin into carbon anode materials for lithium-ion batteries. The innovation is designed to replace fossil-based anodes, mainly synthetic graphite, that are currently used in batteries.

Stora Enso introduced a paperboard tube for cosmetics packaging in 2019. The body of the tube is made from 70% renewable raw materials, and Stora Enso is developing biocomposite materials to replace the tube's plastic cap and shoulder.

In 2019, Stora Enso also announced its investment in the production of a plant-based chemical to be used to make bio-based PEF plastic. The pilot plant, to be located at our Langerbrugge Mill in Belgium, will convert plant-based sugars into the chemical needed to make PEF.

A responsible supplier to our customers

By the end of 2019, 25 (25 in 2018) of Stora Enso's production units were registered in the Supplier Ethical Data Exchange (Sedex). Sedex is a platform where we can share sustainability information with multiple customers in an agreed format and level of detail. By the end of the year, twelve of the 25 units had been audited through Sedex Member Ethical Data Audits (SMETA) at least once. During 2019, SMETA audits were conducted at nine Stora Enso units. A second SMETA audit was also completed at our joint operation Veracel in Brazil. All summary audit reports are made visible to customers in Sedex.

Stora Enso is also a member of the ethical supplier rating system Ecovadis. Ecovadis' sustainability scorecards provide detailed insight into environmental, social, and ethical risks in the supply chain. Since 2017, we have been included in the top 1% of industry supplier performers in sustainability.

With our expertise, we can help customers to replace plastics and achieve their circularity objectives.

In 2019, Stora Enso introduced formed fiber products that can replace single-use food packaging such as plastic plates and bowls.

Suppliers

We have strict sustainability requirements for all our suppliers. We see our extensive supplier base as an opportunity to drive change in the world.

96%

of supplier spend was covered by our Supplier Code of Conduct

Opportunities and challenges

Promoting supply chain sustainability

As a global business with over 20 000 suppliers globally, Stora Enso can use its purchasing power to drive them to make their operations more sustainable. This helps to increase the number of suppliers with improved sustainability globally. However, developing a comprehensive understanding of a supplier's sustainability performance, including their potential impacts on human rights, remains a challenge, even with very strict sourcing processes and criteria in place.

Stora Enso runs sourcing and logistics operations in various regulatory environments. For example, new global regulation by the International Maritime Organisation will require reduced sulphur content in fuel oil used in marine vessels. We also consistently respond to stakeholder demands concerning transparency and the sustainability performance of our suppliers. Similarly, when sourcing materials, we look for ways to address the growing stakeholder demand for less plastic. By passing on sustainability requirements to our direct suppliers, we are able to drive positive change further down our supply chains.

Our policies

Extensive framework for responsible sourcing

The Stora Enso **Supplier Code of Conduct (SCoC)** is the cornerstone of our approach to responsible sourcing. It is a legally binding document that imposes sustainability requirements on our suppliers concerning human and labour rights, occupational health and safety, environmental commitments, and responsible business practices. The SCoC applies to all our sourcing categories globally.

Several other Stora Enso policies and documents also support responsible sourcing, including our:

- **Stora Enso Code** – our code of conduct.
- **Sourcing Policy, Logistics Policy** – our statements on our sourcing and logistics framework and objectives.
- **Sourcing Guideline, Logistics Guideline** – define how sourcing and logistics should be executed, managed, and controlled.

Through our Supplier Code of Conduct, we also implement policies and guidelines such as our **Policy on Wood and Fiber Sourcing, and Land Management, Chemical Management Guideline**, and **Human Rights Policy**.

How we work

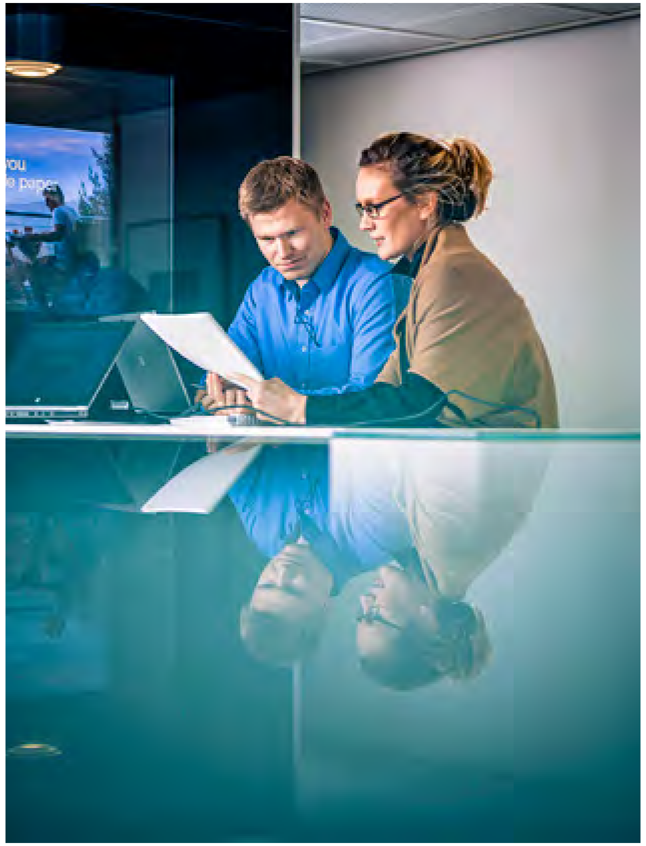
Strict sustainability requirements

Materials and products sourced by Stora Enso include wood and fiber-based materials such as pulp and Paper for Recycling (PfR), chemicals, fillers, energy, fuels, and spare parts, as well as maintenance, logistics, and IT services. In 2019, purchases of materials, goods, and services represented 49% of our total variable cost (50% in 2018) while fiber procurement accounted for 51% (50%).

Sourcing is a centrally-led function at Stora Enso that serves the entire Group and enables clear and transparent decision-making. Sourcing initiatives are reviewed and resolved by dedicated committees that meet when the sourcing need is specified, during the tendering process, and when a contract is drafted. In 2019, we created new guidelines, with sustainability considerations embedded, for strengthening the role of sourcing categories in managing our activities.

All suppliers wishing to do business with Stora Enso must first pre-qualify during tendering or, at the latest, before a contract is drafted. Instead of using our own supplier numbering, we use D-U-N-S® numbering, which is a globally recognised system for identifying companies. To pre-qualify, suppliers must complete a questionnaire, submit confirmation of their compliance with our SCoC, and complete our safety management online training. Our suppliers are also asked to provide information about their own suppliers, including sub-suppliers operating in high-risk countries.

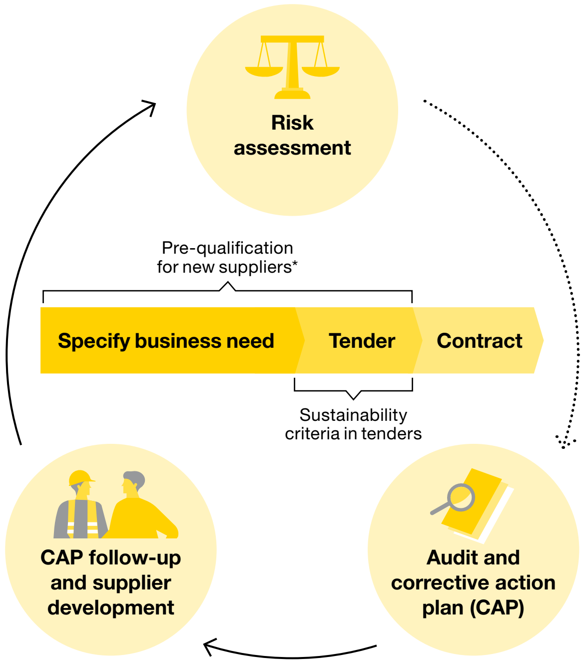
We use sustainability criteria in the tendering phase of all sourcing, regardless of previous contracts with the same supplier, and collect data on supplier performance. The criteria help us make more balanced sourcing decisions and create incentives for our suppliers to invest in sustainability reporting. To adhere with the criteria, suppliers need to respond to a set of questions about their financial stability, occupational accident rates, and carbon dioxide (CO_2) emissions. Collecting data on our suppliers' CO_2 emissions also contributes to our science-based targets for reducing greenhouse gas emissions in our value chain.



Dedicated committees review and approve Stora Enso's sourcing needs.

Our process for responsible sourcing

Risk assessments and audits can be conducted prior to pre-qualification and at any stage of the supplier contract.



* Not all pre-qualified suppliers enter our sourcing process.

Driving supplier sustainability

In addition to enforcing our SCoC, we help our suppliers improve their sustainability performance. Our 'deep dives' combine desktop reviews and on-site visits to help us better understand specific supply chains and support suppliers in improving their operations. For examples, see the Progress section in this chapter. Deep dives also enable us to offer added transparency to our customers – and even their customers. In addition, we conduct on-site visits and commission audits by third-party auditors to monitor and improve supplier sustainability performance. Focused audits are done based on risk assessments or concerns raised by our stakeholders.

Stora Enso's supplier sustainability risk mapping tool, created in collaboration with an international non-profit organisation, helps our purchasers to make more detailed risk assessments. Based on a pre-evaluation of a supplier's social and environmental risk profile, they may be selected for a third-party sustainability audit, conducted together with our purchaser.

Any suspected SCoC non-conformances identified during supplier visits or audits or brought to our attention through our many grievance channels are duly investigated. The findings are discussed, and corrective action plans are devised together with suppliers that must sign up to the plans. Our purchasers follow up on their implementation. If a supplier does not take the necessary corrective actions, new discussions are held to examine the reasons, and at a higher management level if necessary. In cases when a supplier is not willing to improve their performance, the relationship is terminated.

Contractors

Some of our suppliers are contractors hired for long-term work, such as in forest and plantation management, and others on a shorter-term basis, for example in large-scale investment or mill maintenance projects. Our SCoC and sourcing process applies to all contractors. While contractors are primarily responsible for their own employees, we strive to ensure that everyone working on our premises is treated fairly and receives adequate safety training.

Pulp procurement

Most of the pulp used in Stora Enso's operations is produced internally at our mills. For specific quality and logistical reasons, a small proportion of the pulp for our paper and board production is purchased from external suppliers. As with wood, we ensure that all the pulp we purchase is sustainably sourced. For more information about our wood procurement, see pages 48–54.

Paper for Recycling

Stora Enso sources paper for recycling (PfR) from local authorities and waste management companies. For more details on our PfR use, see pages 34 and 37.

In Brazil, our joint operation Veracel funds a programme to protect humpback whales near the Belmonte Maritime Terminal where the company ships out pulp. The programme includes the training of Veracel's sea logistics suppliers to prevent collisions with whales.

Progress

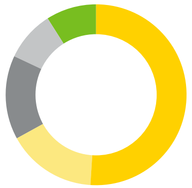
Deeper understanding of supply chain sustainability

Stora Enso's key performance indicator (KPI) for responsible sourcing measures the proportion of our total supplier spend covered by our SCoC, including all categories and regions. By the end of 2019, 96% of Stora Enso's total spend on materials, goods, and services was covered (95% at the end of 2018), which exceeds our target to maintain the level of 95%. Joint operations, intellectual property rights (IPR), leasing fees, financial trading, government fees such as customs, and wood purchases from private individual forest owners are not included in our total supplier spend.

During 2019, we conducted three deep dives of specific supply chains. In Thailand, we reviewed our tapioca starch supply chain from the farmers to the plant that manufactures the starch we purchase. In the United States, we completed a review of our supply chain for polylactic acid which is made from corn. We also conducted a deep dive of our corn-based starch supply chain in the Ukraine. Besides the lack of progressive sustainable farming practices in the Ukraine and slight concerns over chemical use in Thailand, no serious non-conformances were found in the deep dives.

Our efforts to automate the collection of supplier sustainability performance data continued in 2019. With search robotics and artificial intelligence, we are able to access publicly available supplier

Breakdown of raw material and service costs
% of our total variable costs



[1] Wood, Paper for Recycling, and purchased pulp

CO_2 data and to evaluate our suppliers' carbon footprints. According to the results, approximately 200 (approximately 200 also in 2018) out of our approximately 1 300 (1 300) top suppliers by spend had publicly reported their CO_2 data in 2019.

Developments in sea logistics
In 2019, Stora Enso joined the Clean Cargo Working Group, which is a global initiative that promotes responsible shipping and aims to reduce the environmental impacts of transportation.

During the year, we also signed a contract with an existing partner that will decrease the environmental impact of our sea logistics in the Gulf of Bothnia, the Baltic Sea, and the North Sea. Vessels currently leased by Stora Enso will become part of the supplier's fleet, and two new vessels running on liquefied natural gas (LNG) will be added to the fleet by 2022. LNG does not contain sulphur and has lower CO_2 emissions than fuel oil or diesel.

Occasionally, people board our chartered sea logistics line from Central Europe to the Nordic countries unpermitted and undetected. In 2019, our sea logistics suppliers recorded three cases where a total of 11 people were found hiding. Detailed records show that all detected people were treated with dignity and respect onboard and ensured a safe and humane return into the custody of local authorities at their point of origin in Central Europe. For more information about how we manage potential human trafficking, see our annual Slavery and Human Trafficking Statement.

Improving supplier safety
Stora Enso's commitment to safety also extends to our suppliers and contractors. In 2019, we piloted 'Safety share' to share details of a serious contractor accident - and best practices to avoid similar incidents – with other suppliers in the same category. During Stora Enso's Safety Week, we held our first safety webinar for suppliers to introduce key elements for safe operations and Stora Enso's eight life-saving rules. In addition, we updated our Safety Trail e-learning tool to cover two new languages: Czech and Estonian.

We held a safety webinar for suppliers in 2019 to share expertise on safe behaviour.

Using a Group-wide safety reporting platform, we continuously monitor contractor accidents to recognise patterns and to identify those with an unacceptably high accident performance compared to their peers. When such behaviour is indicated by statistics, we take action to mitigate it.

Auditing high-risk suppliers

In 2019, Stora Enso's third-party supplier audits continued to focus on suppliers with heightened sustainability risks, as identified by our risk assessment tool. Other focus areas were the chemical value chain, waste handling, Paper for Recycling, and land logistics.

During 2019, a total of 62 Stora Enso suppliers were audited through third-party supplier audits (70 in 2018), including 17 audits (18) through external audit schemes such as the HSEQ (Health, Safety, Environment, and Quality management) audit cluster in Finland. The total number of audits in 2018 has been restated to include audits from external audit schemes. In the HSEQ cluster, buyer companies such as Stora Enso use the platform to improve auditing efficiency by sharing results from their third-party supplier audits. The participating Stora Enso suppliers' performance in safety, in particular, has improved significantly over the last three years.

The supplier audits revealed non-conformances particularly related to working hours, basic worker rights, and emergency preparedness. Several non-conformances were also related to missing documentation and policies. We create corrective action plans for all non-conformances and follow up on them. In China, for example, a packaging supplier installed an additional exit in 2019 to improve fire safety in the dormitory building, as agreed in our corrective action plan.

By the end of 2019, 28% of our identified high-risk supplier spend was covered by third-party supplier audits (24% in 2018). In our 2018 report, the audit coverage was reported based on the number of suppliers, and the figure for 2018 has been restated for comparability.

In 2019, we also conducted 50 supplier visits (23 in 2018). No supplier relationships were terminated in 2019 (none in 2018) based on findings or follow-ups resulting from third-party audits or our own supplier visits. However, one contract was not renewed due to business ethics challenges that were identified while investigating a potential SCoC violation reported by our own organisation.

Sourcing developments in China and the USA

Coal sourcing for Beihai Mill in China

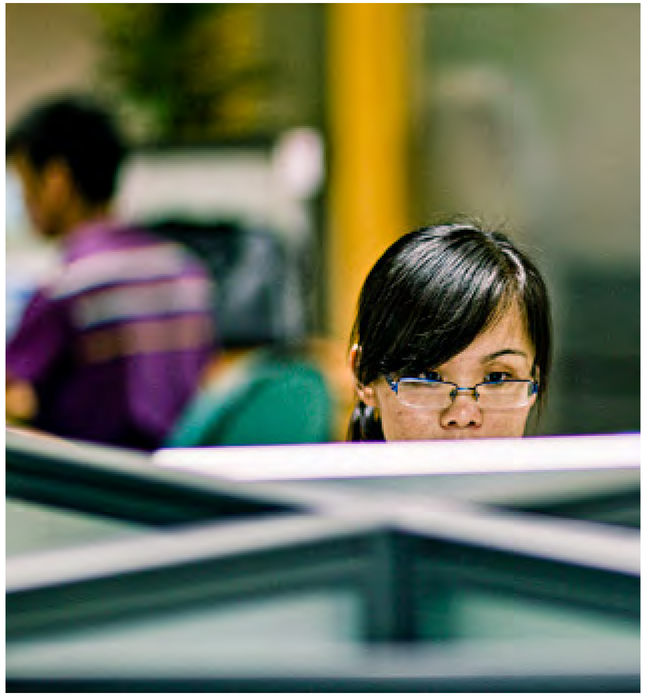
In southern China, coal is currently the only feasible energy source for an industrial facility as large as Stora Enso's Beihai Mill. However, as part of our long-term planning, we are investigating opportunities to use more renewable energy at the mill. For more information, see page 46. In 2019, we continued to look for more sustainable alternatives to coal.

Following a thorough supply chain audit and consequent corrective action plans in China, we found insufficient improvements made by our coal supplier during 2018. In December 2018, we replaced them with a new supplier that has a significantly better sustainability performance and a railway connection to the port, which reduces the need for truck transport and improves road safety.

Sourcing sugar industry by-products in the USA

Stora Enso's demonstration plant in Raceland, Louisiana, USA, validates extraction and separation technologies by converting cellulosic biomass into highly refined xylose sugars. For feedstock, the plant purchases bagasse, a residual from the sugar-making process, from a nearby sugar mill.

Stora Enso has been monitoring labour rights in its bagasse supply chain for several years to ensure that working hour schedules do not have adverse impacts on contractor health and safety. In 2019, our long-term dialogue with the supplier led to significant progress in adopting our SCoC requirements. We will continue to monitor and support our bagasse supplier in adopting our SCoC requirements, while continuously pushing for improvements.



Desktop reviews are an important part of our supply chain deep dives.

What's in a supply chain?

While all Stora Enso suppliers must commit to our Supplier Code of Conduct, driving change with the suppliers' suppliers remains a challenge. To tackle this, our sourcing personnel uses "deep dives" to have a closer look at supply chains where we have identified risk or that we simply want to learn more about.

"Deep dives focus on open dialogue and observe the full chain of a product or service. They are not needed everywhere but for those supply chains that are spread across the globe and that may pose risks we're not familiar with, it's a great tool," says **Johanna Pirinen**, Head of Sustainable Sourcing and Logistics at Stora Enso.

Read the full article at › storaenso.com/sustainability

Sustainability

Investors

We strive to continuously improve our sustainability performance and reporting, and to keep investors informed of our progress, ambitions, and future direction.

Stora Enso issued its first Green Bonds in 2019, collecting SEK 6 billion

Opportunities and challenges

Growing interest in sustainable investing

Investors are increasingly recognising the importance of corporate sustainability in their investment decision-making by exploring ways to integrate environmental, social, and governance (ESG) performance into their investment strategies. In addition to the growing interest in sustainability aspects, including human rights, investors perceive sustainability as a valuable growth driver and/or competitive advantage for companies and sustainability reporting as an important tool in identifying investment opportunities that can generate long-term shareholder value. Hence, companies are encouraged to conduct their business more sustainably. Simultaneously, investors expect financial rewards from their investments.

At Stora Enso, we believe that long-term financial success results from truly sustainable business. Stora Enso's Investor Relations work is guided by several laws and regulations, including the EU's Market Abuse Regulation (MAR), the Finnish Securities Markets Act, Nasdaq rules in Helsinki and Stockholm, and the standards of the Finnish Financial Supervisory Authority.

Our policies

Guiding our Investor Relations

Company policies and guidelines related to Stora Enso's Investor Relations include our:

- **Disclosure Policy** – a set of rules covering all our communications with investors and other stakeholders. It encompasses insider guidelines, closed periods, communications governance, and communications procedures.
- **The Stora Enso Code** – our code of conduct, applied to all our operations around the world, including Investor Relations.

We believe that truly sustainable business results in long-term financial success.

How we work

Sustainability as a key metric

Many investors are committed to integrating ESG factors into their investments. Aspects of sustainability, such as global warming and sustainable forest management, are important to Stora Enso's investors. Our main shareholders are long-term investors that place high value on sustainable business practices, and continuously monitor and evaluate our performance. For more information on how we create value through a sustainable business model, see **Strategy 2019**. For details of Stora Enso's ownership distribution, see **Financials 2019**.

Timely and transparent communication with investors is a top priority for Stora Enso. We actively maintain open dialogue with our investors on ESG matters through face-to-face meetings, conference calls, seminars, roadshow meetings, and webcasts. We also regularly share updated information on our sustainability performance with investors in our Interim and Annual Reports, stakeholder letters, web updates, and investor newsletters. We participate in sustainability events of interest to investors. For more information about our investor relations, see storaenso.com/investors.

Stora Enso's Sustainable Finance strategy is an integrated part of our overall strategy. Stora Enso aims to have access to sufficient and competitively priced funding at any time to be able to pursue its strategy and achieve its targets. In order to accomplish this, our emphasis is on debt capital markets funding. In the long-term, Stora Enso's aim is to secure funding partners that have sustainability as a fundamental part of their agenda. We aim to influence and develop the financial markets to ensure that sustainability becomes an integral part of decisions and credit evaluation.

Stora Enso has a Green Bond Framework as part of its Sustainable Finance strategy. The ambition is to offer a type of loan that supports sustainability-focused fixed-income investors, and to report the direct environmental impacts of specific investments and business activities. The Green Bond framework is based on and aligned with the international Green Bond Principles (GBP) formulated by the International Capital Market Association. The framework lists the possibilities and limitations of the project categories that Stora Enso has defined as eligible for green funding.

Progress

ESG topics embedded into investor relations activities

During the year, we continued our strategy to enhance the availability of ESG information to investors, and to prioritise Stora Enso's participation in questionnaires and assessments for the ESG index and ratings schemes that are most material for our investors.

In 2019, Stora Enso organised an Investor Day and provided an update on our strategy, including a detailed review of Wood Products and Nordic forests, and published its carbon substitution potential. Read more at storaenso.com/investors.

For more information about our investor activities during the year, see Capital Markets in **Financials 2019**.

Sustainable finance and use of proceeds

Stora Enso issued its first green bonds in February 2019, collecting SEK 6 billion. In addition, a SEK 1 billion Green Loan was issued in May 2019. The proceeds of both were solely used for financing Stora Enso's acquisition of forest assets in Sweden and were 100% allocated by the end of 2019. The forest assets will be managed intensively, yet sustainably to utilise their full growth potential and produce more fiber-based products, including Cross Laminated Timber (CLT), which can substitute non-renewable construction materials and store carbon throughout its lifetime. This helps combat global warming and creates value for society at large.

The acquired forest assets are 100% certified by FSC and PEFC and amount to 1.41 million hectares, including 1.14 million hectares of productive forest land. As a consequence of the acquisition, Stora Enso's proportion of owned or managed lands in wood production and harvesting covered by forest certification schemes (our Forests, plantations, and land use KPI) increased to 98% in 2019 (96% in 2018). We continue to develop our green bond reporting approach to enable the disclosure of impacts within relevant aspects of sustainability.

In 2017, Stora Enso signed a Revolving Credit Facility (RCF) loan where part of the pricing is based on Stora Enso's ability to reduce greenhouse gas emissions per tonne of pulp, paper, and board produced, in accordance with the Science Based Targets initiative.

In 2019, Stora Enso was highly commended in the 'Embedding an integrated approach' category at the Finance for the Future Awards by Accounting for Sustainability (A4S), where the Group's climate leadership was also recognised. Stora Enso also signed the A4S Net zero statement of support by Accounting for Sustainability.

Cross-laminated timber replaces non-renewable materials in the construction industry.

Sustainable funding with green bonds

Interest in ESG (environmental, social, and governmental) issues and general awareness of sustainability topics is growing among all investors. For Stora Enso, sustainable funding is more than responding to trends, as sustainability is already integrated into everything we do within the company.

"Green bonds are basically loans that are earmarked for investments in sustainable projects. The green bonds we issue give investors an opportunity to invest in projects that are controlled and managed by Stora Enso in order to provide sustainable solutions for the climate and environment," explains **Pasi Kyckling**, SVP, Group Treasury at Stora Enso.

Read the full article at › storaenso.com/sustainability

ESG indices and other external recognition in 2019

Euronext Vigeo
Stora Enso is listed in the Euronext Vigeo Europe, and Eurozone 120 indices as one of the 120 most advanced companies in terms of environmental, social, and governance performance.

Ethibel
Stora Enso is a constituent of the Ethibel Sustainability Index (ESI) Excellence Europe. The ESI indices are composed of companies that display the best performance in the field of corporate social responsibility.

FTSE4Good Index
Stora Enso is included in the FTSE4Good Index Series. These indices measure the performance of companies demonstrating strong environmental, social, and governance practices.

MSCI
In 2019, Stora Enso received a rating of AA in the MSCI ESG Ratings assessment. Stora Enso is included in several of MSCI's ESG indices.

ECPI Ethical Indices
Stora Enso is included in the ECPI EMU Ethical Equity index, which covers environmental, social, and governance criteria.

Transition Pathway Initiative (TPI)
Stora Enso is top-ranked in greenhouse gas management and performance by the TPI. An asset owner-led and asset manager-supported global initiative, the TPI assesses companies' preparedness for transition to a low carbon economy, supporting efforts to address climate change.

CDP
Stora Enso is included in CDP's Climate List, which identifies the global companies that are taking leadership in climate action.

STOXX ESG indices
Stora Enso is included in several STOXX ESG indices. These indices rate leading global companies according to environmental, social, and governance criteria.

Equileap
Ranked globally at number 29, Stora Enso was also rated the best performing Finnish company and best in our industry in gender balance and gender equality by Equileap.

Ecovadis
Stora Enso was included in the top 1% (industry suppliers) of the Ecovadis ethical supplier rating system, and achieved the highest recognition level (Gold).

OMX Sustainability Finland index
Stora Enso is included in the NASDAQ OMX Sustainability Finland index.

WBCSD
Stora Enso's Sustainability Report 2018 was included in the top ten sustainability reports globally according to the 2019 Reporting matters publication by the World Business Council for Sustainable Development (WBCSD).

Sustainability Reporting Awards Finland
Stora Enso's Sustainability Report 2018 was chosen as the best in Finland in a competition organised by an independent group of expert organisations.

ReportWatch
Stora Enso's Annual report 2018, including the Sustainability report, received the highest A+ ranking among more than 300 reports globally.

Stockholm School of Economics
Stora Enso received the highest score in the 2019 'Walking the talk' study on sustainability communications by the Mistra Center for Sustainable Markets (Misum) at the Stockholm School of Economics. The study included 95 Large Cap companies at the Stockholm stock exchange.

Most sustainable company 2019
Stora Enso was ranked the most sustainable listed company in our sector in Sweden by Dagens Industri, Aktuell Hållbarhet, and Lund University School of Economics and Management. We were also ranked overall best in the category for 'Climate and environment.'

Data and assurance

Reporting scope

At Stora Enso, we regularly review the priorities in our Sustainability Agenda and ensure that our reporting duly addresses them. When defining the materiality of issues impacting our sustainable business model, we consider the expectations of our major internal and external stakeholders. For more information on our approach to materiality, see page 7.

Data boundaries

Unless otherwise stated, the Group's consolidated performance data expressed in this report covers the parent company, Stora Enso Oyj, and all companies in which we hold over 50% of voting rights directly or indirectly. The consolidated figures and our reporting on human rights, safety, community, and forests, plantations, and land use also include the 50% owned joint operations Veracel in Brazil and Montes del Plata in Uruguay, due to their materiality to the Group's sustainability impacts and stakeholder interest. Otherwise the consolidated figures do not include equity-accounted investments where Stora Enso's ownership is between 20% and 50%, or equity investments in which our ownership share is less than 20%.

Consolidated environmental and energy data covers our production units. Stora Enso's sawmills and converting facilities are excluded from water, energy, and certain CO_2 indicators that are normalised per tonne of sales production unless otherwise specified in the respective footnotes. This is due to the lower materiality of sawmills and converting facilities in the Group's related performance and different metrics for sales production (cubic metre and square metre, respectively), compared with board, pulp, and paper mills (tonnes).

Human Resources (HR) data is derived from separately collected statistics. Unlike in our financial reporting, consolidated HR data in this Sustainability report excludes employees of our 50% owned joint operations Montes del Plata and Veracel. The HR data presented covers our permanent and temporary employees as of 31 December 2019 and are expressed as a headcount (rounded to the nearest 10). Certain administrative functions and sales offices are not included in the Group's consolidated occupational health and safety (OHS) data due to availability and lower occupational safety risk compared to production units.

Significant changes in scope during 2019

In 2019, the shareholders of Bergvik Skog AB, a Swedish forest holding company, finalised the previously announced restructuring of its ownership. Stora Enso's Swedish forest holdings are consolidated in the Group's annual sustainability reporting for 2019 as material.

The divestment of Dawang paper mill in China was completed in October. The closure of Kitee sawmill was concluded in September. Both units are still included in our annual sustainability reporting for 2019 as applicable. The divestment of Dawang or closure of Kitee do not have material impact on the Group's consolidated sustainability performance figures. For more information on the Group's acquisitions and disposals, see note 4 in **Financials 2019**.

In 2019, our Wood Products division inaugurated a new production unit for Cross Laminated Timber (CLT) at Gruvön sawmill in Sweden, which is included in the reporting.

In our environmental and energy reporting, divestments and closures are managed according to the international Greenhouse Gas Protocol. This means that figures for historical performance are recalculated following the removal of divested units from the baseline when necessary. However, closed units are included in the environmental and energy targets and trend calculation baselines, as per internationally accepted rules.

In accordance with the GRI Standards

We also prepare our reporting in accordance with the GRI Sustainability Reporting Standards: Core option. Our reporting covers all the General Disclosures as well as the topic-specific GRI Standards we deem material. Our GRI Content Index lists our disclosures with reference to the GRI Standards and refers to the locations where these issues are addressed in our reporting. The location references are complemented in the index with additional information, such as reasons for omission as necessary.

Impacts that make sustainability topics relevant to us may occur outside operations owned by Stora Enso, or they may only be material for some of our operations or locations. When our reporting on a sustainability disclosure only concerns specific units, geographical regions or other data collection boundaries, based on the identified materiality, this is specified in connection with the respective disclosure.

External assurance

This report has been verified by an independent third-party assurance provider in accordance with the voluntary external assurance practices followed in sustainability reporting. The assurance report appears on page 72. PwC has provided a limited level of assurance covering the entire contents of this report, based on an assessment of materiality and risk. For the fifth year running, a level of reasonable assurance has been provided for Stora Enso's reporting on direct and indirect fossil CO_2e emissions (Scopes 1 and 2).

The UN Global Compact

Stora Enso supports the ten principles of the United Nations Global Compact, an initiative set up in 2000 to encourage businesses worldwide to embed responsibility into their operations. We respect and promote these principles throughout our operations and report on our progress in this report. We annually upload our Communication on Progress to the UN Global Compact website as a public record of our commitment.

UN GLOBAL COMPACT
COMMUNICATION ON PROGRESS

This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

Data by production unit

This table presents unit-specific information on environmental performance, production, certificates, and numbers of employees.

					Certificates														Fossil CO_2 emissions								
	Number of employees[a]	Production capacity[b]	Products	Recovered fiber[c]	ISO 9001	ISO 14001	ISO 22000	FSSC 22000	FDA	ISO 50001	OHSAS 18001	ISO45001[d]	FSC® CoC	PEFC™/CFCC CoC	Process waste to landfill	Hazardous waste[e]	SO_2[f]	NO_x as NO_2	Direct CO_2[g]	Indirect CO_2[g]	CO_2, on-site transport[g]	Carbon neutral CO_2, biomass fuels[g]	COD	AOX	Phosphorus	Nitrogen	Process water discharges
Unit		1 000 t													t	t	t	t	t	t	t	t	t	t	t	t	1 000 m³
Belgium																											
Langerbrugge	333	555	4	x	x	x				x	x		x	x	18 011	55	2	270	128 019	21 661	1 447	425 430	1 105	0.90	7.5	57.6	6 819
China																											
Beihai	403	470	1		x	x	x	x		x		x	x	x	272	9	143	207	463 335	13 654	1 068	43 619	211		1.5	12.1	5 478
Dawang[h]	169	140	4	x	x	x					x		x							53 028	1						445
Dongguan	961	30*	3		x	x					x		x			20				4 673	15		12	0.0	0.0	0.7	
Jiashan	317	20*	3		x	x					x		x			3				1 451	3			0.0	0.0	0.0	4
Qian'an	1 747	25*	3		x	x					x		x			16				8 438	24			0.0	0.0	0.0	2
Wujin	583	10*	3												1	39				2 715	2						1
Estonia																											
Tallinn	36	18*	3		x	x	x					x	x		3				95	937	10						2
Finland																											
Anjala/Ingerois	548	435/280	4 1		x	x	x	x[i]		x	x		x	x		107	9	269	94 586	74 316	1 422	154 892	1 822		2.6	62.6	8 910
Enocell	265	490	2		x	x				x	x		x	x	7 834	50	82	815	72 518	- 920	129	1 462 413	9 773	59.6	2.7	53.2	23 466
Heinola Fluting	213	300	1		x	x	x			x	x		x	x	365	137	434	320	118 900	7 737	141	210 067	1 142		2.0	24.4	1 363
Imatra	1 301	1 280	1 2		x	x	x	x	x	x	x		x	x	188	361	113	1 902	173 336	53 155	1 345	2 123 853	20 103	86.0	16.0	209.0	65 206
Kristiinankaupunki	54	20*	3		x	x	x			x	x		x			1			149	62							1
Lahti	258	130*	3		x	x	x			x	x		x			347				4 805	114		3		0.0	0.3	25
Oulu	730	1 080	4 2		x	x				x	x		x	x	43	389	299	973	234 106	18 231	2 736	1 094 368	7 258	34.3	10.4	85.8	19 805
Sunila	231	375	2 5		x	x				x	x		x	x	5 061	349	80	604	29 905	3 103	552	747 178	5 687	37.0	6.6	13.2	15 838
Varkaus	307	390	1	x	x	x	x			x	x		x	x	2 031	234	96	458	54 373	12 981	301	698 184	1 590		3.9	62.5	16 081
Veitsiluoto	695	790	4		x	x	x[j]			x	x		x	x	1 368	24	327	1 064	214 527	21 792	288	1 087 810	9 495	29.0	9.5	139.7	10 706
Germany																											
Maxau	425	530	4	x	x	x				x	x		x	x		244	4	186	87 209	189 151	1	355 776	1 627	0.3	3.2	8.5	5 027
Sachsen	250	310	4 2	x	x	x				x	x		x	x		8	2	140	154 867	5 833	718	31 190	680	0.5	0.5	14.4	3 390
Latvia																											
Riga	168	105*	3		x	x	x			x		x	x			77		2	2 070	604	191						16
Lithuania																											
Kaunas	53	20*	3		x	x	x					x	x			1				263	63						2

	Number of employees[a)]	Production capacity[b)]	Products	Recovered fiber[c)]	Certificates: ISO 9001	ISO 14001	ISO 22000	FSSC 22000	FDA	ISO 50001	OHSAS 18001	ISO45001[d)]	FSC® CoC	PEFC™/CFCC CoC	Process waste to landfill	Hazardous waste[e)]	SO_2[f)]	NO_x as NO_2	Fossil CO_2 emissions: Direct CO_2[g)]	Indirect CO_2[g)]	CO_2, on-site transport[g)]	Carbon neutral CO_2, biomass fuels[g)]	COD	AOX	Phosphorus	Nitrogen	Process water discharges
Unit		1 000 t													t	t	t	t	t	t	t	t	t	t	t	t	1 000 m³
Poland																											
Łódź	276	135*	3		x	x	x				x		x	x		1		3	3 289	1 080							
Mosina	98	20*	3		x	x	x				x		x	x		109			421		38						1
Ostrołęka Corrugated[k)]	255	145*	3	x	x	x	x				x		x	x		2				4 657	108						
Ostrołęka Containerboard[k)]	1 019	723	1 4		x	x					x		x	x		37	387	359	283 376		1 633	406 663	887		5.4	24.7	9 916[k)]
Tychy	173	135*	3		x	x	x				x		x	x		4			3 031		173						12
Russia																											
Arzamas	166	100*	3		x	x	x						x		18	8	1	6	3 223	14 054	80						31
Balabanovo	334	165*	3		x	x	x						x			5	1	3	4 880	21 880	102						25
Lukhovitsy	137	100*	3		x	x	x						x			5		2	2 672	14 717	127						18
Sweden																											
Falu Rödfärg	[l)]		6		x	x										8 575			387								
Fors	541	455	1		x	x	x	x		x	x		x	x		121	7	88		82	602	223 807	1 848	0.5	1.2	27.5	4 516
Hylte	423[m)]	480	4	x	x	x				x	x		x	x	23 725	71		178	3 397	106	856	281 604	770	1.4	2.1	31.9	5 271
Jönköping	179	100*	3		x	x	x						x			39			200	527	21						11
Kvarnsveden	472	385	4		x	x				x	x		x	x		133	19	104	14 337	237	1	207 493	1 841	0.7	2.0	40.5	7 358
Nymölla	569	485	4 2		x	x				x	x		x	x		85	543	474	2 553	57	1 790	701 204	11 656	0.5	4.7	71.6	27 828
Skene	153	100*	3		x	x							x			3				19	7						15
Skoghall	732	875	1		x	x	x	x		x	x		x	x	3 093	494	164	449	55 819	134	1 632	961 646	10 070	19.3	10.5	102.2	26 281
Skoghall (Forshaga)	104	120	1		x	x	x	x	x	x	x		x	x		11			966	3	150						
Skutskär	400	540	2		x	x				x	x		x	x		42	125	817	100	25	1 469	1 156 078	5 781	36.9	20.2	106.0	19 126
Vikingstad	69	75*	3		x	x							x			1			1 075	60	1						1
Total board, pulp, paper, converted products		11 498[n)]													62 013	12 218	2 840	9 691	2 207 720	555 309	19 358	12 373 275	93 362	307	112	1 148	282 995
Total, wood products		[o)]																									
Wood products units[p)]					[p)]	[p)]	[p)]	[p)]	[p)]	[p)]	[p)]	[p)]	[p)]	[p)]	6 209	1 174	27	485	5 029	105 249	19 056	486 715					
Grand Total																											
All units															**68 223**	**13 392**	**2 866**	**10 176**	**2 212 749**	**660 558**	**38 413**	**12 859 990**	**93 362**	**307**	**112**	**1 148**	**282 995**

a) Yearly average as full-time equivalents.
b) Production capacities of integrated pulp, paper, and board mills only include paper and board production capacities.
c) Mills using recovered fiber as raw material (fully or partly).
d) The new certificate ISO 45001 will gradually replace the OHSAS 18001.
e) Reported on the basis of country-specific definitions applied in national regulations.
f) Total sulphur is reported as sulphur dioxide (SO_2) equivalent, but includes all sulphurous compounds.
g) All CO_2 figures are calculated using the WRI/WBCSD Greenhouse Gas Protocol and Scope 2 Guidance.
h) The divestment of Dawang paper mill was completed in October 2019.
i) Covers only board production at Ingerois.
j) Covers only PM5.
k) Water discharges reported together from both Ostrołęka units.
l) Does not have its own personnel but hires personnel from Stora Enso AB.
m) Number of biocomposite production line employees is included. See separate table for Wood Products units for biocomposite production data.
n) Excluding total corrugated board capacity 1 368 million m².
o) Production capacities for sawn timber 5 830 000 m³ and for wood pellets 495 000 t.
p) See separate table for Wood Products units.

Products:
① board and packaging paper
② market pulp
③ converted products (e.g. cores, corrugated board)
④ paper
⑤ lignin
⑥ red paint pigment

The figure 0 (zero) in the table signifies that such discharges, emissions, or waste did not occur or they were below the Group's reporting threshold. Where cells are left blank, this signifies that the parameter is considered as not relevant for that unit.

Certificate documents can be found at storaenso.com/certificates

* million m²

		Capacities						Certificates											Fossil CO_2 emissions			
	Number of employees[a]	Sawn products	Further processed	CLT	Wood pellets	LVL	Biocomposite	ISO 9001	ISO 14001	ISO 50001	OHSAS 18001	FSC® CoC	PEFC™ CoC	SBP	Process waste to landfill	Hazardous waste[b]	SO_2[c]	NO_x as NO_2	Direct CO_2[d]	Indirect CO_2[d]	CO_2, on-site transportation[d]	Carbon neutral CO_2 biomass fuels[d]
Unit		1 000 m³	1 000 m³	1 000 m³	1 000 t	1 000 m³	1 000 t								t	t	t	t	t	t	t	t
Wood products units																						
Austria																						
Bad St. Leonhard	256	360	105	80				x	x	x	x	x	x			48		4			3	
Brand	209	440	295					x	x	x	x	x	x			50					3	
Ybbs	404	700	450	100				x	x	x	x	x	x			88		8			3	
Czech Republic																						
Planá	238	390	220					x	x	x	x	x	x		414	53	0.3	55			1 827	22 651
Ždírec	253	580	220		80			x	x	x	x	x	x		3 396	26	2.4	110			2 400	127 527
Estonia																						
Imavere	312	340	160		100			x	x	x	x	x	x	x	4	79	4.3	44		45 773	1 697	55 284
Näpi	94	50	180		23			x	x	x	x	x	x		26	42	0.6	6	34	10 728	299	4 917
Finland																						
Honkalahti	115	310	70					x	x	x	x	x	x			35	0.6	24	67	2 487	988	43 391
Kitee[e]	93	260	110		25			x	x	x	x	x	x			6	0.2	13		1 438	350	29 256
Uimaharju	67	240	20					x	x	x	x	x	x			5	0.0			1 950	679	
Varkaus	120	150	35			75		x	x	x	x	x	x			27				4 495	810	
Veitsiluoto[f]	57	200						x	x	x	x	x	x				10.3	19		4 979	554	
Germany																						
Pfarrkirchen	102		145					x	x	x	x	x	x			9	1.8	13			256	5 545
Latvia																						
Launkalne	151	200	20					x	x	x	x	x	x			3		27	534	1 573	1 119	25 102
Lithuania																						
Alytus	250	210	115					x	x	x	x	x	x			22	1.7	14		2 599	1 075	25 414
The Netherlands																						
Amsterdam	47		80					x	x	x	x	x	x			1			13	1 044	1	
Poland																						
Murow	275	300	210					x	x	x	x	x	x			624	2.7	16		10 619	1 332	11 532
Russia																						
Impilahti	124	150	10		25			x	x	x	x	x	x					9		5 197	1 286	22 781
Nebolchi	178	180	45		42			x	x	x	x	x	x	x	2 370		0.5	44		8 314	1 164	23 855
Sweden																						
Ala	147	400	50		100			x	x	x	x	x	x			42	1.2	75		10	1 839	89 461
Gruvön[g]	178	370	150	25	100			x	x	x	x	x	x	x		15	0.1	3	4 381	4 014	1 370	
Hylte	19						15	x	x	x	x	x	x							29		
Wood products units total		**5 830**	**2 690**	**205**	**495**	**75**	**15**								**6 209**	**1 174**	**27**	**485**	**5 029**	**105 249**	**19 056**	**486 715**

a) Yearly average as full-time equivalents.
b) Reporting is based on country-specific definitions applied in national regulations.
c) Total sulphur is reported as sulphur dioxide (SO_2) equivalent, but includes all sulphurous compounds.
d) All CO_2 figures are calculated using the WRI/WBCSD Greenhouse Gas Protocol and Scope 2 Guidance.
e) The permanent closure of Kitee sawmill was concluded in September 2019.
f) Sawing capacity reported with Paper Division.
g) CLT production was started at Gruvön sawmill in May 2019.

Certificate documents can be found at storaenso.com/certificates.

Auditor's assurance report

To the Board of Directors and Management of Stora Enso Oyj

We have been engaged by the Board of Directors and the Group Leadership Team of Stora Enso Oyj (hereafter Stora Enso) to provide limited assurance on Stora Enso's Sustainability report 2019 as a whole, and reasonable assurance on Stora Enso's direct and indirect (scopes 1+2) fossil CO_2 emissions as disclosed in the Sustainability report.

Responsibilities of the Board and Management

The Board of Directors and Group Leadership Team of Stora Enso are responsible for preparing the Sustainability report in accordance with the Reporting Criteria as set out in the Company's reporting instructions, including the Sustainability Reporting Standards of the Global Reporting Initiative (GRI) and the Greenhouse Gas Protocol for CO_2 emissions. This responsibility includes the internal control relevant to the preparation of a Sustainability report that is free from material misstatements, whether due to fraud or error.

Responsibilities of the Auditor

Our responsibility is to express a conclusion on the Sustainability report based on the procedures we have performed and the evidence we have obtained. Our assignment is limited to the historical information that is presented and thus does not include future-oriented information. We do not accept, or assume responsibility to anyone else, except to Stora Enso for our work, for this report, or for the conclusions that we have reached.

We conducted the assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000, "Assurance Engagements Other than Audits or Reviews of Historical Financial Information", to provide limited assurance on the Sustainability report as a whole, and in accordance with ISAE 3410, "Assurance Engagements on Greenhouse Gas Statements", to provide reasonable assurance on direct and indirect (scopes 1+2) fossil CO_2 emissions as disclosed in the Sustainability report. These standards require that we plan and perform the engagement to obtain the appropriate level of assurance that the information examined is free from material misstatement.

A reasonable assurance engagement includes examining, on a test basis, evidence supporting the selected information in the Sustainability report. We have evaluated the effectiveness of internal controls and the processes for collecting and consolidating CO_2 emissions data, and performed testing on a sample basis to evaluate whether the CO_2 emissions are reported according to the Reporting Criteria.

A limited assurance engagement consists of making inquiries, primarily of persons responsible for the preparation of the Sustainability report, reviewing documentation, and applying analytical and other limited assurance procedures based on the auditor's judgement. In addition, we have performed site visits to Langerbrugge (Belgium) and Ostrołęka (Poland) to review compliance with reporting policies, assess the reliability of local reporting process, and test data collected for sustainability reporting purposes on a sample basis.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusions below. The conclusion based on our limited assurance procedures does not comprise the same level of assurance as the conclusion of our reasonable assurance procedures. Since this assurance engagement is combined, our conclusions regarding the reasonable assurance and the limited assurance procedures are presented separately below.

Our independence and quality control

We have complied with the independence and other ethical requirements of the "Code of Ethics for Professional Accountants" issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

PricewaterhouseCoopers applies International Standard on Quality Control (ISQC) 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Conclusions

Based on the limited assurance procedures we have performed, nothing has come to our attention that causes us to believe that the Sustainability report is not prepared, in all material respects, in accordance with the Reporting Criteria.

In our opinion, Stora Enso's direct and indirect (scopes 1+2) fossil CO_2 emissions which have been subject to our reasonable assurance procedures have, in all material respects, been prepared in accordance with the Reporting Criteria.

Helsinki, 11 February 2020
PricewaterhouseCoopers

Samuli Perälä
Authorized Public Accountant

Fredrik Ljungdahl
Sustainability Reporting Specialist

Financials includes the report of the Board of Directors and the financial statements, as well as Stora Enso in capital markets and our tax footprint.

Financials

Part of Stora Enso's Annual Report 2019

THE RENEWABLE MATERIALS COMPANY

Dividend proposal per share

EUR 0.50

Operational ROCE

9.8%

Contents

Unaudited
Limited assurance

In this report: This publication consists of both audited and unaudited contents. The audited parts include the consolidated financial statements, the parent company financial statements, and the notes to the financial statements. The unaudited parts – such as Stora Enso in 2019, the Report of the Board of Directors, Stora Enso in capital markets, and Stora Enso as a taxpayer – are marked with a symbol on the top of the page. The contents of Stora Enso as a taxpayer have been assured by an independent third-party assurance provider with a level of Limited Assurance. The official audited financial statements in Finnish and an unofficial Swedish translation can be found on the company website › storaenso.com/download-centre

Print optimised
A4

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Strategy
Sustainability
Financials
Governance

Financials

Unaudited

Stora Enso in 2019

Why to invest in Stora Enso

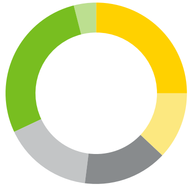
Part of the bioeconomy, Stora Enso is a leading global provider of renewable solutions in packaging, biomaterials, wooden construction and paper. Our fiber-based materials are renewable, recyclable and fossil free. Our solutions offer low-carbon alternatives to products based on finite resources. We believe that everything that is made from fossil-based materials today can be made from a tree tomorrow. Stora Enso is well-positioned for profitable growth: In a long-term, we estimate our annual sales to increase 6-8%, excluding Paper, and have a target of above 13% for operational return on capital employed (ROCE) for the Group. We have a strong cash flow generation and we aim to maintain the capex at the targeted level, at or below depreciation and depletion over the business cycle. Stora Enso is well within the targeted level of debt to equity (less than 60%) and close to the targeted level of net debt to operational EBITDA (below 2.0x). Stora Enso has a dividend policy to distribute 50% of earnings per share (EPS) over the cycle.

Stora Enso shares are listed on Nasdaq Helsinki Oy (STEAV, STERV) and Nasdaq Stockholm AB (STE A, STE R). In addition, the shares are traded in the USA as ADRs (SEOAY).

Key figures

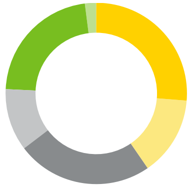
	2019	2018	Change	Target
Sales, EUR million	10 055	10 486	-4.1%	
Operational EBITDA, EUR million	1 542	1 878	-17.9%	
Operational EBIT, EUR million	953	1 325	-28.1%	
Operational EBIT margin	9.5%	12.6%		
Operating profit (IFRS), EUR million	1 305	1 390	-6.1%	
Net profit for the period, EUR million	856	988	-13.4%	
Net interest-bearing liabilities, EUR million	3 209	2 092	53.4%	
Operational ROCE, %	9.8%	15.5%		>13%
EPS (basic), EUR	1.12	1.28	-13.1%	
Net debt/last 12 months' operational EBITDA ratio	2.1	1.1		<2.0
Net debt/equity ratio	0.43	0.31		<0.60
Fixed costs to sales, %	24.3%	23.6%		<20%

Sales 2019



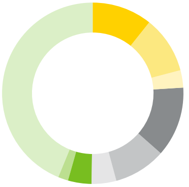
- Consumer Board 25%
- Packaging Solutions 12%
- Biomaterials 15%
- Wood Products 16%
- Paper 28%
- Other and eliminations 4%

Operational EBIT 2019



- Consumer Board 26%
- Packaging Solutions 14%
- Biomaterials 24%
- Wood Products 11%
- Paper 22%
- Other and eliminations 2%

Ownership distribution, % of shares held

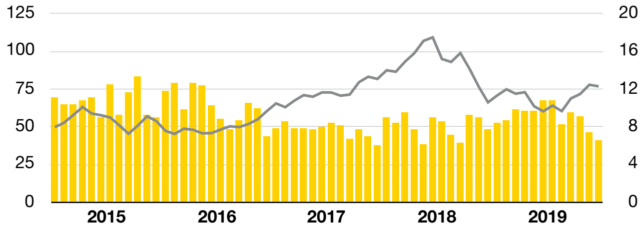


- Solidium Oy[1] 10.7%
- FAM AB[2] 10.2%
- Social Insurance Institution of Finland (KELA) 3.1%
- Finnish institutions (excl. Solidium and KELA) 12.5%
- Swedish institutions (excl. FAM) 9.3%
- Finnish private shareholders 4.4%
- Swedish private shareholders 4.2%
- ADR holders 1.8%
- Under nominee names (non-Finnish/non-Swedish shareholders) 43.8%

[1] Entirely owned by Finnish state.
[2] As confirmed to Stora Enso.

Share price performance and volumes

Helsinki, Stora Enso R



Financials

Unaudited

Report of the Board of Directors

Stora Enso introduction

Part of the bioeconomy, Stora Enso (the Group or the Company) is a leading global provider of renewable solutions in packaging, biomaterials, wooden construction and paper. Our customers include packaging manufacturers, brand owners, paper and board producers, publishers, retailers, printing houses, converters, and joinery and construction companies.

Our fibre-based materials are renewable and recyclable. Our solutions offer low-carbon alternatives to products based on finite resources. We believe that everything that is made from fossil-based materials today can be made from a tree tomorrow.

Stora Enso had 26 096 employees on average during 2019. Our sales in 2019 were EUR 10.1 billion, with an operational EBIT of EUR 1.0 billion. Stora Enso shares are listed on Nasdaq Helsinki Oy (STEAV, STERV) and Nasdaq Stockholm AB (STE A, STE R).

Markets and deliveries

Demand for cartonboard decreased by 2% in Western Europe and continued to grow in Eastern Europe, but with modest speed, reaching just 1% growth. Demand for cartonboard in North America was flat and demand in Asia Pacific declined further 2% after similar drop a year earlier driven by 5% demand decline in China.

Global containerboard demand declined slightly compared to previous year mainly driven by decreased activities in manufacturing sector affected by the trade dispute. However, the containerboard demand in Europe continued to increase slightly. Demand growth of corrugated board in our European focus countries remained strong; the annual average growth rate was close to 3%.

World chemical market pulp demand was flat (+0.1%) through the first 9 months of 2019. Deliveries, however, saw a seasonal peak in Q4, which increased the overall demand by 1% in 2019. Softwood pulp deliveries increased by 4.5% thanks to grade switching, and hardwood pulp deliveries were flat compared to 2018. Global demand increased in Asia, especially in China, and Eastern Europe in 2019 and contracted in Europe, North America and Latin America. The global chemical market pulp capacity increased by 1% in 2019, the softwood segment increased by 2.2% while hardwood capacity remained flat (+0.2%). The overall demand-capacity balance stood at 89%, 1 percent point up from 2018.

High pulp inventories, slow demand, declining prices and overall economic uncertainty characterised the year 2019. Underlying demand conditions in paper and board sector remain difficult in 2019. By the end of the year, inventories were approaching the normal levels thanks to production curtailments. There were numerous closures in Western Europe during 2019, especially in woodfree paper sector. Global tissue output also grew below trend as developing markets mature.

Global softwood sawn demand 2019 remained on 2018 level. Suppliers have been reducing high inventories from 2018 and this has had a negative impact on prices on the market. In 2019 Chinese market was growing well, but as European market growth was small and the US market was slightly declining, market in total remained on 2018 level. All global markets, US, most of Europe, Japan, China and most of Asia were oversupplied during 2019. Also, Australian stocks have been worked down during the year affecting prices on the market.

Demand erosion of paper intensified during 2019. European paper demand was 8% weaker than in 2018. As a result of demand decline European paper market's supply and demand balance has turned unfavourable for paper producers. In North America demand declined by 11% compared to 2018. In Asia demand declined 5%. Global paper consumption was 7% lower in 2019 than 2018. However, variation between paper grades is wide. Uncoated fine paper global demand decline was 2% whereas newsprint declined by 12%.

Production and external deliveries

	2019	2018	Change % 2019–2018
Consumer board deliveries, 1 000 tonnes	2 811	2 914	-3.5%
Consumer board production, 1 000 tonnes	2 775	2 922	-5.0%
Containerboard deliveries, 1 000 tonnes	943	985	-4.3%
Containerboard production, 1 000 tonnes	1 303	1 320	-1.3%
Corrugated packaging deliveries, million m²	943	940	0.4%
Corrugated packaging production, million m²	1 055	1 048	0.7%
Market pulp deliveries, 1 000 tonnes	2 362	2 017	17.1%
Wood product deliveries, 1 000 m³	4 918	5 095	-3.5%
Paper deliveries, 1 000 tonnes	4 130	4 591	-10.0%
Paper production, 1 000 tonnes	4 065	4 633	-12.3%

Estimated consumption of board, pulp, sawn softwood, and paper in 2019

Tonnes, million	Europe	North America	Asia and Oceania
Consumer board	11.0	9.4	26.3
Containerboard	33.6	31.5	79.1
Corrugated board (billion m²)[1]	10.8	n/a	73.1
Chemical market pulp	17.3	7.5	34.0
Sawn softwood (million m³)	99.2	99.9	n/a
Newsprint	5.1	2.3	8.4
Uncoated magazine paper	2.8	1.2	0.2
Coated magazine paper	4.1	1.9	2.8
Coated fine paper	4.3	3.1	10.4
Uncoated fine paper	7.1	7.0	20.1

[1] European focus markets (Baltics, FI, PL, RU, SE) and China.
Source: Pöyry, ICCA, RISI, Numera, Euro-Graph, PPPC, Stora Enso, UNECE

The Group's external consumer board deliveries totalled 2 811 000 tonnes, which was 103 000 tonnes or -3.5% lower compared to a year ago. This was mainly due to decreased volumes in Europe. External containerboard deliveries decreased by 42 000 tonnes, or -4.3%, from 985 000 tonnes to 943 000 tonnes, mainly due to lower recycled containerboard deliveries. External corrugated board deliveries increased slightly to 943 million m². Market pulp deliveries increased by 345 000 tonnes or 17.1% to record high 2 362 000 tonnes, mainly due to higher bleached eucalyptus kraft pulp (BEKP) deliveries from Latin American pulp mills and challenges in Nordic wood sourcing in the beginning of 2018. External wood product deliveries decreased 177 000 m³ or -3.5% to 4 918 000 m³, negatively impacted by curtailments in Nordic saw mills to manage inventories. External paper deliveries totalled 4 130 000 tonnes, down 461 000 tonnes or -3.5% from 2018, due to lower deliveries in most paper grades and disposal of Dawang Mill in China.

Operational key figures, items affecting comparability and other non-IFRS measures

The list of Stora Enso's non-IFRS measures and the calculation of our key figures are presented at the end of the Report of the Board of Directors. See also the chapter Non-IFRS measures at the end of this report.

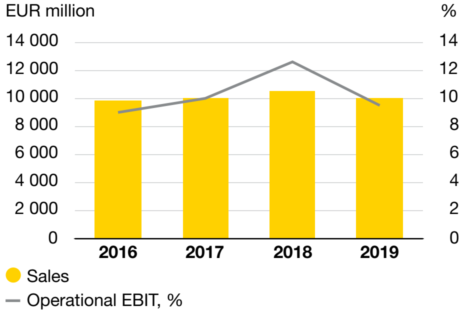
Financial results – Group

Sales at EUR 10 055 (10 486) million were 4.1% lower than a year earlier, mainly due to lower paper volumes and significantly lower sales prices in all pulp grades and containerboard, wood product prices were also lower. Consumer Board and Paper prices had a positive impact to sales. The impact of the foreign exchange rate movements on sales was EUR 39 million positive. Sales excluding the paper business decreased by 3.0%.

In October, Stora Enso completed the divestment of its 60% equity stake in the Dawang Mill in China to its joint venture partner, Shandong Huatai Paper.

Operational EBIT at EUR 953 (1 325) million decreased 28.1% or EUR 372 million and represents a margin of 9.5% (12.6%).

Sales and operational EBIT



Operational EBIT decreased mainly due to significantly lower sales prices in all pulp grades, containerboard and wood products. Lower paper volumes had also a negative impact to EBIT. Consumer Board and paper prices had a positive EBIT impact.

Variable costs were EUR 26 million higher, mainly wood and transportation costs. Fixed costs and depreciation combined decreased EUR 36 million due to profit protection programme actions. The net foreign exchange impact increased operational EBIT by EUR 73 million. The operational result from equity accounted investments was EUR 33 million lower, mainly due to the Bergvik Skog transaction during Q2.

The IFRS operating profit includes a positive net effect of EUR 493 (negative 2) million from IAS 41 forest valuation from subsidiaries and joint operations. The positive impact comes mainly from the increase in fair valuation in Stora Enso owned forests in Sweden. There is also a positive net effect of EUR 52 (positive 53) million from Stora Enso's share of net financial items, taxes and IAS 41 forest valuations of equity accounted investments. The positive impact came mainly from an increase in fair valuation of forests of the Nordic equity accounted investment Tornator.

Tangible and intangible asset impairments amounted to EUR 78 (1) million and impairment reversals amounted to EUR 21 (0) million.

The Group recorded items affecting comparability (IAC) with a negative impact of EUR 192 (positive 20) million on its IFRS operating profit and a positive impact of EUR 13 (negative 27) million on income taxes. The IACs relate mainly to Bergvik Skog restructuring (negative EUR 41 million), Oulu Mill conversion (negative EUR 22 million), environmental provisions (negative EUR 13 million), the profit protection programme (negative EUR 47 million) and net fixed asset impairments (negative EUR 62 million) coming mainly from asset write downs in Biomaterials division.

The IFRS operating profit was EUR 1 305 (1 390) million.

Segment share of operational EBIT, IAC, fair valuations and non-operational items and operating profit/loss

	Year Ended 31 December					
	Operational EBIT		IAC, Fair Valuations and Non-Operational items		Operating Profit/Loss	
EUR million	2019	2018	2019	2018	2019	2018
Consumer Board	250	231	-3	-1	247	230
Packaging Solutions	135	245	6	-1	141	244
Biomaterials	233	427	-53	-3	180	425
Wood Products	105	165	-13	-1	92	164
Paper	213	234	-59	0	154	234
Other	17	23	474	71	491	93
Total	**953**	**1 325**	**352**	**65**	**1 305**	**1 390**
Net financial items					-168	-180
Profit before Tax					**1 137**	**1 210**
Income tax expense					-281	-221
Net Profit					**856**	**988**

Operational EBIT comprises the operating profit excluding items affecting comparability (IAC) and fair valuations from the segments and Stora Enso's share of the operating profit of equity accounted investments (EAI), also excluding items affecting comparability and fair valuations.

IAC =Items affecting comparability are exceptional transactions that are not related to recurring business operations. The most common IAC are capital gains and losses, impairments or impairment reversals, disposal gains and losses relating to Group companies, provisions for planned restructurings, environmental provisions, changes in depreciation due to restructuring and penalties. Items affecting comparability are normally disclosed individually if they exceed one cent per share.

Fair valuations and non-operational items include CO_2 emission rights, valuations of biological assets and the Group's share of income tax and net financial items of EAI.

Items affecting comparability, fair valuations and non-operational items

	Year Ended 31 December	
EUR million	2019	2018
Impairments and impairment reversals	-62	0
Restructuring costs excluding impairments	-52	0
Acquisitions and disposals	-59	20
Other	-19	0
Items affecting comparability	**-192**	**20**
Fair valuations and non-operational items	544	45
Total	**353**	**65**

Segment share of operative assets, operative liabilities and operating capital

	Year Ended 31 December					
	Operative Assets		Operative Liabilities		Operating Capital	
EUR million	2019	2018	2019	2018	2019	2018
Consumer Board	2 644	2 486	544	535	2 100	1 951
Packaging Solutions	1 232	1 138	270	215	962	923
Biomaterials	2 748	2 722	252	260	2 496	2 462
Wood Products	868	866	221	245	647	621
Paper	1 484	1 588	827	792	657	796
Other and eliminations	5 002	2 668	402	466	4 600	2 202
Total	**13 978**	**11 468**	**2 516**	**2 513**	**11 462**	**8 955**

Key figures

	2019	2018	2017
Sales, EUR million	10 055	10 486	10 045
Operational EBIT, EUR million	953	1 325	1 004
Operational EBIT margin	9.5%	12.6%	10.0%
Operating profit (IFRS), EUR million	1 305	1 390	904
Operating margin (IFRS)	13.0%	13.3%	9.0%
Return on equity (ROE)	12.1%	15.5%	10.3%
Operational ROCE	9.8%	15.5%	11.9%
Debt/equity ratio	0.43	0.31	0.38
EPS (basic), EUR	1.12	1.28	0.79
EPS excluding IAC, EUR	1.34	1.29	0.89
Dividend and distribution per share[1], EUR	0.50	0.50	0.41
Payout ratio, excluding IAC	37.3%	38.8%	46.1%
Payout ratio (IFRS)	44.6%	39.1%	51.9%
Dividend and distribution yield, (R share)	3.9%	5.0%	3.1%
Price/earnings (R share), excluding IAC	9.68	7.82	14.90
Equity per share, EUR	9.42	8.51	7.62
Market capitalisation 31 Dec, EUR million	10 328	8 123	10 422
Closing price 31 Dec, A/R share, EUR	13.55/12.97	11.05/10.09	13.20/13.22
Average price, A/R share, EUR	12.88/11.05	16.36/14.61	11.93/11.54
Number of shares 31 Dec (thousands)	788 620	788 620	788 620
Trading volume A shares (thousands)	1 299	3 068	6 768
% of total number of A shares	0.7%	1.7%	3.8%
Trading volume R shares (thousands)	679 475	610 300	571 717
% of total number of R shares	111.0%	99.7%	93.4%
Average number of shares, basic (thousands)	788 620	788 620	788 620
Average number of shares, diluted (thousands)	789 533	789 883	790 024

[1] See the Board of Directors' proposal for dividend distribution.

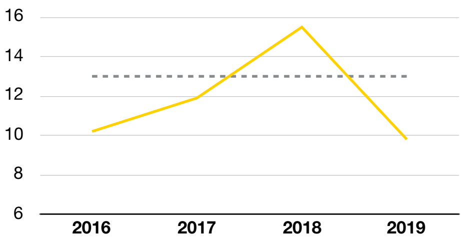
Net financial expenses at EUR 168 (180) million were EUR 12 million lower than a year ago. Net interest expenses at EUR 147 million increased by EUR 19 million mainly as a result of higher gross debt levels and the implementation of IFRS 16 Leases, partly offset by lower average interest expense rate on borrowings. Other net financial expenses at EUR 15 million were EUR 3 million lower than a year ago. Net foreign exchange impact in respect of cash equivalents, interest-bearing assets and liabilities and related foreign-currency hedges amounted to a loss of EUR 6 (loss of EUR 33) million, mainly due to revaluation of foreign currency net debt in subsidiaries and joint operations.

The net tax charge totalled EUR 281 (221) million, equivalent to an effective tax rate of 24.7% (18.3%), as described in more detail in Note 9 Income taxes, of the Consolidated Financial Statements.

The loss attributable to non-controlling interests was EUR 24 (24) million, leaving a profit of EUR 880 (1 013) million attributable to Company shareholders.

Earnings per share excluding items affecting comparability were EUR 1.34 (1.29) and including items affecting comparability EUR 1.12 (1.28). Operational return on capital employed was 9.8% (15.5%).

Operational ROCE



Operational ROCE, %
— Target >13%

The Group capital employed was EUR 10 632 million on 31 December 2019, an increase of EUR 1 808 mainly due to the adoption of IFRS 16 Leases and the Bergvik Skog transaction.

Breakdown of Capital Employed change

EUR million	Capital Employed
31 December 2018	**8 824**
Capital expenditure less depreciation	96
Right-to-use assets - adoption of IFRS 16 leases	530
Impairments and reversal of impairments	-56
Fair valuation of biological assets	493
Operational decrease in biological asset values	-50
Unlisted securities (mainly PVO)	103
Equity accounted investments	-1 202
Net liabilities in defined benefit plans	-58
Operative working capital and other interest-free items, net	-307
Net tax liabilities	-97
Acquisition of subsidiary companies	2 362
Translation difference	34
Other changes	-38
31 December 2019	**10 632**

Financing

Cash flow from operations was strong EUR 1 980 (1 365) million and cash flow after investing activities was EUR 1 386 (811) million. Working capital decreased by EUR 240 (increased 428) million, inventories decreased by EUR 179 million and short-term receivables by EUR 178 million having a positive impact into working capital. Payments related to the previously announced provisions were EUR 24 million.

Operative cash flow

EUR million	2019	2018
Operational EBITDA	1 542	1 878
IAC on operational EBITDA	-128	20
Other adjustments	325	-104
Change in working capital	240	-428
Cash Flow from Operations	**1 980**	**1 365**
Cash spent on fixed and biological assets	-587	-525
Acquisitions of equity accounted investments	-7	-29
Cash Flow after Investing Activities	**1 386**	**811**

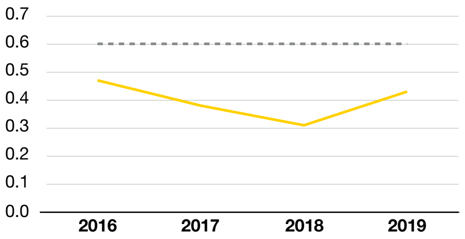
At the end of the period, net interest-bearing liabilities of the Group were EUR 3 209 (2 092) million. The increase in net interest-bearing liabilities was mainly driven by restructuring of Bergvik forest assets in Sweden and IFRS 16 implementation. As a result of the restructuring, Stora Enso's Swedish forest assets were placed in a fully owned subsidiary and consolidated line by line in Stora Enso's results with the Group's forest holdings in Sweden increasing to 1.4 million hectares. Cash and cash equivalents net of bank overdrafts amounted to EUR 863 (1 128) million. The debt/equity ratio at 31 December 2019 was 0.43 (0.31). The ratio of net debt to the last 12 months' operational EBITDA was 2.1, compared to the ratio of 1.1 at the end of the previous year. The increase was mainly due to the restructuring of the Bergvik Skog (impact 0.6) and due to the adoption of IFRS 16 Leases (impact 0.2). The average interest rate on borrowings for year 2019 decreased to 3.5% (4.3%).

In the first quarter of 2019 Stora Enso successfully issued its first Green Bonds with a total nominal value of SEK 6 000 million. The bonds consist of three tranches with SEK 3 000 million maturing in August 2021 and paying a floating coupon of STIBOR +0.85%, SEK 1 250 million maturing in February 2024 and paying a floating coupon of STIBOR + 1.45%, and SEK 1 750 million maturing in February 2024 and paying a fixed coupon of 1.875%.

In the second quarter of 2019 Stora Enso issued SEK 1 000 million loan in Green Bond format under EMTN and Green Bond frameworks. The loan matures in 2026. In addition, Stora Enso also entered into a new amortising credit-institution loan with the nominal of SEK 1 500 million. The loan matures in 2021.

Stora Enso has EUR 600 million committed revolving credit facility that was fully undrawn at the year-end. Additionally, Stora Enso has access to various long-term sources of funding up to EUR 950 (1 000) million. These mainly relate to the available funding sources from Finnish pension funds.

Debt/equity ratio



Debt/equity ratio
— Target <0.6

The fair valuation of cash flow hedges and equity investments fair valued through other comprehensive income in accordance with IFRS 9 increased equity by EUR 95 (increase of EUR 75) million mainly due to higher fair valuation of Group's shareholding in Pohjolan Voima Oy (PVO) partly offset by net fair valuation loss from outstanding cash flow hedge derivatives recorded in other comprehensive income.

At the end of the year, the ratings for Stora Enso's rated bonds were as follows:

Rating agency	Long/short-term rating	Valid from
Fitch Ratings	BBB- (stable)	8 August 2018
Moody's	Baa3 (stable) / P-3	1 November 2018

Financials

Financial results – Segments

Consumer Board division

The ambition of the Consumer Board division is to be the global leader in high-quality virgin fiber cartonboard. We aim to be the preferred partner of customers and brand owners in premium end-use packaging and graphical segments. Our wide board and barrier coating selection is suitable for consumer packaging for liquid, food, pharmaceutical and luxury goods.

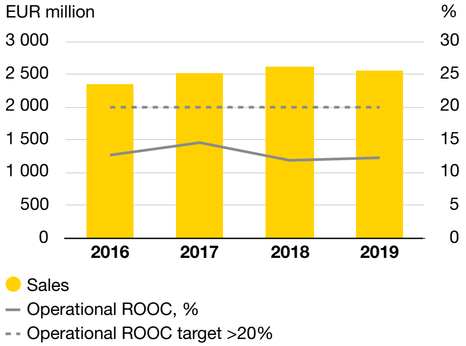
EUR million	2019	2018
Sales	2 563	2 622
Operational EBITDA	433	423
Operational EBITDA margin	16.9%	16.1%
Operational EBIT	250	231
Operational EBIT margin	9.7%	8.8%
Operational ROOC	12.3%	11.9%
Cash flow from operations	476	339
Cash flow after investing activities	328	177
Board deliveries, 1 000 tonnes	2 812	2 916
Board production, 1 000 tonnes	2 775	2 922

Consumer Board division sales at EUR 2 563 (2 622) million decreased by 2.3% due to lower volumes resulted from value over volume approach. Average price per tonne improved due to price increases.

Operational EBIT at EUR 250 (231) million increased by 8.0%, due to higher prices and both lower variable and fixed costs. Lower pulp prices had the biggest positive impact on variable costs.

Sales and operational ROOC

Consumer Board



Packaging Solutions division

The Packaging Solutions division provides fiber-based board materials and corrugated packaging products and services that are designed for a wide array of applications. Our renewable high-end packaging solutions serve leading converters, brand owners and retailers – including those in e-commerce that are looking to optimise performance, drive innovation and improve their sustainability.

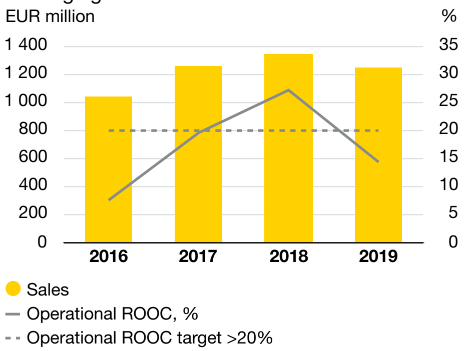
EUR million	2019	2018
Sales	1 247	1 344
Operational EBITDA	212	313
Operational EBITDA margin	17.0%	23.3%
Operational EBIT	135	245
Operational EBIT margin	10.8%	18.2%
Operational ROOC	14.4%	27.2%
Cash flow from operations	248	272
Cash flow after investing activities	135	172
Board deliveries, 1 000 tonnes	1 299	1 308
Board production, 1 000 tonnes	1 303	1 320
Corrugated packaging deliveries, million m^2	1 055	1 059
Corrugated packaging production, million m^2	1 055	1 048

Packaging Solutions division sales were EUR 1 247 (1 344) million, down 7% mainly due to significantly lower containerboard prices. Corrugated board volumes increased and containerboard volumes decreased slightly.

Operational EBIT at EUR 135 (245) million decreased 45% from an all time high level a year ago. The reason for the reduction was mainly the significantly lower sales prices. Wood and energy costs were higher, however the Corrugated business benefited from significantly lower variable costs due to low containerboard prices. Fixed costs were lower due to profit protection programme actions.

Sales and operational ROOC

Packaging Solutions



Biomaterials division

The Biomaterials division offers a variety of pulp grades to meet the demands of paper, board, tissue, textile and hygiene product producers. We maximise the business potential of the side streams of our processes, such as tall oil and turpentine from biomass. Based on our strong innovation approach, all fractions of biomass, like lignin and sugars, hold potential for use in various applications.

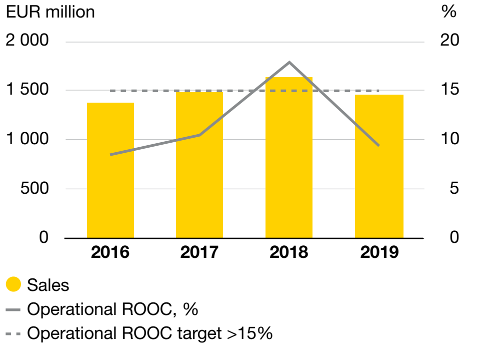
EUR million	2019	2018
Sales	1 464	1 635
Operational EBITDA	356	550
Operational EBITDA margin	24.3%	33.6%
Operational EBIT	233	427
Operational EBIT margin	15.9%	26.1%
Operational ROOC	9.4%	17.9%
Cash flow from operations	423	438
Cash flow after investing activities	266	327
Pulp deliveries, 1 000 tonnes	2 520	2 432

Biomaterials division sales were EUR 1 464 (1 635) million, down 10.5% due to significantly lower pulp sales prices in all grades. Delivery volumes were higher, and currencies had a positive EUR 38 million impact on sales.

Operational EBIT at EUR 233 (427) million was 45.6% down from previous year, due to significantly lower sales prices in all grades. Operational EBIT was also negatively impacted by higher wood costs. Fixed costs were lower due to profit protection programme actions. Foreign exchange rates had a positive impact on operational EBIT.

Sales and operational ROOC

Biomaterials



Financials

Wood Products division

The Wood Products division is a leading provider of innovative wood-based solutions. The product range covers applications for construction, the window and door industry, as well as for the packaging and decoration industries. Biocomposites offer plastic replacement opportunities in e.g. consumer goods, industrial components, cosmetics and packaging. Pellets provide a sustainable solution for heating. The offering includes service concepts such as Building Solutions and e-business. Our solutions meet strict requirements regarding safety, quality, design and sustainability.

EUR million	2019	2018
Sales	1 569	1 622
Operational EBITDA	153	199
Operational EBITDA margin	9.8%	12.3%
Operational EBIT	105	165
Operational EBIT margin	6.7%	10.2%
Operational ROOC	16.6%	28.1%
Cash flow from operations	183	147
Cash flow after investing activities	135	80
Deliveries, 1 000 m³	4 753	4 932

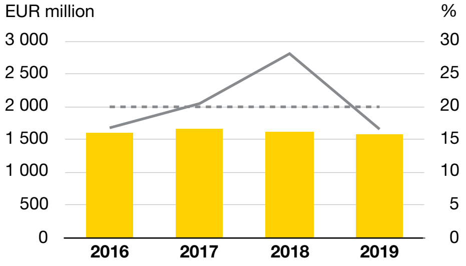
Wood Products division sales were EUR 1 569 (1 622) million, down 3.3% due to lower volumes and sales prices.

Operational EBIT at EUR 105 (165) million decreased by 36% from an exceptionally high level a year ago. Market demand and sales prices were lower. The impact was partially compensated by lower wood costs in Central Europe and lower fixed costs due to profit protection programme actions.

Record high cash flow due to good working capital management.

Sales and operational ROOC

Wood Products



- Sales
- Operational ROOC, %
- Operational ROOC target >20%

Paper division

Stora Enso is the second largest paper producer in Europe with an established customer base and a wide product portfolio for print and office use. Customers benefit from Stora Enso's broad selection of papers made from recycled and virgin fiber as well as our valuable industry experience, know-how and customer support.

EUR million	2019	2018
Sales	2 856	3 066
Operational EBITDA	318	345
Operational EBITDA margin	11.1%	11.3%
Operational EBIT	213	234
Operational EBIT margin	7.4%	7.6%
Operational ROOC	29.3%	30.2%
Cash flow from operations	344	222
Cash flow after investing activities	264	175
Cash flow after investing activities to sales	9.3%	5.7%
Paper deliveries, 1 000 tonnes	4 130	4 591
Paper production, 1 000 tonnes	4 065	4 633

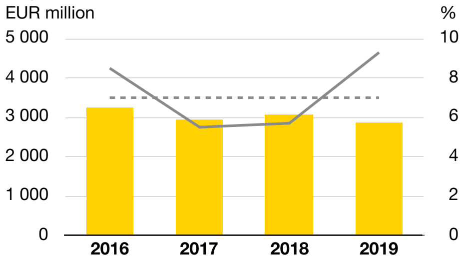
Paper division sales were EUR 2 856 (3 066) million, down 6.8% due to lower volumes resulted from market demand decrease. Despite the overcapacity on the market the local prices were higher in all segments.

Operational EBIT at EUR 213 (234) million declined by 9.1% due to lower volumes and higher wood and chemical costs. Fixed costs were lower due to profit protection programme.

Very strong cash flow due to good working capital management.

Sales and cash flow after investing activities to sales[1]

Paper



- Sales
- Cash flow after investing activities to sales, %
- Cash flow after investing activities to sales target >7%

[1] The Paper division's financial target is cash flow after investing activities to sales (non-IFRS), because the division's goal is to generate cash flow for the Group so that it can transform into a renewable materials growth company.

Other

The segment Other includes the Group's Swedish forest holdings, the Finnish forest equity-accounted investment Tornator, Stora Enso's shareholding in the energy company Pohjolan Voima (PVO), operations supplying wood to the Nordic and Baltic mills, plantations not connected to any mill site, and the Group's shared services and administration.

EUR million	2019	2018
Sales	3 396	3 425
Operational EBITDA	70	48
Operational EBITDA margin	2.1%	1.4%
Operational EBIT	17	23
Operational EBIT margin	0.5%	0.7%
Cash flow from operations	305	-52
Cash flow after investing activities	258	-119

Sales of the segment Other at EUR 3 396 (3 425) million reduced from previous year mainly due to lower sales in Wood Supply unit.

Operational EBIT at EUR 17 (23) million was down from previous year mainly due to lower results from the equity accounted investments following the Bergvik Skog transaction and higher costs related to innovations and strategic initiatives.

During the fourth quarter of 2019 EUR 232 million was received as dividends and capital repayment from the equity accounted investment Bergvik Skog.

Investments and capital expenditure

Additions to fixed and biological assets including internal costs capitalised in 2019 totalled EUR 656 (574) million. The total amount includes additions in biological assets of EUR 77 (83) million.

During the first quarter of 2019, the EUR 42 million investment in flash-drying capacity of chemi-thermomechanical pulp (CTMP) at Imatra Mills was completed. The EUR 45 million investment in a new cross laminated timber (CLT) unit at the Gruvön sawmill was completed, and the first commercial volumes were produced during the first quarter of 2019.

The EUR 52 million investment to increase the dissolving pulp production capacity at Enocell Mill was completed during the third quarter. The gradual ramp-up started during the fourth quarter. Production started as planned during the third quarter of 2019 at Launkalne sawmill in Latvia, following EUR 13 million investment to increase the sawmilling and planing capacity.

During the fourth quarter of 2019, the EUR 9 million to upgrade and expand the corrugated packaging plant in Riga, Latvia was completed.

In March 2019, Stora Enso announced investment of EUR 5 million to build a new production line and related infrastructure to manufacture formed fiber products at Hylte Mill in Sweden. The formed fiber technology enables manufacturing of products that are designed for circularity, meaning that they are renewable, recyclable and biodegradable and do not contain any plastic.

Financials

In May, Stora Enso announced investment of approximately EUR 350 million to convert the Oulu paper mill in Finland into packaging production. The investment will include a new world-class line for virgin-fiber based kraftliner (both brown and white-top) with an annual capacity of 450 000 tonnes, the modification of the pulp mill and drying machine for unbleached brown pulp, as well as investments to enhance the mill's environmental performance. Production on the converted machine is estimated to start by the end of 2020.

In May, the shareholders of Bergvik Skog AB, a Swedish forest holding company, finalised the previously announced restructuring of its ownership. Stora Enso's forest holdings in Sweden increased to 1.4 million hectares, of which 1.15 million hectares is productive forest land. Prior to the transaction, Stora Enso's indirect share of Bergvik Skog's productive forest land was 936 thousand hectares.

In July, Stora Enso announced investment of EUR 10 million to build a pilot facility for producing bio-based carbon materials based on lignin. Wood-based carbon can be utilised as a crucial component in batteries typically used in consumer electronics, the automotive industry and large-scale energy storage systems. The pilot plant will be located at Stora Enso's Sunila Mill in Finland.

In July, Stora Enso initiated feasibility studies for a possible cross laminated timber (CLT) unit in connection with its Ždírec mill in the Czech Republic and a new construction beam unit to be located at the Ybbs mill in Austria.

The main projects ongoing at the end 2019 were, EUR 22 million investment at Skoghall Mill in Sweden in an expansion of the existing water treatment plant; EUR 25 million investments to boost green energy generation at Maxau Mill and EUR 350 million conversion of Oulu Mill into kraftliner production.

Innovation, research and development

Stora Enso's expenditure on innovation, research and development in 2019 was EUR 141 (149) million, which was equivalent to 1.4% (1.4%) of sales.

Stora Enso is recognised as the renewable materials company. We believe that everything made with fossil-based materials today can be made from a tree tomorrow. Work for replacing fossil-based products with new bio-based applications continues.

Scale-up of the Hylte biocomposite DuraSense™ of Wood Products, Sunila lignin for phenol replacement, Lineo™ of Biomaterials and ECO TAG™ of Intelligent Packaging continued in 2019. Commercialisation has been slower than planned. However, the speed of scaling up is accelerating.

Consumer Board division continued to develop the generation 1 MFC film at Imatra Mill. Some adjustments will still be needed to the paper machine 7 in Imatra to enable Proof of Concept #2. First trial orders have been shipped. The generation 2 dewatering development continues with collaboration partners.

Formed fiber project, implementation of which started in February 2019, has developed very quickly and smoothly. The installation of the first two presses, related pulp handling and infrastructure was ready for commissioning during the second half of December 2019 and first-run products, salad bowls, came out of the lines towards the end of the year. Commercial production of PureFiber™ started in January. Customers show high interest in these products, which will replace currently used plastics.

The company continues to focus on five renewable material R&D themes: Forestry & Biomass, Bio-based chemistry, Material Science and Design, process solutions, and wood as a construction material. Additionally, focus on Digitalisation has increased with focus areas Robotic Process Automation (RPA), machine learning, smart operations, transparent supply chain, digital customer experience and Intelligent Packaging.

Strong consumer demand to replace fossil-based plastics has positively impacted the attractiveness of new fiber-based solutions to our customers. These applications include materials for new packaging board grades especially targeting to replace single use plastics and plastic packaging. For long-term success, Stora Enso collaborates with academia and research institutes; for fast results, we work together with startups. Good examples are Sulapac, where the cooperation originates in Stora Enso Accelerator programme and 20tree.ai, where cooperation with the startup shows results of joint efforts with the Combient Foundry Venture Client Program. Sulapac holds patents in biodegradable materials, and 20tree.ai technology is used for forest valuation based on satellite images.

To trigger innovation processes, we will need ideas, which we will receive from customers, suppliers, various stakeholders and our own employees. WeNovate, our group-wide tool for collecting and evaluating ideas from the Stora Enso divisions and functions, has gained traction. It has changed our ideation and innovation culture by engaging an increasing number of employees into the activity. In 2019, we ran 25 campaigns and have 15 open idea channels operating. In total almost 1200 ideas were collected, growing from 875 in 2018. The most suitable ideas enter state-gate based innovation processes of the divisions and functions.

Stora Enso has established funds to be used in an agile manner for capital expenditure in novel projects, which have potential business cases. The Innovation Fund is an allocation for new pilot scale opportunities and new business models. The Digitalisation Fund is an allocation for piloting new digital tools and models. Applications for these resources will be approved in the company's Investment Working Group. We have allocated an agility reserve to cover operational expenses related to cross-divisional projects in 2020, as was the case in 2019.

Stora Enso defines innovation as the process of translating ideas into new value. Research and development work is a basic element in the process. The company employs close to 400 people in the following R&D centres:

- Research Centre and Pulp Competence Centre in Imatra (Finland)
- Research Centre and Pulp Competence Centre in Karlstad (Sweden)
- The Innovation Centre for biomaterials in Sickla, Stockholm (Sweden)
- The Innovation Centre for packaging in Helsinki (Finland)
- Biocomposite Competence Centre in Hylte (Sweden)
- Intelligent Packaging Centre in Tampere (Finland)
- Virdia demonstration plant in Louisiana and Research Centre in Virginia (United States)

Supporting Stora Enso's innovation strategy, we have several co-operation projects with research organisations and academic institutions. The aim is to build clearer understanding of how our needs and the universities' capabilities can meet, first and foremost in the research sphere surrounding Stora Enso research themes and the long-term research needs in the divisions. The second target is to widen the contact network. Thirdly, we aim to identify topics where we have special interest regarding the universities' bachelor, master and PhD programmes, also for recruiting talents to mills and research/innovation centres.

Our collaboration partners include Aalto University in Finland, and Chalmers University of Technology and the Royal Institute of Technology in Sweden, VTT Technical Research Centre of Finland, SweTree Technologies Ltd, Swedish University of Agricultural Science and Wallenberg Wood Science Center R&D. Stora Enso is a member of national, European and trade associations focused on the bioeconomy and forest agendas including Confederation of European Paper Industries (CEPI), Forest Technology Platform (FTP), and the Swedish and Finnish Forest Industry Federations. Stora Enso is also a member in the EU's Biobased Industries Consortium (BIC) and the Bio-Based Industries Initiative Joint Undertaking, a partnership within the EU Horizon 2020 research programme.

Intellectual property (IP) is an increasingly important tool to support Stora Enso's transformation. In this context, IP rights relate to areas such as patens, utility models, designs, trademarks, domain names, know-how and trade secrets. IP landscape as well as FTO (Freedom to Operate) investigations are of equally high importance. During 2019, Stora Enso continued to strengthen its patent portfolio, with 65 priority founding patent applications filed and over 430 patents granted worldwide. The Group IP has within the Group the responsibility for handling IP matters. The Group IP strategy has been approved by the CEO supported by the Group IP Steering Team.

Non-financial information

Requirements of non-financial information reporting according to the Finnish Accounting Act are reported below. The scope of the reporting includes those non-financial topics that relate to the Group's key risks.

Risks and policy principles related to these topics are additionally described on pages 10–16. In addition, respect for human rights is explicitly covered below from the risk perspective.

Business model

Replacing the use of fossil-based resources with renewable raw materials is the foundation for a sustainable bioeconomy. Stora Enso's products contribute to a low-carbon circular economy, in which materials are reused and recycled, while waste is minimised, to maximise environmental, social, and financial added value. As a leading renewable materials company with access to carbon-neutral biomass, Stora Enso is in a unique position to combat global warming. Stora Enso's business model description is in the beginning of the Report of Board of Directors and value creation model is presented in **Strategy 2019** on page 10.

Stora Enso acknowledges the importance of the United Nations Sustainable Development Goals as part of a commonly agreed global ambition to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. Read more on pages 10–11 in **Sustainability 2019**.

Sustainability

Sustainability is a key element of Stora Enso's corporate governance, promoted by the Board of Directors, the CEO, and the Group Leadership Team (GLT). The CEO carries the ultimate responsibility for the successful implementation of the sustainability strategy. Work on sustainability is led by the Executive Vice President, Sustainability, who reports directly to the CEO. The Board of Directors' Sustainability and Ethics Committee oversees the implementation of Stora Enso's Sustainability Strategy and Ethics and Compliance Strategy. The Committee met four times in 2019.

Stora Enso's Sustainability Policy describes our overall approach and governance model. At the same time, our Code of Conduct and other policies, guidelines, and statements on specific sustainability topics all further elaborate our approach, while also guiding our employees in their everyday work. These documents are available at storaenso.com/sustainability.

More information on Stora Enso's approach to sustainability is published in **Sustainability 2019**.

Environmental matters

Forests, plantations, and land use

Key policy: Wood and fiber sourcing, and land management policy

Progress on responsible forestry is followed with a key performance indicator (KPI) measuring the proportion of land in wood production and harvesting owned and managed by Stora Enso that is covered by forest certification schemes. Our target is to maintain the high level of 96%. In 2019, coverage amounted to 98% (96% in 2018). At year-end Stora Enso owned or managed lands with a total area of 2.35 million hectares.

In 2019, the total amount of wood (including roundwood and wood chips) delivered to our mills was 36.3 million m^3 (solid under bark) (38.7 million m^3 in 2018). The proportion of third-party certified wood in the Group's total wood supply was 75% (76%).

Carbon dioxide

Key policy: Energy and carbon policy

Stora Enso's science-based target (KPI) is to reduce greenhouse gas emissions from our operations by 31% per tonne of pulp, paper and board produced by 2030 compared with the 2010 base-year. In 2019, our CO_2e emissions per saleable tonne of board, pulp, and paper were 25% lower than the 2010 benchmark level (18% lower in 2018). The performance improved mainly due to a significant new contract to purchase certified renewable electricity in Poland from the national pool and less fossil-intensive purchased electricity at Finnish mills and Beihai Mill in China.

Water use

Key policy: Stora Enso's Environmental Guidelines

The objective of Group's KPIs on total water withdrawal and process water discharges is to drive a downward trend from our 2016 baselines of 57 m^3 and 27 m^3 per saleable tonne of product, respectively. In 2019, our total water withdrawal was 61 m^3 per saleable tonne (56 in 2018) and our process water discharges amounted to 29 m^3 per saleable tonne (26 in 2018). Despite increasing focus on water efficiency lower production of board, pulp and paper partly affected our specific water performance per tonne.

Social and employee matters

Employees and wider workforce

Key policies: Minimum HR requirements, Health and Safety policy

On 31 December 2019, there were 25 100 (26 100) employees in the Group. The average number of employees in 2019 was 26 096, which was approximately the same than the average number in 2018. The numbers include 50% of the employees at Veracel in Brazil and Montes del Plata in Uruguay.

Personnel expenses totalled EUR 1 331 (1 330) million or 13.2% of sales. Wages and salaries were EUR 1 004 (1 000) million, pension costs EUR 166 (170) million and other employer costs amounted to EUR 157 (153) million.

At the end of 2019, the Group's top three countries in respect to the number of employees were Finland, China and Sweden. 26% (26%) of employees were women.

Personnel turnover in 2019 was 15.0% (15.0%). Illness-related absenteeism amounted to 3.2% (3.0%) of total theoretical working hours.

In 2019, our Total Recordable Incident (TRI) rate increased to 7.0 (6.1). The milestone for 2019 was 5.3. There was a fatal accident at a Stora Enso unit when a contractor was killed during an equipment maintenance activity in Poland in March. An occupational fatality occurred at Ždírec sawmill in Czech Republic in November involving one of our own employees. The investigation is ongoing. In addition, a fatality occurred at Skutskär Mill in Sweden in November involving a customer's contractor employee. An investigation by the authorities concluded that the fatality was due to a fall from the top of the tanker. The learnings from these tragic events will be acted upon in Stora Enso.

Stora Enso's KPI for leadership, the Leadership Index, measures employee perceptions of their managers. The index is calculated based on our annual employee survey. Our target was to achieve an index of 85/100 by 2022. In 2019, the Leadership Index remained stable at 83 (83).

Remuneration to the Board of Directors and key management is described in Note 7 of the Consolidated financial statements.

Suppliers

Key policy: Supplier Code of Conduct (SCoC)

Stora Enso's key performance indicator (KPI) for responsible sourcing measures the proportion of our total supplier spend covered by our SCoC, including all categories and regions. By the end of 2019, 96% of Stora Enso's total spend on materials, goods, and services was duly covered (95% at the end of 2018), which meets our target to maintain the high level of 95%.

Community

Key policies: Guidelines for Social Responsibility, Human Rights Policy

Guangxi, China

Stora Enso leases 81 000 hectares of land in Guangxi province China, of which 27 000 hectares (29 000 hectares in 2018), corresponding to 34% (36%) of the total area, is social land leased from village collectives, individual households, and local forest farms.

Bahia, Brazil

In Bahia, Brazil, work continued on a Sustainable Settlement Initiative launched in 2012 to provide farming land and educational support for local families in the landless people's social movements. In 2018, Veracel signed a new agreement with the social landless movements to complement the earlier agreed Sustainable Settlement Initiative.

Since 2012, Veracel has voluntarily approved the transfer of approximately 20 000 hectares of land to benefit landless people. By the end of 2019, 469 hectares of productive land owned by Veracel remained occupied by movements not involved in the Sustainable Settlement Initiative or in the new agreement. Veracel will continue to seek repossessions of the remaining occupied areas through legal processes.

At the end of 2019, the total land area owned by Veracel was 213 000 hectares, of which 79 000 hectares are planted with eucalyptus for pulp production.

Respect for human rights

Key policy: Human Rights policy

Stora Enso's commitment to respect human rights covers all our operations, including our employees, contractors, suppliers, and neighbouring communities. In addition to our commitment to the

UN Guiding Principles on Business and Human Rights, Stora Enso respects and follows the legal reporting requirements of the UK, and as of 2019, also the Australian Modern Slavery Act and we continue to monitor the development of similar legislation in other countries. Human rights are integrated into our Sustainability Agenda, which is aligned with the ten principles of the UN Global Compact.

Human rights risks and impacts shall be taken into account throughout our operations, including investment decisions related to mergers, acquisitions, and divestments. Our investment guidelines stipulate that environmental and social risks and impacts, including those related to human rights, must be duly identified, assessed, and addressed prior to any investments in projects with business-critical risks.

While we respect and consider all human rights important, our highest priority human rights remain the primary focus of our work:

- Health and safety
- Fair employment conditions
- Forced labour
- Freedom of association
- Non-discrimination and non-harassment
- Land and natural resource rights acquisition and management
- Grievance mechanisms
- Children's rights (relevant to the forestry sector).

We continued to develop our human rights due diligence programme in 2019. As a first step, to strengthen our strategic focus, we mapped our Group function processes to identify development areas related to our highest priority human rights. Actions to address the findings are expected to be completed by the end of 2020. In addition, we began updating our internal guidelines to better align them with our eight priority human rights.

Anti-corruption and bribery matters

Key policies: Business practice policy, the Stora Enso Code (Code of Conduct)
As to Business Ethics, in 2019, a total of 57 reports received through Stora Enso's various grievance channels were identified as potential non-compliance cases (68 in 2018). Based on the investigations finalised by end of the year 2019, proven cases leading to disciplinary action, legal action and/or process improvements were identified in 26 (20) of the completed investigations.

Based on our assessments, nine of the proven cases can be considered relating to corruption and/or fraud (2 in 2018). Seven of the cases resulted in employee dismissal or disciplinary process (2).

The company's code of conduct index monitors and evaluates employees' perceptions of Stora Enso's work on topics covered by the Stora Enso Code and it is based on the annual employee survey results. After five years of continued improvement, the index decreased one unit to 84 in 2019 (85 in 2018). Our target is to continue the previous positive trend and further efforts will therefore be put in communications and training in 2020.

Environmental investments and liabilities

In 2019 Stora Enso's environmental investments amounted to EUR 54 (46) million. These investments were mainly to improve the quality of air and water, to enhance resource efficiency and energy self-sufficiency, and to minimise the risk of accidental spills.

Stora Enso's environmental costs in 2019 excluding interest and including depreciation totalled EUR 172 (184) million. These costs include taxes, fees, refunds, permit-related costs, and repair and maintenance costs, as well as waste water treatment chemicals and certain other materials.

Provisions for environmental remediation amounted to EUR 97 (99) million at 31 December 2019, details of which are in Note 22, Other Provisions, of the Consolidated financial statements. There are currently no active or pending legal claims concerning environmental issues that could have a material adverse effect on Stora Enso's financial position. Payments related to environmental remediation measures amounted to EUR 12 (7) million.

Risks and risk management

Our approach to risk management

Risk is an integral element of business and corporate governance, and it is characterised by both threats and opportunities, which may have an impact on future performance and the financial results of Stora Enso, as well as on its ability to meet certain social and environmental objectives. Stora Enso is committed to ensuring that systematic, holistic and proactive management of risks and opportunities is among its organisational core capabilities, and that a culture is fostered where both are carefully considered in all business decisions. Through consistent application of dynamic risk analysis, we enhance opportunities and manage risk in order to reduce threats to thus achieve our competitive advantage.

Risk governance

Stora Enso defines risk as the effect of uncertainty on our ability to meet organisational values, objectives and goals. The Group Risk and Internal Control Policy, which is approved by the Board of Directors, sets out the overall approach to governance and the management of risks in accordance with the COSO (Committee of Sponsoring Organizations) framework and in line with the ISO 31000 standard. The Board retains the ultimate responsibility for the overall risk management process and for determining what an appropriate and acceptable level of risk is.

The Board has established a Financial and Audit Committee to provide support to the Board in monitoring the adequacy of the risk management process within Stora Enso, and specifically regarding the management and reporting of financial risks. This oversight scope includes also climate related risks which are reviewed annually and constitute a specific theme of focus. The Sustainability and Ethics Committee is responsible for overseeing the company's sustainability and ethical business conduct, its strive to be a responsible corporate citizen, and its contribution to sustainable development.

The head of Enterprise Risk Management, reporting to the CFO, is responsible for the design, development and monitoring of the top-down implementation of the Group risk management framework. Each division head, together with their respective management teams, are responsible for process execution and cascading the framework and guidelines further down in the organisation. The Internal Audit unit evaluates the effectiveness and efficiency of the Stora Enso risk management process. In 2019, Stora Enso established a cross-functional co-ordination team to facilitate the implementation of TCFD (Task Force on Climate-related Financial Disclosures) recommendations.

Risk management process

Risk management is embedded in all decision-making processes, with holistic risk assessments conducted as part of all significant investment decisions. In connection with the annual strategy process, business divisions and group service and support functions conduct a holistic baseline risk assessment, linked to their key objectives. Specific guidance regarding the risk management process is outlined in the enterprise risk management instructions.

Business entities and functions identify the sources of risk events including changes in circumstances and their causes and potential consequences. Stora Enso's risk model outlines the overall risk universe which is used to support holistic risk identification and risk consolidation, while also providing taxonomy as well as consistency in risk terminology. Risk appetite is determined across main risk categories on the business division level.

Risk analysis involves developing an understanding of the risk to provide an input for risk evaluation. The purpose of risk evaluation is to determine the risk priorities and to support decision making to determine which risks require treatment/actions. Risks are assessed in terms of their impact and likelihood of occurrence, often based on specific risk scenarios. The effectiveness of existing risk reduction is factored in to define the residual risk level. Pre-defined impact scales consider financial, safety and reputational impacts, on both a quantitative and qualitative basis.

Risk treatment involves selecting one or more risk management option, such as avoidance, reduction, sharing or retention. Additional risk mitigation actions are determined for risks which exceed the perceived risk tolerance incorporating the assignment of responsibility, schedule and timetable of the risk response actions.

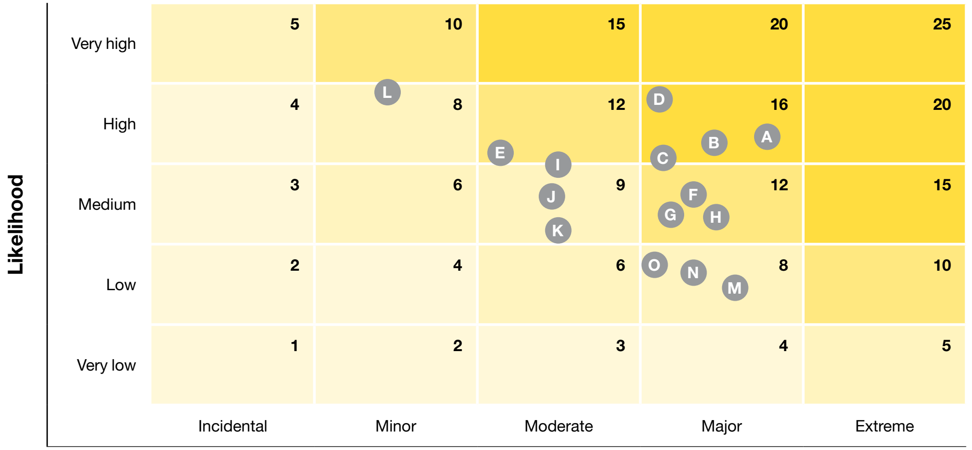
Following the annual baseline assessment, prioritised and emerging risks, as well as the corresponding risk mitigation and business continuity plans related to those risks, are reviewed in divisional business review meetings on a quarterly basis.

Despite the measures taken to manage risks and mitigate the impact of risks, and while some of the risks remain beyond the direct control of the management, there can be no absolute assurance that risks, if they occur, will not have a materially adverse effect on Stora Enso's business, financial condition, operating profit or ability to meet financial obligations.

Financials

Main risk factors

Risk map



Impact – annualised Group EBITDA impact / share price impact / reputational impact

Key risks in 2019

	Risk	Risk classification	Time span*	Change vs 2018	Level of possible management influence
Major impact – high likelihood					
A	Macroeconomy, geopolitics, and currency rates	E/S/F	ST	→	
B	Global warming – physical impacts	E/S	LT	↑	
C	Sourcing	I/S/O	MT	→	
D	Regulatory changes	E/S/C	MT	↑	
Moderate impact – high likelihood					
E	Information technology and security	I/O	MT	↓	
Major impact – medium likelihood					
F	Ethics and compliance	M/C	MT	→	
G	People and capabilities	I/O	MT	→	
H	Strategic investments	M/C	MT	↑	
Moderate impact – medium likelihood					
I	Competition and market demand	E/S	MT	→	
J	Product safety	M/O/C	MT	→	
K	Community relations and social responsibility	I/O/C	MT	→	
Minor impact – high likelihood					
L	Health and safety	I/O	ST	→	
Minor impact – low likelihood					
M	Digitalisation	I/S	MT	→	
N	Forest and land use	I/O/C	MT	→	
O	Mergers, acquisitions, and divestures	M/I/O/C	MT	→	

* The most relevant timeframe when underlying risk factors are expected to manifest themselves

Symbols

M = Mandatory obligations
E = External factors
I = Internal capabilities
S = Strategic
O = Operational
C = Compliance
F = Financial market and reporting
ST = Short-term (next 12 months)
MT = Medium term (1–5 years)
LT = Long-term (upto 25–30 years)

Change vs 2018

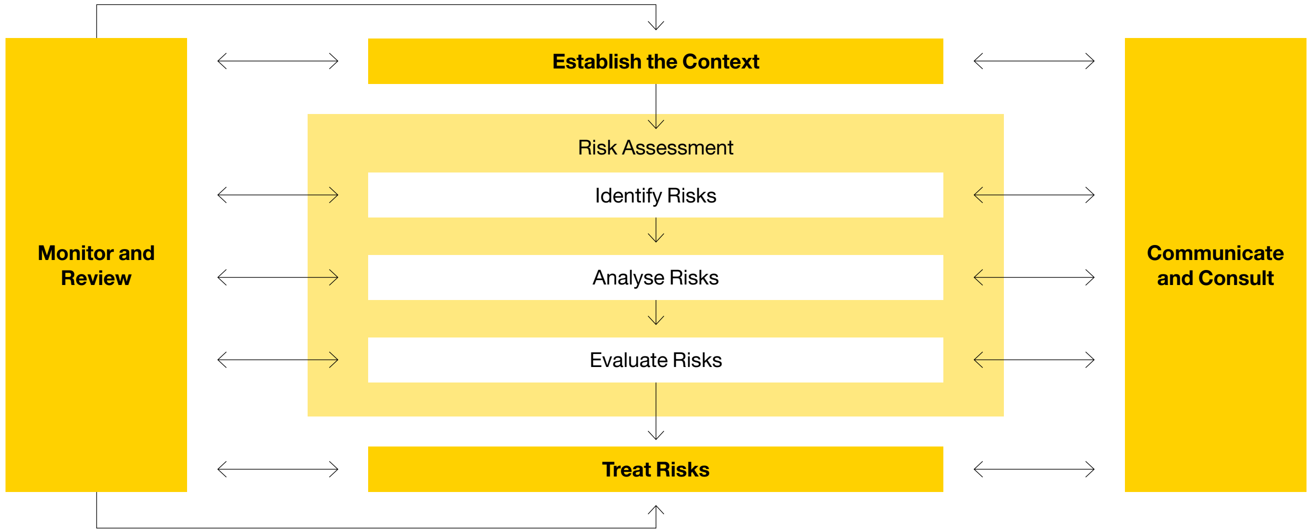
Increased ↑
Decreased ↓
Stable →

Level of possible management influence

Low High

Financials

Risk management process



Strategic risks

Macroeconomy, geopolitics, and currency rates
Stora Enso operates in more than 30 countries and is affected by the global economy. Changes in broad economic conditions, sharp market corrections, increasing volatility in foreign exchange rates and chronic fiscal imbalances could have negative and material impact on the Group's profit, cash flows and financial position. A prolonged global recession may materially and adversely affect Stora Enso's performance and financial condition. A recession may also materially affect the Group's customers, suppliers and other parties with whom it does business. Exchange rate fluctuations may have a material impact on the reported results through transaction and translation risk impact.

A significant and sustained economic downturn, or any similar event, could have a material adverse effect on the Group's operational performance and financial condition.

Stora Enso is exposed to several financial market risks that the Group is responsible for managing under policies approved by the Board of Directors. The objective is to achieve cost-effective funding in Group companies and manage financial risks using financial instruments to reduce earnings volatility. The main exposures for the Group besides currency risk are interest rate risk, funding risk, commodity price risk and credit risk.

Financial risks are discussed in detail in Note 24, Financial risk management, of the Consolidated financial statements.

Policy principles and mitigation measures
The Group has a diversified portfolio of businesses which mitigates exposure to any one country or product segment. We monitor the external environment continuously and our planning assumptions take account of important near- to medium-term and long-term drivers related to key macro-economic factors. We closely monitor the Board-approved risk appetite compliance for specific financial metrics and actively manage cash flow and liquidity. We hedge 50% of the highly probable 12-month net foreign exchange flows in main currency pairs. Currency translation risk is reduced by funding assets, whenever economically possible, in the same currency as the asset. The divisions regularly monitor their order flows and other leading indicators, where available, so that they may respond quickly to deterioration in trading conditions. In the event of a significant deterioration in general economic condition and in main leading economic indicators, the Group identifies and implements cost reduction measures to offset the impact on margins from deterioration in sales.

Related opportunities
- A diverse business portfolio and geographical presence, competitive strength and resilient balance sheet reduce the Group's risk exposures
- Strategic opportunities in changing currency and macroeconomic environment.

Global warming - physical impacts
Physical risks related to climate change are assessed based on stress scenario on long-term (25-30 years) basis. Changes in precipitation patterns, periods of drought, typhoons and severe frost periods in the subtropics could cause damage to operations and tree plantations. Increases in average temperatures could lead to changes in the tree species composition of forests. Drought periods together with high temperatures increase the risk of forest fires and insect outbreaks, potentially affecting forests and regional wood prices. Milder winters will impact harvesting and transport of wood in northern regions and the related costs. The increase in risk level vs 2018 is driven by higher ownership of forest assets in Sweden, as well as by increased understanding of risks due to the availability of recent scientific analysis. See also Competition and market demand and Sourcing.

Policy principles and mitigation measures
Physical risks are to great extent subject to risk transfer and thereby within the cover of our property and business interruption insurance programs. With regards to forest and plantation assets, making roughly 25% of the Group's balance sheet, Stora Enso benefits from strong strategic resilience through geographical diversification within the asset portfolio. Moreover, risks related to insect damages such as bark beetle infestation in Nordic forest assets is limited by better inherent endurance of Nordic forest compared e.g to Central-European forests. 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 in soft soils involves the implementation of best practices guidelines.

Related opportunities
- Nordic forests in Finland and Sweden benefit from increased heat summation and longer growing seasons, leading to acceleration in forest growth with direct positive impact on the value of own forest asset and indirect impact related to market wood availability and cost.

Strategic investments
Stora Enso's business strategy is to transform itself from a traditional paper and board producer to a customer-focused renewable materials growth company. The success of this transformation depends on the Group's ability to understand the needs of the customer and find the best way to serve them with the right offering and with the right production asset portfolio. Failure to complete strategic projects in accordance with the agreed schedule, budget or specifications can have serious impacts on our financial performance. Significant, unforeseen changes in costs or an inability to sell the envisaged volumes or achieve planned price levels may prevent us from achieving our business goals. The increase of risk level relevant to strategic investments increased from last year due to the implementation risks associated with the Oulu conversion project.

Policy principles and mitigation measures
Risks are mitigated through profound and detailed pre-feasibility and feasibility studies which are prepared for each large investment. Group investment guidelines stipulate the process, governance, risk assessment, management and monitoring procedures for strategic projects, including climate related risk factors. The guidelines also require the calculation of potential cost and income for CO_2 emissions as part of the investment proposal.

Environmental and Social Impact Assessments (ESIAs) are conducted for all new projects that could cause significant adverse effects in local communities. Post completion audits are carried out for all significant investments.

Related opportunities
- Replacing fossil-based materials by innovating and developing new products and services based on wood and other renewable materials.

Competition and market demand
Continued competition and supply and demand imbalances in the raw material, energy and products market, driven by megatrends such as eco-awareness and combatting global warming, may have an impact on profitability. The paper, pulp, packaging and wood products industries are mature, capital intensive and highly competitive. Stora Enso's principal competitors include a number of large international forest products companies and numerous regional and more specialised competitors. Customer demand for products is influenced by the general economic conditions and inventory levels and affects product price levels. Product prices, which tend to be cyclical in this industry, are affected by capacity utilisation, which decreases in times of economic slowdowns. Changes in prices differ between products and geographic regions.

The following table shows the operating profit sensitivity to a +/- 10% change in either price or volume for different segments based on figures for 2019.

Operating profit: Impact of changes +/- 10%, EUR million

Segments	Price	Volume
Consumer Board	244	89
Packaging Solutions	120	51
Biomaterials	142	61
Wood Products	153	46
Paper	265	79

Furthermore, as a global warming-related risk, extreme weather events may disrupt the operations of our customers, and consequently result in increased volatility on product demand.

Policy principles and mitigation measures
The ability to respond to changes in product demand and consumer preferences and to develop new products on a competitive and economic basis calls for innovation, continuous capacity management and structural development. The risks related to factors such as demand, price, competition and customers are regularly monitored by each division and unit as a routine part of business management. These risks are also continuously monitored and evaluated on a Group level to gain a perspective of the Group's total asset portfolio and overall long-term profitability potential.

Related opportunities
- Products based on renewable materials with a low carbon footprint help customers and society at large to reduce CO_2 emissions by providing an alternative to solutions based on fossil fuels or other non-renewable materials. Our expertise in wood and other biomass is focused on responding to customer and consumer demand. Stora Enso, as one of the biggest private forest owners in the world, has control over a strategic renewable resource base.

Digitalisation
The digital transformation of businesses continues to alter the ways in which organisations operate. Digital capabilities penetrate all aspects of business and operating models, reshaping how companies and functions generate value. Therefore, digitalisation also involves potentially disruptive forces. Moreover, customers, regulators and other stakeholders expect companies to understand what data they have or could have, what risks it poses, and to have plans to manage it well.

Business process erosion, failure to take advantage of the upside that technology offers or inability to harvest related synergies could significantly impair Stora Enso's competitiveness in the market place.

Policy principles and mitigation measures
Stora Enso has an extensive digitalisation programme with the aim to develop a competitive advantage by making full use of the opportunities to drive revenue growth and internal efficiency. Stora Enso has established a programme with external partners to search for technological development initiatives with a clear business purpose. With experimental and fast prototyping, these projects will help to identify and further develop initiatives that will speed up Stora Enso's digital maturity by exploring new technologies and capabilities.

Related opportunities
- Opportunities related to digitalisation clearly exceed related risks
- New technologies offer significant potential for higher level of process optimisation and automatisation, new business models and enhanced value propositions for customers and consumers.

Mergers, acquisitions, and divestments
Failure to achieve the expected benefits from any acquisition or value from assets or businesses sold can have serious financial impacts. The Group could find itself liable for past acts or omissions of the acquired business, without any adequate right of redress. Failure to achieve expected values from the sales of assets or deliveries beyond the expected receipt of funds may also impact the Group's financial position. In connection with an acquisition, past practices with targets related to e.g. pollution, competition law compliance or corruption could result in additional costs for Stora Enso and cause reputational damage. Divestments may involve additional costs due to historical and unaccounted liabilities. Business restructuring may also involve reputational impacts.

Policy principles and mitigation measures
Rigorous M&A guidelines, including due diligence procedures are applied to the evaluation and execution of all acquisitions that require the approval of the Board of Directors. Structured governance and policies such as the policy for responsible rightsizing, are followed when making restructuring decisions.

Related opportunities
- A strong balance sheet and cash flow enable value enhancing M&A, when the timing and opportunity are right.

Operational risks

Sourcing
Violation of Supplier Code of Conduct could result in contractual, financial and reputational damages and loss of sales, if Stora Enso were to be blacklisted by customers. Similarly, poor occupational safety performance of subcontractors can be a risk to our reputation. Increasing input costs or availability of materials, goods and services may adversely affect Stora Enso's profitability. Securing access to reliable low-cost supplies and proactively managing costs and productivity are of key importance. Reliance on outside suppliers for natural gas, oil and coal, and for peat and nearly half of the electricity consumed, leaves the Group susceptible to changes in energy market prices and disturbances in the supply chain. As a global warming-related physical risk, potential acute availability shocks or chronic shortage of water may in the long term impact the Group's operations through our supply chains.

The following table shows Stora Enso's major cost items.

Composition of costs in 2019

Operative costs	% of costs	% of sales
Logistics and commissions	11%	10%
Manufacturing costs		
Fibre	34%	31%
Chemicals and fillers	10%	9%
Energy	6%	6%
Material	6%	5%
Personnel	14%	13%
Other	13%	12%
Depreciation	6%	5%
Total costs and sales	**100%**	**91%**
Total operative costs and sales in EUR million	**9 150**	**10 055**
Equity accounted investments (EAI), operational		48
Operational EBIT		**953**

In many areas Stora Enso is dependent on suppliers and their ability to deliver a product or a service at the right time and of the right quality. The most important products are fibre, chemicals and energy, and machinery and equipment in capital investment projects. Increased demand for carbon neutral primary and secondary biomass fuels may increase energy costs. Drought periods and changing precipitation patterns may affect hydropower generation and electricity prices for units in Europe. Sea level rise will in long term impact the accessibility to ports and salt water intrusion may cause disruption in inbound and outbound supply chain operations. The most important services are transport and various outsourced business support services. For some of these inputs, the limited number of suppliers is a risk.

Policy principles and mitigation measures
Input cost volatility is closely monitored on the business unit, divisional and Group level. The Group applies consistent long-term energy risk management. The price and supply risks are mitigated through increased own generation, shareholding in competitive power assets such as PVO/TVO, physical long-term contracts and financial derivatives. The Group hedges price risks in raw material and end-product markets and supports the development of financial hedging markets. The Group uses a wide range of suppliers and monitors them to avoid situations that might jeopardise continued production, business transactions or development projects.

Suppliers and subcontractors must also comply with Stora Enso's sustainability requirements as they are part of Stora Enso's value chain, and their weak sustainability performance could harm Stora Enso and its reputation. Stora Enso's sustainability requirements for suppliers and audit schemes cover its raw materials, and other goods and services procured. Suppliers are assessed for risks related to their environmental, social and business practices through self-assessment questionnaires and supplier audits. Findings from such assessments are continuously followed up and progressive blacklisting procedures are applied as necessary.

Related opportunities
- Add value and bring innovation to our business globally by building strong and measurable relationships with the best suppliers.
- Enforce harmonised sourcing processes to increase capabilities, increase tender quality to reduce cost, and develop sustainable suppliers to reduce risk.

Information technology and security
The Group is dependent on IT systems for both internal and external communications and for the day-to-day management of its operations. The Group's information systems, personnel and facilities are subject to cyber security risk. Other IT related risks relate to the potential unavailability of IT services due to human error in operations, damaged hardware in data rooms and data centres, network connection issues and the failure of suppliers to follow service level agreements.

Accidental disclosure of confidential information due to a failure to follow information handling guidelines or due to an accident or criminal act may result in financial damage, penalties, disrupted or delayed launch of new lines of business or ventures, loss of customer and market confidence, loss of research secrets and other business critical information. Further risks involve the loss of backup media and violation of data privacy regulations.

Policy principles and mitigation measures
The management of risks is actively pursued in the Information Risk Management System and best practice change management and project methodologies are applied. A number of security controls have been implemented to strengthen the protection of confidential information and to facilitate compliance with international regulations. Specific measures include a thorough RfP process in supplier selection for business-critical services, supplier audits, annual controls and audit, data centres located in low-risk areas, backup connections for critical services, disaster recovery plans, targeted scanning and investigation activities, encryption of communication, information and devices, remote management of security on devices and information security awareness training. In 2019, the overall information and cyber security was reduced through several risk improvement efforts.

Related opportunities
Efficient operations, performance optimisation, innovative product offerings, and new customer services through digitisation and sophisticated IT systems.

People and capabilities
Recruiting, retaining and developing a competent workforce and managing key talent throughout Stora Enso's global organisation are crucial to success. Competition for personnel is intense and the Group may not be successful in attracting or retaining qualified personnel. A significant portion of Stora Enso employees are members of labour unions and there is a risk that the Group may face labour market disruptions especially in times of restructuring and redundancies due to divestments and mill closures or during labour market negotiations.

The loss of key employees, the Group's inability to attract new or adequately trained employees, or a delay in hiring key personnel could seriously harm the Group's business and impede the Group and its business divisions from reaching their strategic objectives. Labour market disruptions and strikes could have adverse material effects on the business, financial conditions and profitability.

Policy principles and mitigation measures
Stora Enso manages the risks and loss of key talents through a combination of different actions. Some of the activities aim at providing a better overview of the workforce of the whole Group, making the Stora Enso employer brand better known both internally and externally, globalising some of the remuneration practices and intensifying the efforts to identify and develop talents. Finally, the Group actively focuses on talent and management assessments, including succession planning for key positions. The majority of employees are represented by labour unions under several collective agreements in different countries where Stora Enso operates, thus relations with unions are of high importance to manage labour disruption risks.

Related opportunities
- Skilled and dedicated employees are essential for success.
- Engaged high performing people enable the implementation of transformation strategy and commercial success.

Product safety
Some of our products are used to package liquids and food consumer products, so any defects could affect health or packaging functions and result in costly product recalls. Wood products are incorporated into buildings, and this may involve product liability resulting from failures in structural design, product selection or installation. Failure to ensure product safety could result in product recalls involving significant costs including compensation for indirect costs of customers, and reputational damage.

Policy principles and mitigation measures
The mills producing food and drink contact products have established certified hygiene management systems based on risk and hazard analysis. To ensure the safety of its products, Stora Enso actively participates in CEPI (Confederation of European Paper Industry) working groups on chemical and product safety. In addition, all Stora Enso mills have certified ISO quality management systems. Furthermore, contractual liability limitation and insurance protection are used to limit the risk exposure to Stora Enso.

Related opportunities
- Differentiation and value creation through superior product quality and the highest level of product conformity.

Community relations and social responsibility
Social risks may harm existing operations and the execution of investments, especially in growth markets. Failure to successfully manage relationships with local communities and non-governmental organisations (NGOs) could disrupt our operations and adversely affect the Group's reputation. The Group operates in certain countries, where land and resource ownership rights remain unclear and where related disputes may arise.

Potential impacts include reputational impacts and negative media coverage, harm to communities and rights holders, disruption of operations, and loss of the licence to operate.

Policy principles and mitigation measures
Stora Enso strives to identify and minimise risks related to social issues in good time, in order to guide decision-making in its investment processes as well as in its ongoing operations. Tools such as sustainability risk assessment, human rights due diligence and Environmental and Social Impact Assessments (ESIA) help ensure that no unsustainable projects are initiated, and all related risks and opportunities are fully understood in all operations. These tools also enable project plans and operating practices to be adapted to suit local circumstances. Furthermore, dialogue with NGOs is a part of the Group's stakeholder engagement. More information on community engagement is presented in Stora Enso's **Sustainability Report**.

Related opportunities
- Ensuring that the communities around our operations thrive economically, socially, and environmentally is crucial for the success and sustainability of Stora Enso.
- Clear business benefits to Stora Enso through a strong focus on social responsibility, as customers, business partners, investors and potential employees become more and more attracted to socially responsible companies.

Health and safety

Failure to maintain high levels of safety management can result in harm to the Group's employees and contractors, and also to communities near our operations and the environment. Impacts in addition to physical injury, health effects and environmental damage could include liability to employees or third parties, impairment of the Group's reputation, or inability to attract and retain skilled employees. Government authorities could additionally enforce the closure of our operations on a temporary basis.

Personnel security can never be compromised and thus Stora Enso must be aware of potential safety risks and provide adequate guidelines to people for managing risks related to, for example, travel, work and living in countries with security or crime concerns. Focusing on the security of key personnel is also important from a business continuity perspective.

Policy principles and mitigation measures

Stora Enso's goal is to provide an accident-free workplace. Encouraging a company-wide safety culture means that everyone is responsible for making every workday healthy and safe - from our top management and throughout the company. Safety management at Stora Enso is based on international standards such as OHSAS 18001 and ISO 45001, but our processes go beyond these requirements.

Stora Enso's approach to safety extends to contractors, suppliers, and on-site visitors. We encourage everyone to give feedback and provide ideas on how to further improve safety. Additionally, we promote safety among our contractors and suppliers through a dedicated e-learning - Safety Trail. We also emphasise the importance of safety by asking suppliers for information on their safety performance in our tendering process.

Stora Enso's Health and Safety Policy defines the objectives for our safety management as well as our governance model on how we manage health and safety topics in practice and how we integrate them into annual planning and reporting.

Other key documents applied in our people and safety management include our:
- Stora Enso Code - our code of conduct
- Supplier Code of Conduct
- Minimum Human Resources Requirements - Labour Conditions
- Global Framework Agreement
- Diversity Policy

For more information please see **Sustainability 2019**: Employees and wider workforce.

Related opportunities
- Leading health and safety performance strengthens the brand as an employer.
- Improved engagement, efficiency and productivity.

Compliance risks

Regulatory changes

The Group's businesses may be affected by political or regulatory developments in any of the countries and jurisdictions in which the Group operates, including changes to fiscal, tax, environmental or other regulatory regimes. Potential impacts include higher costs and capital expenditure to meet new environmental requirements, expropriation of assets, imposition of royalties or other taxes targeted at our industry, and requirements for local ownership or beneficiation. In particular, the EU energy and carbon policies may impact the availability and price of wood fibre. Concerning the EU Emissions Trading Scheme (ETS) 4th trading period, carbon leakage will remain, but the allocation of free allowances is expected to decline. A stress scenario over the next ten years and with a carbon allowance price at 50 EUR/t, assuming the current proposal for the 4th ETS trading period, implies an annual financial impact below Group materiality threshold, even when factoring in increased costs from purchased electricity.

Increased demand for carbon neutral primary and secondary biomass fuels may increase energy costs. General opinion and political consensus to limit wood harvesting, arising from the view to further increase forests' function as carbon sinks while ignoring the net-positive climate impact of forest products, could limit the availability of wood, increase costs and reduce investment opportunities. Additionally, political instability may result in civil unrest, nullification of existing agreements, harvesting permits or land leases. Unpredicted changes in forest certification schemes could limit the availability of certified raw materials.

Regulation as part of the EU's Action Plan on sustainable finance brings new climate related obligations on both investors and corporates, in particular through the EU Taxonomy on sustainable activities and integration of ESG risks in investment processes. There is uncertainty as to how Stora Enso's share will be classified as an investment object in light of this emerging regulation, but good management of financial climate and other sustainability related risks and opportunities, as well as disclosure thereof, will improve the likelihood of a favourable perception by the capital markets and thus the cost of capital.

Policy principles and mitigation measures
- Active monitoring of regulatory and political developments in the countries where the Group operates
- Participation in policy development mainly through industry associations and other partnership programmes

Related opportunities
- Regulatory changes involve market growth potential for sustainable products. Resource efficiency, the low-carbon circular economy and renewability are increasingly important sources of competitive advantage.

Ethics and compliance

Stora Enso operates in a highly regulated business area and is thereby exposed to risks related to breach of applicable laws and regulations (e.g. capital markets regulation, company and tax laws, customs regulation and safety regulation) and breaches of group policies such as the Stora Enso Code, Supplier Code of Conduct and Business Practice Policy regarding fraud, anti-trust, corruption, conflict of interests and other misconduct. Stora Enso may face high compliance and remediation costs under environmental laws and regulations. See also Information systems and information security. Potential impacts include prosecution, fines, penalties, and contractual, financial and reputational damage.

Policy principles and mitigation measures

Stora Enso's Ethics and Compliance Programme, including policy setting, value promotion, training and knowledge sharing and grievance mechanisms are kept continuously up to date and developed. Other compliance mechanisms include Stora Enso Group's internal control system and Internal Audit assurance, the Supplier Code of Conduct in supplier contracts, supplier risk assessments, supplier trainings, supplier audits and black-listing procedures. In response to capital markets regulations, Stora Enso's Disclosure Policy emphasises the importance of transparency, credibility, responsibility, proactivity and interaction.

Environmental risks are minimised through environmental management systems and environmental due diligence for acquisitions and divestments, and indemnification agreements where effective and appropriate remediation projects are required. Special remediation projects related to discontinued activities and mill closures are executed based on risk assessments.

Related opportunities
- Focusing on wider ethical topics rather than mere compliance with regulations will lead to successful business, foster accountability and enhance corporate reputation.

Forest and land use

Wood is our most important raw material. Failure to meet stakeholder expectations or to ensure the chain of custody and economically, socially and environmentally sustainable forest and land management practices throughout our wood procurement and plantation operations could also result in significant reputational and financial loss to Stora Enso. Furthermore, global challenges such as population growth, global warming, increasing demand for agricultural land and bioenergy, and the widening gap between the supply and demand for wood, all require us to use natural resources even more efficiently. See also Global warming - physical impacts, Regulatory changes and Community relations and social responsibility.

Policy principles and mitigation measures

Our Policy for Wood and Fiber Sourcing, and Land Management, robust traceability systems and our active promotion of forest certification all help to ensure that no wood or fibre from unacceptable sources enters our supply chain. In addition, when sourcing logging residues and other forest biomass for energy use, we follow the specific guidelines developed for the harvesting of forest energy, which include strict environmental considerations.

Related opportunities
As trees absorb carbon dioxide (CO_2) from the atmosphere and – together with wood-based products – act as carbon sinks, wood from sustainably managed forests represents a carbon neutral, renewable alternative to many non-renewable materials. If forests and plantations are managed sustainably, new generations of trees will replace those that are logged, sequestering more CO_2 from the atmosphere. Well-managed forests can make entire ecosystems more resilient to negative impacts, and benefit from positive ones.

Climate-related financial disclosures (TCFD)

The Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD) recommends a framework for disclosing climate-related risks and opportunities that goes beyond current practices. The TCFD recommendations respond to a growing demand for improved financial disclosures from companies in relation to climate risks.

In the index table below, we list our disclosures with reference to TCFD recommendations, and refer to the locations where these issues are addressed in our annual reporting. The location references are complemented in the index with additional information, as necessary.

Table key:
SR - Sustainability 2019
FR - Financials 2019
ST - Strategy 2019
CG - Governance 2019

Disclosure focus area	Recommended disclosure	Key locations and comments
I - Governance		
	a) Describe the board's oversight of climate-related risks and opportunities	CG: Board of Directors, The Board of Directors' and management's annual working cycle FR: Risks and risk management – Risk governance SR: Strategy, governance and stakeholders – Sustainability governance and organisational structure
	b) Describe management's role in assessing and managing climate-related risks and opportunities	CG: Management of the Company, The Board of Directors' and management's annual working cycle SR: Strategy, governance and stakeholders – Sustainability governance and organisational structure SR: Materials, water and energy – How we work SR: Carbon dioxide – How we work SR: Forest, plantations, and land use – How we work
II - Strategy		
	a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term	The physical and transition risks as relevant are considered as part of the overall risk descriptions in Stora Enso's risk taxonomy. The impact of physical risks and opportunities is expected to increase over time depending on different global warming scenarios. The impact of transition risks and opportunities is more short- and mid-term depending on policy and market measures to combat global warming. FR: Report of the Board of Directors – Risk management: Key risks in 2019 • Global warming – physical risks • Strategic investments and related opportunities • Competition and market demand • Sourcing • Physical assets • Regulatory changes • Forest and land use Mitigation of global warming provides opportunities for Stora Enso's operations, and for the renewable, recyclable and fossil-free products and solutions. ST: Transformation
	b) Describe the Impacts of Climate related risks and opportunities on the organisation's business, strategy and financial planning	FR: Risk management ST: Transformation SR: Environmental agenda, Economic agenda
	c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2C or lower scenario	Stora Enso is proceeding for scenario work in 2020 against selected global warming scenarios. The use of scenarios further aids our decision-making and strategic planning. ST: Transformation FR: Risks and risk management SR: Environmental agenda, Stora Enso's GHG performance and scenarios
III - Risk management		
	a) Describe the organisation's processes for identifying and assessing climate-related risks	FR: Risks and risk management SR: Strategy, governance and stakeholders
	b) Describe the organisation's processes for managing climate-related risks	FR: Risks and risk management
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management	FR: Risks and risk management
IV - Metrics and targets		
	a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process	SR: Our sustainability targets and key performance indicators, See also Progress sections under SR: Environmental agenda ST: Transformation – Substituting materials from finite resources is our key competitive advantage
	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	SR: Carbon dioxide – Progress, Stora Enso's GHG performance and scenarios, Stora Enso's carbon footprint 2015–2019
	c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	SR: Our sustainability targets and key performance indicators

Corporate governance in Stora Enso

Stora Enso complies with the Finnish Corporate Governance Code issued by the Securities Market Association (the "Code"). The Code is available at cgfinland.fi. Stora Enso also complies with the Swedish Corporate Governance Code ("Swedish Code"), with the exception of the deviations listed in Appendix 1 of the Corporate Governance Report. The deviations are due to differences between the Swedish and Finnish legislation, governance code rules and practices, and in these cases Stora Enso follows the practice in its domicile. The Swedish Code is issued by the Swedish Corporate Governance Board and is available at corporategovernanceboard.se.

Legal proceedings

Contingent liabilities

Stora Enso has undertaken significant restructuring actions in recent years which have included the divestment of companies, sale of assets and mill closures. These transactions include a risk of possible environmental or other obligations the existence of which would be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group. Stora Enso is party to legal proceedings that arise in the ordinary course of business and which primarily involve claims arising out of commercial law. The management does not consider that liabilities related to such proceedings before insurance recoveries, if any, are likely to be material to the Group's financial condition or results of operations.

Legal proceedings in Latin America

Veracel

On 11 July 2008, Stora Enso announced that a federal judge in Brazil had issued a decision claiming that the permits issued by the State of Bahia for the operations of Stora Enso's joint operations company Veracel were not valid. The judge also ordered Veracel to take certain actions, including reforestation with native trees on part of Veracel's plantations and a possible fine of BRL 20 (EUR 5) million. Veracel disputes the decision and has filed an appeal against it. Veracel operates in full compliance with all Brazilian laws and has obtained all the necessary environmental and operating licences for its industrial and forestry activities from the relevant authorities. In November 2008, a Federal Court suspended the effects of the decision. No provisions have been recorded in Veracel's or Stora Enso's accounts for the reforestation or the possible fine.

Legal proceedings in Sweden

Insurance claim

In July and August 2016, six Swedish insurance companies filed lawsuits in the Environmental Court and the District Court of Falun against Stora Enso, due to damage caused by the forest fire in Västmanland, Sweden, in 2014. The claimed amount is approximately SEK 300 (EUR 30) million, excluding interest. The environmental law case is closed based on that the environmental code was not applicable on damages caused by fire. The other case in the District Court of Falun has now been settled and the settlement amount in full has been covered by insurance and without financial impact for Stora Enso. Hence, there are no longer any open cases for compensation due to the forest fire. There will be no further reporting of these claims.

Company fine

In January 2018, a Swedish prosecutor filed a lawsuit against Stora Enso and its supplier, due to the forest fire in Västmanland, Sweden in 2014, claiming a company fine of SEK 5 million each. In December 2019, the court acquitted Stora Enso of responsibility for causing the fire. The verdict has been appealed to the Court of Appeal by the prosecutor and the supplier. The prosecutor has reduced the claim for company fine to SEK 2.5 million. There will be no further reporting of this case.

Changes in organisational structure and Group management

Stora Enso established a new Forest division and started reporting it separately at the beginning of 2020. The new division includes the Group's Swedish forest assets and its 41% share of the equity accounted investment Tornator with the majority of its forest assets located in Finland. The Forest division also includes wood supply operations in Finland, Sweden, Russia and the Baltic countries.

Stora Enso merged its containerboard business in the Packaging Solutions division with the Consumer Board division, creating a new Packaging Materials division. The remaining business in Packaging Solutions together with Stora Enso's recently created formed fiber unit, constitutes a more focused Packaging Solutions division. The change is effective as of 1 January 2020.

On 25 September 2019 Stora Enso's Board of Directors appointed Annica Bresky as President and CEO of Stora Enso as of 1 December 2019. She was previously EVP and Head of Stora Enso's Consumer Board division. She replaced Karl-Henrik Sundström, who announced in August 2019 that he would leave his position of CEO.

Hannu Kasurinen was appointed EVP, Head of Consumer Board and member of the Group Leadership Team on 4 December 2019 and as of 1 January 2020, EVP, Head of Packaging Materials.

Gilles van Nieuwenhuyzen left his position as EVP Packaging Solutions on 6 December 2019 to pursue new career opportunities outside the company. David Ekberg, SVP and head of Business Unit Corrugated Nordics in the division, took on the role as acting Head of Packaging Solutions as of 6 December 2019.

Jari Suominen was appointed EVP, Head of Forest division as of 1 January 2020. He will continue as a member of the Group Leadership Team. Previously he led the Wood Products division. Seppo Toikka, Head of Strategy and Business Controlling in Wood Products, took on the role as acting Head of the division as of 1 January 2020.

Share capital

Stora Enso Oyj's shares are divided into A and R shares. The A and R shares entitle holders to the same dividend but different voting rights. Each A share and each ten R shares carry one vote at a shareholders' meeting. However, each shareholder has at least one vote.

During 2019, a total of 55 838 A shares converted into R shares were recorded in the Finnish Trade Register. On 31 December 2019, Stora Enso had 176 256 834 A shares and 612 363 153 R shares in issue. The company did not hold its own shares. The total number of Stora Enso shares in issue was 788 619 987 and the total number votes at least 237 493 149.

Board of Directors is authorised to decide on the repurchase and on the issuance of Stora Enso R shares. The amount of shares to be issued or repurchased shall not exceed a total of 2 000 000 R shares, corresponding to approximately 0.25% of all shares and 0.33% of all R shares.

Financials

Major shareholders as of 31 December 2019

By voting power	A shares	R shares	% of shares	% of votes
1 Solidium Oy[1]	62 655 036	21 792 540	10.7%	27.3%
2 FAM AB[2]	63 123 386	17 000 000	10.2%	27.3%
3 Social Insurance Institution of Finland (KELA)	23 825 086	973 982	3.1%	10.1%
4 Varma Mutual Pension Insurance Company	8 513 018	1 140 874	1.2%	3.6%
5 MP-Bolagen i Vetlanda AB	4 826 020	1 110 000	0.8%	2.1%
6 Ilmarinen Mutual Pension Insurance Company	3 055 000	16 570 000	2.1%	2.0%
7 Erik Johan Ljungberg's Education Foundation	1 780 540	2 336 224	0.5%	0.8%
8 Swedbank Robur Funds	0	16 729 037	2.1%	0.7%
9 Elo Mutual Pension Insurance Company	0	7 909 000	1.0%	0.3%
10 Bergslaget's Healthcare Foundation	626 269	1 609 483	0.3%	0.3%
11 AFA Insurance	0	7 072 505	0.9%	0.3%
12 Nordea Investment Funds	0	5 841 360	0.7%	0.2%
13 The State Pension Fund (Finland)	0	5 813 755	0.7%	0.2%
14 SEB Investment Management	0	5 769 313	0.7%	0.2%
15 Keva (Local Government Pension Institution)	0	4 793 208	0.6%	0.2%
Total	**168 404 355**	**116 461 281**	**35.6%**	**75.6%**
Nominee-registered shares[3]	74 608 072	467 705 419	68.8%	51.3%

[1] Entirely owned by the Finnish State.
[2] As confirmed to Stora Enso.
[3] According to Euroclear Finland.
The list has been compiled by the Company on the basis of shareholder information obtained from Euroclear Finland, Euroclear Sweden and a database managed by Citibank, N.A (Citi). This information includes only directly registered holdings, thus certain holdings (which may be substantial) of shares held in nominee or brokerage accounts cannot be included. The list is therefore incomplete.

Share distribution as at 31 December 2019

By size of holding, A share	Shareholders	% of shareholders	Shares	% of shares
1–100	5 394	52.70%	240 338	0.10%
101–1 000	4 216	41.20%	1 513 068	0.90%
1 001–10 000	587	5.70%	1 352 742	0.80%
10 001–100 000	29	0.30%	563 513	0.30%
100 001–1 000 000	0	0.00%	0	0.00%
1 000 001–	6	0.10%	172 587 173	97.90%
Total	**10 232**	**100.00%**	**176 256 834**	**100.00%**

By size of holding, R share	Shareholders	% of shareholders	Shares	% of shares
1–100	12 702	29.30%	705 256	0.10%
101–1 000	23 206	53.60%	9 631 026	1.60%
1 001–10 000	6 753	15.60%	18 010 289	2.90%
10 001–100 000	539	1.20%	14 293 560	2.30%
100 001–1 000 000	82	0.20%	24 033 992	3.90%
1 000 001–	24	0.10%	545 689 030	89.10%
Total	**43 306**	**100.00%**	**612 363 153**	**100.00%**

According to Euroclear Finland.

Ownership distribution as at 31 December 2019

	% of shares	% of votes
Solidium Oy[1]	10.7%	27.3%
FAM AB[2]	10.2%	27.3%
Social Insurance Institution of Finland (KELA)	3.1%	10.1%
Finnish institutions (excl. Solidium and KELA)	12.5%	8.8%
Swedish institutions (excl. FAM)	9.3%	6.1%
Finnish private shareholders	4.4%	2.6%
Swedish private shareholders	4.2%	2.7%
ADR holders	1.8%	0.6%
Under nominee names (non-Finnish/non-Swedish shareholders)	43.8%	14.7%

[1] Entirely owned by the Finnish State.
[2] As confirmed to Stora Enso.

Outlook and short-term risks

Subdued and mixed trading conditions caused by geopolitical uncertainties are expected to continue to impact Stora Enso in 2020. The decline in demand for European paper will persist, and demand for other Group products is expected to remain mixed. Exceptionally mild winter conditions in the Nordics with reduced period of frozen soil could impact harvesting and transport of wood and may therefore affect the stability of raw material supply and potentially increase wood costs to our Nordic mills.

Stora Enso will continue active cost management in 2020–2021 through the profit protection programme implementation. The fixed and variable cost savings target is EUR 275 million to the end of 2021.

Various labour unions in Finland are currently on strike which is expected to impact result negatively (as of 29 January 2020).

Stora Enso publishes the quarterly guidances in its interim reports.

Increasing competition, and supply and demand imbalances in the paper, pulp, packaging, wood products and roundwood markets may affect Stora Enso's market share and profitability. Changes in the global economic and political environment, sharp market corrections, increasing volatility in foreign exchange rates and deteriorating economic conditions in the main markets could all affect Stora Enso's profits, cash flows and financial position.

With reference to current geopolitical circumstances, the immediate probability of a further escalation in the tariff wars between the US and China has diminished, but the chance of a lasting de-escalation in the trade conflict remains slim.

To mitigate the impact of deteriorating geopolitical and macro-economic conditions, and increased uncertainty in the global economy, Stora Enso has a profit protection programme, targeting EUR 275 million reductions in fixed and variable costs by the end of 2021.

Exceptionally mild winter conditions could impact harvesting and the transport of wood and may therefore affect the stability of raw material supply and potentially increase wood costs to our Nordic mills.

Stora Enso has been granted various investment subsidies and has given certain investment commitments in different countries e.g. Finland, China and Sweden. If committed planning conditions are not met, the local officials may pursue administrative measures to reclaim some of formerly granted investment subsidies or to impose penalties on Stora Enso, and the outcome of such process could result in negative financial impact on Stora Enso.

Other risks and uncertainties include, but are not limited to: general industry conditions, such as changes in the cost or availability of raw materials, energy and transportation costs; unanticipated expenditures related to the cost of compliance with existing and new environmental and other governmental regulations and to actual or potential litigation; material disruption at one of our manufacturing facilities; risks inherent in conducting business through joint ventures, and other factors that can be found in Stora Enso's press releases and disclosures.

Energy sensitivity analysis: the direct effect of a 10% increase in electricity and fossil fuel market prices would have a negative impact of approximately EUR 12 million on operational EBIT for the next 12 months.

Wood sensitivity analysis: the direct effect of a 10% increase in wood prices would have a negative impact of approximately EUR 170 million on operational EBIT for the next 12 months.

Pulp sensitivity analysis: the direct effect of a 10% increase in pulp market prices would have a positive impact of approximately EUR 115 million on operational EBIT for the next 12 months.

Chemical and filler sensitivity analysis: the direct effect of a 10% increase in chemical and filler prices would have a negative impact of approximately EUR 33 million on operational EBIT for the next 12 months.

A decrease of energy, wood, pulp or chemical and filler prices would have the opposite impact.

Foreign exchange rates sensitivity analysis for the next twelve months: the direct effect on operational EBIT of a 10% strengthening in the value of the US dollar, Swedish krona and British pound against the euro would be approximately positive EUR 114 million, negative EUR 89 million and positive EUR 30 million annual impact, respectively. Weakening of the currencies would have the opposite impact. These numbers are before the effect of hedges and assuming no changes occur other than a single currency exchange rate movement.

The Group incurs annual unhedged net costs worth approximately EUR 158 million in Brazilian real (BRL) in its operations in Brazil and approximately EUR 42 million in Chinese Renminbi (CNY) in its operations in China. For these flows, a 10% strengthening in the value of a foreign currency would have a EUR 16 million and EUR 4 million negative impact on operational EBIT, respectively.

Events after the balance sheet date

Malin Bendz, Executive Vice President, Human Resources, left her position at Stora Enso on 15 January 2020.

Proposal for the distribution of dividend

The Board of Directors proposes to the AGM that a dividend of EUR 0.50 per share be distributed on the basis of the balance sheet adopted for the year 2019.

The Parent Company distributable shareholders' equity on 31 December 2019 amounted to EUR 1 309 630 306.42, including the profit for the period of EUR 230 302 677.26. The Board of Directors proposes to the Annual General Meeting of the Company that the distributable funds be used as follows:

Dividend of EUR 0.50 per share from the distributable shareholders' equity to be distributed on 788 619 987 shares, not to exceed EUR 394 309 993.50

Remaining in distributable shareholders' equity EUR 915 320 312.92

Distributable shareholders' equity on 31 December 2019, total EUR 1 309 630 306.42

The dividend would be paid to shareholders who on the record date of the dividend payment, 23 March 2020, are recorded in the shareholders' register maintained by Euroclear Finland Oy or in the separate register of shareholders maintained by Euroclear Sweden AB for Euroclear Sweden registered shares. Dividends payable to Euroclear Sweden registered shares will be forwarded by Euroclear Sweden AB and paid in Swedish crowns. Dividends payable to ADR holders will be forwarded by Citibank N.A. and paid in US dollars.

The Board of Directors proposes to the AGM that the dividend be paid on or about 30 March 2020.

Annual General Meeting

Stora Enso Oyj's Annual General Meeting (AGM) will be held on Thursday 19 March 2020 at 4.00 p.m. Finnish time at the Marina Congress Center, Katajanokanlaituri 6, Helsinki, Finland.

Non-IFRS measures

The Group's key non-IFRS performance metric is operational EBIT, which is used to evaluate the performance of its operating segments and to steer allocation of resources to them. Operational EBIT comprises the operating profit excluding items affecting comparability (IAC) and fair valuations from the segments and Stora Enso's share of the operating profit of equity accounted investments (EAI), also excluding items affecting comparability and fair valuations.

Items affecting comparability are exceptional transactions that are not related to recurring business operations. The most common IAC are capital gains and losses, impairments or impairment reversals, disposal gains and losses relating to Group companies, provisions for planned restructurings, environmental provisions, changes in depreciation due to restructuring and penalties. Items affecting comparability are normally disclosed individually if they exceed one cent per share.

Fair valuations and non-operational items include CO_2 emission rights, valuations of biological assets and the Group's share of income tax and net financial items of EAI. Until the end of 2018, fair valuations and non-operational items also included equity incentive schemes and related hedges. The previous periods have not been restated due to immateriality.

Cash flow from operations (non-IFRS) is a Group specific way to present operative cash flow starting from operational EBITDA instead of operating profit.

Cash flow after investing activities (non-IFRS) is calculated as follows: cash flow from operations (non-IFRS) excluding cash spent on intangible assets, property, plant and equipment, and biological assets and acquisitions of EAIs.

The full list of the non-IFRS measures is presented at the end of this report.

Calculation of key figures

Operational return on capital employed, operational ROCE (%)	$100 \times \dfrac{\text{Annualised operational EBIT}}{\text{Capital employed}^{1,2}}$
Operational return on operating capital, operational ROOC (%)	$100 \times \dfrac{\text{Annualised operational EBIT}}{\text{Operating capital}^{2}}$
Return on equity, ROE (%)	$100 \times \dfrac{\text{Net profit/loss for the period}}{\text{Total equity}^{2}}$
Net interest-bearing liabilities	Interest-bearing liabilities – interest-bearing assets
Net debt/equity ratio	$\dfrac{\text{Net interest-bearing liabilities}}{\text{Equity}^{3}}$
Earnings per share (EPS)	$\dfrac{\text{Net profit/loss for the period}^{3}}{\text{Average number of shares}}$
Payout ratio, excl. IAC, %	$100 \times \dfrac{\text{Dividend distribution / share}}{\text{EPS excl. IAC}}$
Dividend and distribution yield, %	$100 \times \dfrac{\text{Dividend distribution / share}}{\text{Closing price of share}}$
Price/earnings ratio (P/E), excl. IAC	$\dfrac{\text{Closing price of share}}{\text{EPS excl. IAC}}$
Operational EBIT	Operating profit/loss excluding items affecting comparability (IAC) and fair valuations of the segments and Stora Enso's share of operating profit/loss excluding IAC and fair valuations of its equity accounted investments (EAI)
Operational EBITDA	Operating profit/loss excluding operational decrease in the value of biological assets, fixed asset depreciation and impairment, IACs and fair valuations. The definition includes the respective items of subsidiaries, joint arrangements and equity accounted investments.
Net debt/last 12 months' operational EBITDA ratio	$\dfrac{\text{Net interest-bearing liabilities}}{\text{LTM operational EBITDA}}$
Fixed costs	Maintenance, personnel and other administrative type of costs, excluding IAC and fair valuations
Last 12 months (LTM)	12 months prior to the end of reporting period
TRI rate	Total recordable incident rate = number of incidents per one million hours worked

[1] Capital employed = Operating capital – Net tax liabilities
[2] Average for the financial period
[3] Attributable to owners of the Parent

List of non-IFRS measures

Operational EBITDA
Operational EBITDA margin
Operational EBIT
Operational EBIT margin
Capital expenditure
Capital employed
Operational ROCE
Earnings per share (EPS), excl. IAC
Operational ROOC
Net debt/last 12 months' operational EBITDA ratio
Cash flow from operations
Cash flow after investing activities

Consolidated financial statements

Consolidated income statement

		Year ended 31 December	
EUR million	**Note**	**2019**	**2018**
Sales	3	**10 055**	**10 486**
Other operating income	5	165	92
Changes in inventories of finished goods and work in progress		-102	125
Materials and services		-5 964	-6 157
Freight and sales commissions		-904	-932
Personnel expenses	6	-1 331	-1 330
Other operating expenses	5	-686	-526
Share of results of equity accounted investments	13	229	181
Change in net value of biological assets	12	442	-68
Depreciation, amortisation and impairment charges	10	-597	-479
Operating profit	3	**1 305**	**1 390**
Financial income	8	8	27
Financial expense	8	-176	-207
Profit before Tax		**1 137**	**1 210**
Income tax	9	-281	-221
Net profit for the year		**856**	**988**
Attributable to:			
Owners of the Parent	18	880	1 013
Non-controlling Interests	19	-24	-24
Net profit for the year		**856**	**988**
Earnings per share			
Basic and diluted earnings per share, EUR	32	1.12	1.28

Consolidated statement of comprehensive income

		Year ended 31 December	
EUR million	**Note**	**2019**	**2018**
Net profit for the year		**856**	**988**
Other Comprehensive Income (OCI)			
Items that will not be reclassified to profit and loss			
Equity instruments at fair value through other comprehensive income	14	109	97
Actuarial losses/gains on defined benefit plans	20	-78	-24
Income tax relating to items that will not be reclassified	9	6	5
		37	**78**
Items that may be reclassified subsequently to profit and loss			
Share of OCI of equity accounted investments that may be reclassified	27	11	4
Currency translation movements on equity net investments (CTA)	28	206	-36
Currency translation movements on non-controlling interests	19	0	0
Net investment hedges and loans	28	-9	-14
Cash flow hedges	27	-17	-24
Cost of hedging - time value of options	27	3	-2
Non-controlling interests' share of cash flow hedges	19	0	-2
Income tax relating to items that may be reclassified	9	2	7
		196	**-68**
Total comprehensive income		**1 089**	**999**
Attributable to:			
Owners of the Parent		1 113	1 025
Non-controlling interests	19	-24	-27
Total comprehensive income		**1 089**	**999**

The accompanying Notes are an integral part of these Consolidated financial statements.

Consolidated statement of financial position

EUR million		Note	As at 31 December 2019	2018
Assets				
Goodwill	O	11	302	243
Other intangible assets	O	11	169	254
Property, plant and equipment	O	11	5 610	5 234
Right-of-use assets			508	0
		11	**6 590**	**5 731**
Biological assets	O	12	3 627	457
Emission rights	O		37	26
Equity accounted investments	O	13	483	1 729
Listed securities	I	14	12	13
Unlisted securities	O	14	526	422
Non-current interest-bearing receivables	I	25	72	54
Deferred tax assets	T	9	81	120
Other non-current assets	O	15	37	48
Non-current assets			**11 463**	**8 601**
Inventories	O	16	1 391	1 567
Tax receivables	T		11	9
Operative receivables	O	17	1 289	1 487
Interest-bearing receivables	I	25	23	55
Cash and cash equivalents	I		876	1 130
Current assets			**3 590**	**4 248**
Total assets			**15 053**	**12 849**

EUR million		Note	As at 31 December 2019	2018
Equity and liabilities				
Share capital		18	1 342	1 342
Share premium			77	77
Fair value reserve			397	290
Cumulative translation adjustment		28	-136	-335
Invested non-restricted equity fund			633	633
Retained earnings			4 236	3 694
Net profit for the year			880	1 013
Equity attributable to owners of the Parent			**7 429**	**6 714**
Non-controlling Interests		19	-7	18
Total equity			**7 423**	**6 732**
Post-employment benefit provisions	O	20	458	401
Other provisions	O	22	110	101
Deferred tax liabilities	T	9	875	168
Non-current interest-bearing liabilities	I	26	3 232	2 265
Other non-current operative liabilities	O	23	40	34
Non-current liabilities			**4 713**	**2 970**
Current portion of non-current debt	I	26	376	403
Interest-bearing liabilities	I	26	572	675
Bank overdrafts	I	26	13	1
Other provisions	O	22	55	16
Other operative liabilities	O	23	1 854	1 960
Tax liabilities	T	9	48	92
Current liabilities			**2 917**	**3 147**
Total liabilities			**7 630**	**6 117**
Total equity and liabilities			**15 053**	**12 849**

Items designated "O" comprise Operating Capital, items designated "I" comprise Interest-bearing Net Liabilities, items designated "T" comprise Net Tax Liabilities.
The accompanying Notes are an integral part of these Consolidated financial statements.

Consolidated cash flow statement

		Year ended 31 December	
EUR million	**Note**	**2019**	**2018**
Cash flow from operating activities			
Net profit for the year		856	988
Adjustments and reversal of non-cash items:			
Taxes	9	281	221
Depreciation and impairment charges	10	597	479
Change in value of biological assets	12	-442	68
Change in fair value of share awards and total return swaps		0	2
Share of results of equity accounted investments	13	-229	-181
CTA and profits and losses on sale of fixed assets and investments[1]	5	172	20
Net financial items	8	168	180
Other adjustments		-6	-9
Dividends received from equity accounted investments	13	343	24
Interest received		7	3
Interest paid		-150	-116
Other financial items, net		-10	-9
Income taxes paid	9	-178	-152
Change in net working capital, net of businesses acquired or sold		240	-428
Net cash provided by operating activities		**1 649**	**1 092**
Cash flow from investing activities			
Acquisition of subsidiary shares and business operations, net of acquired cash	4	-464	-4
Acquisition of shares in equity accounted investments	13	-7	-29
Acquisition of unlisted securities	14	0	-3
Cash flow on disposal of subsidiary shares and business operations, net of disposed cash	4	-19	42
Cash flow on disposal of shares in equity accounted investments	13	0	3
Cash flow on disposal of unlisted securities	14	6	1
Cash flow on disposal of intangible assets and property, plant and equipment	11	12	9
Capital expenditure	3, 11	-510	-442
Investment in biological assets	12	-77	-83
Proceeds from/payment of non-current receivables, net		-18	8
Net cash used in investing activities		**-1 077**	**-497**

		Year ended 31 December	
EUR million	**Note**	**2019**	**2018**
Cash flow from financing activities			
Proceeds from issue of new long-term debt	26	870	578
Repayment of long-term debt and lease liabilities	26	-1 284	-358
Change in short-term borrowings	26	-33	39
Dividends paid		-394	-323
Buy-out of interest in subsidiaries from non-controlling interests	19	-8	-2
Equity injections from, less dividends to, non-controlling interests	19	-4	-2
Purchase of own shares		-3	-5
Net cash used in financing activities		**-856**	**-73**
Net change in cash and cash equivalents		**-285**	**521**
Translation adjustment		19	4
Net cash and cash equivalents at beginning of year		1 128	603
Net cash and cash equivalents at year end		**863**	**1 128**
Cash and cash equivalents at year end[2]		**876**	**1 130**
Bank overdrafts at year end		**-13**	**-1**
Net cash and cash equivalents at year end		**863**	**1 128**

[1] CTA = Cumulative Translation Adjustment
[2] Cash and cash equivalents comprise cash-in-hand, deposits held at call with banks and other liquid investments with original maturity of less than three months. Bank overdrafts are included in current liabilities.
The accompanying Notes are an integral part of these Consolidated financial statements.

Consolidated cash flow statement

Supplemental cash flow information

EUR million	Note	Year ended 31 December 2019	2018
Change in net working capital consists of:			
Change in inventories		161	-267
Change in interest-free receivables:			
Current		205	-183
Non-current		13	-1
Change in interest-free liabilities:			
Current		-127	36
Non-current		-12	-13
Change in net working capital, net of businesses acquired or sold		**240**	**-428**
Cash and cash equivalents consist of:			
Cash on hand and at banks		676	801
Cash equivalents		199	328
Cash and cash equivalents		**876**	**1 130**
Non-cash investing activities			
Total capital expenditure		550	491
Amounts paid		-510	-442
Non-cash part of additions to intangible assets and property, plant and equipment		**40**	**49**
Cash flow on acquisitions of subsidiaries and business operations			
Purchase consideration on acquisitions, cash part	4	-527	5
Cash and cash equivalents in acquired companies, net of bank overdraft	4	64	-1
Net cash flow on acquisition		**-464**	**4**
Cash flow on disposals of subsidiaries and business operations			
Cash part of the consideration	4	-15	44
Cash and cash equivalents in divested companies	4	-4	-2
Net cash flow from disposal		**-19**	**42**

The accompanying Notes are an integral part of these Consolidated financial statements.

Statement of changes in equity

					Fair Valuation Reserve									
EUR million	**Share Capital**	**Share Premium and Reserve Fund**	**Invested Non-Restricted Equity Fund**	**Treasury Shares**	**Step Acquisition Revaluation Surplus**	**Equity instruments through OCI**	**Available for Sale Investments**	**Cash Flow Hedges**	**OCI of Equity Accounted Investments**	**CTA and Net Investment Hedges and Loans**	**Retained Earnings**	**Attributable to Owners of the Parent**	**Non-controlling Interests**	**Total**
Balance at 31 December 2017	**1 342**	**77**	**633**	**—**	**4**	**—**	**205**	**15**	**-14**	**-288**	**4 034**	**6 008**	**47**	**6 055**
Adoption of IFRS 2 and IFRS 9						205	-205				8	8		
Balance at 1 January 2018	**1 342**	**77**	**633**	**—**	**4**	**205**	**—**	**15**	**-14**	**-288**	**4 042**	**6 016**	**47**	**6 063**
Profit/loss for the year	—	—	—	—	—	—	—	—	—	—	1 013	1 013	-24	988
OCI before tax	—	—	—	—	—	97	—	-26	4	-50	-24	—	-2	-2
Income tax relating to components of OCI	—	—	—	—	—	1	—	5	—	3	4	13	—	13
Total Comprehensive Income	**—**	**—**	**—**	**—**	**—**	**98**	**—**	**-22**	**4**	**-47**	**993**	**1 026**	**-27**	**999**
Dividend	—	—	—	—	—	—	—	—	—	—	-323	-323	-2	-326
Acquisitions and Disposals	—	—	—	—	—	—	—	—	—	—	—	—	-2	-2
NCI buy-out	—	—	—	—	—	—	—	—	—	—	-2	-2	2	—
Purchase of treasury shares	—	—	—	-5	—	—	—	—	—	—	—	-5	—	-5
Share-based payments	—	—	—	5	—	—	—	—	—	—	-3	2	—	2
Balance at 31 December 2018	**1 342**	**77**	**633**	**—**	**4**	**304**	**—**	**-7**	**-11**	**-335**	**4 706**	**6 714**	**18**	**6 732**
Profit/loss for the year	—	—	—	—	—	—	—	—	—	—	880	880	-24	856
OCI before tax	—	—	—	—	—	109	—	-14	11	197	-78	225	—	225
Income tax relating to components of OCI	—	—	—	—	—	—	—	1	—	1	6	9	—	9
Total Comprehensive Income	**—**	**—**	**—**	**—**	**—**	**109**	**—**	**-13**	**11**	**198**	**808**	**1 113**	**-24**	**1 089**
Dividend	—	—	—	—	—	—	—	—	—	—	-394	-394	-1	-395
Acquisitions and disposals	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Purchase of treasury shares	—	—	—	-4	—	—	—	—	—	—	—	-4	—	-4
Share-based payments	—	—	—	4	—	—	—	—	—	—	-3	—	—	—
Balance at 31 December 2019	**1 342**	**77**	**633**	**—**	**4**	**413**	**—**	**-20**	**—**	**-136**	**5 116**	**7 429**	**-7**	**7 423**

CTA = Cumulative Translation Adjustment, NCI = Non-controlling Interests, OCI = Other Comprehensive Income, EAI = Equity Accounted Investments

Strategy

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Notes to the consolidated financial statements

Note 1 Accounting principles

Principal activities

Stora Enso Oyj ("the Company") is a Finnish public limited liability company organised under the laws of the Republic of Finland and with its registered address at Kanavaranta 1, 00160 Helsinki. Its shares are currently listed on Nasdaq Helsinki and Stockholm. The operations of Stora Enso Oyj and its subsidiaries (together "Stora Enso" or "the Group") are organised into the following divisions: Consumer Board, Packaging Solutions, Biomaterials, Wood Products, Paper and the segment Other. The segment Other includes Nordic forest equity accounted investments, Stora Enso's shareholding in Pohjolan Voima, operations supplying wood to Nordic and Baltic mills, plantations not connected to any mill site, and group shared services and administration. The Group's main market is Europe, with an expanding presence in Asia and South America.

The Financial Statements were authorised for issue by the Board of Directors on 29 January 2020.

Basis of preparation

The Consolidated Financial Statements of Stora Enso Oyj have been prepared in accordance with International Financial Reporting Standards (IFRS), as adopted by the European Union, including International Accounting Standards (IAS) and interpretations issued by the IFRS Interpretations Committee (IFRIC). The Consolidated Financial Statements of Stora Enso Oyj have been prepared according to the historical cost convention, except as disclosed in the accounting policies. The detailed accounting principles are explained in the related notes with a few exceptions where the accounting principles are presented in this note. The Consolidated financial statements are presented in euros, which is the parent company's functional currency.

All figures in this Annual Report have been rounded to the nearest million, unless otherwise stated. Therefore, figures in this report may not add up precisely to the totals presented and may vary from previously published financial information.

New and amended standards and interpretations adopted in 2019

The Group has applied the following standards and amendments which are effective from 1 January 2019:

- **IFRS 16 Leases.** The new leasing standard replaced the guidance in IAS 17 and related interpretations and is a significant change in accounting by lessees in particular. IFRS 16 requires lessees to recognize a lease liability reflecting future lease payments and a right-of-use (ROU) asset for virtually all lease contracts. The distinction between operating and finance lease is removed for lessees. Before the transition to IFRS 16, the Group mainly had contracts classified as operating leases, which were not capitalised and Stora Enso did not have any material finance lease contracts in effect at the end of 2018. Stora Enso is mainly acting as a lessee and does not have any material lease agreements where it would act as a lessor.

In accordance with IFRS 16, at inception of a contract, the Group assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. The change in lease definition mainly relates to the concept of control and the amendment in the definition of lease has no material effect on the Group.

Stora Enso adopted IFRS 16 on 1 January 2019, using the modified retrospective approach and therefore the comparative information will not be restated and continues to be reported under IAS 17 and IFRIC 4. The effect of the initial application of IFRS 16 is recognised in the balance sheet at 1 January 2019. At transition, lease liabilities are measured at the present value of the remaining lease payments, discounted at the Group's incremental borrowing rate. ROU assets are measured at an amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments. The Group allocates the consideration in the contract to each lease component and will separate non-lease components if these are identifiable.

ROU assets are initially measured at cost, which comprises the initial amount of the lease liability adjusted mainly for lease payments made at or before the commencement date. The ROU assets are subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the lease term or the end of the useful life of the ROU asset. In addition, the ROU asset is adjusted for certain remeasurements of the lease liability. ROU assets are tested for impairment in accordance with IAS 36 Impairment of Assets.

Lease liabilities are initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the Group's incremental borrowing rate. The lease term applied corresponds to the non-cancellable period except in cases where the Group is reasonably certain to exercise a renewal option or prolong the contract. The lease liabilities are measured at amortised cost using the effective interest method. Lease liabilities are remeasured mainly when there is a change in future lease payments arising from a change in an index or rate, or if there is a change in the Group's assessment whether it will exercise an extension option. When a lease liability is remeasured, a corresponding adjustment is generally made to the carrying amount of the ROU asset.

The Group has elected not to recognise ROU assets and lease liabilities for those short-term leases that have a lease term of 12 months or less and leases of low value assets. The Group has also applied the exemption not to recognise contracts which are ending in 2019. The Group has defined the low value asset exemption to include leases in which the underlying asset is not material to Stora Enso. The assessment of whether the underlying asset is material and is within the scope or excluded from the recognition requirements of IFRS 16 is based on the concept of materiality in the Conceptual Framework and IAS 1. Leases of low value assets mainly include IT and office equipment, certain vehicles and machinery, and other low value items. The Group recognises the lease payments associated with these leases as an expense on a straight-line basis over the lease term. In addition, the Group has applied hindsight in the determination of a lease term if the lease contract includes extension options.

On the transition to IFRS 16, leases previously classified as operating leases under IAS 17 resulted in the recognition of ROU assets and lease liabilities. This also resulted in a decrease in operative expenses and an increase in depreciation charges and interest expenses. Under IFRS 16, cash paid for the interest portion of a lease liability is presented as part of the operating activities, and cash payments for the principal portion of a lease liability is presented as part of financing activities. The adoption of IFRS 16 does not have an impact on the total net cash flow. Stora Enso's most material lease agreements capitalised at the implementation consist of land leases (~55%), operative machinery and equipment (~30%), and properties (~15%).

Undiscounted operating lease commitments at the end of 2018 totalled EUR 731 million. On transition to IFRS 16, the Group recognised an additional EUR 525 million of lease liabilities. No adjustment to the opening balance of retained earnings has been made due to the IFRS 16 transition. The weighted average discount rate was 4.1%.

EUR million	1 Jan 2019
Operating lease commitments at 31 December 2018	**731**
Discounted using the incremental borrowing rates at 1 January 2019	**544**
Finance lease liabilities recognised as at 31 December 2018	1
Short term leases	-9
Leases of low-value assets	-16
Other*	5
Lease liabilities recognised at 1 January 2019	**526**
Finance lease liabilities recognised as at 31 December 2018	-1
Additional lease liabilities as a result of the initial application of IFRS 16	**525**

* Lease period adjustments (e.g. extension options), exclusion of non-lease components and variable rents not included in the measurement of the lease liability

As at 1 January 2019, the Group recognised an additional EUR 530 million of ROU assets. This amount includes prepaid expenses of EUR 5 million, presented as accrued expenses in the balance sheet before the transition and reclassified to ROU assets at IFRS 16 implementation. In addition, certain land use contracts, amounting to EUR 80 million, accounted as intangible assets before the IFRS 16 transition, were classified as leases on the transition to IFRS 16. All the liabilities related to the arrangements have already been settled in previous periods and therefore there is no effect on the lease liability or income statement. See Note 11 Intangible assets and property, plant and equipment for more detailed information on ROU assets and leases arrangements, Note 26 Interest-bearing liabilities for more detailed information on lease liabilities and Note 5 Other operating income and expense for more detailed information on lease expenses.

- Other amended IFRS standards and interpretations do not have a material effect on the Group.

Consolidation principles

The Consolidated financial statements include the parent company, Stora Enso Oyj, and all companies controlled by the Group. Control is defined as when the Group:

- has power over the investee,
- is exposed, or has rights, to variable returns from its involvement with the investee; and
- has the ability to use its power to affect its returns.

If facts and circumstances indicate that there are changes to the three elements of control listed above the Group reassess whether or not it controls an investee. Acquired companies are accounted for under the acquisition method whereby they are included in the consolidated financial statements from the date the control over the subsidiary is obtained, whereas, conversely, divestments are included up to the date when the control is lost. The principal subsidiaries and joint operations are listed in Note 30 Principal subsidiaries and joint operations.

All intercompany transactions, receivables, liabilities and unrealised profits, as well as intragroup profit distributions, are eliminated. Accounting policies for subsidiaries, joint arrangements and all equity accounted investments are adjusted where necessary to ensure consistency with the policies adopted by Stora Enso. Non-controlling interests are presented as a separate component of equity.

Associated companies over which Stora Enso exercises significant influence are accounted for using the equity method, which involves recognising the Group's share of the equity accounted investment profit or loss for the year less any impaired goodwill in the consolidated income statement. These companies are undertakings in which the Group has significant influence, but which it does not control. Significant influence means the power to participate in the financial and operating policy decisions of the company without control or joint control over those policies. The most significant of such companies are listed in Note 13 Equity accounted investments.

The Group's interest in an associated company is carried in the consolidated statement of financial position at an amount that reflects its share of the net assets of the associate together with any remaining goodwill upon acquisition. When the Group share of losses exceeds the carrying amount of an investment, the carrying amount is reduced to zero and any recognition of further losses ceases unless the Group is obliged to satisfy obligations of the investee that it has guaranteed or which it is otherwise committed to.

Joint control is the contractually agreed sharing of control of the joint arrangement, which exists only when decisions on relevant activities require the unanimous consent of the parties sharing control.

Joint operations are joint arrangements whereby the partners who have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. A joint venture is a joint arrangement whereby the partners who have joint control of the arrangement have rights to the net assets of the joint arrangement.

The Group has two joint operations: Veracel and Montes del Plata. In relation to its interest in joint operations, as a joint operator, the Group recognises assets, liabilities, revenues and expenses using the line-by-line method.

- Veracel is a joint owned (50%/50%) company of Stora Enso and Suzano located in Brazil. The pulp mill produces 1.2 million tonnes of bleached eucalyptus hard wood pulp per year and both owners are entitled to half of the mill's output. The eucalyptus is sourced mostly from the company's own forestry plantations. The mill commenced production in May 2005 and the group's share of the pulp shipments are sent primarily to Stora Enso mills in Europe and China.
- Montes del Plata is a joint owned (50%/50%) company of Stora Enso and Arauco located in Uruguay. The Montes del Plata Pulp Mill's annual capacity is 1.4 million tonnes of bleached eucalyptus hard wood pulp and Stora Enso's part, 700 000 tonnes, is sold entirely as market pulp. The eucalyptus is sourced mostly from the company's own forestry plantations. The mill started in June 2014.

Revenue recognition

Sales comprise products, raw materials and services less indirect sales tax and discounts, and are adjusted for exchange differences on sales in foreign currencies. Sales are recognised after Stora Enso has transferred the control of goods and services to a customer and the Group retains neither a continuing right to dispose of the goods, nor effective control of those goods; usually, this means that sales are recorded upon the delivery of goods to customers in accordance with the agreed terms of delivery.

Stora Enso's terms of delivery are based on Incoterms 2010, which are the official rules for the interpretation of trade terms as issued by the International Chamber of Commerce (ICC). The main categories of the terms covering Group sales are:

- "D" terms, under which the group is obliged to deliver the goods to the buyer at the agreed place in the manner specified in the chosen rule, in which case the Point of Sale is the moment of delivery to the buyer.
- "C" terms, whereby the Group arranges and pays for the external carriage and certain other costs, though the Group ceases to be responsible for the goods once they have been handed over to the carrier in accordance with the relevant term. The Point of Sale is thus the handing over of the goods to the carrier contracted by the seller for the carriage to the agreed destination.
- "F" terms, being where the buyer arranges and pays for the carriage, thus the Point of Sale is the handing over of the goods to the carrier contracted by the buyer at the agreed point.

Where local rules may result in invoices being raised in advance of the above, the effect of this revenue advancement is quantified, and an adjustment is made accordingly. Stora Enso's sales mainly comprise sales of products and the revenue is typically recognised at a point in time when Stora Enso transfers control of these products to a customer. Revenues from services are recognised over time once the service has been performed. More detailed information regarding Stora Enso's principal activities from which the Group generates its revenue and disaggregation of revenue is presented in Note 3 Segment information.

Foreign currency transactions

Transactions in foreign currencies are recorded at the rate of exchange prevailing at the transaction date, but at the end of the month foreign-currency-denominated receivables and liabilities are translated using the month-end exchange rate. Foreign exchange differences for operating items are recorded in the appropriate income statement account in the operating profit, and, for financial assets and liabilities, they are entered in the financial items of the consolidated income statement, except when deferred in equity as qualifying cash flow hedges, net investment hedges or net investment loans. Translation differences on non-monetary financial assets, such as equities classified at fair value through other comprehensive income (FVTOCI), are included in equity.

Foreign currency translations

The Group operates internationally and is thus exposed to currency risks arising from exchange rate fluctuations on the value of its net investment in non-euro area foreign subsidiaries and equity accounted investments. The Income Statements of subsidiaries with functional and presentational currencies other than the euro are translated into the Group reporting currency using the average exchange rates for the year, whereas the statements of the financial position of these subsidiaries are translated using the exchange rates at the reporting date. Exchange differences arising from the retranslation of net investments in foreign entities that are non-euro foreign subsidiaries, joint arrangements or equity accounted investments, and of financial instruments that are designated as and are hedges of such investments, are recorded directly in the shareholders' equity in the cumulative translation adjustment (CTA), as shown in the consolidated statement of comprehensive income and Note 28 Cumulative translation adjustments and equity hedging. The cumulative translation differences of divestments and liquidations are combined with their gain or loss on disposal. The CTA is also recycled in the consolidated income statement upon any partial disposal of a business unit.

Future standard changes endorsed by the EU but not yet effective in 2019

- Amendments to IAS 1 and IAS 8: Definition of Material. Amendments will clarify the definition of material and align the definition used in the Conceptual Framework and the standards themselves. The effective date for these amendments is 1 January 2020. The Group is assessing the impact of these amendments.
- Amendments to References to the Conceptual Framework in IFRS Standards. The revised Conceptual Framework includes: a new chapter on measurement; guidance on reporting financial performance; improved definitions and guidance - in particular the definition of a liability; and clarifications in important areas, such as the roles of stewardship, prudence and measurement uncertainty in financial reporting. The effective date for these amendments is 1 January 2020. The amendments are not expected to have a material effect on the Group.

Future standard changes not yet effective and not yet endorsed by the EU in 2019

- Amendments to IFRS 3 Business combinations. The amendments will help companies determine whether an acquisition made is of a business or a group of assets. The amended definition emphasises that the output of a business is to provide goods and services to customers, whereas the previous definition focused on returns in the form of dividends, lower costs or other economic benefits to investors and others. The effective date for these amendments is 1 January 2019. The amendments are not expected to have a material effect on the Group.
- Amendments to IFRS 9, IAS 39 and IFRS 7. The amendments are related to Interest Rate Benchmark Reform and require qualitative and quantitative disclosures to enable users of financial statements to understand how an entity's hedging relationships are affected by the uncertainty arising from interest rate benchmark reform. The effective date for these amendments is 1 January 2020. The amendments are not expected to have a material effect on the Group.
- IFRS 17 Insurance Contracts: This standard replaces IFRS 4, which currently permits a wide variety of practices in accounting for insurance contracts. The effective date for these amendments is 1 January 2021. The standard is not relevant to the Group.
- Other published standard changes or interpretations are not expected to have a significant effect on the Group's consolidated financial statements or disclosures.

Note 2 Critical accounting estimates and judgements

Use of estimates

The preparation of consolidated financial statements conforming to IFRS requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, as well as the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of revenues and expenses during the period. The estimates are based on historical experience and various other assumptions that are believed to be reasonable, though actual results and timing could differ from the estimates. Management believes that the accounting policies below represent those matters requiring the exercise of judgement where a different opinion could result in the greatest changes to reported results.

Intangible assets and property, plant and equipment

The carrying amounts of Intangible assets and property, plant and equipment are assessed at each reporting date to determine whether there is any indication that an asset may be impaired. If an indicator of impairment exists, the asset's recoverable amount is determined and compared with its carrying amount. The recoverable amount of an asset is estimated as the higher of fair value less the cost of disposal and the value in use, with an impairment charge recognised whenever the carrying amount exceeds the recoverable amount. The value in use is calculated using a discounted cash flow model which is most sensitive to the discount rate as well as the expected future cash flows. The key assumptions used in the impairment testing, including sensitivity analysis, are explained further in Note 10 Depreciation, amortisation and impairment charges.

Management believes that the assigned values and useful lives, as well as the underlying assumptions, are reasonable, though different assumptions and assigned lives could have a significant impact on the reported amounts. For material intangible assets and property, plant and equipment in an acquisition, an external advisor makes a fair valuation of the acquired intangible assets and property, plant and equipment and assists in determining their remaining useful life.

Goodwill

Goodwill is tested per Cash Generating Unit (CGU) or by a group of CGUs at least on an annual basis and any impairment is measured using the discounted cash flow valuation method (value in use). This method uses future projections of cash flows from each of the reporting units in a CGU or a group of CGUs and includes, among other estimates, projections of future product pricing, production levels, product costs, market supply and demand, projected maintenance capital expenditures and an assumption of the weighted average cost of capital. A pre-tax discount rate used for the net present value calculation of projected cash flows reflects the weighted average cost of capital.

The Group has evaluated the most sensitive estimates which when changed could have a material effect on the fair value of the assets or goodwill and therefore could lead to an impairment. These estimates are expected sales prices, expected operating costs and discount rate. The key assumptions used in the impairment testing, including the sensitivity analysis, are explained further in Note 10 Depreciation, amortisation and impairment charges.

Biological assets

The Group has biological assets in subsidiaries, joint operations and equity accounted investment companies. Biological assets, in the form of standing trees, are accounted for under IAS 41, which requires that the assets are measured at fair value less the costs to sell. Fair value is determined using discounted cash flows from continuous operations based on sustainable forest management plans taking into account the growth potential of one cycle. These discounted cash flows require estimates of growth, harvest, sales price and costs, discount rate, and changes in these premises are included in the consolidated income statement, for directly owned interests and for joint operations, on the line for Change in Net Value of Biological assets. For those assets shown in the Consolidated statement of financial position of equity accounted investments, changes are included on the line for Share of results of equity accounted investments. In determining the value of biological assets the management of subsidiaries, joint operation companies and equity accounted investments need to make appropriate estimates of future price levels and trends for sales and costs, and to undertake regular surveys of the forest to establish the volumes of wood available for cutting and their current growth rates. See Note 12 Biological assets for more detailed information.

Control assessment of joint operations and associates

Note 1 Accounting principles describe Veracel and Montes del Plata as joint operations. In both companies Stora Enso's ownership is 50%. The interpretations as joint operations are based on shareholders' agreements which give Stora Enso rights to a share of returns and make the Group liable indirectly for the liabilities, as our ability to pay for the pulp is used to finance debts. Joint operations are consolidated with the proportionate line-by-line method.

Equity accounted investments are accounted for using the equity method. Stora Enso does not control the companies alone or jointly with other parties and thus retains its significant minority interest as equity accounted investments. These companies are presented in Note 13 Equity accounted investments.

Fair value of financial instruments

Where the fair value of financial assets and liabilities cannot be derived directly from publicly quoted market prices, other valuation techniques, such as discounted cash flow models, transaction multiples, the Black and Scholes model and the Gordon model, are employed. The key judgements include future cash flows, credit risk, volatility and changes in assumptions about these factors which could affect the reported fair value of the financial instruments. Investments in debt and equity instruments of unlisted entities, such as Pohjolan Voima Oy (PVO), represent a significant portion of the group's assets and require significant management judgement, as explained in more detail in Notes 14 Equity instruments and 24 Financial risk management.

Income taxes

Tax assets and liabilities are reviewed on a periodic basis and balances are adjusted appropriately. Management considers that adequate provision has been made for future tax consequences based on the current facts, circumstances and tax law. However, should any tax positions be challenged and not prevail, different outcomes could result and have a significant impact on the amounts reported in the consolidated financial statements. See Note 9 Income taxes for more detailed information.

Post-retirement benefits

The determination of the Group pension obligation and expense is subject to the selection of certain assumptions used by actuaries in calculating such amounts, including, among others, the discount rate, the annual rate of increase in future compensation levels and estimated lifespans. Amounts charged in the Income statement are determined by independent actuaries; however, where actual results differ from the initial estimates, together with the effect of any change in assumptions or other factors, these differences are recorded directly in equity, as disclosed in the statement of comprehensive income. See Note 20 Post-employment benefits for detailed information on the assumptions used in the pension liability calculations.

Environmental provisions

The Group has made provisions for known environmental liabilities where legal or constructive obligation exist, based on the management's best estimate of the remediation costs. There is some uncertainty regarding the timing and amount of these costs and therefore the final liability could differ significantly from the original estimate. See Note 22 Other provisions for more detailed information on provisions.

Financials

Note 3 Segment information

Stora Enso's reportable segments are formed by five divisions, Consumer Board, Packaging Solutions, Biomaterials, Wood Products, Paper and the segment Other. Operating segments reflect the Group's management structure and the way financial information is regularly reviewed by Stora Enso's CEO who is responsible for allocating resources and assessing the performance of the operating segments. Costs, revenues, assets and liabilities are allocated to business segments on a consistent basis. Transactions between operating segments are based on arm's length terms, and they are eliminated on consolidation. The activities of the reportable segments are:

Consumer Board
The ambition of the Consumer Board division is to be the global leader in high-quality virgin fiber cartonboard. We aim to be the preferred partner of customers and brand owners in premium end-use packaging and graphical segments. Our wide board and barrier coating selection is suitable for consumer packaging for liquid, food, pharmaceutical and luxury goods.

Packaging Solutions
The Packaging Solutions division provides fiber-based board materials and corrugated packaging products and services that are designed for a wide array of applications. Our renewable high-end packaging solutions serve leading converters, brand owners and retailers – including those in e-commerce that are looking to optimise performance, drive innovation and improve their sustainability.

Biomaterials
The Biomaterials division offers a variety of pulp grades to meet the demands of paper, board, tissue, textile and hygiene product producers. We maximise the business potential of the by-products extracted in our processes from biomass, such as tall oil and turpentine. Based on our strong innovation approach, all fractions of biomass, like sugars and lignin, hold potential for use in various applications.

Wood Products
The Wood Products division is a leading provider of innovative wood-based solutions. The product range covers all areas of construction, including massive wood elements and wood components. It also includes a variety of sawn timber goods and pellets for sustainable heating. The emerging product range of biocomposites addresses the opportunities to reduce plastics in broad range of industrial and consumer goods and creates potential in various demanding exterior applications.

Paper
Stora Enso is the second largest paper producer in Europe with an established customer base and a wide product portfolio for print and office use. Customers benefit from Stora Enso's broad selection of papers made from recycled and virgin fiber as well as our valuable industry experience, know-how and customer support.

Other
The segment Other includes the Group's Swedish forest holdings, the Finnish forest equity-accounted investment Tornator, Stora Enso's shareholding in the energy company Pohjolan Voima (PVO), operations supplying wood to the Nordic and Baltic mills, plantations not connected to any mill site, and the Group's shared services and administration.

Sales by segment

	External	Internal	Total	External	Internal	Total
EUR million		**2019**			**2018**	
Consumer Board	2 547	16	2 563	2 608	14	2 622
Packaging Solutions	1 223	24	1 247	1 318	26	1 344
Biomaterials	1 193	271	1 464	1 233	402	1 635
Wood Products	1 457	112	1 569	1 497	125	1 622
Paper	2 800	56	2 856	3 004	62	3 066
Other	835	2 561	3 396	826	2 599	3 425
Elimination of internal sales		-3 040	-3 040		-3 228	-3 228
Total	**10 055**	**0**	**10 055**	**10 486**	**0**	**10 486**

Disaggregation of revenue

EUR million	2019	2018
Product sales	9 935	10 346
Service sales	120	140
Total	**10 055**	**10 486**

Product and Service sales by segment

EUR million		2019	2018
Consumer board	Product sales	2 551	2 611
	Service sales	12	11
Packaging solutions	Product sales	1 244	1 340
	Service sales	3	4
Biomaterials	Product sales	1 436	1 610
	Service sales	28	25
Wood Products	Product sales	1 550	1 619
	Service sales	19	3
Paper	Product sales	2 842	3 043
	Service sales	14	23
Other	Product sales	2 459	2 430
	Service sales	937	995
Inter-segment sales	Product sales	-2 146	-2 307
	Service sales	-894	-922
Total		**10 055**	**10 486**

Financials

Segment share of operating profit/loss

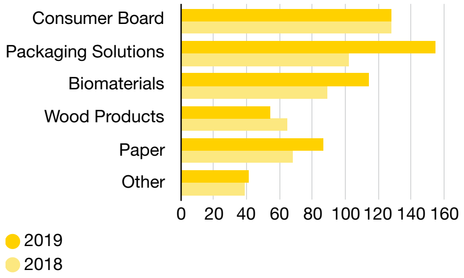
	Year Ended 31 December	
	Operating Profit/Loss	
EUR million	**2019**	**2018**
Consumer Board	247	230
Packaging Solutions	141	244
Biomaterials	180	425
Wood Products	92	164
Paper	154	234
Other	491	93
Total	**1 305**	**1 390**
Net financial items	-168	-180
Profit before Tax	1 137	1 210
Income tax expense	-281	-221
Net Profit	**856**	**988**

Intangible asset, property, plant and equipment (PPE) and right-of-use asset (ROU), depreciation, impairments and impairment reversals, disposal gains and losses, and capital expenditure by segment

	Year Ended 31 December					
	Intangible Assets, PPE and ROU		Depreciation/ Impairments/ Impairment reversals/ Disposal gains and losses		Capital Expenditure	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Consumer Board	1 765	1 557	164	154	128	128
Packaging Solutions	924	799	59	67	155	102
Biomaterials	1 929	1 857	144	94	114	89
Wood Products	517	454	55	34	54	65
Paper	888	901	125	111	87	68
Other	567	163	49	19	41	39
Total	**6 590**	**5 731**	**597**	**479**	**579**	**491**

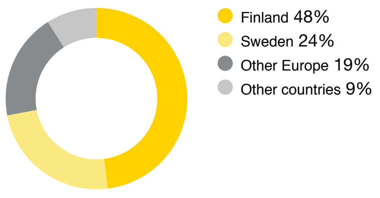
Capital expenditure by segment*

EUR million



*excluding bioasset capex

Capital expenditure by location*



*excluding bioasset capex

Goodwill by segment

	Year Ended 31 December			
	Goodwill		Impairment	
EUR million	**2019**	**2018**	**2019**	**2018**
Consumer Board	18	0	0	0
Packaging Solutions	19	19	0	0
Biomaterials	49	34	0	0
Wood Products	117	107	0	0
Paper	100	83	0	0
Other	0	0	0	0
Total	**302**	**243**	**0**	**0**

Average personnel

	Year Ended 31 December	
Segment	**2019**	**2018**
Consumer Board	4 129	4 156
Packaging Solutions	7 617	7 750
Biomaterials	1 752	1 731
Wood Products	4 106	4 038
Paper	4 861	4 957
Other	3 631	3 435
Total	**26 096**	**26 067**

	Year Ended 31 December	
Location	**2019**	**2018**
Austria	999	970
Baltic States	1 362	1 270
Belgium	529	525
Czech Republic	941	929
Finland	6 615	6 596
France	33	34
Germany	975	990
Poland	2 136	2 103
Russia	1 125	1 108
Spain	14	15
Sweden	5 215	5 168
Other Europe	230	222
Total Europe	**20 175**	**19 930**
Brazil	418	431
China (incl. Hong Kong)	4 890	5 092
India	0	0
USA	95	89
Uruguay	314	317
Other countries	205	208
Total	**26 096**	**26 067**

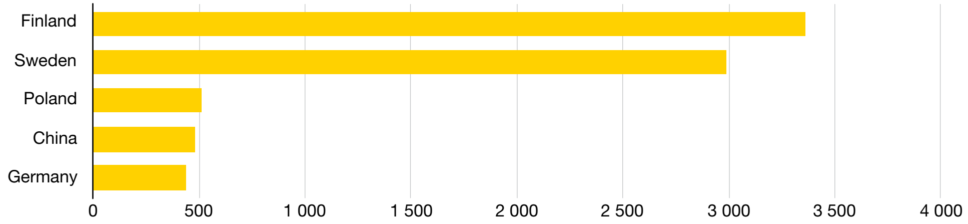
	As at 31 December	
	2019	**2018**
Year-End Personnel	**25 141**	**26 129**

External sales by destination and origin

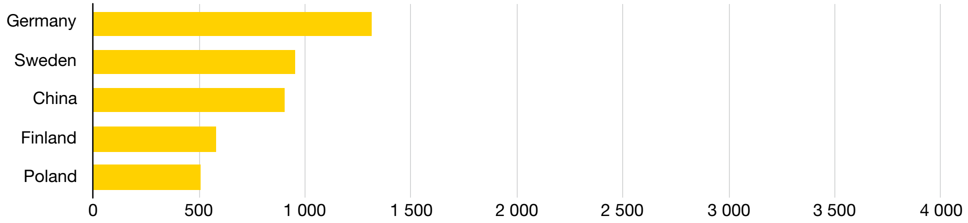
	Sales by Destination		Sales by Origin		Balance of Trade	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Austria	276	295	393	408	117	113
Baltic States	256	258	274	316	18	58
Belgium	120	140	256	259	136	119
Czech Republic	159	149	241	262	82	113
Denmark	105	133	19	21	-86	-112
Finland	580	583	3 357	3 511	2 776	2 928
France	460	506	15	16	-445	-490
Germany	1 317	1 385	439	461	-878	-924
Italy	418	400	0	0	-418	-400
Netherlands	276	282	0	0	-276	-282
Poland	504	552	510	579	6	27
Russia	305	300	230	222	-75	-78
Spain	239	282	0	0	-239	-282
Sweden	956	1 003	2 987	3 037	2 030	2 034
UK	458	491	16	15	-442	-476
Other Europe	876	903	99	83	-777	-820
Total Europe	**7 308**	**7 662**	**8 835**	**9 190**	**1 527**	**1 528**
Australia / New Zealand	168	192	36	2	-132	-190
Brazil	70	70	300	360	230	290
China (incl. Hong Kong)	904	932	483	498	-421	-434
Japan	290	285	0	0	-290	-285
Middle East	241	261	0	0	-241	-261
Uruguay	25	23	371	424	346	401
USA	281	236	27	12	-254	-224
Other countries	768	825	3	0	-765	-825
Total	**10 055**	**10 486**	**10 055**	**10 486**	**0**	**0**

Major markets

Top 5 countries, sales by origin 2019
EUR million



Top 5 countries, sales by destination 2019
EUR million



Total assets and capital employed by location

	As at 31 December			
	Total Assets		Capital Employed	
EUR million	**2019**	**2018**	**2019**	**2018**
Austria	174	169	102	96
Baltic States	136	121	113	108
Belgium	223	235	130	143
Czech Republic	151	148	126	121
Finland	4 378	4 347	2 715	2 623
Germany	337	362	-15	15
Poland	573	585	436	435
Russia	192	161	126	104
Sweden	5 129	2 958	3 546	1 992
Other Europe	98	111	51	77
Total Europe	**11 390**	**9 197**	**7 330**	**5 714**
Brazil	387	377	357	353
China (incl. Hong Kong)	1 359	1 433	1 212	1 082
Uruguay	1 735	1 609	1 624	1 543
USA	109	147	62	115
Other countries	73	86	48	17
Total	**15 053**	**12 849**	**10 632**	**8 824**

Total capital employed represents operating capital less net tax liabilities.

Reconciliation of operating capital to total asset

	As at 31 December	
EUR million	**2019**	**2018**
Operating Capital	**11 462**	**8 955**
Operative liabilities	2 516	2 512
Interest-bearing receivables	982	1 252
Tax receivables	92	129
Total Assets	**15 053**	**12 849**

Operating capital ("O" items) is designated thus in the Balance Sheet and represents the sum of Intangible Asset and Property, Plant and Equipment, right-of-use assets, biological assets, emission rights, unlisted shares, other non-current assets, inventories, current operative receivables and liabilities, provisions and other non-current operative liabilities.

Intangible asset, property, plant and equipment (PPE) and right-of-use asset (ROU), depreciation, impairments and impairment reversals, disposal gains and losses, and capital expenditure by location

	Year Ended 31 December					
	Intangible Assets, PPE and ROU		Depreciation/ Impairments/ Impairment reversals/ Disposal gains and losses		Capital Expenditure	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Austria	121	104	8	6	9	5
Baltic States	67	47	7	6	24	11
Belgium	172	183	27	25	8	6
Czech Republic	119	111	6	4	4	2
Finland	1 492	1 364	179	183	278	230
Germany	280	273	27	26	25	9
Poland	415	406	31	28	25	24
Russia	80	64	8	6	13	13
Sweden	1 292	815	120	88	136	142
Other Europe	10	3	0	2	0	0
Total Europe	**4 048**	**3 370**	**414**	**374**	**523**	**442**
Brazil	179	185	19	20	11	6
China (incl. Hong Kong)	953	790	70	49	15	23
Uruguay	1 324	1 268	44	33	27	19
USA	77	117	47	3	3	1
Other countries	9	1	3	0	0	0
Total	**6 590**	**5 731**	**597**	**479**	**579**	**491**

Note 4 Acquisitions and disposals

Accounting principles

Acquired companies are accounted for under the purchase method whereby they are included in the Consolidated financial statements from the date the control over the subsidiary is obtained, whereas, conversely, divestments are included up to the date when the control is lost.

Acquisition of Group companies

EUR million	2019	2018
Net assets acquired		
Cash and cash equivalents	64	1
Intangible assets and Property, plant and equipment	332	0
Biological assets	2 598	0
Working capital	-28	0
Tax assets and liabilities	-598	1
Interest-bearing assets and liabilities	-793	0
Fair value of Net Assets Acquired	**1 575**	**2**
Purchase consideration, cash part	527	5
Purchase consideration, non-cash	1 106	0
Total Purchase Consideration	**1 633**	**5**
Fair value of Net Assets Acquired	-1 575	-2
Fair value of already held equity shares	0	2
Goodwill	**57**	**5**
Cash outflow with purchase consideration on acquisitions	-527	-5
Cash and cash equivalents of acquired subsidiaries	64	1
Cash flow on acquisition, net of acquired cash	**-464**	**-4**

Acquisitions – Bergvik Skog AB restructuring

On 31 May 2019, Bergvik Väst AB, a subsidiary of Bergvik Skog AB, was distributed as dividends to the shareholders of Bergvik Skog AB. On the same date the Group acquired an additional 20% of shares in Bergvik Väst AB from other shareholders resulting in a total holding in Bergvik Väst AB of 69.8%. Simultaneously, Bergvik Väst AB was demerged and Stora Enso became the 100% owner of a new subsidiary holding around 69.8% of the former Bergvik Väst AB assets and liabilities. The acquisition date of the new subsidiary was 31 May 2019.

As a result of the transaction, Stora Enso's direct forest holdings in Sweden are 1.4 million hectares, of which 1.15 million hectares is productive forest land.

The fair values of the identifiable assets and liabilities as of the acquisition date are presented in the table below:

EUR million	Acquisition of 69.8% of Bergvik Väst AB
Cash and cash equivalents	64
Land	305
Other property, plant and equipment	8
Biological assets	2 598
Working capital	-35
Tax liabilities	-598
Interest-bearing liabilities	-793
Fair value of Net Assets Acquired	**1 550**
Purchase consideration on acquisition, cash part	500
Fair value of 49.8% of shares in Bergvik Väst AB, non-cash	1 106
Total Purchase Consideration	**1 605**
Fair value of Net Assets Acquired	-1 550
Goodwill	**56**
Cash out flow with purchase consideration on acquisitions	-500
Cash and cash equivalents, net of bank overdrafts of acquired subsidiaries	64
Cash flow on acquisition of subsidiary shares and business operations, net of acquired cash	**-436**

The fair value of the shares received as dividends was determined based on the acquired net assets value of Bergvik Väst AB, whereby the fair values of the biological assets and land were estimated through a discounted cash flow model. A deferred tax liability was also included in the acquisition balances.

The fair values of the acquired assets, liabilities and goodwill as at 31 December 2019 have been determined on a provisional basis pending finalisation of the post-combination review of the fair value of the acquired assets mainly with respect to biological assets valuation and related deferred tax liabilities. The provisional goodwill represents the value of securing a competitive raw material supply for the long term in Sweden. With direct ownership, Stora Enso will have better visibility of its wood supply and the acquisition provides better opportunities to further develop sustainable forest management and strengthening of the Group's competitiveness. The goodwill has been allocated to those Divisions benefiting from the acquisition. Measurement period adjustments in 2019 are including increase of EUR 75 million in biological assets, increase of EUR 8 million in tax liabilities, decrease of EUR 21 million in goodwill, increase of EUR 48 million in non-cash consideration and decrease of EUR 1 million in cash consideration. The measurement period adjustments are mainly due to updates in biological asset valuation to better reflect the conditions existing at acquisition date.

Almost all the revenues of the acquired entity are internal from Stora Enso Group point of view. The acquired entity's net profit has been reported for the first five months of the year in the Group result as part of the Share of results of the equity accounted investments. Therefore, even if the acquisition had taken place from 1 January 2019, it would not have had a significant impact on the Group sales and net profit figure for 2019. Related transaction costs during 2019 amounted to EUR 3 million and were recorded to Other operating expenses. In connection to the restructuring, a cumulative translation adjustment (CTA) of EUR -171 million was released from equity through profit and loss. In addition, a net gain of EUR 129 million on the transaction was presented in Share of results of equity accounted investments.

The Group owns 49.8% of shares in Bergvik Skog AB which continue to be reported as an equity accounted investment. See Note 13 Equity accounted investments for more details.

Acquisitions - Other

In September 2019, Stora Enso bought out non-controlling interests in Stora Enso China Packaging. Stora Enso previously owned 90% of the parent company of the China Packaging Group and with the purchase, the Group's ownership increased to 100%. China Packaging is included in the Packaging Solutions division. The transaction did not have a material impact on the Group.

In May 2019, and separately from Bergvik Skog AB restructuring, Stora Enso also acquired 100% of the nursery business Bergvik Skog Plantor AB from Bergvik Skog AB, three wind turbine projects, and a real estate company. These acquired entities are included in the segment Other. These transactions did not have a material impact on the Group.

In December 2018, Stora Enso bought out non-controlling interests in VLAR Papier NV. Stora Enso previously owned 65% of the company and with the purchase, the Group's ownership increased to 100%. The transaction did not have a material impact on the Group.

In October 2018, Stora Enso increased its ownership up to 100% in the Sweden-based company Cellutech AB. The company specialises in the development of new materials and applications based on cellulose, micro-fibrillated cellulose and other wood-based components. Stora Enso previously owned 22% of the shares. Cellutech is included in the Biomaterials division. The transaction did not have a material financial impact on the Group.

Disposal of Group companies and business operations

	Year Ended 31 December	
EUR million	**2019**	**2018**
Net Assets Sold		
Cash and cash equivalents	4	2
Intangible assets and Property, plant and equipment	8	38
Working capital	3	-2
Interest-bearing assets and liabilities	-43	0
Non-controlling interest	11	-1
Net Assets in Divested Companies and Businesses	**-16**	**38**
Total Disposal Consideration	**-15**	**44**
CTA release	3	-27
Transaction costs	0	-1
Total Net Gain/loss	**4**	**-22**
Attributable to the owners of the parent	**4**	**-22**
Attributable to the non-controlling interest holders	**0**	**0**

On 25 July 2019, Stora Enso signed an agreement to divest its 60% shareholding in the Dawang Mill in China, to its joint venture partner, Shandong Huatai Paper. Stora Enso Huatai (Shandong) Paper Co Ltd operated the Dawang paper mill in China and started operation in 2008. The disposal was completed in October 2019. During the third quarter of 2019 the Group recorded an impairment in fixed assets amounting to EUR 5 million in order to reduce the value of the net assets disposed to the recoverable value. The final consideration paid by Stora Enso for the divestment of the shares was EUR 17 million. In addition, a cumulative translation adjustment (CTA) gain of EUR 3 million was released from equity through profit and loss at closing. Stora Enso Huatai Paper was part of the Paper division.

In October 2019, Stora Enso divested 100% of shares of its Swedish subsidiary Skaftåsen Vindkraft AB. The company was acquired in May 2019 in connection to Bergvik Skog AB restructuring. Skaftåsen Vindkraft AB was part of the segment Other. The transaction did not have a material impact on the Group.

In December 2018, Stora Enso divested 100% of shares of its Swedish subsidiary June Emballage AB to its current management. June Emballage is a manufacturer specialized in small-batch custom-made transport packaging in corrugated board and was part of the Packaging Solutions division. The transaction did not have a material impact on the Group.

On 8 August 2018, Stora Enso disposed shares in Dongguan E-creative Industrial Co. Ltd to Dongguan An Shen Investment Co. Ltd. Stora Enso previously had 51% ownership of the company. The transaction did not have a material impact on the Group.

On 28 March 2018, Stora Enso signed an agreement to divest its entire 100% shareholding in the wood supply company in Rio Grande do Sul, Brazil to Copa Florestal III FIP Multiestrategia. The final consideration for the divestment of the shares was EUR 30 million. In 2017 the Group recorded an impairment in fixed assets amounting to EUR 5 million in order to reduce the value of the net assets disposed to the recoverable value. The disposal was completed in the second quarter of 2018. The transaction resulted in a loss of EUR 28 million, due to cumulative translation adjustment (CTA) released from equity through profit and loss at closing. Rio Grande do Sul was part of the segment Other.

Note 5 Other operating income and expense

Accounting principles

Research and development

Research costs are expensed as incurred in other operating expenses in the consolidated income statement. Development costs are also expensed as incurred unless it is probable that future economic benefits will flow to the Group, in which case they are capitalised as intangible assets, and depreciated over the period of the income streams.

Government grants

Government grants relating to the purchase of property, plant and equipment are deducted from the carrying value of the asset, while the net cost is capitalised. Other government grants are recognised as income on a systematic basis over the periods necessary to match them with the related costs which they were intended to compensate.

Emission rights and trading

The Group's participation in the European Emissions Trading Scheme, in which it has been allocated allowances to emit a fixed tonnage of carbon dioxide over a fixed period of time, gives rise to an intangible asset for allowances, a government grant and a liability for the obligation to deliver allowances equal to those emissions that have been made during the compliance period. Emission allowances recorded as intangible assets are recognised when the Group is able to exercise control and are measured at level 1 fair value at the date of initial recognition. If the market value for the emission allowances falls significantly below the carrying amount, the decrease is considered permanent. At that point an impairment charge is booked for allowances which the Group will not use internally. The liability to deliver allowances is recognised based on actual emissions; this liability will be settled using allowances on hand and measured at the carrying amount of those allowances, with any excess emissions measured at the market value of the allowances at the period end.

In the consolidated income statement, the Group will expense emissions made at the fair value of the rights at their grant date, under materials and services, together with purchased emission rights at their purchase price. Such costs will be offset under other operating income by the income from the original grant of the rights used at their fair value at the grant date, together with income from the release or sale of surplus rights. The consolidated income statement will thus be neutral in respect of all the rights consumed that were within the original grant. Any net effect represents the costs of purchasing additional rights to cover excess emissions, or the sale of unused rights in case that the realised emissions are below the allowances received free of charge or the impairment of allowances that are not required for internal use.

Green certificates

Stora Enso is part of the local green energy production system which entitles selected mills in Sweden, Belgium and Poland to receive green certificates based on megawatt hours of green energy produced. Green certificates represent the environmental value of renewable energy generated. The certificates can be traded separately from the energy produced. Several countries use green certificates as a means to bring green electricity generation closer to a market economy instead of more bureaucratic investment support and feed-in tariffs. The certificates are typically received free of charge and they can be traded in the local market to offset part of the production costs. Green certificates are often sold to electricity distributors which have a quota obligation to buy a certain percentage of their electricity from renewable sources. Green certificates validate that the electricity has been produced from sustainable sources.

All certificates received are recognized at grant date market value only in the Balance Sheet. Certificates are posted to prepaid costs and accrued income, and a corresponding liability is entered into accrued liabilities and deferred income. As such, fluctuation in market prices does not have an impact on the Income statement. The income is recognised only when the certificate is sold.

Other operating income and expense

	Year Ended 31 December	
EUR million	**2019**	**2018**
Other operating income		
Emission rights granted and disposal gains	50	32
Sale of green certificates	26	32
Capital gains on sale of intangible assets and property, plant and equipment	2	4
Dividend and gain on sale of unlisted shares	2	0
Insurance compensation	7	4
Rent and other	68	14
Government grants	9	6
Total	**165**	**92**
Other operating expenses include		
Lease expenses	34	96
Research and development	100	104
Credit losses, net of reversals	9	8
CTA release	185	28
Materials and services include		
Emissions rights to be delivered and disposal losses	**33**	**23**

The Group has recorded an other operating income of EUR 50 (EUR 32) million related to emissions. Under materials and services an expense of EUR 33 (EUR 23) million has been booked related to the cost of CO_2 emissions from production. Actual realised profits amounted to EUR 17 (EUR 8) million on the disposal of surplus rights and EUR 4 (EUR 3) million is the value of excess emission rights held at the year end.

The Group also generates income from its renewable power generation in Belgium, Sweden and Poland. Based on this, the Group is entitled to Green certificates related to our investment s in green energy production in these countries. Green certificates are sold onwards to electricity retailers for fulfilling their renewable quota obligations. The income from the sale of green certificates amounted to EUR 26 (EUR 32) million.

As from 1 January 2019, lease expenses include expenses relating to short-term leases of EUR 13 million, low-value asset of EUR 19 million, and variable lease payments not included in the measurement of lease liabilities of EUR 3 million. Lease expenses also include service payments included in lease contracts, which are not included in the measurement of lease liabilities. More details regarding CTA are presented in Note 4 Acquisition and disposals.

Auditor's fees and services

	Year Ended 31 December	
EUR million	**2019**	**2018**
Audit fees	4	4
Audit-related	0	0
Tax fees	0	0
Other fees	0	1
Total	**4**	**5**

Aggregate fees for professional services rendered to the Group principal auditor PwC amounted to EUR 4 (EUR 5) million. Audit fees relate to the auditing of the annual financial statements or ancillary services normally provided in connection with statutory and regulatory filings. Audit-related fees are incurred for assurance and associated services that are reasonably related to the performance of the audit or for the review of financial statements.

Note 6 Personnel expenses

Personnel expenses

	Year Ended 31 December	
EUR million	**2019**	**2018**
Wages and salaries	1 004	1 000
Pensions (see below)	166	170
Share-based remuneration (Note 21)	3	7
Other statutory employer costs	136	134
Other voluntary costs	21	19
Total	**1 331**	**1 330**

Pensions

	Year Ended 31 December	
EUR million	**2019**	**2018**
Defined benefit plans	10	10
Defined contribution plans	156	160
Total	**166**	**170**

The average number of employees in 2019 amounted to 26 096 compared with 26 067 in 2018. Pension costs are discussed further in Note 20 Post-employment benefits.

In 2019, the expense of the share-based remuneration was EUR 3 (EUR 7) million. Share-based remuneration comprising of share awards and related hedges are described in more detail in Note 21 Employee variable compensation and equity incentive schemes. Remuneration of the Group Leadership Team and Board are described in Note 7 Board and executive remuneration.

Note 7 Board and executive remuneration

Board and committee remuneration

	Year Ended 31 December				
	2019			2018	
EUR thousand (before taxes)	**Cash**	**Value of shares[1]**	**Total[4]**	**Total**	**Committee memberships**
Board members at 31 December 2019					
Jorma Eloranta, Chair	140	77	217	200	Remuneration, Nomination[2,3], Financial and Audit
Hans Stråberg, Vice Chair	71	44	115	109	Remuneration, Nomination[2,3]
Elisabeth Fleuriot	58	30	88	78	Financial and Audit
Hock Goh	50	30	80	78	Sustainability and Ethics
Mikko Helander	44	30	74	0	
Christiane Kuehne	54	30	84	86	Sustainability and Ethics
Antti Mäkinen	50	30	80	86	Remuneration
Richard Nilsson	65	30	95	93	Financial and Audit
Göran Sandberg	50	30	80	78	Sustainability and Ethics
Former Board members					
Anne Brunila (until 14 March 2019)	0	0	0	82	
Total remuneration as Directors[1]	**582**	**331**	**913**	**891**	

[1] 40% of the Board remuneration, excluding Committee remuneration, in 2019 was paid in Stora Enso R shares purchased from the market and distributed as follows: to Chair 6 695 R shares, Vice Chair 3 801 R shares, and members 2 580 R shares each. The Company has no formal policy requirements for the Board members to retain shares received as remuneration.
[2] Stora Enso's Shareholders' Nomination Board has been appointed by the AGM in 2016 to exist until otherwise decided. The Shareholders' Nomination Board according to its Charter as approved by the AGM comprises of four members: the Chair and Vice Chair of the Board of Directors, as well as two members appointed by the two largest shareholders (one each) as of 31 August each year. No separate remuneration is paid to members of the Shareholders' Nomination Board.
[3] Marcus Wallenberg, appointed by FAM AB, is Chair of the Nomination Board. Harri Sailas is the member of the Shareholders' Nomination Board appointed by Solidium Oy. Jorma Eloranta and Hans Stråberg were appointed as members of the Shareholders' Nomination Board in their roles as Chair and Vice Chair of the Board of Directors.
[4] The Company additionally pays the transfer tax for share purchases for each member, in line with AGM decision, which amount is considered also taxable income for each member.

Shareholders at the Annual General Meeting (AGM) have established a Shareholders' Nomination Board to exist until otherwise decided and to annually prepare proposals for the AGM's approval concerning the number of members of the Board of Directors, the Chair, Vice Chair and other members of the Board, as well as the remuneration for the Chair, Vice Chair and members of the Board and its committees.

Board share interests at 31 December 2019

	Shares held[1]	
	A	**R**
Board members at 31 December 2019		
Jorma Eloranta, Chair	1 150	27 076
Hans Stråberg, Vice Chair		41 291
Elisabeth Fleuriot		23 731
Hock Goh		28 484
Mikko Helander		4 298
Christiane Kuehne		8 292
Antti Mäkinen		4 717
Richard Nilsson		20 834
Göran Sandberg		6 792
Total shares held	**1 150**	**165 515**

[1] Board members' related parties hold no Stora Enso shares.

The following Board members also served in 2019

	Shares held when Board membership ended	Effective date of Board membership ending
Anne Brunila	20 121	14 March 2019

Group Leadership Team (GLT) remuneration and share interests

The table below includes the remuneration paid to GLT members during the year, including those shares vested in that year. The company recommends and expects the CEO and GLT members to hold Stora Enso shares at a value corresponding to at least one annual base salary. Stora Enso shares received as remuneration are therefore recommended not to be sold until this level has been reached.

The aggregate cost of remuneration for GLT in 2019 amounted to EUR 11.7 (EUR 12.2) million. The total number of GLT members was eleven (twelve) at year end in 2019.

In accordance with their respective pension arrangements, GLT members may retire at sixty-five years of age with pensions consistent with local practices in their respective home countries. Contracts of employment provide for six months' notice prior to termination with severance compensation of twelve months basic salary if the termination is at the Company's request.

The outcome of the financial targets relating to the Short term incentive programmes for the performance year 2018, and Long term incentive programmes for the performance years 2016 to 2018 were reviewed and confirmed by the Remuneration Committee in the ordinary February meeting, and approved by the Board of Directors in February.

Note 21 Employee variable compensation and equity incentive schemes includes details of incentive schemes and share opportunity programmes for the management and staff of Stora Enso.

Group Leadership Team remuneration

	Year Ended 31 December						
	2019				2018		
EUR thousand	**CEO[1]**	**Former CEO[2,4]**	**Others[3]**	**GLT Total**	**CEO**	**Others**	**GLT Total**
Remuneration[7]							
Annual salary	75	887	3 756	4 717	905	3 589	4 494
Local housing (actual costs)	0	0	0	0	0	22	22
Other benefits	2	19	373	394	20	385	405
Termination benefits	0	0	0	0	0	0	0
Short term incentive programme[6]	0	571	1 467	2 039	611	1 089	1 700
Long term incentive programme[6]	0	566	1 508	2 073	845	2 431	3 276
	77	**2 043**	**7 104**	**9 224**	**2 381**	**7 516**	**9 897**
Pension Costs							
Mandatory plans	23	62	1 396	1 481	66	1 296	1 362
Stora Enso voluntary plans[5]	0	464	539	1 003	478	447	925
	23	**526**	**1 934**	**2 484**	**544**	**1 743**	**2 287**
Total Compensation	**100**	**2 569**	**9 038**	**11 708**	**2 925**	**9 259**	**12 184**

[1] CEO remuneration consists of remuneration delivered to Annica Bresky from her appointment as President and CEO on 1 December 2019.
[2] Former CEO remuneration consists of remuneration delivered to Karl-Henrik Sundström for the period up until his last day as CEO (30 November 2019).
[3] Amounts include payments related to Annica Bresky until 30 November 2019 and Gilles van Nieuwenhuyzen until 6 December 2019. Payments related to the new GLT member Hannu Kasurinen have been included from 4 December 2019.
[4] For the former CEO, Short term incentives for the financial year 2019 will be paid out on the normal payout date in March 2020. The former CEO did not receive any other termination benefits such as severance pay.
[5] The former CEO participates in the Swedish Executive Pension Plan where pension accruals are unfunded for all participants, the liability is calculated and insured in accordance with Swedish legislation. The liability for the former CEO amounts to EUR 3 052 thousand.
[6] The pay-outs for Short term incentive in March 2019 were based on 2018 results and for Long term incentive payouts in March 2019 were based on 2016-2018 results. Disclosed amounts are included for the executives who were GLT members at the time of the payment.
[7] Remuneration for executives is disclosed only for the period during which they were GLT members.

Executives other than CEO

Short term incentive (STI) programmes for management
In 2019, GLT members have STI programmes with up to a maximum of 50% or 60% of their annual fixed salary, payable the year after the performance period. 70% of the STI for 2018 and 2019 was based on financial measures and 30% on Individual Key Targets.

Long term incentive (LTI) programmes for management
Since 2014, the LTI programmes have had three-year targets and vest in one portion only after three years, and the absolute maximum vesting level is 100% of the number of shares granted. Three quarters (75%) of the opportunity under the 2016-2017 programmes is in Performance Shares, where the shares are vested in accordance with performance criteria proposed by the Remuneration Committee and approved by the Board of Directors. One quarter (25%) of the opportunity under the 2016-2017 programmes is in Restricted Shares, for which vesting is only subject to continued employment.

The 2018 LTI programme was changed so that GLT members will receive only Performance shares, and no Restricted shares.

Under the 2019 LTI programme, GLT members (in GLT at year end) can potentially receive a value corresponding to 196 273 shares before taxes, assuming the maximum vesting level during the three-year vesting period (2019-2021) is achieved. The total number of shares actually transferred will be lower because a portion of shares corresponding to the tax obligation will be withheld to cover income tax.

The fair value of employee services received in exchange for share-based compensation payments is accounted for in a manner that is consistent with the method of settlement and is either cash or equity settled as described in more detail in Note 21. For the equity settled part, it is possible that the actual cash cost does not agree with the accounting charges because the share price is not updated at the time of the vesting. The figures in the Group Leadership Team Remuneration table refer to individuals who were executives at the time of settlement.

During the year, the 2016 programme vested in one portion after three years, dependent on Economic Value Added (EVA) for the Stora Enso Group. The number of shares settled on executives (GLT members at settlement date) from previous Restricted Share programmes and Performance Share programmes amounted to 128 076, with a cash value of EUR 1 560 947 before taxes, based on the share price of EUR 12.19 on the 1 March 2019 settlement date.

President & Chief Executive Officer – Annica Bresky

The CEO has been employed by Stora Enso since 1 May 2017 and assumed the position as CEO on 1 December 2019. She has a notice period of six months with a severance payment of twelve months salary on termination by the company but with no contractual payments on any change of control. The CEO's benefits include pension provisions. The CEO's pension plan has contributions equal to the collectively agreed pension plan in Sweden (ITP1), with a pensionable salary consisting of annual base salary, vacation pay, and actual paid STI. The retirement age is sixty-five years.

Short term incentive (STI) programme for CEO
In 2019, the CEO is entitled to an STI programme decided by the Board each year giving a maximum of 75% of the annual fixed salary. The STI for 2018 and 2019 was 70%, based on financial measures, and 30%, based on Individual Key Targets.

Long term incentive (LTI) programmes for CEO
The CEO participates in 2017, 2018 and 2019 share based LTI programmes. The programmes have three-year targets and vest in only one portion after three years. The 2017 programme is related to performance periods 2017-2019, the 2018 programme is related to performance periods 2018-2020 and the 2019 programme is related to performance periods 2019-2021. Three quarters (75%) of the opportunity in the 2017 programme is in performance shares, where shares will vest in accordance with performance criteria proposed by the Remuneration Committee and approved by the Board of Directors. One quarter (25%) of the opportunity is in restricted shares, for which vesting is only subject to continued employment. In the 2018 and 2019 programme, the CEO was granted all (100%) of the opportunity in performance shares.

The CEO has the potential to receive a value corresponding to a maximum of 27 160 shares before taxes under the 2019 LTI programme. The grant value of EUR 331 018 is based on the share price at the grant date and assuming a maximum vesting level during the three-year vesting period is achieved. During the year, the 2016 programme vested in one portion after three years, dependent on Economic Value Added (EVA) for the Stora Enso Group. There has been no settlement of shares to the CEO during the year. The actual gross number of shares before taxes settled for the former CEO amounted to 46 649 with a cash value of EUR 568 544 before taxes, based on the share price EUR 12.19 on the 1 March 2019 settlement date. The total number of shares actually transferred was lower because a portion of shares corresponding to the tax obligation was withheld to cover income tax.

Group Leadership Team share interests

Executives in office at the year end	R shares held[1]	Performance share opportunity[2]	Restricted share opportunity[2]
Annica Bresky	0	76 561	8 397
Seppo Parvi	32 202	63 149	6 454
Malin Bendz	19 162	44 776	4 539
Johanna Hagelberg	16 039	48 164	5 091
Kati ter Horst	38 772	81 011	8 043
Hannu Kasurinen	31 486	17 903	5 967
Ulrika Lilja	25 732	42 304	4 471
Per Lyrvall[3]	59 362	60 516	6 450
Markus Mannström	18 392	52 084	3 601
Noel Morrin	33 756	49 256	5 382
Jari Suominen	37 985	59 337	6 121
Total, serving officers[4]	**312 888**	**595 061**	**64 516**

[1] None of the GLT members holds A shares.
[2] Potential shares to GLT members listed here are gross of taxes for the LTI programmes started in 2017, 2018, and 2019 covering three year periods during 2017-2021, with vesting in 2020, 2021 and 2022 respectively.
[3] Spouse holds 1 257 of the shares.
[4] The Company recommends and expects GLT members to hold Stora Enso shares at a value corresponding to at least one annual base salary. Stora Enso shares received as remuneration are therefore recommended not to be sold until this level has been reached.

The following Executive Officers also served in 2019	R shares held when GLT membership ended	Performance share awards when GLT membership ended[2]	Restricted share awards when GLT membership ended[2]	Effective date of GLT membership ending
Karl-Henrik Sundström[1]	166 011	204 343	20 350	30 November 2019
Gilles van Nieuwenhuyzen	19 610	82 042	8 797	6 December 2019

[1] 41 700 of the shares are held by a related party (Alma Patria AB).
[2] These shares are forfeited at end of employment, except for the LTI 2017 shares which have been earned at the time employment ended and vest at the normal vesting date in March 2020.

Note 8 Net financial items

Accounting principles

Net financial items comprise net interest expenses, foreign exchange gains and losses and other financial income and expenses mainly arising from interest-bearing assets and liabilities.

Financial income and expense

	Year Ended 31 December	
EUR million	**2019**	**2018**
Net financial expense in the Income Statement		
Financial income	8	27
Financial expense	-176	-207
Total	**-168**	**-180**
Represented by		
Interest expense		
Interest expense from borrowings measured at amortised cost	-121	-126
Net interest from interest rate derivatives measured at fair value through OCI	-13	-6
Interest expense on leases (IFRS 16)	-20	0
Interest expense on finance leases (IAS 17)	0	-1
Interest income on loans and receivables measured at amortised cost	7	4
Net interest expense	**-147**	**-129**
Foreign exchange gains and losses		
Currency derivatives	0	22
Borrowings, deposits and lease liabilities	-6	-55
Net foreign exchange gains and losses	**-6**	**-33**
Other financial income	0	1
Other financial expense		
Financial fees	-8	-10
Fair valuation losses	0	-3
Net interest on net defined benefit liabilities	-7	-6
Net other financial expense	**-15**	**-19**
Total	**-168**	**-180**

Gains and losses on derivative financial instruments are shown in Note 27 Derivatives.

In 2019, the net interest expense increased mainly as a result of higher gross debt level and the implementation of IFRS 16 standard, partly offset by lower average interest expense rate on borrowings. The capitalised borrowing costs were EUR 0 million in 2019 (EUR nil). Costs on long-term debt issues capitalised as part of non-current debt amounted to EUR 12 (EUR 14) million in the Statement of financial position. During the year, EUR 5 (EUR 5) million was amortised through interest expense by using the effective interest rate method.

Exchange gains and losses for currency derivatives mainly relate to non-hedge accounted instruments fair valued in the Income statement. The amount reported under financial fees in the table above mainly relates to net financial fees for unused committed credit facilities, guarantees and rating agencies.

Note 9 Income taxes

Accounting principles

The Group income tax expense/benefit includes taxes of group companies based on taxable profit/loss for the period, together with tax adjustments for previous periods and the change in deferred income taxes. Tax assets and liabilities reflect uncertainty related to income taxes, if any.

Deferred income taxes are provided using the liability method, as measured with enacted, or substantially enacted, tax rates, to reflect the net tax effects of all temporary differences between the tax bases and the accounting bases of assets and liabilities. No deferred tax is recognised for the initial recognition of goodwill and the initial recognition of an asset or liability in a transaction which is not a business combination, and at the time of the transaction this affects neither accounting profit nor taxable profit. Deferred tax assets reduce income taxes payable on taxable income in future years. The deferred tax assets, whether arising from temporary differences or from tax losses, are recognised only to the extent that it is probable that future taxable profits will be available against which the assets can be utilised.

Tax expense

	Year Ended 31 December	
EUR million	**2019**	**2018**
Current Tax	-132	-166
Deferred Tax	-149	-55
Total Tax	**-281**	**-221**

Income tax rate reconciliation

	Year Ended 31 December	
EUR million	**2019**	**2018**
Profit before tax	1 137	1 210
Tax at statutory rates applicable to profits in the country concerned[1]	-235	-247
Non-deductible expenses and tax exempt income[2]	-41	13
Valuation of deferred tax assets	-53	-17
Taxes from prior years	2	-23
Changes in tax rates and tax laws	-2	9
Profits from equity accounted investments	48	39
Other	0	3
Total tax	**-281**	**-221**
Effective tax rate	**24.7%**	**18.3%**
Statutory tax rate (blended)	**20.7%**	**20.4%**

[1] Includes a EUR 17 million impact from countries with tax holidays and tax benefits in 2019 and a EUR 21 million impact from tax holidays and other tax benefits in 2018.

[2] The tax value of non-deductible expenses of EUR 50 million has been netted against a tax exempt income of EUR 9 million in 2019, and the tax value of non-deductible expenses of EUR 26 million has been netted against a tax exempt income of EUR 39 million in 2018.

The statutory tax rate is a weighted average of the statutory tax rates prevailing in jurisdictions where Stora Enso operates.

Financials

Change in deferred taxes in 2019

EUR million	Value at 1 Jan 2019	Income Statement	OCI	Acquisitions/ disposals	Translation difference	Value at 31 Dec 2019
Fixed assets and biological assets	-175	-158	0	-605	-1	-939
Financial instruments	-1	0	2	0	0	1
Untaxed reserves	-19	16	0	-1	2	-2
Pensions and provisions	62	2	6	0	-1	69
Tax losses and tax credits carried forward	90	-5	0	0	-1	84
Other deferred taxes	-5	-2	0	0	0	-7
Total	**-48**	**-147**	**8**	**-606**	**-1**	**-794**
Equity hedges (CTA)		-1	1			
Change in deferred tax	**-48**	**-148**	**9**	**-606**	**-1**	**-794**
Assets[1]	120					81
Liabilities[1]	-168					-875

[1] Deferred tax assets and liabilities have been offset in accordance with IAS 12.

Change in deferred taxes in 2018

EUR million	Value at 1 Jan 2018	Income Statement	OCI	Acquisitions/ disposals	Translation difference	Value at 31 Dec 2018
Fixed assets and biological assets	-163	-14	0	0	2	-175
Financial instruments	-7	0	6	0	0	-1
Untaxed reserves	-15	-6	0	0	2	-19
Pensions and provisions	46	13	4	0	-1	62
Tax losses and tax credits carried forward	127	-39	0	1	1	90
Other deferred taxes	0	-6	0	0	1	-5
Total	**-12**	**-52**	**10**	**1**	**5**	**-48**
Equity hedges (CTA)		-3	3			
Change in deferred tax	**-12**	**-55**	**13**	**1**	**5**	**-48**
Assets[1]	154					120
Liabilities[1]	-166					-168

[1] Deferred tax assets and liabilities have been offset in accordance with IAS 12.

The recognition of deferred tax assets is based on the Group's estimations of future taxable profits available against which the group can utilise the benefits.

Tax losses

	As at 31 December					
	Tax losses carried forward		Recognised tax values		Unrecognised tax values	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Expiry within five years	786	703	63	71	79	58
Expiry after five years	20	131	4	5	0	27
No expiry	1 212	1 030	11	13	242	202
Total	**2 018**	**1 864**	**78**	**89**	**321**	**287**

Tax losses of EUR 328 (EUR 332) million relate to Finland. A deferred tax asset of EUR 66 (EUR 66) million has been recognized relating to these tax losses, as it is evident considering the recent history of profit in Finland, the outlook and tax planning opportunities that the full amount of tax losses in Finland will be utilized before its expiration.

Non-recognised deferred tax assets on deductible temporary differences amounted to EUR 50 (EUR 39) million. There is no expiry date for these differences. Taxable temporary differences in respect of investments in subsidiaries, branches and associates and interests in joint ventures, for which deferred tax liabilities have not been recognised amounted to EUR 330 (EUR 224) million.

Uncertain tax positions

At balance sheet date there were on-going tax audits in several jurisdictions. It is not expected that any significant additional taxes in excess of those already recorded for will arise as a result of these audits.

The tax liabilities of EUR 48 (EUR 92) million include an amount of EUR 33 (EUR 32) million for an uncertain tax position in Sweden due to a dispute concerning the deduction of interest expense.

Note 10 Depreciation, amortisation and impairment charges

Accounting principles

Depreciation, amortisation and impairment charges

Depreciation or amortisation of an asset begins when it is available for use in the location and condition necessary for it to be operated in the manner intended by management. Depreciation or amortisation ceases when the asset is derecognised or classified as held for sale in accordance with IFRS 5. Depreciation or amortisation does not cease when the asset becomes idle. Tangible and intangible assets are depreciated and amortised on a straight-line basis during their useful lives. Useful lives are reviewed periodically. If an asset is disposed of, proceeds exceeding the carrying value of the asset up to its historical cost are netted against depreciation, amortisation and impairment charges. Only disposal proceeds exceeding the historical cost of an asset are presented as other operating income (Note 5). If the asset's book value is higher than the disposal proceeds, the difference is recognised as an impairment in the period when a binding sales contract is signed. Right-of-use (ROU) assets are depreciated using the straight line method from the commencement date of the contract to the earlier of the end of the lease term or the end of the useful life of the ROU assets.

The carrying amounts of intangible assets, property, plant and equipment and ROU assets are reviewed at each reporting date to determine whether there is any indication of impairment, whereas goodwill is tested annually. If any such indication exists, the recoverable amount is estimated as the higher of the fair value less costs of disposal and the value in use, with an impairment loss being recognised whenever the carrying amount exceeds the recoverable amount.

A previously recognised impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount, however, not to an extent higher than the carrying amount that would have existed had no impairment loss been recognised in prior years. For goodwill, however, a recognised impairment loss is not reversed.

Whilst intangible assets, property, plant and equipment and ROU assets are subject to impairment testing at the cash generating unit (CGU) level, goodwill is subject to impairment testing at the CGU level for groups of CGUs, which represents the lowest level within the group at which goodwill is monitored for internal management purposes.

Depreciation, amortisation and impairment charges

	Year ended 31 December	
EUR million	**2019**	**2018**
Depreciation and amortisation		
Intangible assets	27	23
Buildings and structures	83	78
Plant and equipment	356	368
Right-of-use assets	70	0
Other tangible assets	10	10
Total	**546**	**479**
Impairment		
Goodwill	0	0
Intangible assets	4	0
Buildings and structures	5	0
Plant and equipment	66	1
Right-of-use assets	3	0
Other tangible assets	0	0
Total	**78**	**1**
Reversal of impairment		
Intangible assets	0	0
Buildings and structures	-21	0
Plant and equipment	0	0
Total	**-21**	**0**
Disposal gains/losses		
Gain on sale of assets	-7	-4
Loss on sale of assets	2	4
Total	**-5**	**-1**
Depreciation, amortisation and impairment charges	**597**	**479**

Depreciation and amortisation

The total depreciation and amortisation charge amounted to EUR 546 million and was EUR 67 million more than in 2018 due to depreciation of ROU assets. A breakdown of depreciation, amortisation and impairment charges by divisions is set out in Note 3 Segment information.

Disposal gains and losses

There were no material disposal gains or losses relating to fixed assets in 2019 or 2018.

Impairment testing

The recoverable amount for the cash generating units (CGUs) has been determined based on a value in use calculation using cash flow projections from financial estimates approved by the Board of Directors and management. The pre-tax discount rates are calculated for each CGU taking into account the business environment of the CGU and the tax and risk profile of the country in which the cash flow is generated. The table in the goodwill impairment testing section below sets out the pre-tax discount rates used for goodwill impairment testing, which are similar to those used in the impairment testing of other intangible assets, property, plant and equipment, and ROU assets.

Impairments were tested using a value in use method for each CGU based on the following main assumptions:

- Sales price estimates in accordance with internal and external specialist analysis
- Cash flows and discount rates were prepared in real terms
- Current cost structure to remain unchanged
- For goodwill testing a five-year future period was used after which the perpetuity value was based on zero growth rates, whereas for intangible assets, property, plant and equipment and ROU assets testing the period was the remaining expected economic life of the assets.

Property, plant and equipment, other intangible assets and ROU assets impairments

The total impairment charges on property, plant and equipment, other intangible assets and ROU assets in 2019 amounted to EUR 78 (EUR 1) million and resulted from business restructurings, Group company disposals and impairment testing.

Impairment reversals amounted to EUR 21 (EUR 0) million. In 2019, and in connection to Oulu Mill conversion project, Containerboard CGU in Packaging Solutions division was tested for fixed asset impairment reversal and a reversal of EUR 21 million was recognised. In 2019, certain assets in Nordic and Innovation CGU in the Biomaterials division were tested for fixed asset impairment and an impairment charge of EUR 43 million was recognised.

Goodwill impairment testing

In 2019 or 2018, the Goodwill testing did not result in any impairment.

The most material groups of cash generating units containing goodwill

	Year ended 31 December									
	2019					2018				
EUR million	Goodwill at year end	Intangible assets, property, plant and equipment and ROU assets at year end	Recoverable amount	Impairment charge	Pre-tax discount rate	Goodwill at year end	Intangible assets and property, plant and equipment at year end	Recoverable amount	Impairment charge	Pre-tax discount rate
Wood Products - Central Europe	108	163	1 182	0	5.4%	107	155	1 155	0	5.7%
Paper - Newsprint and Book Paper	52	235	769	0	5.7%	43	238	492	0	5.7%
Paper - Uncoated Magazine Paper	40	231	667	0	5.7%	40	242	477	0	5.7%
Biomaterials - Nordic and Innovation	49	376	2 888	0	5.9%	34	369	2 927	0	6.2%
Other CGUs[1]	54			0		19			0	
Total	**302**	**1 005**	**5 506**	**0**		**243**	**1 004**	**5 051**	**0**	

[1] Other CGUs line is including Packaging Solutions - Europe, Consumer Board operations in Sweden, Wood Products - Northern Europe and Office Paper cash generating units.

Impairment and impairment reversals per division

	Year ended 31 December	
EUR million	2019	2018
Consumer Board	7	0
Packaging Solutions	-17	0
Biomaterials	43	0
Wood Products	8	0
Paper	11	1
Other	4	0
Total (impairment +) / (Impairment reversal -)	**56**	**1**

The calculation of value-in-use is highly sensitive to discount rates, sales prices and costs. The Sensitivity Analysis table below summarises what effect a 1% change in the discount rate, 1% decrease in sales prices and 1% increase in costs would have had on the recoverable amounts of the groups of CGUs carrying most of the group's total goodwill.

Goodwill testing sensitivity analysis, impact on recoverable amount

EUR million	Wood Products - Central Europe	Paper - Newsprint and Book	Paper - Uncoated Magazine Paper	Biomaterials - Nordic and Innovation
1% increase in the discount rate	-272	-157	-128	-687
1% annual decrease in the sales prices	-211	-189	-111	-221
1% annual increase in the costs	-188	-174	-100	-171

Financials

Note 11 Intangible assets, property, plant and equipment and right-of-use assets

Accounting principles

Computer software development costs

The cost of development or acquisition of new software clearly associated with an identifiable and unique product that will be controlled by the Group and has a probable benefit exceeding its cost beyond one year is recognised as an intangible asset and will be amortised over the expected useful life of the software between 3 to 10 years. Website costs are expensed as incurred.

Goodwill

Goodwill represents future economic benefits arising from assets that are not capable of being individually identified and separately recognised by the Group on an acquisition. Goodwill is computed as the excess of the cost of an acquisition over the fair value of the Group's share of the fair value of net assets of the acquired subsidiary at the acquisition date, and is allocated to those groups of cash generating units expected to benefit from the acquisition for the purpose of impairment testing. In compliance with IFRS 3, the cost of an acquisition is equal to the sum of the consideration transferred, the value of the non-controlling interest in the acquisition, and the fair value of the previously held interest in the acquired subsidiary. Goodwill arising on the acquisition of non-euro foreign entities is treated as an asset of the foreign entity denominated in the local currency and translated at the closing rate.

Goodwill is not amortised but tested for impairment on an annual basis, or more frequently if there is an indication of impairment. Gains and losses on the disposal of a Group entity include any goodwill relating to the entity sold.

Goodwill arising from the acquisition of an equity accounted investment or joint arrangement is included in the carrying amount of the investment and is assessed for impairment as part of that investment. Any excess of the Group's share of the net fair value over the cost of the acquisition, after reassessment, is recognised immediately in the income statement.

Intangible assets

Intangible assets are stated at their historical cost and amortised on a straight-line basis over their expected useful lives, which usually varies from 3 to 10 years and up to 20 years for patents. An adjustment is made for any impairment. Intangible items acquired must be recognised as assets separately from goodwill if they meet the definition of an asset, are either separable or arise from contractual or other legal rights, and their fair value can be measured reliably.

Intangible assets recognised separately from goodwill in acquisitions consist of marketing and customer-related or contract and technology-based intangible assets. Typical marketing and customer-related assets include trademarks, trade names, service marks, collective marks, certification marks, customer lists, order or production backlogs, customer contracts and the related customer relationships. Contract and technology-based intangible assets are normally licensing and royalty agreements or patented technology and trade secrets, such as confidential formulas, processes or recipes. The fair value determination of customer contracts and related relationships is derived from expected retention rates and cash flow over the customers' remaining estimated lifetime. The value of trademarks is derived from a discounted cash flow analysis using the relief from royalty method.

Property, plant and equipment

Property, plant and equipment acquired by Group companies are stated at their historical cost, which are augmented where appropriate by asset retirement costs. Assets arising on the acquisition of a new subsidiary are stated at fair value at the date of acquisition. Depreciation is computed on a straight-line basis, and adjusted for any impairment and disposal charges. The Consolidated statement of financial position value represents the cost deducted by received grants and subsidies and less the accumulated depreciation and any impairment charges. Interest costs on borrowings to finance the construction of these assets are capitalised as part of the cost during the construction period when the requirements are fulfilled.

Land and water areas are not depreciated, as these are deemed to have an indefinite life, but otherwise depreciation is based on the following expected useful lives:

Asset class	Depreciation years
Buildings, industrial	10-50
Buildings, office & residential	20-50
Groundwood mills	15-20
Hydroelectric power	40
Paper, board and pulp mills, main machines	20-30
Heavy machinery	10-20
Converting factories	10-15
Sawmills	10-15
Computers	3-5
Vehicles	5
Office equipment	3-5
Railway, harbours	20-25
Forest roads	10-15
Roads, fields, bridges	15-20

Ordinary maintenance and repair charges are written as expensed as incurred, but the costs of significant renewals and improvements are capitalised and depreciated over the remaining useful lives of the related assets. Retirements, sales and disposals of property, plant and equipment are recorded by deducting the cost and accumulated depreciation from the accounting records with any resulting terminal depreciation adjustments reflected in impairment charges in the Consolidated income statement. Capital gains are shown in other operating income.

Spare parts are accounted for as property, plant and equipment if they are major and used over more than one period, or if they are used only in connection with an item of property, plant and equipment. In all other cases, spare parts are carried as part of the inventory and recognised in profit or loss as consumed items.

Right-of-use (ROU) assets

As from 1 January 2019 and in accordance with IFRS 16, at inception of a contract, the Group assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. ROU assets are initially measured at cost, which comprises the initial amount of the lease liability adjusted mainly for lease payments made at or before the commencement date. The Group allocates the consideration in the contract to each lease component and will separate non-lease components if these are identifiable. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions.

The ROU assets are subsequently depreciated using the straight line method from the commencement date to the earlier of the end of the lease term or the end of the useful life of the ROU asset. In addition, the ROU asset is adjusted for certain remeasurements of the lease liability. ROU assets are tested for impairment in accordance with IAS 36.

The Group has elected not to recognise ROU assets for short-term leases that have a lease term of 12 months or less and leases of low value assets. Leases of low value assets mainly include IT and office equipment, certain vehicles and machinery and other low value items. The Group recognises the lease payments associated with these leases as an expense on a straight-line basis over the lease term (Note 5).

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Intangible assets

	Year ended 31 December				
EUR million	**Computer software**	**Other intangible assets**	**Assets in progress**	**Goodwill**	**Total**
Acquisition cost					
At 1 January 2018	249	176	39	1 190	1 654
Translation difference	-1	0	0	-1	-2
Reclassifications	26	-1	-28	0	-3
Additions[2]	13	21	16	5	55
Disposals[1]	-62	-19	0	0	-81
At 31 December 2018	**225**	**177**	**27**	**1 194**	**1 623**
Translation difference	0	4	0	3	7
Reclassifications	6	-75	-10	0	-78
Additions[2]	8	3	11	57	78
Disposals[1]	-4	-6	0	0	-10
At 31 December 2019	**236**	**102**	**29**	**1 253**	**1 620**
Accumulated amortisation and impairment					
At 1 January 2018	209	26	0	953	1 188
Translation difference	-1	-1	0	-2	-4
Disposals[1]	-62	-19	0	0	-81
Amortisation	12	11	0	0	23
At 31 December 2018	**158**	**17**	**0**	**951**	**1 126**
Translation difference	0	0	0	0	1
Disposals[1]	-4	-6	0	0	-10
Amortisation	16	12	0	0	27
Impairment	0	4	0	0	4
At 31 December 2019	**170**	**27**	**0**	**951**	**1 148**
Net Book Value at 31 December 2019	**65**	**75**	**29**	**302**	**471**
Net Book Value at 31 December 2018	**67**	**160**	**27**	**243**	**497**

[1] Company disposals are included in Disposals line. Company disposals are discussed in more detail in Note 4 Acquisitions and disposals.
[2] Company acquisitions are included in the Additions line. Company acquisitions are discussed in more detail in Note 4 Acquisitions and disposals.

Property, plant and equipment

	Year ended 31 December					
EUR million	**Land and water**	**Buildings and structures**	**Plant and equipment**	**Other tangible assets**	**Assets in progress**	**Total**
Acquisition cost						
At 1 January 2018	361	3 349	13 346	428	441	17 925
Translation difference	-1	-29	-201	-8	-1	-240
Reclassifications	0	43	207	2	-249	3
Reclassifications to biological assets	0	-1	-2	0	0	-3
Additions[2]	0	19	171	2	249	441
Disposals[1]	-31	-46	-108	-4	0	-189
At 31 December 2018	**329**	**3 335**	**13 413**	**420**	**440**	**17 937**
Translation difference	6	11	-49	1	9	-22
Reclassifications	-1	61	322	17	-403	-3
Reclassifications to biological assets	0	-1	-2	0	0	-2
Additions[2]	306	42	228	28	299	904
Disposals[1]	-2	-73	-476	-6	-1	-558
At 31 December 2019	**638**	**3 376**	**13 438**	**459**	**345**	**18 256**
Accumulated depreciation and impairment						
At 1 January 2018	10	2 040	10 196	360	9	12 615
Translation difference	-1	-32	-177	-6	0	-216
Disposals[1]	-5	-41	-103	-4	0	-153
Depreciation	0	77	368	11	0	456
Impairments and reversals	0	0	1	0	0	1
At 31 December 2018	**4**	**2 044**	**10 285**	**361**	**9**	**12 703**
Translation difference	0	-3	-54	0	2	-55
Additions[2]	0	7	17	19	0	43
Disposals[1]	-1	-68	-469	-6	0	-543
Depreciation	0	81	356	11	0	448
Impairments and reversals	0	-16	66	0	0	50
At 31 December 2019	**4**	**2 044**	**10 201**	**386**	**11**	**12 646**
Net Book Value at 31 December 2019	**634**	**1 332**	**3 237**	**73**	**334**	**5 610**
Net Book Value at 31 December 2018	**325**	**1 291**	**3 128**	**59**	**431**	**5 234**

[1] Net Book Value at 31 December 1 Company disposals are included in the Disposals line. Company disposals are discussed in more detail in Note 4 Acquisitions and disposals.
[2] Company acquisitions are included in the Additions line. Company acquisitions are discussed in more detail in Note 4 Acquisitions and disposals.

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Right-of-use assets

	Year ended 31 December			
EUR million	**Land and water**	**Buildings and structures**	**Plant and equipment and other**	**Total**
Acquisition cost				
At 1 January 2019	292	80	158	530
Translation difference	3	2	0	5
Reclassifications	80	2	0	81
Reclassifications to biological assets	-12	0	0	-12
Additions	7	6	15	29
Disposals	0	0	-2	-2
Other changes	-19	0	-34	-53
At 31 December 2019	**352**	**89**	**138**	**579**
Accumulated depreciation and impairment				
At 1 January 2019	0	0	0	0
Disposals	0	0	-2	-2
Depreciation	10	20	40	70
Impairment	3	0	0	3
Other changes	0	0	0	1
At 31 December 2019	**13**	**20**	**38**	**71**
Net Book Value at 31 December 2019	**340**	**69**	**99**	**508**

Stora Enso's most material right-of-use assets capitalised consist of land areas used in forestry and industrial operations, various machinery and equipment leases including operative machinery, vessels and other logistic equipment and properties including offices, warehouses and other operative properties. Some of the leases contain renewal options and extension options that are considered in the lease term if the Group is reasonably certain to exercise the option.

As at 1 January 2019 certain land use contracts, amounting to EUR 80 million, before IFRS 16 transition accounted as intangible assets were classified on transition to IFRS 16 as leases.

Intangible assets and property, plant and equipment, and right-of-use asset additions

The total capital expenditure for the year in Stora Enso Oyj and its subsidiaries amounted to EUR 579 (EUR 491) million. Details of ongoing projects and future plans are discussed in more detail in the Report of the Board of Directors.

Note 12 Biological assets

Accounting principles

The biological assets of Stora Enso consist of standing trees to be used as raw material in pulp and mechanical wood production and as biofuels.

IAS 41 Agriculture standard requires that biological assets are shown in the Consolidated Statement of financial position at fair value. Group forests are thus accounted for at level 3 of fair value less the estimated point-of-sale costs at harvest, there being a presumption that fair values can be measured for these assets.

The valuation of forest assets is based on discounted cash flow models whereby the fair value of the biological assets is calculated using cash flows from continuous operations, that is, based on sustainable forest management plans taking into account growth potential. The yearly harvest from the forecasted tree growth is multiplied by wood prices and the cost of silviculture and harvesting is then deducted. The fair value of the biological assets are measured as the present value of the harvest from one growth cycle based on the productive forestland, taking into consideration environmental restrictions and other reservations. Young standing timber less than two years old (less than three years in Montes del Plata) is considered to be an immature asset and is accounted at cost. At harvesting, biological assets are transferred to the inventory.

Fair value is deemed to approximate the cost when little biological transformation has taken place or the impact of the transformation on the price is not expected to be material, which varies according to the location and species of the assets.

Stora Enso also ensures that the Group's share of the valuation of forest holdings in equity accounted investments and joint operations are consistent with Group accounting policies.

The Group has biological assets in its own subsidiaries in Sweden, China and Laos, as well as in joint operations in Brazil and Uruguay and in equity accounted investments in Finland and Brazil.

The value of biological assets disclosed in the group Consolidated statement of financial position from subsidiary companies and from joint operations amounts to EUR 3 627 (EUR 457) million as shown below. The Group's indirect share of biological assets held by equity accounted investments amounts to EUR 753 (EUR 2 871) million.

Biological assets

EUR million	Year Ended 31 December 2019	2018
Subsidiaries and Joint Operations		
Fair Value at 1 January	**457**	**448**
Translation differences[2]	40	-2
Unrealized change in fair value[1 2]	546	17
Additions[3]	2 675	83
Change due to harvesting[1]	-98	-79
Other operative changes[1]	-6	-7
Other changes	-1	-7
Reclassification from Property, plant and equipment	14	2
Fair Value of biological assets at 31 December	**3 627**	**457**
Equity accounted investments		
Bergvik Skog Ab (49.79%)[2]	0	2 262
Tornator Oyj (41%)	740	595
Arauco Florestal Arapoti S.A. (20%)	14	14
Fair value of biological assets of Associated companies at 31 December	**753**	**2 871**

[1] Items are recorded in the profit and loss lines.
[2] The impact in 2019 was mainly due to fair valuation increase of Swedish forests, which was mostly driven by lower discount rates.
[3] Assets mainly acquired through Bergvik Skog AB restructuring in 2019.

Valuation and standing stock of forest assets in main subsidiaries, joint operations and equity accounted investment

			As at 31 December 2019 Guangxi	Swedish forests	Veracel (50%)	MdP (50%)	Tornator (41%)	Total[4]
Land area	Total area	ha	81 000	1 408 000	112 000	131 000	286 000	2 019 000
	- of which owned		0	1 408 000	107 000	95 000	286 000	1 897 000
	- of which leased		81 000	0	5 000	36 000	0	123 000
	Productive area	ha	76 000	1 140 000	50 000	86 000	262 000	1 614 000
Total area	Standing stock[6]	million m³ fo.[1]	4.3	146.3	3.8	10.0	31.5	195.8
	Standing stock[6]	million m³ u.b.[2]	3.5	121.5	3.1	8.2	25.4	161.8
Productive Forest land	Standing stock	million m³ fo.[1]	4.2	143.2	3.8	10.0	31.0	192.1
	Standing stock	million m³ u.b.[2]	3.4	120.3	3.1	8.2	25.1	160.1
	Estimated Growth[3]	million m³ u.b.[2]/p.a.	0.7	4.7	0.8	1.6	1.1	8.9
	Harvesting[3]	million m³ u.b.[2]/p.a.	1.0	3.4	0.9	1.4	1.0	7.8
Fair value[5]		EUR million	181	3 133	86	222	740	4 362
	Productive land area	EUR/ha	2 385	2 749	1 716	2 608	2 824	2 703

[1] forest cubic metres
[2] solid under bark cubic metres
[3] Swedish forests harvesting volume is annualised based on June-December outcome. Estimated Growth is a full year estimate.
[4] Total figures exclude minor forest ownerships in Laos and equity accounted investment Arauco Florestal Arapoti S.A. in Brazil
[5] Biological asset fair value, excluding land values. The corresponding forest land value was EUR 548 million at end 2019.
[6] Non-productive natural forest area is not included to Veracel's total area standing stock

Subsidiaries and joint operations:
On 31 May 2019, Bergvik Väst AB, a subsidiary of Bergvik Skog AB, was distributed as dividend to the shareholders of Bergvik Skog AB. On the same date, the Group acquired an additional 20% of shares in Bergvik Väst AB from other shareholders, resulting in a total holding in Bergvik Väst AB of 69.8%. Simultaneously, Bergvik Väst AB was demerged and Stora Enso became the 100% owner of a new subsidiary holding around 69.8% of the former Bergvik Väst AB assets and liabilities. The acquisition date of the new Swedish forest was 31 May 2019. As a result of the transaction Stora Enso's direct forest holdings in Sweden are 1 408 thousand hectares, of which 1 140 thousand hectares is productive forest land. Details on the Bergvik Skog AB restructuring are shown in Note 4 Acquisitions and disposals.

At 31 December 2019 biological assets were located by value, in Sweden 86% (0%), China 5% (36%), Brazil 2% (16%), Uruguay 6% (44%) and other areas less than 1% (4%). The land area comes to 1 732 (325) thousand hectares of which 7% (37%) is leased and under 1% (2%) is restricted. From Stora Enso's total forest holdings 1 344 thousand hectares is productive forest land. The harvested wood amounted to 7 (4) million m³. These changes are mainly driven by the acquisition of Swedish forests. The Montes del Plata and Veracel amounts are taken into account in the ownership share and number of hectares.

At the end of 2019, the fair value of the biological assets in Swedish forests amounted to EUR 3 133 (EUR 0) million. The discount rate of 4.2% used in the discounted cash flows (DCF) is determined using the weighted average cost of capital method. The productive land in Swedish forests, totals 1 140 thousand hectares with a standing stock of 120.3 million m³ solid under bark (sub). The annual harvesting is on average 3.4 million m³ sub.

At the end of 2019, the fair value of the biological assets in Guangxi, China, amounted to EUR 181 (EUR 166) million. The biological assets included young standing timber with a value of EUR 34 (EUR 29) million. This increase is driven by higher sales prices and volumes. The discount rate of 8.9% (8.7%) used in the discounted cash flows (DCF) is determined using the weighted average cost of capital method increased slightly. The productive land in Guangxi, China, totals 76 (77) thousand hectares with a standing stock of 3.1 (6.4) million m³ solid under bark (sub). The annual harvesting is on average 1.0 (1.1) million m³ sub.

Veracel Celulose S.A. (Veracel), a 50% joint operation company in Brazil, had biological assets fair valued at EUR 172 (EUR 150) million, of which Stora Enso's share was EUR 86 (EUR 75) million. This increase is driven by higher sales prices and volumes. The biological assets included young standing timber with a value of EUR 33 (EUR 33) million. The discount rate of 9.0% (8.3%) used in the DCF is determined using the weighted average cost of capital method. Stora Enso's share (50%) of the land area is 112 (113) thousand hectares.

Stora Enso's 50% share of the productive land in Veracel, Brazil totals 50 (44) thousand hectares with a share of standing stock of 3.1 (2.9) million m³ sub. The ownership share of annual harvesting is on average 0.9 (1.7) million m³ sub.

Montes del Plata (MdP), a 50% joint operation company in Uruguay, had biological assets with a fair value of EUR 445 (EUR 398) million, of which Stora Enso's share was EUR 222 (EUR 199) million. The biological assets included young standing timber with a value of EUR 55 (EUR 55) million. The discount rate of 8.0% (8.0%) used in the DCF is determined using the weighted average cost of capital method. Stora Enso's share (50%) of the land area is 131 (126) thousand hectares.

Stora Enso's 50% share of the productive land in Montes del Plata, Uruguay totals 86 (81) thousand hectares with a share of standing stock of 8.2 (8.1) million m³ sub. The ownership share of annual harvesting is on average 1.4 (1.4) million m³ sub.

Equity accounted investments:
The Group has two equity accounted investments holding biological assets:

- Tornator Oyj (Tornator), a 41% owned Finnish associated company, had biological assets with a fair value of EUR 1 805 (EUR 1 451) million, of which Stora Enso's share was EUR 740 (EUR 595) million. The increase in fair value is mainly due to increased harvesting volume and long term sales prices. Growing costs had a slight reducing impact on the fair value. Stora Enso's 41% share of the productive forest land in Tornator totals 262 (223) thousand hectares with a share of standing stock of 25.1 (24.6) million m³ sub. The ownership share of annual harvesting is on average 1.0 (1.2) million m³ sub.

- Arauco Florestal Arapoti S.A., the 20% owned Southern Brazilian associated company, had biological assets with a fair value of EUR 67 (EUR 73) million, of which Stora Enso's share was EUR 14 (EUR 14) million.
- The Group owns 49.79% of shares in Bergvik Skog AB which continue to be reported as an equity accounted investment, but there are no biological assets to be reported anymore at the end of 2019.

Sensitivities of significant assumptions of a +/- 10% movement

	Wood market prices	Growth rate	Discount rate
Guangxi	+/-35	+/-19	+/-3
Swedish Forests	+/-502	+/-116	+381/-320
Veracel	+/-7	+/-9	+/-2
Montes del Plata	+/-21	+/-21	+/-6

Note 13 Equity accounted investments

Accounting principles

Consolidation principles
Associated companies over which Stora Enso exercises significant influence are accounted for using the equity method, which involves recognising the Group's share of the equity accounted investment profit or loss for the year in the Consolidated income statement. The Group's interest in an associated company is carried in the Consolidated statement of financial position at an amount that reflects its share of the net assets of the associate.

The Group's share of results in equity accounted investments is reported in the operating profit to reflect the operational nature of these investments, especially those in wood supply. There is no material goodwill in the Statements of financial position for equity accounted investments.

Principal equity accounted investments

			As at 31 December			
			Proportion of ownership interest/voting rights held %		EUR million	
Company	**Reportable segment**	**Domicile and principal place of operations**	**2019**	**2018**	**2019**	**2018**
Bergvik Skog AB: forest[1]	Other	Sweden	49.79/36.70	49.79/36.70	54	1 400
Tornator Oyj: forest	Other	Finland	41	41	381	288
Arauco Florestal Arapoti S.A.: plantation	Other	Brazil	20	20	19	19
Others					29	23
Carrying Value at 31 December					**483**	**1 729**

[1] The group's shareholding in Bergvik Skog AB is 49.79%, however, the voting rights are limited to 36.7%.

Group share of equity accounted investments income statements

	Year Ended 31 December	
EUR million	**2019**	**2018**
Sales	170	249
Net operating expenses	-121	-119
Other operating income[1]	129	0
IAS 41 valuation	127	90
Operating Profit	**305**	**220**
Net financial items	-55	-37
Net Profit before Tax	**249**	**183**
Income tax	-21	-2
Net Profit for the Year	**229**	**181**

[1] Other operating income relates to Bergvik Skog AB restructuring, see Note 4 Acquisitions and disposals

All the above companies are accounted for using the equity method in the Consolidated financial statements.

The average number of personnel in the equity accounted investments was 1637 in 2019, compared with 1 727 in 2018.

A summary of the financial information in respect of the Group's material associates, Bergvik Skog AB and Tornator Oyj, is set out below. The Group's share of these associated companies is reported under the segment Other and covers the majority of the Group's total share of results of equity accounted investments. The summarised financial information below represents amounts shown in the associate's financial statements prepared in accordance with IFRS.

Bergvik Skog AB

EUR million	**2019**	**2018**
Current assets	478	152
Non-current assets	0	4 705
Current liabilities	0	157
Non-current liabilities	369	971
Tax liabilities	0	955
Sales	92	245
Net profit for the year	243	295
Other comprehensive income	27	7
Total comprehensive income	270	302
Dividends received from the associate during the financial year[1]	1 434	11
Net assets of the associate	109	2 774
Proportion of the Group's ownership interest in Bergvik Skog AB	49.79%	49.79%
Goodwill	0	19
Carrying amount of the Group's interest in Bergvik Skog AB	**54**	**1 400**

[1] amount relates to Bergvik Skog AB restructuring, of which EUR 331 million was paid in cash

On 31 May 2019, Bergvik Väst AB, a subsidiary of Bergvik Skog AB, was distributed as dividends to the shareholders of Bergvik Skog AB. On the same date the Group acquired an additional 20% of shares in Bergvik Väst AB from other shareholders resulting in a total holding in Bergvik Väst AB of 69.8%. Simultaneously, Bergvik Väst AB was demerged and Stora Enso became the 100% owner of a new subsidiary holding around 69.8% of the former Bergvik Väst AB assets and liabilities. The Group owns 49.79% of shares in Bergvik Skog AB which continue to be reported as an equity accounted investment. Details on the Bergvik Skog AB restructuring are shown in Note 4 Acquisitions and disposals.

Stora Enso's shareholding in the company was valued at EUR 54 (EUR 1 400) million at the year-end in 2019. In 2019, the Group's share of Bergvik Skog's net profit was EUR 121 (EUR 147) million.

Tornator Oyj

EUR million	2019	2018
Current assets	43	34
Non-current assets	1 918	1 557
Current liabilities	672	376
Non-current liabilities	144	351
Tax liabilities	216	161
Sales	112	113
Net profit for the year	262	79
Other comprehensive income	-1	0
Total comprehensive income	261	79
Dividends received from the associate during the financial year	14	12
Net assets of the associate	929	702
Proportion of the Group's ownership interest in Tornator Oyj	41.00%	41.00%
Carrying amount of the Group's interest in Tornator Oyj	**381**	**288**

Stora Enso's Finnish forest holdings were divested into an equity accounted investment, Tornator, in 2002. The Group's current 41% ownership is valued at EUR 381 (EUR 288) million at the year-end for 2019. In 2018, the Group's share of Tornator's net profit was EUR 107 (EUR 32) million, including a forest valuation gain of EUR 128 (gain EUR 13) million.

Aggregate information of equity accounted investments that are not individually material

	As at 31 December	
EUR million	**2019**	**2018**
PPE1, goodwill and other intangible assets	26	21
Biological assets	13	14
Operative receivables:		
Non-current	0	0
Current	21	16
Inventories	1	1
Cash	5	8
Total Assets	**66**	**61**
Operative Liabilities:		
Non-current	1	2
Current	12	11
Debt:		
Non-current	1	1
Current	1	0
Tax liabilities	4	4
Total Liabilities	**18**	**19**
Net Equity in the Group Statement of Financial Position	48	42
Represented by		
Capital and Reserves	48	42
OCI	0	0
Equity Accounting Value	**48**	**42**
Equity Accounting Value for Bergvik Skog AB	54	1 400
Equity Accounting Value for Tornator Oyj	381	288
Total Equity Accounting Value	**483**	**1 729**

[1] PPE = Property, Plant and Equipment

Equity accounted investment company balances

	As at 31 December	
EUR million	**2019**	**2018**
Receivables from Equity Accounted Investments		
Non-current loan receivables	2	2
Trade receivables	0	6
Liabilities due to Equity Accounted Investments		
Trade payables	**38**	**39**

Equity accounted investment transactions

	Year Ended 31 December	
EUR million	**2019**	**2018**
Sales to equity accounted investments	28	53
Purchases from equity accounted investments	109	219

The Group engages in transactions with equity accounted investments such as sales and purchases of wood. All agreements are negotiated at arm's length and are conducted on terms that the Group considers customary in the industry and generally no less favourable than would be available from independent third parties. Equity accounted investment company trade receivables and both sales to equity accounted investments and purchases from equity accounted investments decreased due to Bergvik Skog AB restructuring.

Total loans including interest receivable to equity accounted investments at the year-end 2019 amounted to EUR 2 (EUR 2) million.

Note 14 Equity instruments

Accounting principles

The Group has elected to classify its equity investments in Pohjolan Voima shares and certain listed shares held by the Group at fair value through other comprehensive income (FVTOCI) under IFRS 9 by applying the irrevocable election for equity instruments under the standard due to the long-term nature of the ownership. The gains and losses resulting from changes in the fair value of equity investments under FVTOCI are not recycled to the Income Statement upon impairment or disposal, only the dividend income is recognised in the income statement. In addition, the Group also has certain equity investments in unlisted shares that are classified as fair value through income statement.

Summary of values

	Year Ended 31 December	
EUR million	**2019**	**2018**
Acquisition cost at 1 January		
Listed shares	4	4
Unlisted shares	125	126
Investments classified as equity instruments	**129**	**130**
OCI in opening balance	306	209
Equity Instruments at 1 January	**435**	**339**
Translation difference	0	-1
Additions	1	3
Change in fair values accounted for as OCI	109	97
Disposals	-6	-1
Income Statement - gains and losses	0	-2
Carrying Amount at 31 December	**538**	**435**

Unrealised gains and losses on listed and unlisted shares

	Year Ended 31 December	
EUR million	**2019**	**2018**
Net unrealised holding gains (OCI)	**415**	**306**
Cost	123	129
Fair Value	**538**	**435**
Net unrealised holding gains (OCI)	415	306
Deferred tax	-2	-2
Net Unrealised Holding Gains Shown in Equity as OCI	**413**	**304**
Change in Net Unrealised Holding Gains Shown in Equity as OCI	**109**	**98**

PVO shares

The Group holds a 15.6% (15.6%) interest in Pohjolan Voima Oy (PVO), a privately-owned group of companies in the energy sector that produces electricity and heat for its shareholders in Finland. Each subsidiary of the PVO group has its own class of shares that entitle the shareholder to the energy produced in proportion to its ownership of that class of share. The shareholders then have an obligation to cover the costs of production, which are generally lower than market prices. Stora Enso did not receive actual dividend payments from PVO during 2019. The holding is fair valued quarterly using an average of two methods: the discounted cash flow model and trading multiples. The valuation is categorised at level 3 in the fair value hierarchy according to IFRS 13; levels are explained in Note 25 Fair values.

The electricity prices in the model are based on Nordpool prices. Liquid future derivative prices are used for the available years in the model and thereafter increased by an inflation factor. The historical financial statements provide the basis for the cost structure for each of the power assets, which are adjusted by the inflation factor in future years. The discount rate of 3.18% used in the DCF is determined using the weighted average cost of capital method. The trading multiples are derived from a peer group of European companies operating power assets similar to PVO's. A +/- 5% change in the electricity price used in the DCF would change the valuation by EUR +98 million and EUR -77 million, respectively. A +/- 1% absolute change in the discount rate would change the valuation by EUR -75 million and EUR +185 million, respectively.

As an outcome of the arbitration proceedings, a settlement agreement was signed during 2018 between the plant owner Teollisuuden Voima Oyj (TVO) and the plant supplier AREVA-Siemens Consortium concerning the costs and losses caused by the delay of the Olkiluoto 3 project. As a result, the plant supplier agreed to compensate EUR 450 million to the plant owner TVO. In December 2019 TVO announced that the project is further delayed, with the regular electricity generation expected to start in March 2021. The updated schedule and the arbitration proceeding outcome have been taken into account in the Q4 2019 valuation. Stora Enso's indirect share of the capacity of Olkiluoto 3 is approximately 8.9%, through its PVO B2 shares.

PVO shareholding at 31 December 2019

EUR million	Share Series	% Holding	Asset Category	Fair Value 2019	Fair Value 2018
PVO-Vesivoima Oy	A	20.6	Hydro	221	166
Teollisuuden Voima Oyj	B	15.7	Nuclear	275	243
Teollisuuden Voima Oyj	B2	14.8	Nuclear under construction	22	0
Other	C,C2,V,M	Various	Various	4	6
Total				**522**	**415**

The valuation in 2019 amounted to EUR 522 (EUR 415) million against a cost value of EUR 117 (EUR 118) million, with the revaluation of EUR 405 (EUR 297) million being taken to other comprehensive income. The change in PVO's value is mainly caused by an increase in electricity market prices and a decrease in the discount rate. No deferred tax is appropriate, as under Finnish tax regulations holdings above 10% are exempt from tax on disposal proceeds.

Principal equity instruments

	31 December 2019			
EUR million	**Holding %**	**Number of Shares**	**Acquisition Cost**	**Fair Value**
Packages Ltd, Pakistan - listed shares	6.4	5 396 650	3	12
Total Listed Shares			**3**	**12**
Pohjolan Voima Oy - unlisted shares	15.6	5 073 972	117	522
Others - unlisted shares			3	3
Total Unlisted Shares			**120**	**526**
Total Equity instruments at 31 December 2019			**123**	**538**
Total Equity Instruments at 31 December 2018			**129**	**435**

Note 15 Other non-current assets

	As at 31 December	
EUR million	**2019**	**2018**
Prepaid expenses and accrued income	17	19
Tax credit	5	16
Other non-current operative assets	15	13
Total	**37**	**48**

Note 16 Inventories

Accounting principles

Inventories are reported at lower of cost and net realisable value with the cost determined by the first-in first-out (FIFO) method or, alternatively, by the weighted average cost where it approximates FIFO. The cost of finished goods and work in progress comprises raw material, direct labour, depreciation, other direct costs and related production overheads, but excludes interest expenses. Net realisable value is the estimated selling price in the ordinary course of business, less the costs of completion and sale.

Where market conditions result in the manufacturing costs of a product exceeding its net realisable value, a valuation allowance is made. Valuation allowances are also made for old, slow moving and obsolete finished goods and spare parts. Such valuation allowances are deducted from the carrying value of the inventories in the consolidated statement of financial position.

	As at 31 December	
EUR million	**2019**	**2018**
Materials and supplies	372	438
Work in progress	84	98
Finished goods	672	752
Spare parts and consumables	317	298
Other inventories	17	17
Advance payments and cutting rights	53	83
Obsolescence allowance - spare parts and consumables	-101	-98
Obsolescence allowance - finished goods	-16	-15
Net realisable value allowance	-6	-5
Total	**1 391**	**1 567**

EUR 4 693 (EUR 4 872) million of inventories have been expensed during the year, which are included in the materials and supplies line and relate to materials. EUR 14 (EUR 16) million of inventory write-downs have been recognised as an expense. EUR 8 (EUR 3) million have been recognised as a reversal of previous write-downs.

Note 17 Operative receivables

Accounting principles

Trade receivables

Trade receivables are recognised initially at fair value and subsequently at their anticipated realisable value with an estimate made for loss allowance on expected credit losses based on a forward-looking and objective review of all outstanding amounts at period end. A simplified approach under IFRS 9 has been implemented for trade receivables and loss allowances are recognised based on expected lifetime credit losses in the Consolidated income statement within other operating expenses. For non-defaulted receivables, expected credit losses are estimated based on externally generated customer level probability of default data that is used in the forward-looking loss allowance calculation model. The rebuttable presumption that default does not occur later than when a financial asset is 90 days past due has been applied in the calculation model and a default is normally estimated to occur when trade receivables are at least 90 days overdue or there is otherwise objective evidence supporting the conclusion that a default has occurred. Trade receivables are presented in current assets under Operative receivables in the Consolidated statement of financial position.

Trade receivables under factoring arrangements

Stora Enso uses factoring arrangements as one of the working capital management tools. Sold trade receivables are derecognised once significant related risks and rewards of ownership have been transferred to the buyer. Outstanding balances for trade receivables that were not yet sold at period end but qualify to be sold under factoring programs in the next period, are classified as trade receivables fair valued through other comprehensive income in accordance with the business model and contractual cash flow characteristics tests under IFRS 9. Please refer to Note 25 Fair values for further details.

Current operative receivables

	As at 31 December	
EUR million	**2019**	**2018**
Trade receivables - gross carrying amount	**1 006**	**1 172**
Loss allowance	-38	-36
Prepaid expenses and accrued income	96	96
Other receivables	224	254
Total	**1 289**	**1 487**

Age analysis of trade receivables

	As at 31 December	
EUR million	**2019**	**2018**
Not overdue	865	1 027
Less than 30 days overdue	65	77
31 to 60 days overdue	9	7
61 to 90 days overdue	2	2
91 to 180 days overdue	3	4
Over 180 days overdue	63	55
Total	**1 006**	**1 172**

As at 31 December 2019, a gross amount of EUR 142 (EUR 145) million of trade receivables were overdue. These relate to a number of countries and unrelated customers that have no recent history of default. At 31 December 2019, lifetime expected credit losses for trade receivables amounted to EUR 38 (EUR 36) million. Loss allowances for trade receivables are estimated on an individual basis based on a forward-looking

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model where estimated probabilities of customer default are used in the calculation model. If the Group has concerns regarding the financial status of a customer, an advance payment or an irrevocable letter of credit drawn from a bank is required. At the year end, the letters of credit awaiting maturity totalled EUR 33 (EUR 62) million. Please refer to Note 24 Financial risk management for details of customer credit risk management.

Age analysis of loss allowance

	As at 31 December	
EUR million	**2019**	**2018**
Not overdue and less than 90 days overdue	1	3
More than 90 days overdue	37	33
Total	**38**	**36**

Reconciliation of loss allowance

	As at 31 December	
EUR million	**2019**	**2018**
Opening balance at 1 January	36	28
Adoption of IFRS 9 standard	0	3
Change in loss allowance booked through Income Statement	9	8
Write-downs	-6	-3
Other	0	0
Closing Balance at 31 December	**38**	**36**

The actual credit losses during 2019 amounted to EUR 6 (EUR 3) million of trade receivables being written-off from the Group's balance sheet.

Stora Enso has entered into factoring agreements to sell trade receivables in order to accelerate cash conversion. These agreements resulted in full derecognition of trade receivables amounting to a nominal value of EUR 255 (EUR 240) million at the end of the year. The continuing involvement of Stora Enso in the sold receivables was estimated as being insignificant due to the non-recourse nature of the factoring arrangements involved.

Note 18 Shareholders' equity

Accounting principles

Dividend and capital repayments

Any dividend or capital repayment proposed by the Board is not deducted from distributable shareholders' equity until approved by the shareholders at the Annual General Meeting.

At 31 December 2019, shareholders' equity amounted to EUR 7 429 (EUR 6 714) million, compared to the market capitalisation on Nasdaq Helsinki of EUR 10 328 (EUR 8 123) million. The market values of the shares were EUR 13.55 (EUR 11.05) for A shares and EUR 12.97 (EUR 10.09) for R shares.

The A shares entitle the holder to one vote per share, whereas R shares entitle the holder to one vote per ten shares with a minimum of one vote, though the accountable par of both shares is the same. A shares may be converted into R shares at any time at the request of a shareholder. At 31 December 2019, the company's fully paid-up share capital, as entered in the Finnish Trade Register, was EUR 1 342 million (EUR 1 342 million). The current accountable par of each issued share is EUR 1.70 (EUR 1.70).

At 31 December 2019, Directors and Group Leadership Team members owned 1 150 (1 150) A shares and 478 403 (558 028) R shares representing 0.02% of the total voting rights of the company. Full details of Director and Executive interests are shown in Note 7 Board and executive remuneration. A full description of company share award programmes is shown in Note 21 Employee variable compensation and equity incentive schemes. However, none of these have any impact on the issued share capital.

Change in share capital and number of shares

	A shares	R shares	Total
At 1 January 2018	**176 392 320**	**612 227 667**	**788 619 987**
Conversion of A shares to R shares	-79 648	79 648	–
At 31 December 2018	**176 312 672**	**612 307 315**	**788 619 987**
Conversion of A shares to R shares	-55 838	55 838	–
At 31 December 2019	**176 256 834**	**612 363 153**	**788 619 987**
Number of votes as at 31 December 2019[1]	**176 256 834**	**61 236 315**	**237 493 149**
Share Capital at 31 December 2019, EUR million	**300**	**1 042**	**1 342**
Share Capital at 31 December 2018, EUR million	**300**	**1 042**	**1 342**

[1] R share votes are calculated by dividing the number of R shares by 10.
The issued shares by 9 March 2020 will represent the total shares eligible to vote at the forthcoming Annual General Meeting.

Note 19 Non-controlling interests

Accounting principles

Non-controlling interests are presented within the equity of the Group in the Consolidated statement of financial position. The proportionate shares of profit or loss attributable to non-controlling interests and to equity holders of the parent company are presented in the Consolidated income statement after the profit for the period. Transactions between non-controlling interests and Group shareholders are transactions within equity and are thus shown in the Statement of changes in equity. The measurement type of non-controlling interests is decided separately for each acquisition.

Non-controlling interests

	Year Ended 31 December	
EUR million	**2019**	**2018**
At 1 January	18	47
Acquisitions	-7	-2
Disposals	8	-1
NCI buy-out	0	2
Share of profit for the period	-24	-24
Share of other comprehensive income	0	-2
Dividends	-1	-2
At 31 December	**-7**	**18**

Principal non-controlling interests

Company	Principal Place of Business	Proportion of Ownership Interests Held by Non-controlling Interests, % (As at 31 December 2019)	EUR million 2019	EUR million 2018
Stora Enso Pulp and Paper Asia AB Group[1]	Sweden and China	See separate table below	-9	11
Stora Enso Inpac Packaging Group[2]	China	0.00	0	8
Stora Enso Huatai Paper Co Ltd[3]	China	0.00	0	-7
Others	-		2	5
			-7	**18**

[1] Consist of non-controlling interests in Guangxi Integrated Project and Operations
[2] In September 2019, Stora Enso bought out non-controlling interests in Stora Enso China Packaging. Stora Enso previously owned 90% of the parent company of the China Packaging Group and with the purchase, the Group's ownership increased to 100%.
[3] In October 2019, Stora Enso divested its 60% shareholding in Stora Enso Huatai Paper Co Ltd, which operated the Dawang paper mill in China.

Non-controlling interests in Stora Enso Pulp and Paper Asia AB Group

		31 December 2019			31 December 2018		
Company	**Principal Place of Business**	**Direct-% of NCI**	**Indirect-% of NCI**	**Total-% of NCI**	**Direct-% of NCI**	**Indirect-% of NCI**	**Total-% of NCI**
Stora Enso Pulp and Paper Asia AB	Sweden and China	5.79	0.00	5.79	5.79	0.00	5.79
Guangxi Stora Enso Forestry Co Ltd	China	5.00	5.50	10.50	5.00	5.50	10.50
Stora Enso (Guangxi) Packaging Company Ltd	China	15.00	4.92	19.92	15.00	4.92	19.92
Stora Enso (Guangxi) Forestry Company Ltd	China	15.00	4.92	19.92	15.00	4.92	19.92

In 2019 non-controlling interest in Stora Enso decreased by EUR 24 million mostly due to negative result in Stora Enso Pulp and Paper Asia AB Group. Net loss in Stora Enso Pulp and Paper Asia AB Group was EUR 111 (EUR 128) million.

Summarised financial information in respect of the subsidiaries that have material non-controlling interests is set out below.

Stora Enso Pulp and Paper Asia AB Group

EUR million	2019	2018
Assets	1 268	1 127
Shareholders' equity attributable to the owners of the parent	-74	18
Non-controlling interests[1]	-9	11
Total Equity	**-82**	**29**
Liabilities	1 350	1 097
Net loss for the year	-111	-128
Attributable to:		
Owners of the parent	-91	-104
Non-controlling interests	-20	-24
Net Loss for the Year	**-111**	**-128**
Net cash outflow from operating activities	-15	-28
Net cash outflow from investing activities	-32	-61
Net cash inflow from financing activities	13	62
Net Cash Outflow/Inflow	**-34**	**-27**

[1] No dividends were paid to non-controlling interests in 2019 or 2018.

Note 20 Post-employment benefits

Accounting principles

Employee benefits

The Group operates a number of defined benefit and contribution plans throughout the world, the assets of which are generally held in separate trustee administered funds. Such pension and post-retirement plans are generally funded by payments from employees and by the relevant group companies, taking into account the recommendations of independent qualified actuaries. Employer contributions to the defined contribution pension plans are charged to the Consolidated income statement in the year they relate to.

For defined benefit plans, accounting values are assessed using the projected unit credit method. Under this method, the cost of providing pensions is charged to the consolidated income statement to spread the regular cost over the service lives of employees in accordance with the advice of qualified actuaries who carry out a full valuation of the plan every year in all major pension countries. The pension obligation is measured as the present value of the estimated future cash outflows using interest rates of highly rated corporate bonds or government securities, as appropriate, that match the currency and expected duration of the related liability.

The Group immediately recognises all actuarial gains and losses arising from defined benefit plans directly in equity, as disclosed in its consolidated statement of comprehensive income. Past service costs are identified at the time of any amendments to the plans and are recognised immediately in the consolidated income statement regardless of vesting requirements. In the Group's consolidated statement of financial position, the full liability for all plan deficits is recorded.

The Group has established a number of pension and other benefit plans for its operations throughout the world, the cost amounted to EUR 166 (EUR 170) million in 2019, as shown in Note 6 Personnel expenses. The majority of the plans are defined contribution schemes and the charge amounted to EUR 156 (EUR 160) million.

In accordance with their respective pension arrangements, Group Leadership Team members may retire at 65 years of age with pensions consistent with local practices in their respective home countries. The retirement age for other management teams in companies in the Stora Enso Group follows local law and practices, though some management team members have older agreements with the right to retire earlier, between 60 and 65 years. The retirement age for other staff either follows national retirement ages or is determined by local labour agreements. In the latter case, there may be certain pre-retirement liabilities accruing to the company to cover the income of the early retirees between the age at which they ceased working and the national retirement age.

Stora Enso's total defined benefit obligations for current and former members of staff amount to EUR 1 219 (EUR 1 115) million, though assets of EUR 761 (EUR 714) million have been put aside in various pension schemes to cover these liabilities. The net funding position of the defined benefit plans is shown in full in the statement of financial position and amounted to EUR 458 million in 2019, an increase of EUR 57 million on the previous year's liability of EUR 401 million. This increase is mainly caused by the actuarial losses which result from the change in financial assumptions regarding present value of the defined benefit obligations. Interest costs are entered under financial costs. The 2019 defined benefit expense in the income statement amounts to EUR 17 million and the actuarial losses recorded in other comprehensive income amount to EUR 77 million. The 2018 defined benefit expense in the income statement amounted to EUR 16 million and the actuarial gains recorded in other comprehensive income amounted to EUR 24 million.

Actuarial gains/losses recognised directly in equity

	Year ended 31 December	
	Total operations	
EUR million	**2019**	**2018**
Actuarial gains/losses	-77	-24
Deferred tax thereon	6	4
Total	**-71**	**-20**

The Group policy for funding deficits is intended to satisfy local statutory funding requirements for tax deductible contributions together with adjusting the discount factors used in the actuarial calculations for market rates. However, the emphasis of the Group is to provide defined contribution schemes for its post-employment benefits, thus all aspects of the provision and accounting for defined benefit schemes are evaluated. The net liability in the Group statement of financial position reflects the actual deficits in the defined benefit plans. Details of the pension arrangements, assets and investment policies in the Group's main operating countries are shown below.

Finland

The Group funds its Finnish pension obligations mainly through defined contribution schemes, the charge in the income statement being EUR 69 (EUR 73) million. By contrast, the remaining obligations covered by defined benefit schemes resulted in a charge of EUR 0 (EUR 1) million excluding finance costs. Pension cover since 2001 has been organised entirely through local insurance companies. As state pensions in Finland provide by far the greatest proportion of pensions, Group liabilities are proportionately much smaller than in comparable countries.

Plan assets in Finland are managed by insurance companies. Details of the exact structure and investment strategy surrounding plan assets are not available to participating employers, as the assets actually belong to the insurance companies themselves. The assets are managed in accordance with EU regulations, and also national requirements, under which there is an obligation to pay guaranteed benefits irrespective of market conditions.

Germany

German pension costs amounted to EUR 9 (EUR 8) million, of which EUR 8 (EUR 7) million related to defined contribution schemes and EUR 1 (EUR 1) million to defined benefits excluding finance costs. The net liability increased from EUR 238 million to EUR 259 million. The increase in net liability arose mainly from an decrease in the discount rate and changes in experience. Defined benefit pension plans are mainly accounted for in the statement of financial position through book reserves with some minor plans using insurance companies or independent trustees. Retirement benefits are based on years worked and salaries received during the pensionable service and the commencement of pension payments are linked to the national pension scheme's retirement age. Pensions are paid directly by the companies themselves to their former employees, the security for the pensioners is provided by the legal requirement that the book reserves held in the statement of financial position are insured up to certain limits.

Sweden

In Sweden, most blue-collar workers are covered by defined contribution schemes, the charge in the Income statement being EUR 55 (EUR 56) million. Defined benefit schemes are covering mainly white-collar staff and resulted in a charge of EUR 8 (EUR 7) million excluding finance costs.

Total defined benefit obligations amounted to EUR 411 (EUR 370) million and the assets totalled EUR 284 (EUR 278) million, leaving a net liability of EUR 127 million at the year end, compared with a net liability of EUR 92 million the year before. This increase in net liability arose from a decrease in the discount rate and changes in financial assumptions and experience. Stora Enso has undertaken to pay all local legal pension liabilities for the main ITP scheme to the foundation, thus the remaining liability relates to other small schemes.

The long-term investment return target for the foundation is a 3% real return after tax. Stora Enso's Swedish pension fund conducts an annual asset/liability study to optimise its risk parameters.

Other countries

Obligations and assets in the remaining countries were material only in the United Kingdom, at EUR 146 (EUR 132) million and EUR 136 (EUR 121) million, respectively, leaving a net liability of EUR 10 (EUR 11) million at the end of 2019. This reduction in net liability arose from changes in actuarial assumptions.

Group

Net defined benefit obligation reconciliation

	Year ended 31 December	
EUR million	**2019**	**2018**
Present value of defined benefit obligation		
Defined benefit obligation at 1 January	1 115	1 139
Translation difference	0	-15
Interest on liabilities	20	21
Current service cost	11	11
Past service cost	-1	-2
Actuarial gains and losses on defined benefit obligation arising from changes in demographic assumptions	-22	-3
Actuarial gains and losses on defined benefit obligation arising from changes in financial assumptions	118	27
Actuarial gains and losses on defined benefit obligation arising from experience adjustments	38	2
Benefit payments	-58	-61
Net disposals/acquisitions	-6	-1
Other	3	-2
Defined benefit obligation at 31 December	**1 219**	**1 115**
Fair value of plan asset		
Fair value of plan asset at 1 January	-714	-762
Translation difference	-1	13
Expected return on plan assets	-13	-15
Actuarial gain/loss on plan assets	-57	-1
Employer contributions	-23	3
Benefit payments	48	45
Net disposals/acquisitions	2	0
Other	-3	3
Fair value of plan asset at 31 December	**-761**	**-714**
Net defined benefit obligation	**458**	**401**

Amounts recognised on the statement of financial position – defined benefit plans

	As at 31 December					
	Total defined benefit plans		**Defined benefit pension plans**		**Other post-employment benefits**	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Present value of funded obligations	922	841	922	841	0	0
Present value of unfunded obligations	298	274	271	249	27	25
Defined benefit obligations (DBO)	**1 219**	**1 115**	**1 193**	**1 090**	**27**	**25**
Fair value of plan assets	761	714	761	714	0	0
Net liability in defined benefit plans	**458**	**401**	**432**	**376**	**27**	**25**

Amounts recognised in the income statement

	Year ended 31 December					
	Total defined benefit plans		**Defined benefit pension plans**		**Other post-employment benefits**	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Operating costs						
Current service cost	11	11	10	10	1	1
Past service cost	-1	-1	2	-1	-3	0
Finance cost						
Net interest on net defined benefit liability	7	6	6	6	1	0
Cost recognised in Income Statement	**17**	**16**	**18**	**15**	**-1**	**1**

Statement of actuarial gains and losses

	Year ended 31 December	
EUR million	**2019**	**2018**
Gain/loss on pension scheme assets	57	1
Gain/loss arising on pension scheme liabilities	-134	-25
Total gain/loss	**-77**	**-24**

Defined benefit plans: Country assumptions used in calculating benefit obligations

	Year ended 31 December					
	Finland		**Germany**		**Sweden**	
	2019	**2018**	**2019**	**2018**	**2019**	**2018**
Discount rate %	0.4	1.2	0.8	1.6	1.5	2.3
Future salary increase %	2.2	2.7	2.5	2.5	2.9	2.9
Future pension increase %	1.3	1.8	1.8	1.8	2.0	2.0
Average current retirement age	64.0	64.0	65.0	63.0	65.0	65.0
Weighted average life expectancy	87.0	87.0	85.0	87.0	88.4	89.3
Duration of pension plans	10.0	10.0	13.8	12.6	17.4	16.0

Sensitivity of the defined benefit pension obligation

	Impact on defined benefit obligation		
	Change in assumption	**Increase in assumption**	**Decrease in assumption**
Discount rate	0.50%	Decrease by 7.3%	Increase by 8.0%
Salary growth rate	0.50%	Increase by 1.9%	Decrease by 1.8%
Pension growth rate	0.50%	Increase by 5.8%	Decrease by 5.3%

	Increase by 1 year in assumption	**Decrease by 1 year in assumption**
Life expectancy	Increase by 4.7%	Decrease by 4.6%

Interest rate risk: The obligations are assessed using market rates of high-quality corporate or government bonds to discount the obligations and are therefore subject to any volatility in the movement of the market rate. The net interest income or expense recognised in profit and loss are also calculated using the market rate of interest.

Mortality risk: In the event that members live longer than assumed, the obligations may be understated originally and a deficit may emerge if funding has not adequately provided for the increased life expectancy.

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Defined benefit plan summary by country as at 31 December 2019

	31 December 2019				
EUR million	**Finland**	**Germany**	**Sweden**	**Other**	**Total**
Present value of funded obligations	286	16	389	230	922
Present value of unfunded obligations	0	246	22	29	298
Defined benefit obligations (DBO)	**286**	**263**	**411**	**259**	**1 219**
Fair value of plan assets	-264	-4	-284	-209	-761
Net liability in the defined benefit plans	22	259	127	50	458
Net liability in the Balance Sheet	**22**	**259**	**127**	**50**	**458**
Represented by					
Defined benefit pension plans	22	259	127	24	432
Other post-employment benefits	0	0	0	27	27
Net liability in the Balance Sheet	**22**	**259**	**127**	**50**	**458**

Defined benefit plan summary by country as at 31 December 2018

	31 December 2018				
EUR million	**Finland**	**Germany**	**Sweden**	**Other**	**Total**
Present value of funded obligations	302	20	349	170	841
Present value of unfunded obligations	0	225	21	28	274
Defined benefit obligations (DBO)	**302**	**245**	**370**	**198**	**1 115**
Fair value of plan assets	278	7	278	151	714
Net liability in the defined benefit plans	25	238	92	46	401
Net liability in the Balance Sheet	**25**	**238**	**92**	**46**	**401**
Represented by					
Defined benefit pension plans	25	238	92	21	376
Other post-employment benefits				25	25
Net liability in the Balance Sheet	**25**	**238**	**92**	**46**	**401**

Plan assets

	As at 31 December			
	2019		**2018**	
EUR million	**Value**	**%**	**Value**	**%**
Equity	255	33.5	237	33.2
Government bonds	21	2.7	49	6.8
Corporate bonds	163	21.5	199	27.9
Debt	184	24.2	248	34.7
Property	64	8.5	71	10.0
Cash	50	6.6	39	5.4
Others	207	27.3	119	16.7
Total pension fund assets	**761**	**100.0**	**714**	**100.0**

Plan assets do not include any real estate or other assets occupied by the group or the Company's own financial instruments. The breakdown of Finnish pension assets EUR 264 (278) million is not disclosed separately as actual asset allocations can only be estimated based on known target values published by the insurance companies concerned.

The two main financial factors affecting group pension liabilities are changes in interest rates and inflation expectations, so the aim of asset investment allocations is to neutralise these effects and maximise returns.

In 2020, contributions of EUR 22 million are expected to be paid.

In 2019, reimbursements of EUR 23 (EUR 3) million were paid.

Note 21 Employee variable compensation and equity incentive schemes

Accounting principles

Share awards

The costs of all employee-related share-based payments are charged to the consolidated income statement as personnel expenses over the vesting period. The share programmes may be hedged using Total Return Swaps (TRS) which are settled with cash payments, allowing the company to receive cash compensation to partially offset any change in the share price between the grant and settlement dates. Group TRS instruments do not qualify for hedge accounting and therefore periodic changes to their fair value are recorded in the Income statement in operative costs alongside the share-based programme costs to which they relate.

As a result of the IFRS 2 amendment; Classification and Measurement of Share-based Payment Transactions, effective from 1 January 2018, all share-based payment transactions are classified as equity-settled share awards. Please refer to the Note 1 Accounting principles for further details. The equity-settled share awards (net of tax), are measured at the fair value of the equity instruments on the grant date, and are adjusted for the present value of expected dividends. The fair value of the equity-settled share-based payments determined on the grant date is expensed on a straight-line basis over the vesting period, based on the estimate of equity instruments that will eventually vest, with a corresponding increase in equity.

Short term incentive (STI) programmes

Salaries for senior management are negotiated individually. Stora Enso has incentive plans that take into account the performance, development and results of both business units and individual employees. This performance-based variable compensation system is based on profitability as well as on attaining key business targets.

Group Executives, as well as division and business unit management have STI programmes in which the payment is calculated as a percentage of the annual base salary with a maximum level ranging from 8% to 75%. Non-management employees participate in an STI programme with a maximum incentive level of 7%. All incentives are discretionary. These performance-based programmes cover most employees globally, where allowed by local practice and regulations. For the performance years 2018 and 2019, the annual incentive programmes were based on financial targets as well as individually set key targets. The financial success metrics in the STI programme are: Operational EBITDA and Operative Working Capital to sales.

Long term incentive (LTI) programmes

Since 2005, new share based programmes for executives have been launched every year. The 2016 programme that vested in 2019 as well as the current outstanding programmes including the programme that was launched during 2019 have three year targets and vest in one portion after three years.

Three quarters (75%) of the opportunity under the 2016 to 2017 programmes are in performance shares, where shares will vest in accordance with performance criteria proposed by the Remuneration Committee and approved by the Board of Directors. The financial success metric is 3-year Economic Value Added (EVA) for the Stora Enso Group. One quarter (25%) of the opportunity under the programmes are in Restricted Shares, for which vesting is only subject to continued employment.

Since 2018, all (100%) of the opportunity for members of the GLT has been awarded in performance shares. The financial success metrics in the 2019 performance share plan is 3-year Economic Value Added (EVA) and Earnings Per Share (EPS) for the Stora Enso Group. Others than the GLT were granted three quarters (75%) of the opportunity in performance shares and one quarter (25%) of the opportunity in restricted shares, as in previous years.

Outstanding restricted and performance share opportunities before taxes are shown in the table below. The total number of shares actually transferred will be less than that shown below because a portion of shares corresponding to employees' tax obligation will be withheld to cover income tax.

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Share awards at 31 December 2019

	Estimated delivery of outstanding restricted and performance share awards at year end			
Number of shares	**2020**	**2021**	**2022**	**Total**
2017 programme	1 050 559			1 050 559
2018 programme		816 745		816 745
2019 programme			978 543	978 543
Total	**1 050 559**	**816 745**	**978 543**	**2 845 847**

The costs of the Stora Enso share-based programmes are recognised as costs over the vesting period, which is the period between the grant and vesting. The total impact of share-based programmes in the Income statement amounted to an expense of EUR 3 (EUR 7) million, all of which were related to restricted and performance share awards. There were no Total Return Swaps (TRS) in use at the end of 2019.

Note 22 Other provisions

Accounting principles

Provisions
Provisions are recognised when the Group has a present legal or constructive obligation as a result of past events, and it is probable that an outflow of resources will be required to settle the obligation, and a reliable estimate of the amount of the obligation can be made. Provisions for dismantling, removal or site restoration are measured at the management's best estimate. The expenditure required to settle the obligation is added to the carrying amount of the assets at acquisition date and depreciated over the useful life of the asset. Provisions are discounted back to their current net present value if the effect of the time value of money is material. As provisions are based on management's best estimate, there is some uncertainty regarding the timing and amount of the costs.

Environmental obligations
Environmental expenditures resulting from the remediation of an existing condition caused by past operations, and which do not contribute to current or future revenues, are expensed as incurred. Environmental liabilities are recorded when it is probable, based on current interpretations of environmental laws and regulations, that a present obligation has arisen and the amount of such liability can be reliably estimated.

Restructuring obligations
A restructuring provision is recognised in the period in which the Group becomes legally or constructively committed to the plan. The relevant costs are those that are incremental to, or incurred as a direct result of, the exit plan, or are the result of a continuing contractual obligation with no ongoing economic benefit, or represent a penalty incurred to cancel the obligation.

Other obligations
Other obligatory provisions are recognised regarding different legal or constructive obligations as guarantees to customers, ongoing lawsuits, claims, or similar.

Other provisions

EUR million	Environmental	Restructuring	Other obligatory	Total provisions
Carrying Value at 1 January 2018	**108**	**17**	**9**	**134**
Translation difference	-3	0	-1	-3
Charge in Income Statement				
New provisions	3	2	1	6
Increase in existing provisions	1	0	3	4
Reversal of existing provisions	-3	-1	-1	-5
Payments	-7	-10	-2	-19
Carrying Value at 31 December 2018	**99**	**8**	**10**	**117**
Translation difference	-1	0	0	-1
Acquisitions	0	0	18	18
Charge in Income Statement				
New provisions	7	40	5	51
Increase in existing provisions	6	0	1	8
Reversal of existing provisions	-1	-2	-1	-4
Payments	-12	-5	-7	-24
At 31 December 2019	**97**	**41**	**26**	**165**
Allocation between current and non-current liabilities				
Current liabilities: Payable within 12 months	6	33	16	55
Non-current liabilities: Payable after 12 months	91	8	10	110
Total at 31 December 2019	**97**	**41**	**26**	**165**

Environmental obligation

Provisions for environmental remediation amounted to EUR 97 million at 31 December 2019, which was a net decrease of EUR 2 million compared with 31 December 2018.

Details of the principal provisions are:

- Following an agreement between Stora Enso and the City of Falun, the Group is obliged to purify runoff from the Kopparberg mine before releasing the water into the environment. The provision at year end amounted to EUR 37 (EUR 39) million.
- The total environmental provision in Finland amounted to EUR 21 (EUR 24) million. The largest provision relates to the dismantling provision of EUR 16 (EUR 13) million for a closed operation at Oulu Mill.
- The Skoghall Mill site contains ground pollutants that must be removed. The provision for this at year end amounted to EUR 15 (EUR 15) million.
- Hylte Mill and the Hylte Commune have a contract on the restoration and leakage water handling. This provision amounted to EUR 5 (EUR 6) million.
- Baienfurt Mill real estate in Germany was divested during 2010 and there is a remaining environmental obligation related to landfills that were not disposed. This environmental provision amounted to EUR 4 (EUR 5) million.

Restructuring provisions

The Group has undergone major restructuring in recent years, from divestments to mill closures and administrative cost-saving programmes. The liability at the end of 2019 for restructuring provisions amounted to EUR 41 (EUR 8) million and covered the costs of closing down operations, demolition, clearance and redundancy costs for reducing staff numbers. The net increase of the provision was due to new restructuring programmes mainly in the Paper division that are part of Group's profit protection

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programme. The total cash payments made during the year in respect of established restructuring provisions amounted to EUR 5 (EUR 10) million.

In May 2019 Stora Enso announced a plan to convert the Oulu paper into packaging board mill. The plan includes converting paper machine 7 into kraftliner production and closing down paper machine 6 and the sheeting plant. Provision of the conversion related restructuring amounts to EUR 19 million.

Other obligatory provisions

Other obligatory provisions amounted to EUR 26 million at 31 December 2019, which is an increase of EUR 16 million compared with 31 December 2018. The net increase is mainly due to replanting provision from the acquired balances as part of the Bergvik Skog restructuring.

Stora Enso is legally obligated to take care of reforestation in the Swedish long rotation forests after final harvesting. Provisions for replanting amounted to EUR 15 million. The provision is related to replanting of already harvested areas and is not part of the fair valuation of biological assets.

Note 23 Operative liabilities

Non-current operative liabilities

EUR million	As at 31 December 2019	2018
Post-employment benefit provisions	458	401
Other provisions	110	101
Share-based payments	2	2
Other payables	37	32
Total	**607**	**536**

Current operative liabilities

EUR million	As at 31 December 2019	2018
Trade payables	1 332	1 382
Payroll and staff-related accruals	242	245
Accrued liabilities and deferred income	194	217
Current portion of provisions	55	16
Advances received	20	22
Other payables	67	94
Total	**1 909**	**1 976**

Note 24 Financial risk management

Risk management principles and process

Stora Enso is exposed to several financial market risks that the Group is managing under the policies approved by the Board of Directors. The objective is to ensure cost-effective funding of Group companies and manage financial risks effectively. The Stora Enso Group Financial Risk Policy governs all financial transactions in Stora Enso. This policy and any future amendments take effect once they are approved by the Board of Directors and all policies covering the use of financial instruments must comply with it. The Group's joint operations companies operate under their own financial risk policies, which may not be fully similar to the Group's policies.

The major financial market risks are detailed below with the main exposures for the Group being interest rate risk, foreign exchange risk, liquidity and refinancing risk, and commodity price risk, especially for fiber, pulp, and energy.

Interest rate risk

The Group is exposed to an interest rate risk that is the risk of fluctuating interest rates affecting the interest expense of the Group and value of its assets and liabilities. Stora Enso is exposed to the interest rate risk through interest-bearing assets and liabilities, such as loans, financial instruments and lease liabilities, but also through commercial agreements and operative assets and liabilities such as biological assets. The Group's aim is to keep interest costs stable. The Group's aggregate duration should not exceed the average loan maturity, but should aim towards a longer duration. A duration above the average loan maturity is approved by the Board of Directors.

The Group may use interest-rate swaps and cross-currency swaps to manage the interest-rate risk by synthetically converting floating-rate loans into fixed-rate loans through the use of derivatives. The Group's floating and fixed rate interest-rate position as per the year-end was as shown in the following table:

Floating and fixed interest-rate position

	As at 31 December 2019		As at 31 December 2018	
EUR million	Floating rate	Fixed rate	Floating rate	Fixed rate
Non-current interest-bearing receivables	0	74	1	54
Current interest-bearing receivables	0	0	1	0
Cash and cash equivalents	876	0	1 130	0
Interest-bearing liabilities[1]	-1 509	-2 603	-1 118	-2 118
Interest-bearing assets and liabilities excluding derivatives	**-633**	**-2 530**	**14**	**-2 065**
Interest-rate and cross-currency swaps	810	-810	384	-384
Interest-bearing assets and liabilities, net of derivatives	**177**	**-3 339**	**398**	**-2 449**

[1] Excluding derivative liabilities and interest payable

The average interest reset period for the Group's net interest-bearing liabilities, including all interest rate derivatives but excluding cash and cash equivalents, is some 4.2 (4.9) years.

As of 31 December 2019, one percentage point parallel change up or down in interest rates would impact annual net interest expenses by approximately EUR 5 (EUR 4) million, assuming that the duration and the funding structure of the Group remain constant throughout the year. This simulation calculates the interest effect of a 100 basis point parallel shift in interest rates on all floating rate instruments excluding cash and cash equivalents from their next reset date to the end of the year. In addition, all short-term loans maturing during the year are assumed to be rolled over on maturity to year end using the new higher or lower interest rate.

A one percentage point parallel change up or down in interest rates would also result in fair valuation gains or losses of EUR 31 (EUR 20) million before taxes in the cash flow hedge reserve in OCI regarding interest rate and cross-currency swaps under cash flow hedge accounting. Note 27 Derivatives summarises the nominal and fair values of the outstanding interest rate derivative contracts.

Foreign exchange risk - transaction risk

The Group operates globally and is exposed to a currency risk arising from exchange rate fluctuations against its reporting currency euro. Foreign exchange transaction exposure comprises both the geographical location of Stora Enso production facilities around the world, sourcing of raw materials and sales of end products outside the euro area, mainly denominated in Swedish crowns, US dollars and British pounds.

The currency transaction risk is the impact of exchange rate fluctuations on the Group's Income statement, which is the effect of currency rates on expected future cash flows and subsequent trade receivables or payables. The Group's standard policy to mitigate the risk is to hedge 45–55% of the highly probable forecast cash flows in major currencies for the next 12 months by using derivative financial instruments, such as foreign exchange forwards and currency options. The Group may also hedge periods between 12 months and 36 months, or change the above mentioned hedging ratio for the next 12 months upon the discretion of the Group's management.

For operative receivables and payables in foreign currencies, the objective of the Group is to hedge 50-100% of the outstanding net receivable balance in major currency pairs.

The table below presents the estimated net operative foreign currency exposures for the main currencies for the next 12 months and the related foreign-currency hedges in place as at 31 December, retranslated using year end exchange rates. The net operative receivables and payable exposures, representing the balances as at 31 December, include foreign currency exposures generated by external and intercompany transactions in line with the requirements of IFRS 7. However, in practice mainly external exposures have been hedged through foreign currency hedges. A positive amount of exposure in the table below represents an estimated future inflow or receivable of a foreign currency amount.

Operative foreign currency exposure

	As at 31 December 2019						As at 31 December 2018					
EUR million	**SEK**	**USD**	**GBP**	**BRL**	**CZK**	**CNY**	**SEK**	**USD**	**GBP**	**BRL**	**CZK**	**CNY**
Estimated annual net cash flow exposure in hedged flows[1]	-894	1 141	300	0	-168	0	-990	1 840	380	0	-190	0
Cash flow hedges for the next 12 months[2]	557	-600	-136	0	78	0	630	-930	-190	0	90	0
Estimated annual net cash flow exposure, net of hedges	**-337**	**541**	**164**	**0**	**-90**	**0**	**-360**	**910**	**190**	**0**	**-100**	**0**
Hedging percentage as at 31 December for next 12 months	**62%**	**53%**	**45%**	**0**	**46%**	**0**	**64%**	**51%**	**50%**	**0**	**47%**	**0**
Weighted-average hedged rate against EUR[3]	10.55	1.17	0.91	0.00	26.19	0.00	10.26	1.22	0.91	0.00	25.92	0.00
Translation exposure in Income Statement[4]	**162**	**-202**	**6**	**-158**	**24**	**-42**	**-160**	**-180**	**10**	**-120**	**30**	**-110**
Operative receivables and payables net exposure	1	170	31	-28	-18	-1	40	250	33	-24	-24	-13
Net receivable currency hedges	24	-110	-43	0	4	0	93	-209	-60	0	0	0
Net operative receivables exposure, net of hedges	25	59	-13	-28	-14	-1	133	41	-27	-24	-24	-13
Estimated annual operative exposure, net of hedges	**-150**	**399**	**158**	**-187**	**-80**	**-43**	**-387**	**771**	**173**	**-144**	**-94**	**-123**

[1] In SEK the underlying net cash flow exposure represents EUR denominated transaction risk in Swedish subsidiaries. In CZK, the underlying net cash flow exposure represents EUR, USD, GBP and AUD denominated transaction risk in Czech subsidiaries.
[2] In 2018, in SEK there were also additional cash flow hedges for months 13-18 (19% of estimated exposure was hedged) that are not included in the table above.
[3] The weighted-average exchange rate against EUR is calculated based on bought leg of option collar structure and forward contracts' forward rate and therefore represents the weighted-average hedged rate based on the least favourable hedged rate from the Group's point-of-view.
[4] Includes unhedged sales, costs and depreciation invoiced or expensed in the domestic currency of non-euro based entities, retranslated using year end exchange rates.

The following table includes the estimated effect on annual operating profit of a strengthening in EUR versus SEK, USD, GBP, CZK and CNY by 5% and versus BRL by 10%, as reasonably possible changes in rates, measured against year-end closing rates. A corresponding decrease in the exchange rates would have an approximately equal opposite impact. A negative amount in the table reflects a potential net loss in the income statement or equity and, conversely, a positive amount reflects a potential net gain. In practice, the actual foreign currency results may differ from the sensitivity analysis presented below, since the income statements of subsidiaries with functional currencies other than the euro are translated into the Group reporting currency using the average exchange rates for the year, whereas the statements of the financial position of such subsidiaries, including currency hedges, trade receivables and payable, are translated using the exchange rates at the reporting date.

The calculation includes currency hedges and assumes that no changes other than a single currency exchange rate movement have taken place in the underlying risk exposure. The currency effects are based on estimated operative foreign currency flows for the next twelve months, hedging levels at the year end, and the assumption that the currency cash flow hedging levels, translation exposure in the Income statement and all other variables will remain constant during the next twelve months. Hedging instruments include foreign exchange forward contracts and foreign exchange options. Indirect currency effects with an impact on prices and product flows, such as a product becoming cheaper to produce elsewhere, have not been considered in this calculation.

Estimated currency effects of strengthening of euro

	As at 31 December 2019						As at 31 December 2018					
EUR million	**SEK**	**USD**	**GBP**	**BRL**	**CZK**	**CNY**	**SEK**	**USD**	**GBP**	**BRL**	**CZK**	**CNY**
Currency change versus EUR	-5%	-5%	-5%	-10%	-5%	-5%	-5%	-5%	-5%	-10%	-5%	-5%
Effect on estimated annual net cash flow and translation exposure	37	-47	-15	16	7	2	58	-83	-20	12	8	6
Effect on hedging reserve before taxes as at year end[1]	-28	30	7	0	-4	0	-32	47	10	0	-5	0
EBIT impact as at year end[2]	-1	-3	1	3	1	0	-7	-2	1	2	1	1
Estimated annual EBIT impact[3]	**8**	**-20**	**-7**	**19**	**4**	**2**	**19**	**-38**	**-9**	**14**	**4**	**7**

[1] The effect on hedging reserve (other comprehensive income) before taxes at year end is related to the fair value change in derivative contracts qualifying as cash flow hedges of highly probable forecast transactions.
[2] The Operating Profit impact as at year end represents the estimated currency effect related to net operative receivables or payables, and related hedges.
[3] The estimated annual Operating Profit impact includes currency effects in respect of operative exposures in the Statement of Financial Position, forecast cash flows and related hedges as well as translation exposure in Income Statement.

The following table presents the financial foreign currency exposure and the related hedges in place as at 31 December for the main currencies. Net debt includes foreign-currency external and internal loan payables, net of loan receivables, cash and cash equivalents and loans designated as net investment loans under IAS 21. The currency derivatives mainly hedge financial exposures in the statement of financial position and from time to time they may also hedge forecast cash flows not qualifying under hedge accounting in accordance with IFRS 9. These forecast cash flows are not included in the table below. A negative amount of exposure in the table represents a net payable of a foreign currency amount.

Additionally, the table includes the estimated effect on the income statement of a strengthening in the EUR versus SEK, USD, CNY and PLN by 5%, as reasonably possible changes in rates, measured against year-end closing rates. A corresponding decrease in the exchange rates would have an approximately equal opposite impact. A negative amount in the table reflects a potential net loss in the Income statement and, conversely, a positive amount reflects a net potential gain. In practice, the actual foreign currency results may differ from the sensitivity analysis below as the exposure amounts may change during the year.

Financial foreign currency exposure and estimated currency effects in income statement

	As at 31 December 2019				As at 31 December 2018			
EUR million	**SEK**	**USD**	**CNY**	**PLN**	**SEK**	**USD**	**CNY**	**PLN**
Net debt excluding hedges[1]	-36	-142	472	100	130	-213	602	112
Currency hedges	0	-24	-249	-4	-187	-47	-283	-4
Net financial exposure	**-36**	**-166**	**223**	**96**	**-57**	**-260**	**319**	**108**
Currency change versus EUR	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%
Effect in the Income Statement	**2**	**8**	**-11**	**-5**	**3**	**13**	**-16**	**-5**

[1] The Group has designated certain internal loans to Chinese subsidiaries as net investment loans under IAS 21. The loans are denominated in EUR, USD and CNY. The underlying foreign currency gain or loss will be posted as part of CTA in Equity.

Foreign exchange risk - translation risk

Translation risk results from fluctuations in exchange rates affecting the value of Stora Enso's net foreign currency denominated assets and liabilities. Translation risk is reduced by funding assets, whenever economically possible, in the same currency as the asset itself. The Group may also enter into foreign exchange forwards, foreign exchange options or foreign currency denominated loans to hedge its net investments in foreign entities.

The balance sheets of foreign subsidiaries, equity accounted investments and foreign currency denominated equity instruments in the scope of IFRS 9 are translated into euros using exchange rates prevailing on the reporting date, thus exposing consolidated group equity to fluctuations in currency rates. The resulting translation differences, along with other movements such as the translation rate difference in the income statement, are recorded directly in shareholders' equity. These cumulative differences materialise through the Income statement on the disposal, in whole or in part, of the foreign entity. The next table shows the translation exposure for geographical areas for which the Group has applied net investment hedging techniques to reduce the translation foreign-currency exposure in the consolidated equity. In practise, the Group also incurs material unhedged translation risk exposures in other geographical areas such as Sweden and China. The exposures used in the calculations are based on the foreign currency denominated equity and the hedging levels as at 31 December. Full details of actual CTA movements and hedging results are given in Note 28 Cumulative translation adjustment and equity hedging.

Translation risk and hedges:

	As at 31 December	
EUR million	**2019**	**2018**
Translation exposure on equity in USD area[1]	**1 425**	**1 345**
EUR/USD equity hedges[2]	-267	-306
Translation exposure after hedges	**1 157**	**1 039**
Sensitivity before hedges - EUR strengthening 5%	-71	-67
Sensitivity after hedges - EUR strengthening 5%	-58	-52

[1] Includes the joint operation Montes del Plata in Uruguay, which has USD as its functional currency.
[2] USD denominated bonds classified as hedges of net investments in foreign assets.

The above sensitivity analysis includes the effects of currency hedges of net investments in foreign entities and assumes that no changes take place other than a single currency exchange rate movement on 31 December each year.

Liquidity and refinancing risk

Funding risk arises from the difficulty of obtaining finance for operations at a given point in time. Stora Enso's funding policy states that the average maturity of outstanding loans and committed credit facilities covering short-term borrowings should be at least four years. The policy further states that the Group must have cash equivalents and undrawn committed credit facilities to cover all debt maturing within the next 12 months, including supply chain financing and factoring. At 31 December 2019, unused committed credit facilities were at EUR 600 (EUR 600) million. The EUR 600 million committed credit facility agreement with a syndicate of 13 banks matures in January 2023. The facility is used as a backup for general corporate purposes. In addition, Stora Enso has access to various long-term sources of funding up to EUR 950 (EUR 1 000) million. These mainly relate to available funding sources from Finnish pension funds.

Refinancing risk, or the risk that maturing debt is not refinanced in the markets, is mitigated by Stora Enso's target of maintaining an even maturity profile of outstanding debt. The table below shows maturity analysis for the Group's contractual financial liabilities classified under principal headings based on the remaining period to contractual maturity at the reporting date. Forward interest rates as at the year-end were used for estimating contractual finance charges.

Contractual maturity repayments of financial liabilities, settlement net: 2019

EUR million	**2020**	**2021**	**2022**	**2023**	**2024**	**2025+**	**Total**
Bond loans	0	287	0	299	287	1 106	1 978
Loans from credit institutions	295	214	194	401	37	20	1 162
Lease liabilities	80	67	51	42	34	167	440
Other non-current liabilities	0	5	0	0	0	0	5
Non-current borrowings including current portion	**375**	**573**	**245**	**742**	**358**	**1 292**	**3 584**
Less fair value adjustments to carrying amounts	0	0	0	1	1	7	9
Estimated contractual finance charges	109	96	85	71	57	355	773
Contractual repayments on non-current borrowings	**483**	**670**	**330**	**814**	**416**	**1 654**	**4 366**
Short-term borrowings, carrying amounts	516	0	0	0	0	0	516
Gross-settled derivative liabilities - receipts	1 618	0	0	0	0	0	1 618
Gross-settled derivative liabilities - payments	-1 621	0	0	0	0	0	-1 621
Net-settled derivative liabilities	-20	-15	-14	-10	-2	-1	-62
Trade payables	1 331	0	0	0	0	0	1 331
Bank overdrafts	13	0	0	0	0	0	13
Estimated contractual finance charges	12	0	0	0	0	0	12
Total Contractual Repayments at 31 December 2019	**2 333**	**655**	**316**	**804**	**414**	**1 653**	**6 174**

Contractual maturity repayments of financial liabilities, settlement net: 2018

EUR million	**2019**	**2020**	**2021**	**2022**	**2023**	**2024+**	**Total**
Bond loans	220	0	0	0	298	1 005	1 523
Loans from credit institutions	181	213	167	142	399	38	1 140
Lease liabilities	0	0	0	0	0	0	0
Financial lease liabilities	0	0	0	0	0	1	1
Other non-current liabilities	0	4	0	0	0	0	4
Non-current borrowings including current portion	**401**	**217**	**167**	**142**	**697**	**1 044**	**2 668**
Less fair value adjustments to carrying amounts	-2	0	0	0	1	7	6
Estimated contractual finance charges	121	81	72	64	52	318	708
Contractual repayments on non-current borrowings	**520**	**298**	**239**	**206**	**750**	**1 369**	**3 382**
Short-term borrowings, carrying amounts	566	0	0	0	0	0	566
Gross-settled derivative liabilities - receipts	2 411	71	0	0	0	0	2 482
Gross-settled derivative liabilities - payments	-2 444	-70	0	0	0	0	-2 514
Net-settled derivative liabilities	-22	-13	-11	-10	-7	0	-63
Trade payables	1 383	0	0	0	0	0	1 383
Bank overdrafts	1	0	0	0	0	0	1
Estimated contractual finance charges	14	0	0	0	0	0	14
Total Contractual Repayments at 31 December 2018	**2 429**	**286**	**228**	**196**	**743**	**1 369**	**5 251**

Financial transactions counterparty credit risk

Financial counterparty risk is the risk of fluctuations in the value of the Group's assets as a result of counterparties being unable to meet their obligations arising from financial contracts. The exposure to a financial counterparty risk is measured as the maximum loss that Stora Enso can suffer directly in the event of a single counterparty's credit default. This risk is minimised by:

- entering into transactions only with leading financial institutions and with industrial companies that have a good credit rating;
- only investing in liquid funds and deposits with financial institutions or companies that have a minimum credit rating of BBB-.
- at least the higher of 50% of cash and cash equivalents, or EUR 150 million, of cash equivalents to be held at counterparties with a minimum rating of A- or equivalent using credit ratings from main rating agencies;

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- investing at least EUR 75 million of the Group's cash and cash equivalents at counterparties other than the counterparty at which most of Stora Enso's cash and cash equivalents are held;
- equiring parent company guarantees when dealing with any subsidiary of a rated company.

The Group Financial Risk Policy defines the limits for accepted counterparty risk, based on the tenor of inancial contract and counterparty's credit rating.

At the year end in 2019, there were no significant concentrations of risk with respect to counterparties of derivative contracts, with the highest counterparty mark-to-market exposure being at EUR 5 (EUR 8) million and credit rating of A- (A+) using Standard and Poor's credit rating symbols.

Customer credit risk

Customer credit risk is Stora Enso's exposure to contracts arising from deterioration in the financial health of its customers. The Group uses various measures to reduce customer credit risks, including, but not limited to, letters of credit, prepayments and bank guarantees. The Group has also obtained export guarantees, covering both political and commercial risks, which are used in connection with individual customers outside the OECD area. Management considers that no significant concentration of credit risk with any individual customer, counterparty or geographical region exists for Stora Enso. The aging information of trade receivables and related loss allowances are given in Note 17 Operative receivables.

Commodity price risk

Outstanding commodity hedges

	As at 31 December 2019				31 December 2018			
	Underlying amount of commodity hedged	**Average hedged commodity price**	**Nominal amount hedged in EUR million**	**Fair value EUR million**	**Underlying amount of commodity hedged**	**Average hedged commodity price**	**Nominal amount hedged in EUR million**	**Fair value EUR million**
Coal component of natural gas purchases	54 000 tonnes	USD 58.00	3	—	58 500 tonnes	USD 89.41	5	—
Electricity purchases								
- Nordic region	1 361 040 MWh	EUR 36.99	50	-5	1 588 555 MWh	EUR 31.06	49	27
- Central Europe	315 840 MWh	EUR 40.04	13	1	499 752 MWh	EUR 36.16	18	8
Oil component of natural gas purchases	59 400 barrels	USD 62.60	3	—	65 700 barrels	USD 69.33	4	-1
Oil purchases	203 504 barrels	USD 58.92	11	1	204 249 barrels	USD 56.92	10	-1

The Group is exposed to commodity and energy price volatility that will have an impact on the Group's profitability. Electricity hedge derivatives are part of energy price risk management in the Group, whilst other commodity risks are measured and hedged if economically possible. Currently the Group applies oil and coal risk component hedging for natural gas purchases as described in the table above. In addition to electricity hedge derivatives, the Group also manages energy price risk by entering into long-term physical fixed price purchase agreements, and by holding a 15.6% stake in Pohjolan Voima Oy (PVO), which is a privately owned group of companies in the energy sector in Finland. The fair value of the shares amounted to EUR 522 (EUR 415) million as per the year-end. The fair value of these shares is dependent on electricity market prices and discussed in more detail in Note 14 Equity instruments.

A 10% movement in energy and raw material prices would result in a EUR 9 (EUR 13) million change in the fair value of energy and raw material hedging contracts described in the above table. The majority of these fair value changes, after taxes, are recorded directly in Equity under Hedging Reserves, until the contracts mature and the result is entered in the Income statement. These estimates only represent the sensitivity of commodity financial instruments to market risk and not the Group's full exposure to raw material and energy price risks as a whole, since the actual underlying purchases are not financial instruments within the scope of the IFRS 7 standard. At the end of 2019, the maturities of the energy and commodity contracts ranged between 2020 and 2024. In 2018, the maturities ranged between 2019 and 2024.

In an effort to mitigate other commodity price risk exposures in relation to wood fibre price risk, the Group is a significant owner of forest assets in the Nordic region. In 2019, Stora Enso finalised the restructuring of Bergvik Skog's forest holdings in Sweden and increased the Group's forest holdings in Sweden to 1.4 million hectares. The forest assets were placed in a fully owned subsidiary and consolidated line-by-line into Stora Enso's financial statements. The Group's biological assets are discussed in more detail in Note 12 Biological assets. In addition, Stora Enso holds 41.00% share in Tornator Oyj, which is a significant forest owner in Finland. The Group's share in Tornator is reported as an equity-accounted investment and discussed in more detail in Note 13 Equity accounted investments.

Equity price risk

The Group has certain investments in publicly traded securities. Currently these relate to Packages Ltd shares in Pakistan. The market value of these equity investments was EUR 12 (EUR 13) million at the year end. Market value changes in these investments are recorded, after taxes, directly under Shareholders' Equity in the Equity instruments through OCI reserve. Detailed discussion regarding the publicly traded securities can be found from Note 14 Equity instruments.

Capital risk management

Stora Enso's debt structure is focused on capital markets and banks. Group objectives when managing capital are to safeguard the ability to continue as a going concern in order to provide returns for shareholders and benefits for other stakeholders, as well as to maintain an optimal capital structure to reduce the cost of capital. In order to maintain or adjust the capital structure, the Group may, subject to shareholder approval as appropriate, vary the dividends paid to shareholders, buy its own shares on financial markets, return capital to shareholders, issue new shares or sell assets to reduce debt. The Group strives to pay stable dividends linked to the long-term performance with the aim of distributing 50% of the net income over the cycle.

The Group monitors its capital on the basis of a target net debt-to-equity ratio of 0.60 or less, and ensuring that Net-debt-to-Operational EBITDA ratio remains below 2.0, indicating a solid financial position, and financial flexibility.

Capital structure

	As at 31 December	
EUR million	**2019**	**2018**
Interest-bearing liabilities	4 192	3 344
Interest-bearing assets	983	1 252
Net debt	**3 209**	**2 092**
Equity attributable to owners of the parent	**7 429**	**6 714**
Operational EBITDA[1]	**1 542**	**1 878**
Net debt to equity ratio	**0.43**	**0.31**
Net debt to operational EBITDA	**2.08**	**1.10**

[1] Operational EBITDA definition is included in the "Non-IFRS measures" chapter in the Report of the Board of Directors.

Montes del Plata, a joint operation of Stora Enso, and the Group's subsidiary Stora Enso (Guangxi) Packaging Company Ltd have complied with financial covenants related to debt-to-assets ratio during the reported periods.

Note 25 Fair values

Accounting principles

Financial assets

The Group classifies its financial assets into three categories, which are amortised cost, fair value through other comprehensive income and fair value through profit and loss. The classification is made according to the IFRS 9 standard and management determines the classification of investments at the time of the purchase.

With investments in debt instruments, the classification is made based on the business model and contractual cash flow characteristics of debt instruments. Investments in debt instruments, for which the business model objective is to hold the financial instruments to collect contractual cash flows and those cash flows are solely payments of principal and interest, are classified as amortised cost and presented in current and non-current assets. Investments in debt instruments, for which the business model objective is to hold the financial instruments for both to collect contractual cash flows and sell financial instruments and the cash flows are solely payments of principal and interest, are classified as fair value through other comprehensive income and presented in current and non-current assets.

The Group's investments into equity securities, such as listed and unlisted securities, are classified as fair value through profit and loss unless the Group has at inception decided to apply the irrevocable election under IFRS 9 to classify the investments as fair value through other comprehensive income with only dividend income from the investments being recognised in the Income Statement.

Investments that are not measured at amortised cost or at fair value through other comprehensive income are classified as fair value through profit and loss and are therefore fair valued through the Consolidated Income Statement and presented in current and non-current assets.

Financial liabilities

The Group's financial liabilities are classified into amortised cost or fair value through profit and loss categories. Financial liabilities are measured at amortised cost unless the Group has decided to apply a fair value option to designate a financial liability to be measured at fair value through profit and loss.

Derivatives

Derivative financial assets and liabilities are measured at fair value and classified as fair value through profit and loss or, if the Group has applied hedge accounting, at fair value through other comprehensive income according to the IFRS 9 standard. Derivative financial instruments and hedge accounting are discussed in more detail in Note 27 Derivatives.

Loan receivables

Loan receivables are debt instruments with fixed or determinable payments that are not quoted on an active market. They are recorded initially at fair value and subsequently measured at amortised cost. Loss allowance for expected credit losses is calculated based on the general approach under IFRS 9, where loss allowance is recognised based on 12-month expected credit losses if there has not been a significant increase in credit risk since the initial recognition. A significant increase in the credit risk will be evaluated based on comparison of the risk of a default occurring on the financial instrument as at the reporting date with the risk of default occurring on the financial instrument as at the date of initial recognition. The Group may use, for example, rates of credit default swaps (CDS) observable on financial markets to produce the risk assessment.

Interest income on loan receivables is included in Financial income and expense. Loan receivables with a maturity less than 12 months are included in current assets under interest-bearing receivables, and those with maturities greater than 12 months, in non-current interest-bearing receivables.

Fair value of financial instruments

The fair values of publicly traded derivatives and listed securities, are based on quoted market prices at the reporting date; the fair values of interest rate swaps are calculated as the present value of the estimated future cash flows, and the fair values of foreign exchange forward contracts are determined using forward exchange rates at the reporting date. The valuation principles for derivative financial instruments have been described in more detail in Note 27 Derivatives.

In assessing the fair values of non-traded derivatives and other financial instruments, the Group uses a variety of methods and makes assumptions based on the market conditions at each reporting date. Quoted market prices or dealer quotes for identical or similar instruments are used for non-current debt. Other techniques, such as option pricing models and estimated discounted value of future cash flows, are used to determine fair values for the remaining financial instruments. The face values, less any estimated credit adjustments, for financial assets and liabilities with a maturity of less than one year are assumed to approximate their fair values. The fair values of financial liabilities for disclosure purposes are estimated by discounting the future contractual cash flows at the current market interest rates available to the Group for similar financial instruments.

Purchases and sales of financial instruments are recognised based on trade date accounting, which is the date on which the Group commits to purchasing or selling the financial instrument. Financial instruments are derecognised when the rights to receive or the cash flows from the financial instruments have expired or have been transferred and the Group has substantially transferred all risks, rewards and obligations of the ownership of the financial asset or liability.

Fair value hierarchy

The Group uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique:

- Level 1: quoted (unadjusted) prices in active markets for identical assets or liabilities;
- Level 2: other techniques, for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly;
- Level 3: techniques which use inputs which have a significant effect on the recorded fair values that are not based on observable market data.

The Group evaluates the categorisation of its fair value measurements within the fair value hierarchy on a regular basis at the end of the reporting period. There were no transfers recognised in the fair value hierarchy between Levels 1 and 2 and no transfers into or out of Level 3 fair value measurements during 2019 and 2018. See Note 14 Equity instruments for more information on Level 3 fair value measurement of listed and unlisted securities.

Carrying amounts of financial assets and liabilities by measurement and fair value categories: 2019

EUR million	Amortised cost	Fair value through OCI	Fair value through Income Statement	Hedge accounted derivatives	Total carrying amount	Fair value	Note
Financial assets							
Listed securities	-	12	-	-	12	12	14
Unlisted securities	-	522	3	-	526	526	14
Non-current interest-bearing receivables	71	-	-	1	72	72	25
Trade and other operative receivables	930	38	-	-	968	968	17
Short-term interest-bearing receivables	3	-	3	17	23	23	25
Cash and cash equivalents	876	-	-	-	876	876	
Total	**1 879**	**573**	**7**	**18**	**2 477**	**2 477**	

EUR million	Amortised cost	Fair value through Income Statement	Hedge accounted derivatives	Total carrying amount	Fair value	Note
Financial liabilities						
Non-current interest-bearing liabilities	3 207	4	21	3 232	3 549	26
Current portion of non-current debt	376	-	-	376	376	26
Short-term interest-bearing liabilities	546	1	24	572	572	26
Trade and other operative payables	1 574	25	-	1 598	1 598	23
Bank overdrafts	13	-	-	13	13	
Total	**5 716**	**30**	**45**	**5 790**	**6 107**	

Carrying amounts of financial assets and liabilities by measurement and fair value categories: 2018

EUR million	Amortised cost	Fair value through OCI	Fair value through Income Statement	Hedge accounted derivatives	Total carrying amount	Fair value	Note
Financial assets							
Listed securities	-	13	-	-	13	13	14
Unlisted securities	-	415	8	-	422	422	14
Non-current interest-bearing receivables	54	-	-	-	54	54	25
Trade and other operative receivables	1 092	44	-	-	1 136	1 136	17
Short-term interest-bearing receivables	1	-	5	49	55	55	25
Cash and cash equivalents	1 130	-	-	-	1 130	1 130	
Total	**2 277**	**472**	**13**	**49**	**2 811**	**2 811**	

EUR million	Amortised cost	Fair value through Income Statement	Hedge accounted derivatives	Total carrying amount	Fair value	Note
Financial liabilities						
Non-current interest-bearing liabilities	2 265	-	-	2 265	2 541	26
Current portion of non-current debt	403	-	-	403	403	26
Short-term interest-bearing liabilities	604	7	63	675	675	26
Trade and other operative payables	1 627	21	-	1 648	1 648	23
Bank overdrafts	1	-	-	1	1	
Total	**4 901**	**28**	**63**	**4 992**	**5 268**	

Financials

In the previous tables, the fair value is estimated to be equal to the carrying amount for short-term financial assets and financial liabilities, such as trade receivables and payables due to their short time to maturity and limited credit risk. The fair value of non-current interest-bearing liabilities, considered as a level 2 fair value measurement, is estimated based on a discounted cash flow analysis in which the yield curves observable at commonly quoted intervals are used as a discount factor in the model.

In 2014, Stora Enso acquired 100% of shares in the US-based company Virdia Inc. The transaction included potential pay-outs depending on the completion of specific technical and commercial milestones. The present value of the estimated pay-outs, considered as a level 3 fair value measurement, is estimated based on certain probability criteria. At year end, the fair value amounted to EUR 25 (EUR 21) million and is presented in the table above under trade and other operative payables. In January 2020, the milestones were settled with an amount of approximately EUR 25 million.

Fair value measurements recognised in the statement of financial position: 2019

	As at 31 December			
EUR million	**Level 1**	**Level 2**	**Level 3**	**Total**
Listed securities				
Listed securities through OCI	12	-	-	12
Unlisted securities				
Unlisted securities through OCI	-	-	522	522
Unlisted securities through profit and loss	-	-	3	3
Trade and other operative assets				
Operative receivables through OCI	-	38	-	38
Derivative financial assets				
Hedge accounted derivatives	-	18	-	18
Derivatives at fair value through profit and loss	-	3	-	3
Total financial assets	**12**	**59**	**526**	**597**
Trade and other operative liabilities				
Operative payables through profit and loss	-	-	25	25
Derivative financial liabilities				
Hedge accounted derivatives	-	45	-	45
Derivatives at fair value through profit and loss	-	5	-	5
Total financial liabilities	**-**	**50**	**25**	**75**

Fair value measurements recognised in the statement of financial position: 2018

	As at 31 December			
EUR million	**Level 1**	**Level 2**	**Level 3**	**Total**
Listed securities				
Listed securities through OCI	13	-	-	13
Unlisted securities				
Unlisted securities through OCI	-	-	415	415
Unlisted securities through profit and loss	-	-	8	8
Trade and other operative assets				
Operative receivables through OCI	-	44	-	44
Derivative financial assets				
Hedge accounted derivatives	-	49	-	49
Derivatives at fair value through profit and loss	-	5	-	5
Total financial assets	**13**	**98**	**422**	**533**
Trade and other operative liabilities				
Operative payables through profit and loss	-	-	21	21
Derivative financial liabilities				
Hedge accounted derivatives	-	63	-	63
Derivatives at fair value through profit and loss	-	7	-	7
Total financial liabilities	**-**	**70**	**21**	**91**

Interest-bearing receivables

	As at 31 December	
EUR million	**2019**	**2018**
Long-term derivative assets	1	0
Long-term deposits	68	50
Long-term loans to equity accounted investments	2	2
Other long-term loan receivables	1	2
Total non-current interest-bearing receivables	**72**	**54**
Short-term derivative assets	20	54
Short-term deposits	3	0
Other short-term loan receivables	0	1
Total current interest-bearing receivables	**23**	**55**
Total interest-bearing receivables	**95**	**110**

The annual average interest rate for deposits and loan receivables at 31 December 2019 was approximately 0.6% (0.4%). Current interest-bearing receivables did not include any accrued interest at 31 December 2019. The Group has evaluated that there has not been a significant increase in credit risk related to interest-bearing receivables after the initial recognition. Accordingly, they are considered to have a low credit risk and loss allowance is recognised based on 12-month expected credit losses.

Reconciliation of level 3 fair value measurement of financial assets and liabilities

EUR million	2019	2018
Financial assets		
Opening balance at 1 January	422	318
Gains/losses recognised in income statement	0	-2
Gains/losses recognised in other comprehensive income	109	104
Additions	0	3
Disposals	-5	-1
Closing balance at 31 December	**526**	**422**

EUR million	2019	2018
Financial liabilities		
Opening balance at 1 January	-21	-20
Gains/losses recognised in income statement	-4	0
Translation difference	0	-1
Closing balance at 31 December	**-25**	**-21**

Note 26 Interest-bearing liabilities

Accounting principles

Interest-bearing liabilities

Interest-bearing liabilities are recognised initially at fair value, net of transaction costs incurred. In subsequent periods, interest-bearing liabilities are measured at amortised cost using the effective interest method. Any difference between the proceeds net of transaction costs and redemption value is recognised in the Consolidated income statement over the maturity period of the borrowings. Interest expenses are accrued for and recorded in the Consolidated Income statement for each period.

Interest-bearing liabilities with an original maturity greater than 12 months are classified as non-current interest-bearing liabilities in the Consolidated statement of financial position, though repayments falling due within 12 months are presented in current liabilities under the current portion of non-current debt. Short-term commercial paper, bank and other interest-bearing liabilities, for which the original maturity is less than 12 months, are presented in current liabilities under interest-bearing liabilities.

Lease liabilities

At inception of a contract, the Group assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. Lease liabilities are initially capitalised at the commencement of the lease and measured at the present value of the lease payments that are not paid at the commencement date, discounted using the Group's incremental borrowing rate. The lease term applied corresponds to the non-cancellable period except in cases where the Group is reasonably certain to exercise renewal option or prolong the contract. The Group allocates the consideration in the contract to each lease component and separates non-lease components if these are identifiable. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions.

The lease liabilities are subsequently measured at amortised cost using the effective interest method. Lease payment is allocated between the capital liability and finance charges to achieve a constant interest rate on the outstanding liability balance. Lease liabilities are remeasured mainly when there is a change in future lease payments arising from a change in an index or rate, or if there is a change in the Group's assessment whether it will exercise an extension option. When lease liability is remeasured, a corresponding adjustment is generally made to the carrying amount of the ROU asset.

The Group has elected not to recognise lease liabilities for short-term leases that have a lease term of 12 months or less and leases of low value assets. Leases of low value assets mainly include IT and office equipment, certain vehicles and machinery and other low value items. The Group recognises the lease payments associated with these leases as an expense on a straight-line basis over the lease term.

Before transition to IFRS 16 on 1 January 2019, the Group mainly had contracts classified as operating leases, which were not capitalised and Stora Enso did not have any material finance lease contracts in effect at the end of 2018.

Interest-bearing liabilities

	As at 31 December	
EUR million	**2019**	**2018**
Bond loans	1 978	1 523
Loans from credit institutions	1 162	1 140
Lease liabilities	440	0
Finance lease liabilities	0	1
Derivative financial liabilities (see Note 25)	24	0
Other non-current liabilities	5	4
Non-current interest-bearing liabilities including current portion	**3 608**	**2 668**
Short-term borrowings	516	566
Interest payable	33	40
Derivative financial liabilities (see Note 25)	23	68
Bank overdrafts	13	1
Total Interest-bearing Liabilities	**4 192**	**3 344**

EUR million	2019	2018
Carrying Value at 1 January	3 344	3 016
Additions in lease liabilities due to adoption of IFRS 16	525	0
Acquisition of subsidiary companies	793	0
Proceeds of new long-term debt	870	578
Additions in lease liabilities	29	0
Repayment of long-term debt	-1 216	-358
Repayment of lease liabilities and interest	-88	0
Change in short-term borrowings and interest payable	-58	46
Change in derivative financial liabilities	-21	32
Translation differences and other	13	30
Total Interest-bearing Liabilities	**4 192**	**3 344**

Events during 2019 and 2018

In 2018, Stora Enso launched a Green Bond Framework as part of its Sustainable Finance approach. The ambition is to offer a loan-format to support sustainability-focused fixed income investors and to report the direct environmental impacts of some investments and business activities. In February 2019, Stora Enso successfully issued its first Green Bonds with a total nominal value of SEK 6 000 million. The bonds consist of three tranches with SEK 3 000 million maturing in August 2021 and paying a floating coupon of STIBOR +0.85%, SEK 1 250 million maturing in February 2024 and paying a floating coupon of STIBOR +1.45%, and SEK 1 750 million maturing in February 2024 and paying a fixed coupon of 1.875%. There are no financial covenants for the bonds. Please refer to the Stora Enso Sustainability report 2019 for further information regarding the use of proceeds and Stora Enso's Sustainable Finance strategy.

In the second quarter of 2019, Stora Enso issued SEK 1 000 million loan in Green Bond format under the EMTN and Green Bond frameworks. The loan matures in 2026. In addition, Stora Enso entered into a new amortising credit-institution loan with the nominal of SEK 1 500 million. The loan matures in 2021.

During 2019, Stora Enso's total repayments of USD and EUR bond notes amounted to a nominal of EUR 219 (EUR bond notes of EUR 159) million.

In 2018, Stora Enso successfully issued a new EUR 300 million bond under its EMTN (Euro Medium Term Note) programme. The bond matures in March 2028 and pays a fixed coupon of 2.5%.

In the third quarter of 2018, Fitch Ratings assigned Stora Enso Oyj an investment grade credit rating of BBB- with a stable outlook highlighting Stora Enso's improved cash flow generation and strengthened balance sheet. In the fourth quarter of 2018, Moody's Investors Service also assigned Stora Enso Oyj an investment grade credit rating by upgrading the long-term issuer rating from Ba1 to Baa3 with stable outlook.

Interest-bearing liabilities – maturities, interest rates and currency breakdown

Stora Enso's borrowings maturities range from 2020 to the longest borrowing maturing in 2036. Borrowings have either fixed or floating interest rates ranging from 0.5% (0.9%) to 7.3% (8.6%). The average interest rate on borrowings amounted to 3.5% (4.3%) at the year end. Part of Stora Enso's borrowings have been fixed through floating-to-fixed interest rate swaps and cross-currency swaps. The majority of Group loans are denominated in euros, US dollars, Swedish crowns or Chinese renminbis. Detailed maturity analysis of the Group's borrowings are set out in Note 24 Financial risk management.

Net debt

In 2019, net interest-bearing liabilities increased by EUR 1 117 (decreased by EUR 161) million to EUR 3 209 (EUR 2 092) million. Net interest-bearing liabilities are equal to total interest-bearing liabilities less total interest-bearing assets such as cash and deposits. Cash and cash equivalents net of overdrafts decreased by EUR 265 (increased by EUR 525) million to EUR 863 (EUR 1 128) million as at 31 December 2019. In 2019, the total cash outflow for leases was EUR 88 million including interest component of EUR 20 million.

The ratio of net debt to the last 12 months' operational EBITDA was 2.1 (1.1). The net debt/equity ratio was 0.43 (0.31) as per the year-end.

Bond loans

Issue/ Maturity Dates	Description of Bond	Interest Rate %	Currency of Bond	Nominal Value Issued	Outstanding As at 31 December 2019	Outstanding As at 31 December 2018	Carrying Value As at 31 December 2019	Carrying Value As at 31 December 2018
All Liabilities are Held by the Parent Company					**Currency million**		**EUR million**	
Fixed Rate								
1993-2019	Series C Senior Notes 2019	8.6	USD	50	0	50	0	45
2006-2036	Global 7.250% Notes 2036	7.25	USD	300	300	300	264	259
2012-2019	Euro Medium Term Note	5.5	EUR	500	0	175	0	175
2016-2023	Euro Medium Term Note	2.125	EUR	300	300	300	299	298
2017-2027	Euro Medium Term Note	2.5	EUR	300	300	300	299	298
2018-2028	Euro Medium Term Note	2.5	EUR	300	300	300	298	298
2019-2024	Euro Medium Term Note (Green Bond)	1.875	SEK	1 750	1 750	0	167	0
Total Fixed Rate Bond Loans							**1 326**	**1 373**
Floating Rate								
2015-2025	Euro Medium Term Note	Euribor+2.25	EUR	125	125	125	125	125
2015-2027	Euro Medium Term Note	Euribor+2.35	EUR	25	25	25	25	25
2019-2021	Euro Medium Term Note (Green Bond)	Stibor+0.85	SEK	3 000	3 000	0	287	0
2019-2024	Euro Medium Term Note (Green Bond)	Stibor+1.45	SEK	1 250	1 250	0	119	0
2019-2026	Euro Medium Term Note (Green Bond)	Stibor+1.60	SEK	1 000	1 000	0	95	0
Total Floating Rate Bond Loans							**651**	**150**
Total Bond Loans							**1 978**	**1 523**

Finance lease liabilities under IAS 17

At 31 December 2018, Stora Enso had a small number of finance leasing agreements for machinery and buildings for which capital costs of EUR 3 million were included in property, plant and equipment and buildings; the depreciation and impairment thereon was EUR 2 million in 2018. The aggregate leasing payments for the year 2018 amounted to EUR 28 million, the interest element being EUR 1 million. The present value of finance lease liabilities as per the year-end 2018 amounted to EUR 1 million. The Group adopted IFRS 16 Leases standard on 1st January 2019.

Note 27 Derivatives

Accounting principles

Derivative financial instruments and hedge accounting

Financial derivatives are initially recognised in the consolidated statement of financial position at fair value and subsequently measured at their fair value at each reporting date, though the method of recognising the resulting gains or losses is dependent on the nature of the item being hedged. When derivative contracts are entered into, the Group designates them as either hedges of highly probable forecast transactions or firm commitments (cash flow hedges), hedges of the exposure to changes in the fair value of recognised assets or liabilities (fair value hedges), hedges of net investments in foreign entities, or derivative financial instruments not meeting the hedge accounting criteria in accordance with IFRS 9. Derivative contracts with maturity greater than 12 months are classified as non-current interest-bearing receivables and liabilities, and contracts maturing within 12 months are presented under current interest-bearing receivables and liabilities.

At the inception of a hedge, the Group documents the relationship between the hedging instrument and the hedged item, as well as its risk management objective and strategy for undertaking various hedging transactions. This process includes linking all financial instruments designated under hedge accounting to specific assets and liabilities or to specific firm commitments or highly probable forecast transactions in order to verify and document the hedge relationship between the hedged item and the hedging instrument as required by IFRS 9.

The hedge ratio used for hedging relationships is usually 1:1. For currency and commodity hedging purposes, the Group uses a hedge designation where the critical terms of the hedging instrument and the hedged item will coincide in terms of the notional amount and timing. In respect of interest rate hedging, the interest rate basis between swap contracts and underlying debt will coincide. Since the critical terms of the hedges and underlying risks match, the hedging instruments are considered to offset any changes related to the anticipated transactions. Potential source of ineffectiveness for all the above mentioned hedges is possible credit risk dominating value changes. Potential sources of ineffectiveness that may be expected to occur in relation to currency and commodity hedges are mainly related to the forecasted transaction not occurring in the amount or at the time expected. For interest rate hedges, cross-currency basis spread or initial fair value of the hedging instrument at the date of hedge designation may result in ineffectiveness.

The Group also documents its qualitative prospective assessment at the hedge inception of whether the derivatives used in a hedge relationship are highly effective in offsetting changes in fair value or cash flows of hedged items. Hedge effectiveness will be assessed in accordance with IFRS 9 requirements.

Cash flow hedges

Changes in the fair value of derivatives designated and qualifying as cash flow hedges, and which are effective, are recognised in the cash flow hedges reserve within OCI, the movements of which are disclosed in the consolidated statement of comprehensive income. For currency forwards, both the spot element and forward points have been included to the hedge designation. In case of currency options, the time value of an option is excluded from the hedge designation and only the intrinsic value component of an option is designated as the hedging instrument. The changes in option time value are recognised in a cost of hedging reserve within OCI. The cumulative gain or loss of a derivative deferred in equity is transferred to the consolidated income statement and classified as an income or expense in the same period in which the hedged item affects the consolidated income statement. Realised results of hedge accounted derivative instruments hedging foreign currency sales transactions or purchases are booked as adjustments to sales or materials and services, depending on the nature of the underlying hedged item.

In respect of hedges of exposures to foreign currency risk of future transactions resulting in the recognition of non-financial assets, the gains and losses deferred to the cash flow hedges reserve within OCI are transferred from equity to be included in the initial acquisition cost of the non-financial asset at the time of recognition. The deferred amounts are ultimately recognised in the income statement through depreciation over the lifetime of the non-financial assets.

When a hedging instrument expires or is sold, terminated or exercised or no longer meets the hedge accounting criteria under IFRS 9, any cumulative gain or loss deferred in equity at that time remains in equity and is accounted for as an adjustment to income or expense when the committed or forecast transaction is ultimately recognised in the consolidated income statement. However, if the underlying forecasted transaction is no longer expected to occur, the cumulative gain or loss reported in equity from the period when the hedge was effective is immediately recognised in the consolidated income statement.

Fair value hedges

In case of fair value hedges, the Group uses either derivatives or borrowings as a hedging instrument to manage the risk associated with the fair value of a hedged item. The gains and losses on hedging instruments designated and qualifying as fair value hedges, and which are highly effective, are recorded in the consolidated income statement, along with any changes in the fair value of the hedged assets or liabilities attributable to the hedged risk.

Net investment hedges

For hedges of net investments in foreign entities, the Group uses either derivatives or foreign-currency borrowings for this purpose. If the hedging instrument is a derivative, any gain or loss thereon relating to the effective portion of the hedge is recognised in equity in CTA as disclosed in the consolidated statement of comprehensive income; the gain or loss relating to the ineffective portion is immediately recognised in the consolidated income statement. In addition, exchange gains and losses arising on the translation of a foreign-currency borrowing that hedges net investment in a foreign operation are also recognised in CTA, with any ineffective portion being immediately recognised in the consolidated income statement. The gains and losses recognised in CTA are recycled from equity to the consolidated income statement at the time when the underlying hedged net investment is disposed.

Fair value through profit and loss derivatives

Certain derivative transactions, while providing effective economic hedges under Group risk management policies, do not qualify for hedge accounting under the specific rules in IFRS 9 and therefore changes in the fair value of such non-qualifying hedges are accounted for at fair value in the consolidated income statement. For non-hedge accounted derivatives economically hedging net of operative receivables and payables in foreign currencies, the fair value changes are recognised in operating profit. For other non-hedge accounted derivatives, the fair value changes are recognised in the consolidated income statement under financial income and expense.

Valuation of derivatives

Derivative financial instruments are recorded in the statement of financial position at their fair values defined as the amount at which the instrument could be exchanged in an orderly transaction between market participants at the measurement date. The fair values of such financial items have been estimated on the following basis:

- Currency forward contract fair values are calculated using forward exchange rates at the reporting date.
- Currency option contract fair values are calculated using reporting date market rates together with common option pricing models.
- Commodity contract fair values are computed with reference to quoted market prices on futures exchanges or other reliable market sources.
- Interest rate swaps fair values are calculated using a discounted cash flow method.
- Cross-currency swaps fair values are calculated using a discounted cash flow method with the exchange of notionals being also included into the valuation model.

Shareholders' equity – other comprehensive income

Outstanding derivatives designated under cash flow hedge accounting are measured at fair value with the fair value movements being recorded in the separate equity category of OCI: Cash Flow Hedges Reserve. The time value of options is excluded from the cash flow hedge designation and recognised separately in a cost of hedging reserve within OCI.

Cash flow hedge derivatives

Derivatives used in currency cash flow hedges are mainly forward contracts and options, with swaps mainly used for commodity and interest rate hedging purposes. In respect of commodity hedges, the Group also uses risk component hedging to hedge highly probable forecast purchases of natural gas. These purchases create natural gas price exposure which translates as coal and crude oil risk components that can be hedged by using API2 coal and Dated Brent crude oil linked swaps, which are expected to fully offset changes in the market value of the hedged risk components. Both of the risk components are separately identifiable and reliably measurable due to the pricing formula being specified in the natural gas purchase agreement.

In 2019, the group entered into new interest rate swap contracts with a total nominal value of SEK 4 000 million. The interest rate swaps have been designated as cash flow hedges of newly issued SEK denominated floating-rate Green Bonds maturing in 2021, 2024 and 2026. In 2018, the group entered into a new floating-to-fixed cross-currency swap contract in China with a total nominal value of EUR 200 million. The cross-currency swap has been designated under cash flow hedge accounting to hedge the underlying foreign currency and interest rate risks of Euro denominated floating-rate debt in China. The hedge will mature in 2023.

The unrealised gains and losses related to cash flow hedges are expected to be recycled through the Income Statement within one to three years with the longest hedging contract maturing in 2027 (2027), however the majority of the contracts are expected to mature in 2020. Cash flow hedging reserve and net investment hedges in equity are presented in more detail in the following table.

Breakdown of cash flow hedging reserve and net investment hedges in equity 2019

EUR million	At 1 Jan 2019	Change in fair value recognised in OCI/CTA	Reclassified from OCI to profit and loss	Tax impact	At 31 Dec 2019
Foreign exchange risk - Operational cash flow hedging	-17	-67	86	-4	-2
Commodity price risk - Commodity swaps	25	-23	-12	9	-2
Interest rate risk - Interest rate swaps	-5	-4	0	1	-8
Interest rate and foreign exchange risk - Cross-currency swaps	-10	1	1	-3	-11
Cost of hedging reserve	-2	3	0	-1	1
Total cash flow hedge reserve in OCI	**-9**	**-90**	**75**	**1**	**-22**
Foreign exchange risk - Net investment hedges	20	-6	-4	1	12
Total net investment hedges in CTA	**20**	**-6**	**-4**	**1**	**12**
Total hedging reserves	**11**	**-96**	**72**	**3**	**-10**

Breakdown of cash flow hedging reserve and net investment hedges in equity 2018

EUR million	At 1 Jan 2018	Change in fair value recognised in OCI/CTA	Reclassified from OCI to profit and loss	Tax impact	At 31 Dec 2018
Foreign exchange risk - Operational cash flow hedging	18	-72	28	9	-17
Commodity price risk - Commodity swaps	1	12	21	-8	25
Interest rate risk - Interest rate swaps	-4	-1	0	0	-5
Interest rate and foreign exchange risk - Cross-currency swaps	0	-19	6	3	-10
Cost of hedging reserve	-1	-1	0	0	-2
Total cash flow hedge reserve in OCI	**14**	**-81**	**54**	**4**	**-9**
Foreign exchange risk - Net investment hedges	31	-14	0	3	20
Total net investment hedges in CTA	**31**	**-14**	**0**	**3**	**20**
Total hedging reserves	**45**	**-95**	**54**	**7**	**11**

Equity accounted investments

Associate companies record hedges and pensions-related amounts directly in equity, and the Group also records its share of these amounts in equity in the "OCI of Equity Accounted Investments" classification.

OCI equity accounted investments

	Year ended 31 December	
EUR million	**2019**	**2018**
Bergvik Skog AB	0	-11
Total	**0**	**-11**

Fair values of derivatives

Total foreign exchange gains and losses in the income statement excluding hedges

	Year ended 31 December	
EUR million	**2019**	**2018**
Sales	12	24
Costs and expenses	-10	-16
Borrowings, deposits and lease liabilities	-6	-55
Total	**-3**	**-46**

Hedge gains and losses in operating profit

	Year ended 31 December	
EUR million	**2019**	**2018**
Cash flow hedge accounted derivatives		
Currency hedges	-83	-28
Commodity hedges	12	-21
Total	**-71**	**-48**
As adjustments to Sales	-79	-76
As adjustments to Materials and services	8	28
Realised from OCI through Income Statement	**-71**	**-48**
Currency hedges ineffectiveness	-3	0
Net losses from cash flow hedges	**-74**	**-48**
Non-hedge accounted derivatives		
Currency derivatives	-17	-16
Net losses on non-hedge accounted derivatives	**-17**	**-16**
Net hedge losses in operating profit	**-91**	**-65**

In 2019, certain forecasted future transactions were no longer expected to occur, and due to this hedge accounting was ceased for those transactions. This resulted in a loss of EUR 3 million being booked in the Group's operating profit, and the loss being presented in the table above as ineffectiveness from cash flow hedges. During 2018, there was no cash flow hedge ineffectiveness recorded in operating profit.

Hedge gains and losses in financial items

	Year ended 31 December	
EUR million	**2019**	**2018**
Cash flow hedge accounted derivatives		
Currency hedges ineffectiveness	0	-1
Interest rate hedges ineffectiveness	0	-3
Net losses from cash flow hedges	**-1**	**-4**
Non-hedge accounted derivatives		
Currency derivatives	0	22
Net gains/losses on non-hedge accounted derivatives	**0**	**22**
Net gains/losses in financial items	**-1**	**18**

Financials

Nominal and fair values of derivative instruments

	As at 31 December							
EUR million	**Nominal values**	**Positive fair values**	**Negative fair values**	**Net fair values**	**Nominal values**	**Positive fair values**	**Negative fair values**	**Net fair values**
	2019				**2018**			
Currency derivatives								
Forwards: Operational cash flow hedging	759	6	-9	-4	1 267	7	-15	-7
Options: Operational cash flow hedging	1 458	9	-8	1	1 375	6	-24	-18
Total cash flow hedge accounted	**2 217**	**15**	**-17**	**-2**	**2 642**	**13**	**-38**	**-25**
Forwards: Trade and loan receivables hedging	414	3	-1	3	686	4	-6	-2
Total non-hedge accounted	**414**	**3**	**-1**	**3**	**686**	**4**	**-6**	**-2**
Total currency derivatives	**2 631**	**18**	**-18**	**0**	**3 328**	**17**	**-44**	**-27**
Commodity derivatives								
Electricity swaps: Costs hedging	63	1	-5	-4	67	35	0	35
Oil swaps: Costs hedging	14	1	0	1	15	0	-2	-2
Coal swaps: Costs hedging	3	0	0	0	5	0	0	0
Total cash flow hedge accounted	**80**	**2**	**-5**	**-3**	**87**	**35**	**-2**	**33**
Electricity swaps: Closed contracts	0	0	0	0	2	1	-1	0
Total non-hedge accounted	**0**	**0**	**0**	**0**	**2**	**1**	**-1**	**0**
Total commodity derivatives	**80**	**2**	**-5**	**-3**	**89**	**37**	**-4**	**33**
Interest rate derivatives								
Interest rate swaps: Financial expenses hedging	563	0	-12	-11	187	1	-6	-5
Cross-currency swaps: Financial expenses hedging	200	0	-15	-15	200	0	-16	-16
Total cash flow hedge accounted	**763**	**0**	**-27**	**-27**	**387**	**1**	**-23**	**-22**
Total interest rate derivatives	**763**	**0**	**-27**	**-27**	**387**	**1**	**-23**	**-22**
Total cash flow hedge accounted	**3 060**	**18**	**-49**	**-32**	**3 116**	**49**	**-63**	**-14**
Total non-hedge accounted	**414**	**3**	**-1**	**3**	**688**	**5**	**-7**	**-2**
Total derivatives	**3 474**	**21**	**-50**	**-29**	**3 804**	**54**	**-70**	**-16**

Positive and negative fair values of financial derivative instruments are shown under Interest-bearing receivables and liabilities, and Non-current interest-bearing receivables and liabilities. The presented fair values in the table include accrued interest and option premiums.

Changes in fair values of hedged items and hedging instruments 2019

EUR million	Change in value of hedged item to determine hedge effectiveness	Change in value of outstanding hedging instruments	Ineffectiveness
Foreign exchange risk - Forward and option contracts (excluding option time value)[1]	64	-67	-3
Foreign exchange risk - Net investment hedges	6	-6	0
Commodity price risk - Commodity swaps	23	-23	0
Interest rate risk - Interest rate swaps	4	-4	0
Interest rate and foreign exchange risk - Cross-currency swaps	-1	1	0

[1] Ineffectiveness booked in Operating profit.

Changes in fair values of hedged items and hedging instruments 2018

EUR million	Change in value of hedged item to determine hedge effectiveness	Change in value of outstanding hedging instruments	Ineffectiveness
Foreign exchange risk - Forward and option contracts (excluding option time value)[1]	71	-72	-1
Foreign exchange risk - Net investment hedges	14	-14	0
Commodity price risk - Commodity swaps	-12	12	0
Interest rate risk - Interest rate swaps	1	-1	0
Interest rate and foreign exchange risk - Cross-currency swaps[1]	12	-15	-3

[1] Ineffectiveness booked in Net financial items.

Financial impact of netting for instruments subject to an enforceable master netting agreement 2019

		Not offset in the Statement of Financial Position		
EUR million	Gross amount of recognised financial instruments	Related liabilities (-) or assets (+) subject to master netting agreements	Collateral received (-) or given (+)	Net exposure
Derivative assets	21	-14	0	7
Derivative liabilities	-50	14	0	-36

Financial impact of netting for instruments subject to an enforceable master netting agreement 2018

		Not offset in the Statement of Financial Position		
EUR million	Gross amount of recognised financial instruments	Related liabilities (-) or assets (+) subject to master netting agreements	Collateral received (-) or given (+)	Net exposure
Derivative assets	54	-24	0	30
Derivative liabilities	-70	24	0	-46

The Group enters into derivative transactions under master netting agreements agreed with each counterparty. In case of an unlikely credit event, such as default, all outstanding transactions under the agreements are terminated, and only a single net amount per counterparty is payable for settlement of all transactions. The agreements do not meet the criteria for offsetting in the statement of financial position, because offsetting is enforceable only in the occurrence of certain future events.

Note 28 Cumulative translation adjustment and equity hedging

Cumulative translation adjustment

	Year ended 31 December	
EUR million	**2019**	**2018**
At 1 January		
CTA on net investment in non-euro foreign entities	-355	-319
Hedging	27	41
Net currency losses/gains in equity	-328	-278
Tax on hedging	-7	-10
Net CTA in Equity	**-335**	**-288**
CTA Movement for the Year Reported in OCI		
Restatement of opening non-euro denominated equity	7	-70
Difference in Income Statement translation	13	1
Internal equity injections and dividends	5	6
Other	0	-1
CTA release through the Income Statement	182	27
CTA Movement in OCI	**206**	**-36**
Net Investment Hedging and Loans for the year reported in OCI		
Hedging and Loans	-9	-14
Tax on Hedging and Loans	1	3
Net Hedging and Loans Movement in OCI	**-8**	**-11**
At 31 December		
CTA on net investment in non-euro foreign entities	-148	-355
Hedging and Loans	18	27
Cumulative net currency losses in equity	-130	-328
Tax on Hedging and Loans	-6	-7
Net CTA in Equity	**-136**	**-335**
Net Investment Hedging and Loans in foreign entities		
Hedging and Loans	18	27
Tax on Hedging and Loans	-6	-7
Net Hedging and Loans Result in Equity	**12**	**20**
Realised gains	37	45
Unrealised gains/losses	-25	-25
Net Hedging and Loans Result in Equity	**12**	**20**

The group is currently only hedging its equity exposure to the US dollar. The main movements in CTA in 2019 were a gain of EUR 158 (a loss EUR 53) million related to the Swedish crown, a gain of EUR 25 (EUR 61) million related to the US dollar, a gain of EUR 15 (a loss of EUR 16) million related to the Russian ruble and a gain of EUR 8 (a loss of EUR 4) million related to the Chinese renminbi. The most significant accumulated CTA balances are in Brazil, amounting to a loss of EUR 209 (EUR 204) million, in the US dollar area, amounting to a gain of EUR 164 (EUR 139) million, in Sweden, amounting to a loss of EUR 128 (EUR 286) million and in China, amounting to a gain of EUR 73 (EUR 65) million.

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The release of cumulative translation adjustments to the income statement amounted to a loss of EUR 182 (EUR 27) million in 2019; a loss of EUR 171 million was related to the Bergvik Skog restructuring in Sweden, a loss of EUR 8 million to the liquidation of Stora Enso Suzhou Paper in China, a loss of EUR 6 million to the liquidation of SE Försäkringsaktiebolag in Sweden and a gain of EUR 3 million to the disposal of Stora Enso Huatai Paper in China.

Amounts recognized in the statement of financial position - CTA and Net Investment Hedges and Loans

	As at 31 December					
	Cumulative Translation Adjustments (CTA)		Net Investment Hedges and Loans		Net CTA in the Statement of Financial Position	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Brazil	-209	-204	0	0	-209	-204
China	73	65	0	0	73	65
Czech Republic	33	32	-9	-9	24	23
Poland	-24	-28	0	17	-7	-11
Russia	-55	-71	0	0	-55	-71
Sweden	-128	-286	47	50	-82	-236
Uruguay	158	135	-37	-31	122	105
USA	6	4	0	0	6	4
Others	-1	-1	0	0	-1	-1
CTA before Tax	**-148**	**-355**	**18**	**27**	**-130**	**-328**
Taxes	0	0	-6	-7	-6	-7
Net CTA in Equity	**-148**	**-355**	**12**	**20**	**-136**	**-335**

Amounts recognized in the statement of other comprehensive income - CTA and Net Investment Hedges and Loans

	As at 31 December					
	Cumulative Translation Adjustments (CTA)		Net Investment Hedges and Loans		Net CTA in OCI	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Brazil	-5	-14	0	0	-5	-14
China	8	-4	0	0	8	-4
Czech Republic	1	-1	0	0	1	-1
Poland	4	-10	0	0	4	-10
Russia	15	-16	0	0	15	-16
Sweden	158	-53	-3	0	154	-53
Uruguay	23	56	-6	-14	17	42
USA	2	5	0	0	2	5
Others	0	0	0	0	0	0
CTA before Tax	**206**	**-36**	**-9**	**-14**	**197**	**-50**
Taxes	0	0	1	3	1	3
Amounts recognised in OCI	**206**	**-36**	**-8**	**-11**	**198**	**-47**

Hedging of net investment in foreign entities

The Group policy for translation risk exposure is to minimise this by funding assets whenever possible and economically viable in the same currency, but if matching the assets and liabilities in the same currency is not possible, hedging of the remaining translation risk may take place. The gains and losses net of tax on all financial liabilities and instruments used for hedging purposes are offset in CTA against the respective currency movements arising from the restatement of the net investments at current exchange rates on the reporting date; the net amount of losses included in CTA during the period as shown in the previous table amounted to EUR 8 (EUR 11) million.

Hedging instruments and unrealised hedge losses

	As at 31 December					
	Nominal amount (Currency)		Nominal amount (EUR)		Unrealised Losses (EUR)	
EUR million	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Borrowings						
USD area	300	350	267	306	-25	-25
Total Hedging			**267**	**306**	**-25**	**-25**

Net investment loans

The Group has applied net investment loan accounting under IAS 21 for certain intragroup loans. At 31 December 2019 Net investment loans had an impact of EUR 0 million on CTA in Equity.

Note 29 Commitments and contingencies

Accounting principles

Guarantees

The guarantees entered into with financial institutions and other credit guarantors generally oblige the group to make payment in the event of default by the borrower. The guarantees have an off-balance sheet credit risk representing the accounting loss that would be recognised at the reporting date if the counterparties fail to perform completely as contracted. The credit risk amounts are equal to the contract sums, assuming the amounts are not paid in full and are irrecoverable from other parties.

Commitments

	As at 31 December	
EUR million	**2019**	**2018**
On own behalf		
Mortgages	2	2
Operating leases in next 12 months	0	100
Operating leases after next 12 months	0	631
Other commitments	3	6
On behalf of equity accounted investments		
Guarantees	4	4
On behalf of others		
Guarantees	6	23
Other commitments	13	13
Total	**28**	**779**
Mortgages	2	2
Guarantees	10	27
Operating leases	0	731
Other commitments	17	19
Total	**28**	**779**

In 2019, the Group's commitments amounted to EUR 28 (EUR 779) million. In addition, the parent company Stora Enso Oyj has guaranteed the liabilities of many of its subsidiaries and joint operations up to EUR 1 508 (EUR 1 962) million as of 31 December 2019.

Operating lease obligations have been reported in the balance sheet in accordance with requirements of IFRS 16 Leases since 1 January 2019. More details regarding right-of-use assets are presented in Note 11 Intangible assets and property, plant and equipment and regarding lease liabilities in Note 26 Interest-bearing liabilities.

Repayment schedule of operating lease commitments

	As at 31 December	
EUR million	**2019**	**2018**
Less than 1 year	0	100
1–2 years	0	92
2–3 years	0	78
3–4 years	0	57
4–5 years	0	48
Over 5 years	0	356
Total	**0**	**731**

Capital commitments

	As at 31 December	
EUR million	**2019**	**2018**
Total	**223**	**111**

Capital expenditure commitments are not recognised in the balance sheet and these include the Group's share of direct capital expenditure contracts in joint operations. Commitments in relation to capital expenditure mainly relate to the Oulu mill conversion and other ongoing projects at the Imatra Mill in Finland and the Maxau Mill in Germany.

Contingent liabilities

Stora Enso has undertaken significant restructuring actions in recent years which have included the divestment of companies, sale of assets and mill closures. These transactions include a risk of possible environmental or other obligations the existence of which would be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group.

Stora Enso is party to legal proceedings that arise in the ordinary course of business and which primarily involve claims arising out of commercial law. The management does not consider that liabilities related to such proceedings before insurance recoveries, if any, are likely to be material to the Group's financial condition or results of operations.

Legal proceedings in Latin America

Veracel

On 11 July 2008, Stora Enso announced that a federal judge in Brazil had issued a decision claiming that the permits issued by the State of Bahia for the operations of Stora Enso's joint operations company Veracel were not valid. The judge also ordered Veracel to take certain actions, including reforestation with native trees on part of Veracel's plantations and a possible fine of BRL 20 (EUR 5) million. Veracel disputes the decision and has filed an appeal against it. Veracel operates in full compliance with all Brazilian laws and has obtained all the necessary environmental and operating licences for its industrial and forestry activities from the relevant authorities. In November 2008, a Federal Court suspended the effects of the decision. No provisions have been recorded in Veracel's or Stora Enso's accounts for the reforestation or the possible fine.

In June 2017, Veracel received a tax infringement note referring to year 2012 with a total amount of BRL 224 (EUR 50) million including interest and fines. The dispute was limited to fiscal year 2012 for which the tax authority applied another transfer pricing method due to a different interpretation of a transition rule. The total exposure at year end 2018 was BRL 241 (EUR 54) million considering interest until 31 December 2018. Stora Enso's share of the exposure was BRL 120 (EUR 27) million. Veracel has filed an administrative defense against the tax note in July 2017 which has been finally decided in favour of Veracel in May 2019. There will be no further reporting on this dispute.

The tax authority has claimed that an amount of BRL 139 million (EUR 31 million) of PIS (social integration program) and COFINS (contribution for the financing of social security) paid by Veracel on the purchase of raw materials and services for fiscal years 2006 until 2015 was not eligible for tax credit. Veracel has recorded a write-down related to PIS and COFINS credits of BRL 42 million (EUR 10 million) in relation tax authority claims that were closed in 2019. Stora Enso and Veracel consider the remaining pending claims of BRL 97 million (EUR 21 million) unjustified and no provisions have been recorded in Veracel's or Stora Enso's accounts for this matter. The dispute was still pending at balance sheet date. The remaining pending claim relating to Stora Enso's share in Veracel is BRL 49 million (EUR 11 million).

Legal proceedings in Sweden

Insurance claim

In July and August 2016, six Swedish insurance companies filed lawsuits in the Environmental Court and the District Court of Falun against Stora Enso, due to damage caused by the forest fire in Västmanland, Sweden, in 2014. The claimed amount is approximately SEK 300 (EUR 30) million, excluding interest. The environmental law case is closed based on that the environmental code was not applicable on damages caused by fire. The other case in the District Court of Falun has now been settled and the settlement amount in full has been covered by insurance and without financial impact for Stora Enso. Hence, there are no longer any open cases for compensation due to the forest fire. There will be no further reporting of these claims.

Company fine

In January 2018, a Swedish prosecutor filed a lawsuit against Stora Enso and its supplier, due to the forest fire in Västmanland, Sweden in 2014, claiming a company fine of SEK 5 million each. In December 2019, the court acquitted Stora Enso of responsibility for causing the fire. The verdict has been appealed to the Court of Appeal by the prosecutor and the supplier. The prosecutor has reduced the claim for company fine to SEK 2.5 million. There will be no further reporting of this case.

Financials

Note 30 Principal subsidiaries and joint operations

The following is a list of the Company's fifty principal operating subsidiary undertakings ranked by external sales. These companies along with the parent account for 99% (99%) of Group external sales. The principal country in which each subsidiary operates is the country of incorporation. The group's effective interest in the undertakings is 100%, except where indicated, and is held in each case by a subsidiary undertaking, except for those companies marked with "+" which are held directly by the parent company. Subsidiaries operating outside the euro area are indicated by "◊".

Subsidiary companies (ranked by external sales)

		Country	Sales %	Consumer Board	Packaging Solutions	Biomaterials	Wood Products	Paper	Other
Stora Enso Oyj		**Finland**	**16.20**	•	•	•	•	•	•
Stora Enso Paper AB	◊	Sweden	7.42					•	
Stora Enso International Oy	+	Finland	7.12			•			
Stora Enso AB[1]	+/◊	Sweden	6.67						•
Stora Enso Oulu Oy		Finland	5.66					•	
Stora Enso Veitsiluoto Oy		Finland	5.19					•	
Stora Enso Amsterdam B.V.		Netherlands	4.51			•			
Stora Enso Skog AB	◊	Sweden	3.00						•
Stora Enso Fors AB	◊	Sweden	2.98	•					
Stora Enso Poland S.A.	+/◊	Poland	2.77		•				
Stora Enso (Guangxi) Packaging Company Ltd. (80.1%)	◊	China	2.75	•					
Stora Enso Wood Products GmbH		Austria	2.72				•		
Stora Enso Maxau GmbH		Germany	2.58					•	
Stora Enso Langerbrugge NV		Belgium	2.46					•	
Stora Enso Publication Papers Oy Ltd		Finland	2.30					•	
Stora Enso Ingerois Oy	+	Finland	1.98	•					
Sydved AB (66.7%)	◊	Sweden	1.94						•
Stora Enso Wood Products Oy Ltd	+	Finland	1.72				•		
Stora Enso Sachsen GmbH		Germany	1.54					•	
Stora Enso Timber AB	◊	Sweden	1.29				•		
OOO Stora Enso Packaging BB	◊	Russia	1.29		•				
Stora Enso Eesti AS	+	Estonia	1.22				•		
Stora Enso Wood Products Zdirec s.r.o.	◊	Czech Republic	1.02				•		
Dongguan Stora Enso Inpac Packaging Co. Ltd	◊	China	1.02		•				
Stora Enso Narew Sp.z.o.o.	+/◊	Poland	0.95		•				
Stora Enso Australia Pty Ltd	◊	Australia	0.93				•		
Stora Enso WP Bad St. Leonhard GmbH		Austria	0.90				•		
Stora Enso Packaging AB	◊	Sweden	0.89		•				
Stora Enso Packaging Oy	+	Finland	0.82		•				
Stora Enso Wood Products Sp.z.o.o.	◊	Poland	0.66				•		
Stora Enso North American Sales, Inc.	+/◊	USA	0.64	•					
Stora Enso Timber Deutschland GmbH		Germany	0.57				•		
Stora Enso Bioenergi AB	◊	Sweden	0.56						•
Stora Enso Wood Products Planá s.r.o.	◊	Czech Republic	0.47				•		
Stora Enso Inpac Packaging Co. Ltd	◊	China	0.43		•				
Guangxi Stora Enso Forestry Co Ltd (89.5%)	◊	China	0.41	•					
Stora Enso Wood Products d.o.o. Koper		Slovenia	0.37				•		
AS Stora Enso Latvija		Latvia	0.36				•		

		Country	Sales %	Consumer Board	Packaging Solutions	Biomaterials	Wood Products	Paper	Other
Stora Enso Bois SAS		France	0.35				•		
UAB Stora Enso Lietuva		Lithuania	0.34				•		
Stora Enso Huatai (Shandong) Paper Co Ltd[2]	◊	China	0.30					•	
Stora Enso Timber DIY Products B.V.		Netherlands	0.29				•		
Stora Enso UK Ltd	◊	UK	0.26	•			•		
Stora Enso Packaging SIA		Latvia	0.19		•				
Stora Enso Packaging UAB		Lithuania	0.18		•				
Stora Enso WP HV s.r.o.	◊	Czech Republic	0.18				•		
OOO Setnovo	◊	Russia	0.15				•		
Stora Enso Paper GmbH		Germany	0.13					•	
Stora Enso Packaging AS		Estonia	0.13		•				
DanFiber A/S (51%)	◊	Denmark	0.13					•	
VLAR Papier NV		Belgium	0.11					•	

[1] Stora Enso Skoghall AB was merged to Stora Enso AB in 2019.
[2] Business operations of Stora Enso Huatai (Shandong) Paper Co Ltd (60.0%) were divested during 2019.

The following is a list of the Company's joint operations. The Company holds a 50% interest in joint operations which are consolidated into the Group's financial statements. The countries operating outside the euro area are indicated by "◊". Sales of the joint operations occur via subsidiaries.

Joint operations

		Country	Consumer Board	Packaging Solutions	Biomaterials	Wood Products	Paper	Other
Montes del Plata (50%)	◊	Uruguay			•			
Veracel Celulose SA (50%)	◊	Brazil			•			

Note 31 Related party transactions

Balances and transactions between the Group and its subsidiaries and joint operations, which are classified as related parties, have been eliminated on consolidation and are not disclosed in this note.

The Group has classified Solidium Oy as a related party. This is entirely owned by the State of Finland, and owned 10.7% of Stora Enso shares and 27.3% of all votes on 31 December 2019. The group has applied an exemption, as stated in IAS 24 paragraph 25, not to disclose transactions and outstanding balances with government-related entities.

The Group has classified FAM AB as a related party. FAM AB owned 10.2% of Stora Enso shares and 27.3% of all votes on 31 December 2019. During 2019, the group has sold 2% of shares of Swetree Technologies AB, an equity accounted investment, to FAM AB for EUR 0.5 million in an arm's length based transaction.

The key management personnel of the Group are the members of the Group Leadership Team and the Board of Directors. The compensation of key management personnel is presented in Note 7 Board and executive remuneration.

In the ordinary course of business, the Group engages in transactions on commercial terms with equity accounted investments and other related parties that are not any more favourable than those that would be available to other third parties – with the exception of Veracel. Stora Enso intends to continue with transactions on a similar basis with its equity accounted investments, further details of which are shown in Note 13 Equity accounted investments.

The Group's principal subsidiary companies and joint operations are listed in Note 30 Principal subsidiaries and joint operations.

Paper for recycling

The Group owns non-controlling interests in several paper recyclers, from which paper for recycling is purchased at market prices.

Forest assets and wood procurement

The Group has a 41% interest in Tornator with the remaining 59% being held mainly by Finnish institutional investors. Stora Enso has long-term purchase contracts with the Tornator Group for approximately 2 million cubic metres of wood annually at market prices, and in 2019 purchases of 2 (2) million cubic metres came to EUR 67 (EUR 78) million.

The group procures wood from Kopparfors Skogar AB, a company which is completely owned by FAM AB and which was founded during 2019. In 2019 the purchases from Kopparfors Skogar AB amounted to EUR 6 million and the sales of services by Stora Enso to the said related party amounted to EUR 4 million. At the end of 2019 the group had EUR 1 million of open payables to and EUR 1 million of open receivables from Kopparfors Skogar AB.

Stevedoring

The Group owns 34.4% of shares in Steveco Oy, a Finnish company engaged in loading and unloading vessels. The other shareholders in Steveco are UPM-Kymmene, Finnlines, Ahlström Capital, and Myllykoski. The stevedoring services are provided by Steveco at market prices and in 2019 amounted to EUR 25 (EUR 24) million.

Note 32 Earnings per share and equity per share

Accounting principles

Basic earnings per share, attributable to the owners of the parent company, are calculated by dividing the net profit attributable to shareholders by the weighted average number of ordinary shares in issue during the year, excluding ordinary shares purchased by the group and held as treasury shares. Diluted earnings per share are calculated by adjusting the weighted average number of ordinary shares plus the diluted effect of all potential dilutive ordinary shares, such as shares from share-based payments.

Earnings per share

	Year Ended 31 December	
	2019	**2018**
Net profit for the period attributable to the owners of the parent, EUR million	880	1 013
Total comprehensive income attributable to the owners of the parent, EUR million	1 113	1 025
Weighted average number of A and R shares	788 619 987	788 619 987
Weighted average number of share awards	912 677	1 262 891
Weighted diluted number of shares	789 532 664	789 882 878
Basic Earnings per Share, EUR	**1.12**	**1.28**
Diluted Earnings per Share, EUR	**1.12**	**1.28**
Total Recognised Income and Expense per Share, EUR	**1.41**	**1.30**

Equity per share

	As at 31 December	
	2019	**2018**
Shareholders' equity, EUR million	7 429	6 714
Market value, EUR million	10 328	8 123
Number of A and R shares	788 619 987	788 619 987
Share awards	768 706	1 056 648
Diluted number of shares	789 388 693	789 676 635
Basic Shareholders' Equity per Share, EUR	**9.42**	**8.51**
Diluted Shareholders' Equity per Share, EUR	**9.41**	**8.50**
Dividend per Share Paid/Declared, EUR	**0.50**	**0.50**
Market Value per Share, EUR		
A shares	13.55	11.05
R shares	12.97	10.09

Parent Company Stora Enso Oyj financial statements

Parent company income statement

		Year ended 31 December	
EUR million	**Note**	**2019**	**2018**
Sales	2	**2 641**	**2 776**
Changes in inventories of finished goods and work in progress + / -		-15	25
Production for own use		1	1
Other operating income	3	191	192
Materials and services	4	-1 899	-1 926
Personnel expenses	5	-229	-224
Depreciation and impairment	6	-118	-159
Other operating expenses	7	-478	-471
		2 546	2 562
Operating Profit		**95**	**213**
Financial income and expenses	9	189	1
Profit before Appropriations and Taxes		284	215
Appropriations	10	-53	9
Profit for the Period		**230**	**223**

Parent company statement of financial position

		As at 31 December	
EUR million	**Note**	**2019**	**2018**
Assets			
Non-Current Assets			
Intangible assets	12	79	90
Tangible assets	12	883	840
Investments	13	7 934	7 988
Non-Current Assets Total		8 897	8 918
Current Assets			
Inventories	14	295	326
Short-term receivables	15	935	555
Financial securities	16	276	397
Cash in hand and at bank		506	471
Total Current Assets		2 012	1 750
Total Assets		**10 909**	**10 668**
Equity and Liabilities			
Equity	17		
Share capital		1 342	1 342
Share premium		3 639	3 639
Fair value reserve		-10	-10
Invested non-restricted equity fund		633	633
Retained earnings		456	627
Profit for the period		230	223
Total Equity		6 291	6 454
Accumulated Appropriations	18	254	200
Obligatory Provisions	19	28	26
Liabilities			
Non-current liabilities	21	2 195	1 464
Current liabilities	22	2 141	2 523
Total Liabilities		4 336	3 987
Total Equity and Liabilities		**10 909**	**10 668**

Parent company cash flow statement

	Year ended 31 December	
EUR million	**2019**	**2018**
Cash Provided by Operating Activities		
Profit for the period	230	223
Adjustments and reversal of non-cash items:		
Appropriations	53	-9
Depreciation according to plan and impairment	118	159
Unrealised foreign exchange gains and losses	57	6
Other non-cash items	0	-3
Financial income and expenses	-189	-1
Change in working capital:		
Increase(-)/decrease(+) in current non-interest-bearing receivables	96	-38
Increase(-)/decrease(+) in inventories	31	-79
Increase(+)/decrease(-) in current non-interest-bearing liabilities	-94	30
Cash flow from operating activities before financial items and taxes	303	288
Interest received from operating activities	30	25
Interest paid from operating activities	-73	-64
Dividends received from operating activities	267	76
Other financial items, net	8	-35
Direct taxes paid	-2	-1
Cash Provided by Operating Activities	**533**	**289**
Net Cash Provided by Investing Activities		
Investments in tangible and intangible assets	-155	-185
Capital gains from sale of tangible and intangible assets	3	6
Investments in subsidiary shares and other capital contributions	-2	-61
Proceeds from disposal of subsidiary shares and other repayment of capital	7	2
Proceeds from disposal of other investments	2	1
Payments of non-current loan receivables	-843	-345
Proceeds from non-current loan receivables	371	350
Net Cash Provided by Investing Activities	**-617**	**-232**
Cash Flow from Financing Activities		
Proceeds from (issue of) long-term liabilities	801	299
Proceeds from (payment of) long-term liabilities	-101	-226
Change in short-term borrowings	-309	-128
Dividends paid	-394	-323
Cash Flow from Financing Activities	**-3**	**-378**
Net Change in Cash and Cash Equivalents	**-87**	**-321**
Translation differences	1	-1
Cash and cash equivalents at start of year	868	1 190
Cash and Cash Equivalents at year end	**782**	**868**
Cash and Cash Equivalents at year end includes:		
Financial securities	**276**	**397**
Cash in hand and at bank	**506**	**471**
Cash and Cash Equivalents total	**782**	**868**

Notes to the parent company financial statements

Note 1 Accounting Principles

The financial statements of Stora Enso Oyj have been prepared in accordance with the Finnish Accounting Act and other current rules and regulations concerning financial statements in Finland.

Derivative contracts

Stora Enso is exposed to several financial market risks that the Group is responsible for managing under policies approved by the Board of Directors. The objective is to have cost-effective funding in Group companies and to manage financial risks using financial instruments in order to decrease earnings volatility. The main exposures for the Group are interest rate risk, currency risk, funding risk and commodity price risk, especially for fibre and energy. The parent company manages these risks centrally in the Group. The Group's risk management principles are presented in more detail in Note 24 Financial Risk Management to the consolidated financial statements. Derivative contracts are measured at fair value on the balance sheet. Derivatives with external counterparties that are subject to hedge accounting are recognised as financial assets and liabilities at fair value through the income statement in the same manner as the parent company's derivatives with other Group companies as counterparties. The parent company's derivative contracts that are used to hedge the parent company's own cash flow are measured at fair value, and the change in fair value (effective part) is recognised, in line with hedge accounting principles, in the fair value reserve in equity on the balance sheet, while the ineffective part is recognised in the parent company's income statement. The fair value of derivatives not included in hedge accounting is entered immediately in the income statement.

Interest income and expenses related to derivatives that are used to manage the interest rate risk are allocated over the contract period and are used to adjust interest expenses related to hedged loans. Option premiums are recognised as advance payments until the options mature.

With regard to derivatives, more information about the measurement principles, fair values and changes in fair value is provided in Note 24.

Pensions

Statutory pension security is arranged through employment pension insurance companies outside the Group. Some employees have additional pension security through life insurance companies outside the Group. Pension contributions are allocated in accordance with performance-based salaries and wages for the financial period.

Intangible and tangible assets and depreciation

The balance sheet value of intangible and tangible assets is their direct acquisition cost less depreciation according to plan and any impairment. Depreciation according to plan is recognised for intangible and tangible assets, based on their expected useful lives.

Depreciation is based on the following useful lives:	
Buildings and structures	10–50 years
Production machinery and equipment	10–20 years
Light machinery and equipment	3–5 years
Intellectual property rights	3–20 years

No depreciation is recognised for land and water areas.

Inventories

Inventories are measured at acquisition cost or at net realisable value if lower. Acquisition cost is determined using the FIFO method or the weighted average cost method. The cost of finished goods and work in progress comprises raw materials, direct labour, depreciation and other direct costs, as well as the related production overhead. Net realisable value is the estimated selling price less the costs of completion and sale.

Leasing

Leasing payments are recognised in other operating expenses. The remaining leasing payments under leasing agreements are presented in Note 23 Commitments and Contingencies.

Expenditure on research and development

Expenditure on research and development is recognised as an expense for the financial period.

Income taxes

The tax expense on the income statement includes income taxes based on the taxable profit for the financial period and tax adjustments for previous periods. The parent company does not recognise deferred tax assets and liabilities, excluding derivatives, in its financial statements. Deferred tax assets and liabilities that can be recognised on the balance sheet are presented in Note 20.

Obligatory provisions

Future costs and losses that no longer generate corresponding income, to which the company is committed or by which the company is obligated, are recognised in the income statement according to their nature and in obligatory provisions on the balance sheet.

Emission rights

During 2019, the company was issued 0.4 million tonnes of free emission allowances in accordance with the EU Emissions Trading Directive. Emission allowances are recognised through a net cash cost basis, meaning that the difference between the actual emissions and the emission allowances received is recognised through profit or loss if the actual emissions are larger than the emission allowances received. During the financial period, the emissions emitted were 0.5 million tonnes. The emission rights purchased during the financial period are recognised in other operating expenses, and the emission rights sold during the financial period are recognised in other operating income.

At the end of the financial period, the market value of the emission rights was EUR 24.48 per tonne.

Note 2 Net sales by division and market area

	Year ended 31 December	
EUR million	**2019**	**2018**
By division		
Consumer Board	1 094	1 124
Packaging Solutions	384	414
Biomaterials	241	334
Other	923	904
Total	**2 641**	**2 776**
Distribution by region		
Finland	1 258	1 340
Other Europe	925	962
North and South America	121	92
Asia and Oceania	263	298
Africa	29	31
Others	45	53
Total	**2 641**	**2 776**

Note 3 Other operating income

	Year ended 31 December	
EUR million	**2019**	**2018**
Rent and equivalents	4	5
Gains on sale of fixed assets	2	3
Insurance compensation	2	0
Production and maintenance services	4	8
Subsidies, grants and equivalents	2	2
Administration services	141	133
Proceeds from sales of emission rights	17	7
Other operating income	20	33
Total	**191**	**192**

Note 4 Materials and services

	Year ended 31 December	
EUR million	**2019**	**2018**
Materials and supplies		
Purchases during the period	1 376	1 449
Change in inventories +/-	15	-60
External services	508	537
Total Materials and Services	**1 899**	**1 926**

Note 5 Personnel expenses and average number of employees

	Year ended 31 December	
EUR million	**2019**	**2018**
Salaries and fees	189	185
Statutory employer costs		
Pensions	33	33
Other personnel costs	6	7
Total	**229**	**224**

Remuneration for the CEO and the members of the Board of Directors
Remuneration for the CEO and the members of the Board of Directors is presented in Note 7 to the Consolidated financial statements.

Pension liabilities for the CEO
Pension liabilities for the CEO are presented in Note 7 to the Consolidated financial statements.

Receivables from management
There were no loan receivables from the company's management.

Average number of employees	**2019**	**2018**
Number of employees during the financial period	3 021	2 930

Note 6 Depreciation and impairment

	Year ended 31 December	
EUR million	**2019**	**2018**
Depreciation according to plan	115	159
Impairment of fixed assets	3	0
Total	**118**	**159**

Depreciation and amortisation on each item in the statement of financial position is included under intangible and tangible assets.

Note 7 Other operating expenses

	Year ended 31 December	
EUR million	**2019**	**2018**
Product freight	149	159
Sales commissions	41	40
Rental costs	13	15
Administration and office services	209	207
Insurance premiums	7	6
Other personnel expenses	20	23
Public and other relations	3	3
Emission rights expenses	18	8
Other operating expenses	16	10
Total	**478**	**471**

Financials

Note 8 Auditors' fees

	Year ended 31 December	
EUR million	**2019**	**2018**
Audit fees	1	1
Total	**1**	**1**

Note 9 Financial income and expenses

	Year ended 31 December	
EUR million	**2019**	**2018**
Dividend income		
From Group companies	253	65
From equity accounted investments	14	12
Total	**267**	**76**
Interest income from non-current investments		
From Group companies	35	24
Total	**35**	**24**
Other interest and financial income		
From Group companies	1	2
From others	14	13
Total	15	16
Total Financial Income	**317**	**116**
Interest and other financial expenses		
To Group companies	-1	-1
Other financial expenses	-111	-113
Total	**-112**	**-114**
Impairment on investments		
Impairment on investments in non-current assets	-17	0
Total Financial Expenses	**-129**	**-114**
Total Financial Income and Expenses	**189**	**1**
The item "Financial Income and Expenses" includes exchange rate gains/losses (net)	-27	-31

Note 10 Appropriations

	Year ended 31 December	
EUR million	**2019**	**2018**
Difference between depreciation according to plan and depreciation recognised in taxation	-54	9
Group contributions received	1	0
Total Appropriations	**-53**	**9**

Note 11 Environmental expenses

	Year ended 31 December	
EUR million	**2019**	**2018**
Materials and services	35	36
Personnel expenses	2	3
Depreciation and impairment	10	13
Total	**48**	**51**
Air quality protection	12	14
Wastewater treatment	22	22
Waste management	10	9
Soil and groundwater protection	0	1
Other environmental protection measures	3	5
Total	**48**	**51**

Note 12 Intangible and tangible assets

Intangible assets

EUR million	**Intellectual property rights**	**Other non-current expenditure**	**Advance payments and acquisitions in progress**	**Total**
Acquisition cost 1 Jan	168	12	26	**206**
Increases	6	0	2	**8**
Decreases	-3	-4	0	**-8**
Reclassification	5	4	-9	**0**
Acquisition cost 31 Dec	176	11	18	**206**
Accumulated depreciation and impairment 1 Jan	-108	-7	0	**-116**
Accumulated depreciation on decreases and reclassifications	3	4	0	**8**
Depreciation for the period	-13	-6	0	**-19**
Accumulated depreciation 31 Dec	-118	-9	0	**-127**
Book value on 31 December 2019	**58**	**3**	**18**	**79**
Book value on 31 December 2018	60	4	26	**90**

Financials

Tangible assets

EUR million	Land and water areas	Buildings and structures	Plant and equipment	Other tangible assets	Advance payments and acquisitions in progress	Total
Acquisition cost 1 Jan	18	506	2 266	178	121	3 089
Increases	0	9	90	0	45	144
Decreases	0	-7	-2	-2	0	-11
Reclassification	0	16	101	1	-118	0
Acquisition cost 31 Dec	18	524	2 455	177	49	3 223
Accumulated depreciation and impairment 1 Jan	0	-363	-1 729	-160	0	-2 252
Accumulated depreciation on decreases and reclassifications	0	7	1	2	0	10
Depreciation for the period	0	-12	-80	-4	0	-96
Impairment for the period	0	0	-3	0	0	-3
Accumulated depreciation 31 Dec	0	-368	-1 811	-162	0	-2 341
Increase in value 1 Jan	2	0	0	0	0	2
Increase in value 31 Dec	2	0	0	0	0	2
Book value on 31 December 2019	**20**	**156**	**644**	**15**	**49**	**883**
Book value on 31 December 2018	20	143	538	18	121	840

Production plant and equipment						
Book value on 31 December 2019			623			
Book value on 31 December 2018			514			

Tangible assets includes capitalized interest costs EUR 2 million (EUR 2 million in 2018).

Advance payments and acquisitions in progress

EUR million	Intangible assets	Buildings and structures	Plant and equipment	Other tangible assets	Total
Acquisition cost 1 Jan	26	12	108	1	147
Increases	2	0	44	1	47
Reclassification	-9	-12	-105	-1	-126
Acquisition cost 31 Dec	18	0	48	1	67

EUR million	As at 31 December 2019	2018
Capitalised Environmental Expenditure		
Acquisition cost 1 Jan	83	76
Increases 1 Jan - 31 Dec	15	19
Depreciation and impairment 1 Jan - 31 Dec	-10	-13
Acquisition Cost 31 Dec	**87**	**83**
Air quality protection	50	50
Wastewater treatment	22	26
Waste management	3	4
Soil and groundwater protection	11	2
Noise and vibration prevention	1	1
Total	**87**	**83**

In 2019 and 2018, no environmentally based fines, charges or compensation were paid, and no subsidies or grants were received for environmental protection.

Note 13 Non-current investments in shares and loan receivables

EUR million	Shares in Group companies	Loan receivables from Group companies	Shares in Associated companies	Loan receivables from Associated companies	Other shares	Other receivables	Total Investments
Acquisition cost 1 Jan	6 236	1 520	37	2	181	51	8 028
Increases	2	774	0	0	0	21	797
Decreases	-7	-839	0	0	-2	-3	-851
Acquisition cost 31 Dec	6 231	1 455	37	2	180	68	7 973
Impairments 1 Jan	-38	0	0	0	-1	0	-39
Impairments 31 Dec	-38	0	0	0	-1	0	-39
Book value on 31 December 2019	**6 193**	**1 455**	**37**	**2**	**178**	**68**	**7 934**
Book value on 31 December 2018	6 199	1 520	37	2	180	51	7 988

Note 14 Inventories

EUR million	As at 31 December 2019	2018
Materials and supplies	154	169
Work in progress	7	6
Finished goods	121	138
Other inventories	13	13
Total	**295**	**326**

Note 15 Short-term receivables

	As at 31 December	
EUR million	**2019**	**2018**
Short-term loan receivables		
Receivables from Group companies		
Loan receivables	583	69
Commodity derivative receivables	5	0
Interest receivables	28	40
Total	**615**	**109**
Receivables from others		
Loan receivables	3	0
Commodity derivative receivables	1	36
Other receivables	15	13
Interest receivables	4	5
Total	**22**	**54**
Total current interest-bearing receivables	**637**	**163**
Current Non-Interest-Bearing Receivables		
Receivables from Group companies		
Trade receivables	103	117
Other receivables	1	49
Commodity derivative receivables	1	5
Accrued income	0	4
Total	**104**	**175**
Receivables from others		
Trade receivables	142	178
Deferred tax assets	2	2
Other receivables	21	11
Accrued income	28	26
Total	**194**	**217**

Stora Enso may enter into factoring agreements to sell trade receivables in order to accelerate cash conversion. Nominally, such agreements led to the nominal derecognition of EUR 51.4 million (EUR 48.1 million in 2018) by the end of the financial period. The continuing involvement of Stora Enso in the sold receivables was estimated as being insignificant due to the non-recourse nature of the factoring arrangements involved.

	As at 31 December	
EUR million	**2019**	**2018**
Total current non-interest-bearing receivables	**298**	**392**
Total current receivables	**935**	**555**
Significant accruals		
Other accruals from Group	0	4
Tax-equivalent receivables	15	14
Advances paid	5	2
Other accruals	9	10
Total	**28**	**30**

Note 16 Financial securities

	As at 31 December	
EUR million	**2019**	**2018**
From Group companies	86	82
From others	190	315
Total	**276**	**397**

Note 17 Shareholders' equity

	As at 31 December	
EUR million	**2019**	**2018**
Restricted Shareholders' Equity		
Share capital 1 Jan	1 342	1 342
Share capital 31 Dec	1 342	1 342
Share premium fund 1 Jan	3 639	3 639
Share premium fund 31 Dec	3 639	3 639
Fair value reserve 1 Jan	-10	1
Increase (-) / Decrease (+)	0	-11
Fair value reserve 31 Dec	-10	-10
Total Restricted Equity	**4 971**	**4 971**
Change in share capital and number of shares are presented in Note 18 to the Consolidated financial statements.		
Non-Restricted Shareholders' Equity		
Invested unrestricted equity reserve 1 Jan	633	633
Invested unrestricted equity reserve 31 Dec	633	633
Retained earnings 1 Jan	850	950
Dividend distribution	-394	-323
Retained earnings 31 Dec	456	627
Profit for the period	230	223
Total Non-Restricted Equity	**1 319**	**1 483**
Total Shareholders' Equity	**6 291**	**6 454**
Calculation of Distributable Equity 31 Dec		
Fair value reserve 31 Dec	-10	-10
Invested unrestricted equity reserve 31 Dec	633	633
Retained earnings 31 Dec	456	627
Profit for the period	230	223
Total	**1 310**	**1 473**

Note 18 Accumulated appropriations

	As at 31 December	
EUR million	**2019**	**2018**
Depreciation difference		
Intellectual property rights	2	2
Other non-current expenditure	-1	0
Buildings and structures	25	26
Plant and equipment	227	170
Other tangible assets	1	2
Total	**254**	**200**

Note 19 Obligatory provisions

	As at 31 December	
EUR million	**2019**	**2018**
Restructuring provisions	3	3
Environmental provisions	21	22
Other provisions	4	1
Total	**28**	**26**

Note 20 Deferred tax liabilities and receivables

	As at 31 December	
EUR million	**2019**	**2018**
Deferred tax liability due to depreciation difference	-35	-25
Deferred tax receivable due to derivatives	2	2
Deferred tax receivable due to loss	61	61
Deferred tax receivable due to provisions	5	4
Deferred tax receivables and liabilities due to other temporary differences	-9	-13
Total deferred tax receivable	**24**	**29**

Deferred tax liabilities and receivables excluding derivatives have not been recognised on the balance sheet.

Note 21 Non-current liabilities

	As at 31 December	
EUR million	**2019**	**2018**
Non-current liabilities		
Bonds	1 983	1 308
Loans from credit institutions	212	157
Total	**2 195**	**1 464**
Liabilities with maturities later than five years		
Bonds	1 109	1 008
Total	**1 109**	**1 008**

Specifications of Bond loans are presented in Note 26 Interest-bearing liabilities in Consolidated financial statements.

Note 22 Current liabilities

	As at 31 December	
EUR million	**2019**	**2018**
Current Interest-Bearing Liabilities		
Liabilities to Group companies		
Other loans	1 329	1 458
Commodity derivative liabilities	1	35
Total	**1 330**	**1 493**
Liabilities to others		
Other loans	255	311
Commodity derivative liabilities	5	2
Interest due	22	33
Bonds	0	219
Loans from credit institutions	99	4
Total	**381**	**568**
Total current interest-bearing liabilities	**1 712**	**2 061**
Current non-interest-bearing liabilities		
Liabilities to Group companies		
Trade payables	89	62
Commodity derivative liabilities	1	3
Accrued liabilities and deferred income	1	1
Total	**92**	**66**
Liabilities to equity accounted investments		
Trade payables	37	30
Total	**37**	**30**
Liabilities to others		
Advances received	1	2
Trade payables	208	256
Other loans	14	28
Accrued liabilities and deferred income	77	80
Total	**301**	**366**
Total Current Non-Interest-Bearing Liabilities	**429**	**462**
Total Current Liabilities	**2 141**	**2 523**
Substantial Accrued Liabilities and Deferred Income		
Payroll payments accrued	46	48
Annual discounts	17	17
Other accrued liabilities and deferred income	15	16
Total	**79**	**81**

Note 23 Commitments and contingencies

EUR million	As at 31 December 2019	2018
For Group debt		
Guarantees	1 291	1 676
For joint venture debt		
Guarantees	212	284
On behalf of Group companies		
Guarantees	4	4
On behalf of others		
Guarantees	0	16
Other commitments, own		
Leasing commitments, in next 12 months	7	8
Leasing commitments, after next 12 months	10	16
Mortgages	2	2
Lease commitments	6	6
Other commitments	1	4
Total	**1 533**	**2 017**
Mortgages	2	2
Guarantees	1 507	1 981
Leasing commitments	17	24
Lease commitments	6	6
Other commitments	1	4
Total	**1 533**	**2 017**

Contingent liabilities

Stora Enso Oyj has implemented significant restructuring measures in recent years. These measures have included divestments of business operations and production units, as well as mill closures. These transactions include a risk of possible environmental or other obligations, the existence of which would be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group. A provision has been recognised for obligations for which the related amount can be estimated reliably.

Stora Enso Oyj is party to legal proceedings that arise in the ordinary course of business and primarily involve claims arising out of commercial law. The company management does not believe that such processes as a whole, before any insurance compensation, would have significant impacts on the company's financial position or profit from operations. Some of the most significant legal proceedings are described in Note 29 to the consolidated financial statements.

Note 24 Financial instruments

Valuation of derivatives

The fair value is defined as the amount at which a derivative instrument could be exchanged in an orderly transaction between market participants at the measurement date. The fair values of such instruments are determined on the following basis:

- Currency forward contract fair values are calculated using forward exchange rates on the reporting date.
- Currency option contract fair values are calculated using reporting date market rates together with common option pricing models.
- Commodity contract fair values are computed with reference to quoted market prices on futures exchanges or other reliable market sources.
- Interest rate swaps fair values are calculated using a discounted cash flow method.

Fair value hierarchy

Stora Enso uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique:

- Level 1: quoted (unadjusted) prices in active markets for identical assets or liabilities;
- Level 2: other techniques, for which all inputs that have a significant effect on the recorded fair value are observable, either directly or indirectly;
- Level 3: techniques which use inputs that have a significant effect on the recorded fair values that are not based on observable market data.

The parent company's derivatives are classified as Level 2 in the fair value hierarchy.

Nominal and fair values of derivative instruments

EUR million	As at 31 December 2019 Nominal values	Positive fair values	Negative fair values	Fair values, Net
Cash flow hedges entered on behalf of the parent company and its subsidiaries, for which hedge accounting is applied in target companies				
Currency forwards	1 401	13	-14	-1
Currency options	2 697	16	-17	-1
Commodity contracts	133	6	-6	0
Interest rate swaps	533	0	-12	-11
Non-hedge accounted derivatives				
Currency forwards	364	3	-1	2
Commodity contracts	0	0	0	0
Total	**5 127**	**38**	**-49**	**-11**
of which against subsidiaries	1 968	19	-15	4
of which against external parties	3 159	19	-34	-15

EUR million	As at 31 December 2018 Nominal values	Positive fair values	Negative fair values	Fair values, Net
Cash flow hedges entered on behalf of the parent company and its subsidiaries, for which hedge accounting is applied in target companies				
Currency forwards	2 401	19	-21	-1
Currency options	2 463	24	-28	-4
Commodity contracts	147	35	-36	-1
Interest rate swaps	150	0	-6	-6
Non-hedge accounted derivatives				
Currency forwards	1 555	8	-9	-1
Commodity contracts	2	1	-1	0
Total	**6 718**	**87**	**-101**	**-14**
of which against subsidiaries	3 188	35	-49	-15
of which against external parties	3 530	53	-52	1

Fair value reserve

The net amount of the parent company's unrealised cash flow hedge losses in the fair value reserve was EUR 9.5 million, which was related to currency and interest rate derivatives. Currency and interest rate derivatives also include a loss of EUR 0.2 million related to the time value of options. These unrealised losses are recognised in the income statement upon the maturity of the hedging contracts. The longest hedging contract will mature in 2027. However, the majority of the contracts are expected to mature during 2020. The ineffective portions of hedges are recognised as adjustments to revenue or materials and services according to the hedged item. In 2019, a loss of EUR 0.2 million was booked as an adjustment to sales due to ineffectiveness from cash flow hedges. Derivatives used in currency cash flow hedges are mainly forward contracts and options. Swaps are mainly used in commodity hedges and interest rate cash flow hedges.

Hedge gains and losses in operating profit

	Year ended 31 December	
EUR million	**2019**	**2018**
Cash flow hedge accounted derivatives		
Currency hedges	-13	2
Commodity hedges	-1	6
Total	**-14**	**8**
As adjustments to sales	-13	2
As adjustments to materials and services	-1	6
Items realised from the fair value reserve that are recognised in the income statement	**-14**	**8**
Net gains/losses from cash flow hedges	**-14**	**8**

Hedge gains and losses in financial items

	Year ended 31 December	
EUR million	**2019**	**2018**
Non-hedge accounted derivatives		
Currency derivatives	-14	-20
Net losses in financial items	**-14**	**-20**

Sensitivity of currency derivatives to strengthening of EUR

	31 December 2019		
EUR million	**SEK**	**USD**	**GBP**
Currency change against EUR	-5.0%	-5.0%	-5.0%
Currency derivatives hedging cash flow next 12 months in EUR	0	158	16
Estimated effect on fair value reserve in EUR	0	6	1

Sensitivity of commodity derivatives to price risk

A 10% increase or decrease in the price of energy and raw materials would cause an estimated EUR 0.6 million change to the fair value of hedging contracts for energy and raw materials. Most of these changes in fair value are entered directly in the fair value reserve until the contracts mature and the result is entered in the income statement.

More detailed information about financial instruments are presented in Note 24 Financial risk management, Note 25 Fair values and Note 27 Derivatives to the Consolidated financial statements.

Note 25 Related party transactions

	31 December	
EUR million	**2019**	**2018**
Related party transactions with associated companies and joint ventures:		
Purchase of materials and supplies during the year	10	57
Non-current loan receivables at year end	2	2
Trade payables at year end	37	30

During 2019 Stora Enso Oyj gave a significant additional loan to Stora Enso Ab for the purchase of Bergvik Skog Ab shares and the repayment of the transaction financing loan. Ordinary commercial terms were used in the loan agreement.
The Group's principles for related party transactions are presented in Note 31 to the Consolidated financial statements.

Signatures for the financial statements

There have been no material changes in the Parent Company's financial position since 31 December 2019. The liquidity of the Parent Company remains good and the proposed dividend does not risk the solvency of the Company.

Helsinki, 29 January 2020

Jorma Eloranta
Chair

Hans Stråberg
Vice Chair

Elisabeth Fleuriot

Hock Goh

Mikko Helander

Christiane Kuehne

Antti Mäkinen

Richard Nilsson

Göran Sandberg

Annica Bresky
President and CEO

Financials

Auditor's report

(Translation of the Finnish Original)

To the Annual General Meeting of Stora Enso Oyj

Report on the Audit of Financial Statements

Opinion

In our opinion

- the consolidated financial statements give a true and fair view of the group's financial position and financial performance and cash flows in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU
- the financial statements give a true and fair view of the parent company's financial performance and financial position in accordance with the laws and regulations governing the preparation of the financial statements in Finland and comply with statutory requirements.

Our opinion is consistent with the additional report to the Financial and Audit Committee.

What we have audited

We have audited the financial statements of Stora Enso Oyj (business identity code 1039050-8) for the year ended 31 December 2019. The financial statements comprise:

- the consolidated statement of financial position, income statement, statement of comprehensive income, statement of changes in equity, statement of cash flows and notes, including a summary of significant accounting policies
- the parent company's statement of financial position, income statement, statement of cash flows and notes.

Basis for Opinion

We conducted our audit in accordance with good auditing practice in Finland. Our responsibilities under good auditing practice are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

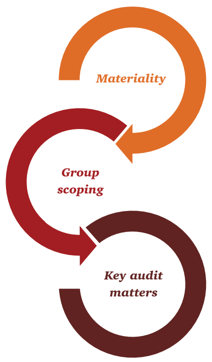
Independence

We are independent of the parent company and of the group companies in accordance with the ethical requirements that are applicable in Finland and are relevant to our audit, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

To the best of our knowledge and belief, the non-audit services that we have provided to the parent company and to the group companies are in accordance with the applicable law and regulations in Finland and we have not provided non-audit services that are prohibited under Article 5(1) of Regulation (EU) No 537/2014. The non-audit services that we have provided are disclosed in Note 5 to the Financial Statements.

Our Audit Approach

Overview



- We have applied an overall group materiality of EUR 52 million.
- We performed audit procedures at 28 reporting components in 11 countries that are considered significant based on our overall risk assessment and materiality.
- Valuation of biological assets
- Provisions and contingent liabilities
- Business combinations

As part of designing our audit, we determined materiality and assessed the risks of material misstatement in the financial statements. In particular, we considered where management made subjective judgements; for example, in respect of significant accounting estimates that involved making assumptions and considering future events that are inherently uncertain.

Materiality

The scope of our audit was influenced by our application of materiality. An audit is designed to obtain reasonable assurance whether the financial statements are free from material misstatement. Misstatements may arise due to fraud or error. They are considered material if individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

Based on our professional judgement, we determined certain quantitative thresholds for materiality, including the overall group materiality for the consolidated financial statements as set out in the table below. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures and to evaluate the effect of misstatements on the financial statements as a whole.

Overall group materiality	EUR 52 million
How we determined it	Based on profit before tax
Rationale for the materiality benchmark applied	We chose operating profit and total assets as the benchmarks because, in our view, they are relevant benchmarks against which the performance of the group is commonly measured by users of the financial statements.

How we tailored our group audit scope

We tailored the scope of our audit, taking into account the structure of the group, the accounting processes and controls, and the industry in which the group operates.

The Group operates in a significant number of legal entities or "reporting components" globally. We determined the nature, timing and extent of audit work that needed to be performed at reporting components by us, as the group engagement team, or component auditors operating under our instruction. Where the work was performed by component auditors, we issued specific instructions to those auditors which included our risk analysis, materiality and global audit approach. We performed audit procedures at 28 reporting components in 11 countries that are considered significant based on our overall risk assessment and materiality. We have considered that the remaining reporting components do not present a reasonable risk of material misstatement for consolidated financial statements and thus our procedures related to these reporting components have been limited to targeted audit procedures over significant balances and to analytical procedures performed at group level.

By performing the procedures above at reporting components, combined with additional procedures at the group level, we have obtained sufficient and appropriate evidence regarding the financial information of the group as a whole to provide a basis for our opinion on the consolidated financial statements.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

As in all of our audits, we also addressed the risk of management override of internal controls, including among other matters consideration of whether there was evidence of bias that represented a risk of material misstatement due to fraud.

Key audit matter in the audit of the group	How our audit addressed the key audit matter
Valuation of Biological Assets Refer to Note 1, Note 2 and Note 12 in the consolidated financial statements for the related disclosures The fair value of the Group's biological assets owned through subsidiaries, joint operations and associated companies amounts to EUR 4 380 million as of December 31, 2019. The value of biological assets is measured at fair value less costs to sell. The fair value is determined using discounted cash flows based on sustainable forest management plans taking into account the growth potential of one cycle. The one cycle varies depending on the geographic location and species. Determining the discounted cash flows requires estimates of growth, harvest, sales price and costs. Due to the level of judgment involved in the valuation of biological assets, complexity of the governance structure as well as the significance of biological assets to the Group's financial position, this is considered to be a key audit matter.	We obtained an understanding of management's biological asset valuation process, evaluated the design and tested the operating effectiveness of internal controls related to directly and indirectly owned biological assets. Our audit procedures over valuation of directly owned biological asset included: • Evaluation of the methodology adopted by management for the valuation; • Testing the mathematical accuracy of the model used for valuation; • Assessment of the discount rates applied in the valuation; • Assessment of the other key valuation assumptions; and • Validation of key inputs and data used in the valuation model including sales price assumptions, growth assumptions and cost assumptions. We involved valuation specialists in the audit work over valuation of directly owned biological assets. Related to indirectly owned biological assets we have communicated with the auditors of the three largest associates and joint operations. As part of the communication, among other things, we have evaluated the key audit procedures performed related to valuation of biological assets.

Key audit matter in the audit of the group	How our audit addressed the key audit matter
Provisions and contingent liabilities Refer to Note 2, Note 22 and Note 29 in the consolidated financial statements for the related disclosures As of 31 December 2019, the Group had environmental, restructuring and other provisions totaling EUR 165 million. In addition, the Group has disclosed significant open legal cases and other contingent liabilities in Note 29. The assessment of the existence of the present legal or constructive obligation, the analysis of the probability of the outflow of future economic benefits, and the analysis of a reliable estimate, require management's judgement to ensure appropriate accounting or disclosures. Due to the level of judgement relating to recognition, valuation and presentation of provisions and contingent liabilities, this is considered to be a key audit matter.	We obtained an understanding of management's process to identify new obligations and changes in existing obligations. We analysed significant changes in material provisions from prior periods and obtained a detailed understanding of these changes and assumptions applied. Our audit procedures related to material provisions recognized included: • Assessment of the recognition criteria for the liability; • Evaluation of the methodology adopted by management for the measurement of the liability; • Testing of the mathematical accuracy of the measurement calculation; • Assessment of the discount rates applied in the measurement; and • Assessment of the other key measurement assumptions and inputs. We obtained legal letters on the main outstanding legal cases. We reviewed minutes of the board meetings including sub committees. We assessed the appropriateness of the presentation of the most significant contingent liabilities in the consolidated financial statements.
Business combinations Refer to Note 4 in the consolidated financial statements for the related disclosures The Group acquired control in Bergvik Skog Väst AB on May 31, 2019. The acquisition was accounted for as a business combination. The purchase consideration included a cash part of EUR 500 million and a fair value of the previously indirectly owned shares of Bergvik Skog Väst AB of EUR 1 106 million. Most of the assets acquired were biological assets. The fair value of biological assets was estimated to be EUR 2 598 million. The acquisition resulted in recognition of goodwill of EUR 57 million. The accounting for the business combination is reported as provisional in the consolidated financial statements. Due to the level of judgment included in accounting for business combinations, and the valuation of the assets acquired and the non-cash purchase consideration, as well as the significance of the business combination to the Group's financial position this is considered to be a key audit matter.	We obtained an understanding of management's process related to purchase accounting. We assessed the appropriateness of the accounting treatment applied to the acquisition. Our audit procedures over valuation of non-cash part of the purchase consideration included: • Evaluation of the methodology adopted by management for the valuation; • Testing the mathematical accuracy of the model used for the valuation; • Assessment of the key valuation assumptions; and • Validation of key inputs and data used in the valuation model. We involved valuation specialists in the audit work over valuation of the non-cash purchase consideration. Our audit procedures related to valuation of biological assets were in-line with the procedures mentioned under key audit matter "Valuation of biological assets".
We have no key audit matters to report with respect to our audit of the parent company financial statements.	
There are no significant risks of material misstatement referred to in Article 10(2c) of Regulation (EU) No 537/2014 with respect to the consolidated financial statements or the parent company financial statements.	

Responsibilities of the Board of Directors and the Managing Director for the Financial Statements

The Board of Directors and the Managing Director are responsible for the preparation of consolidated financial statements that give a true and fair view in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU, and of financial statements that give a true and fair view in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements. The Board of Directors and the Managing Director are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors and the Managing Director are responsible for assessing the parent company's and the group's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting. The financial statements are prepared using the going concern basis of accounting unless there is an intention to liquidate the parent company or the group or to cease operations, or there is no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with good auditing practice will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with good auditing practice, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the parent company's or the group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the Board of Directors' and the Managing Director's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the parent company's or the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the parent company or the group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events so that the financial statements give a true and fair view.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Other Reporting Requirements

Appointment

We were first appointed as auditors by the annual general meeting on 28 March 2018.

Other Information

The Board of Directors and the Managing Director are responsible for the other information. The other information comprises the report of the Board of Directors.

Our opinion on the financial statements does not cover the other information.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. Our responsibility also includes considering whether the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.

In our opinion

- the information in the report of the Board of Directors is consistent with the information in the financial statements
- the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.

If, based on the work we have performed, we conclude that there is a material misstatement of the report of the Board of Directors, we are required to report that fact. We have nothing to report in this regard.

Other Statements

We support the proposal that the financial statements are adopted. The proposal by the Board of Directors regarding the distribution of profits is in compliance with the Limited Liability Companies Act. We support that the Board of Directors and the Managing Director of the parent company should be discharged from liability for the financial period audited by us.

Helsinki 11 February 2020

PricewaterhouseCoopers Oy
Authorised Public Accountants

Samuli Perälä
Authorised Public Accountant (KHT)

Financials

Unaudited

Stora Enso in capital markets

Stora Enso ensures that all material information that has an impact on Stora Enso's share price is simultaneously available to the general public and financial community in order to ensure the right share price level in relation to the company's history, assets and future prospects. In its engagement with the capital markets, Stora Enso's Investor Relations aims to support the brand with accurate, consistent and credible financial communications.

Shares and shareholders

Shares and voting rights

The shares of Stora Enso Oyj (hereafter the "Company" or "Stora Enso") are divided into A and R shares, which entitle holders to the same dividend but different voting rights. Each A share and each ten R shares carry one vote at a shareholders' meeting. However, each shareholder has at least one vote.

On 31 December 2019, Stora Enso had 176 256 834 A shares and 612 363 153 R shares in issue, of which the Company held no A shares or R shares. The total number of Stora Enso shares in issue was 788 619 987 and the total number of votes was 237 493 149.

Share listings

Stora Enso shares are listed on the Nasdaq Helsinki and the Nasdaq Stockholm. Stora Enso shares are quoted in Helsinki in euros (EUR) and in Stockholm in Swedish crowns (SEK).

American Depositary Receipts (ADRs)

Stora Enso has a sponsored Level I American Depositary Receipts (ADR) facility. Stora Enso ADRs are traded over-the-counter (OTC) in the USA. The ratio between Stora Enso ADRs and R shares is 1:1, i.e. one ADR represents one Stora Enso R share. Citibank, N.A. acts as the depositary bank for the Stora Enso ADR programme. The trading symbol is SEOAY and the CUSIP number is 86210M106.

Share registers

The Company's shares are entered in the Book-Entry Securities System maintained by Euroclear Finland Oy, which also maintains the official share register of Stora Enso Oyj.

On 31 December 2019, 132 278 917 of the Company's shares were registered in Euroclear Sweden AB and 14 124 494 of the Company's R shares were registered in ADR form in Citibank, N.A.

Distribution by book-entry system, 31 December 2019

Number of shares	Total	A shares	R shares
Euroclear Finland Oy	642 216 576	164 946 369	477 270 207
Euroclear Sweden AB[1]	132 278 917	11 310 465	120 968 452
Citi administered ADRs[1]	14 124 494	-	14 124 494
Total	**788 619 987**	**176 256 834**	**612 363 153**

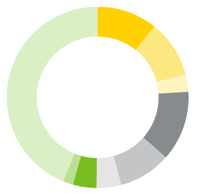
[1] Shares registered in Euroclear Sweden and ADRs are both nominee registered in Euroclear Finland.

Ownership distribution, 31 December 2019

	% of shares	% of votes	% of shareholders
Solidium Oy[1]	10.7%	27.3%	0.0%
FAM AB[2]	10.2%	27.3%	0.0%
Social Insurance Institution of Finland (KELA)	3.1%	10.1%	0.0%
Finnish institutions (excl. Solidium and KELA)	12.5%	8.8%	2.7%
Swedish institutions (excl. FAM)	9.3%	6.1%	1.9%
Finnish private shareholders	4.4%	2.6%	42.9%
Swedish private shareholders	4.2%	2.7%	50.4%
ADR holders	1.8%	0.6%	1.0%
Under nominee names (non-Finnish/non-Swedish shareholders)	43.8%	14.7%	1.1%

[1] Entirely owned by the Finnish state.
[2] As confirmed to Stora Enso.

Ownership distribution, % of shares held



- Solidium Oy[1] 10.7%
- FAM AB[2] 10.2%
- Social Insurance Institution of Finland (KELA) 3.1%
- Finnish institutions (excl. Solidium and KELA) 12.5%
- Swedish institutions (excl. FAM) 9.3%
- Finnish private shareholders 4.4%
- Swedish private shareholders 4.2%
- ADR holders 1.8%
- Under nominee names (non-Finnish/non-Swedish shareholders) 43.8%

[1] Entirely owned by Finnish state.
[2] As confirmed to Stora Enso.

Share capital

On 31 December 2019, the Company's fully paid-up share capital entered in the Finnish Trade Register was EUR 1 342 million. The current accountable par of each issued share is EUR 1.70.

Conversion

According to the Articles of Association, holders of Stora Enso A shares may convert these into R shares at any time. The conversion of shares is voluntary. The conversions of a total of 55 838 A shares into R shares were recorded in the Finnish Trade Register during the year 2019.

Changes in share capital 2011-2019

	No. of A shares issued	No. of R shares issued	Total no. of shares	Share capital (EUR million)
Stora Enso Oyj, 1 Jan 2011	**177 149 784**	**612 388 715**	**789 538 499**	**1 342**
Conversion of A shares into R shares, Dec 2010–Nov 2011	-1 012	1 012	-	-
Stora Enso Oyj, 31 Dec 2011	**177 148 772**	**612 389 727**	**789 538 499**	**1 342**
Conversion of A shares into R shares, Dec 2011–Nov 2012	-1 000	1 000	-	-
Stora Enso Oyj, 31 Dec 2012	**177 147 772**	**612 390 727**	**789 538 499**	**1 342**
Cancellation of shares owned by the Company, 15 May 2013		-918 512	788 619 987	-
Conversion of A shares into R shares, Dec 2012–Nov 2013	-51 568	51 568	-	-
Stora Enso Oyj, 31 Dec 2013	**177 096 204**	**611 523 783**	**788 619 987**	**1 342**
Conversion of A shares into R shares, Dec 2013–Nov 2014	-40 000	40 000	-	-
Stora Enso Oyj, 31 Dec 2014	**177 056 204**	**611 563 783**	**788 619 987**	**1 342**
Conversion of A shares into R shares, Dec 2014–Nov 2015	-524 114	524 114	-	-
Stora Enso Oyj, 31 Dec 2015	**176 532 090**	**612 087 897**	**788 619 987**	**1 342**
Conversion of A shares into R shares, Dec 2015–Nov 2016	-25 000	25 000	-	-
Stora Enso Oyj, 31 Dec 2016	**176 507 090**	**612 112 897**	**788 619 987**	**1 342**
Conversion of A shares into R shares, Dec 2016–Nov 2017	-114 770	114 770	-	-
Stora Enso Oyj, 31 Dec 2017	**176 392 320**	**612 227 667**	**788 619 987**	**1 342**
Conversion of A shares into R shares, Dec 2017–Nov 2018	-79 648	79 648	-	-
Stora Enso Oyj, 31 Dec 2018	**176 312 672**	**612 307 315**	**788 619 987**	**1 342**
Conversion of A shares into R shares, Dec 2018–Nov 2019	-55 838	55 838	-	-
Stora Enso Oyj, 31 Dec 2019	**176 256 834**	**612 363 153**	**788 619 987**	**1 342**

For more historical data about the share capital, please visit storaenso.com/investors/shares

Stora Enso's activities in capital markets during 2019

Stora Enso's Investor Relations activities cover equity and fixed-income markets to ensure full and fair valuation of the Company, continual access to funding sources and stable bond pricing. Investors and analysts are met on a regular basis in Europe and North America. In 2019, the Investor Relations (IR) team conducted several individual and group meetings with equity investors, whilst maintaining regular contact with equity research analysts at investment banks and brokerage firms.

All in all, the IR team met alone or with top management over 450 investors and arranged more than 340 meetings including one-on-one, group meetings, conference calls and site visits of which 20 included discussions related to environmental, social and governance (ESG) topics. There were also meetings with fixed-income analysts and investors. In addition, Stora Enso arranged a webinar for ESG investors and analysts on its sustainability strategy and activities.

The Group arranged site visits to several mills in Finland and Sweden as well as to an innovation centre in Stockholm. Senior management and the IR personnel also gave presentations at equity and fixed-income investor conferences in Scandinavia, Continental Europe, the United Kingdom and North America. During the year, the Group arranged four large group presentations for private investors in Sweden and two in Finland.

Stora Enso arranged an Investor day in September and provided an update to the strategy, including a detailed review of Wood Products division and Nordic forests, highlighting the new Forest division which was established from the beginning of 2020. At the event, the CEO, CFO and heads of Wood Products division and Wood Supply gave their presentations. The programme included visits to a forest logging site and Gruvön sawmill. The guests were able to see the close link between wood procurement and Wood Products division's business. The event was attended by 70 persons, and another 100 joined via live webcast.

Guidance policy

Stora Enso releases its guidance in the financial statements bulletin, in the half-year financial report and in the interim reports. The published guidance consists of general market outlook for the financial year and quarterly result guidance. In the quarterly result guidance, Stora Enso releases an estimated absolute range for quarterly operational EBIT. Stora Enso may include quarterly maintenance impact for sequential quarter including comparison to the quarter year before and previous quarter in the same year.

Closed period

Stora Enso closed period starts when the reporting period ends or 30 days prior to the announcement of the results, whichever is earlier, and lasts until the results are announced. The dates are published in the financial calendar at storaenso.com/investors. During closed periods, Stora Enso persons discharging managerial responsibilities (PDMRs) or persons entered into the Company's Closed Period List are not allowed to trade in Company securities. In addition, there will be no discussions regarding financial issues with the capital markets or the financial media during the closed period. This applies to meetings, telephone conversations or other means of communication.

Shareholdings of other Group-related bodies at 31 December 2019

E.J. Ljungberg's Education Foundation owned 1 780 540 A shares and 2 336 224 R shares, E.J. Ljungberg's Foundation owned 39 534 A shares and 101 579 R shares, Mr. and Mrs. Ljungberg's Testamentary Foundation owned 5 093 A shares and 13 085 R shares and Bergslaget's Healthcare Foundation owned 626 269 A shares and 1 609 483 R shares.

Shareholders

At the end of 2019 the Company had approximately 112 446 registered shareholders, including about 59 694 Swedish shareholders and about 1 136 ADR holders. Each nominee register is entered in the share register as one shareholder.

The free float of shares excluding shareholders with holdings of more than 5% of shares or votes is approximately 599 million shares, which is 76% of the total number of shares issued. The largest shareholder in the Company is Solidium Oy based in Finland.

Major shareholders as at 31 December 2019

By voting power	A shares	R shares	% of shares	% of votes
1 Solidium Oy[1]	62 655 036	21 792 540	10.7%	27.3%
2 FAM AB[2]	63 123 386	17 000 000	10.2%	27.3%
3 Social Insurance Institution of Finland	23 825 086	973 982	3.1%	10.1%
4 Varma Mutual Pension Insurance Company	8 513 018	1 140 874	1.2%	3.6%
5 MP-Bolagen i Vetlanda AB	4 826 020	1 110 000	0.8%	2.1%
6 Ilmarinen Mutual Pension Insurance Company	3 055 000	16 570 000	2.1%	2.0%
7 Erik Johan Ljungberg's Education Foundation	1 780 540	2 336 224	0.5%	0.8%
8 Swedbank Robur Funds	0	16 729 037	2.1%	0.7%
9 Elo Mutual Pension Insurance Company	0	7 909 000	1.0%	0.3%
10 Bergslaget's Healthcare Foundation	626 269	1 609 483	0.3%	0.3%
11 AFA Insurance	0	7 072 505	0.9%	0.3%
12 Nordea Investment Funds	0	5 841 360	0.7%	0.2%
13 The State Pension Fund (Finland)	0	5 813 755	0.7%	0.2%
14 SEB Investment Management	0	5 769 313	0.7%	0.2%
15 Keva (Local Government Pensions Institution)	0	4 793 208	0.6%	0.2%
Total	**168 404 355**	**116 461 281**	**35.6%**	**75.6%**
Nominee-registered shares[3]	74 608 072	467 705 419	68.8 %	51.1 %

[1] Entirely owned by the Finnish State.
[2] As confirmed to Stora Enso.
[3] According to Euroclear Finland.
The list has been compiled by the Company on the basis of shareholder information obtained from Euroclear Finland, Euroclear Sweden and a database managed by Citibank, N.A (Citi). This information includes only directly registered holdings, thus certain holdings (which may be substantial) of shares held in nominee or brokerage accounts cannot be included. The list is therefore incomplete.

Financials

Share price performance and volumes

Helsinki
The Stora Enso R (STERV) share price increased by 29% during 2019 (24% decrease in 2018). Over the same period, the OMX Helsinki Index increased by 13%, the OMX Helsinki Benchmark Index by 15% and the OMX Helsinki Basic Materials Index by 29%.

Stockholm
The Stora Enso R (STE R) share price increased by 31% during 2019 (20% decrease in 2018). Over the same period, the OMX Stockholm 30 Index increased by 26% and the OMX Stockholm Basic Materials Index increased by 32%.

OTC
Stora Enso ADR (SEOAY) share price increased by 26% during 2019 (27% decrease in 2018). Over the same period, the Standard & Poor's Global Timber and Forestry Index increased by 176%.

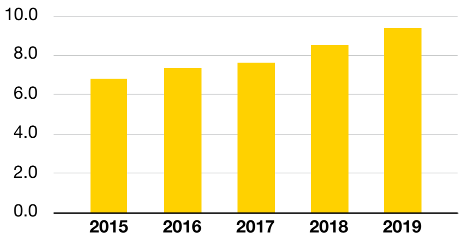
Share prices and volumes in 2019

		Helsinki, EUR	Stockholm, SEK	OTC, USD
	A share	14.45	155.00	
High	R share	13.05	139.40	14.55
	A share	10.85	111.00	
Low	R share	9.10	95.70	10.35
	A share	13.55	142.50	
Closing, 31 Dec 2019	R share	12.97	135.90	14.55
	A share	23%	23%	
Change from previous year	R share	29%	31%	26%
	A share	1 298 814	1 991 894	
Cumulative trading volume, no. of shares	R share	679 474 525	229 218 485	10 661 399

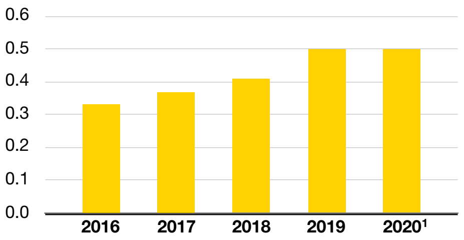
The volume-weighted average price of R shares over the year was EUR 11.05 in Helsinki (EUR 14.61 in 2018), SEK 116.91 in Stockholm (SEK 145.49 in 2018) and USD 12.36 on the OTC in the USA (USD 17.46 in 2018). The percentage of R shares traded was 57.9% (60.7% in 2018) in alternative trading venues, 31.1% (32.7% in 2018) in Helsinki, 10.5% (5.8% in 2018) in Stockholm and 0.5% (0.1% in 2018) on the OTC in the USA. Total market capitalisation on the OMX Helsinki at year-end was EUR 10.3 billion (EUR 8.1 billion).

Alternative trading venues
Stora Enso shares can be traded outside Nasdaq Helsinki and Nasdaq Stockholm, where the shares are listed. During 2019, the largest alternative trading venues included Cboe APA, Cboe BXE and Cboe CXE. The alternative trading venues' market share of monthly volume in Stora Enso shares varied between 48% and 70%. Of the alternative trading venues, Cboe BXE had the biggest share of the volume with 30% on an annual basis (Cboe APA had the biggest share of the volume in 2018 with 35%).

Equity per share

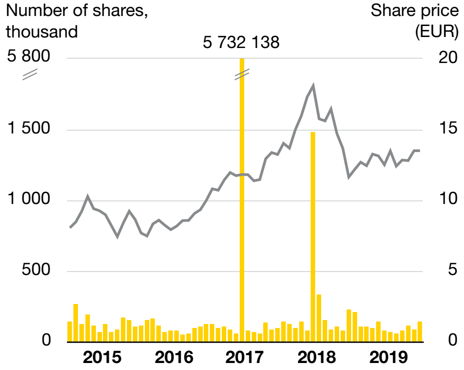


Dividend per share



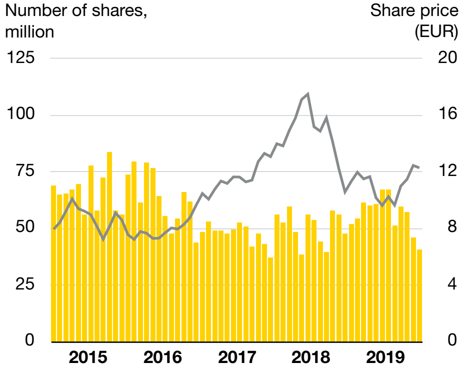
¹ Board of Directors' proposal to the AGM for the distribution of dividend.

Helsinki, Stora Enso A



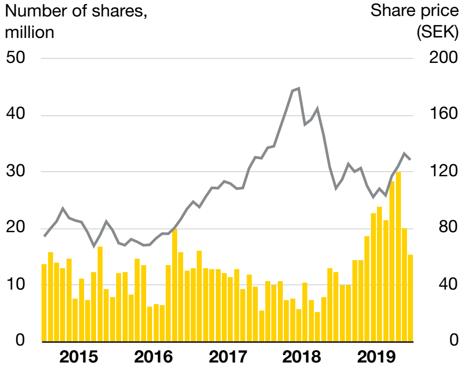
Volume
Monthly average share price

Helsinki, Stora Enso R



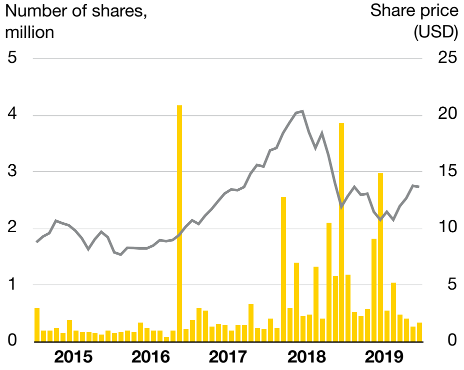
Volume
Monthly average share price

Stockholm, Stora Enso R



Volume
Monthly average share price

New York, Stora Enso ADR



Volume
Monthly average share price

Annual Report 2019

Stora Enso is included in at least the following indices

OMX INDICES	STOXX INDICES	FTSE INDICES	MSCI INDICES	SUSTAINABILITY INDICES
OMX Helsinki	STOXX Global 1800	FTSE RAFI All-World 3000	MSCI Finland	CDP’s Climate A- list
OMX Helsinki 25	STOXX Europe 600	FTSE RAFI Developed 1000	MSCI Nordic countries	FTSE4 Good Index
OMX Helsinki Large Cap	STOXX Europe Mid 200	FTSE RAFI Europe	MSCI Europe	STOXX® Global ESG Leaders Indicies
OMX Helsinki Benchmark	STOXX Nordic	FTSE Finland 25 Index	MSCI Europe Materials	ECPI EMU Ethical Equity index
OMX Helsinki Basic Materials	EURO STOXX	FTSE4Good Global	MSCI World	ECPI World ESG Equity Index
OMX Helsinki Basic Resources	EURO STOXX Basic Materials		MSCI World Mid Cap	OMX GES Sustainability Finland
OMX Helsinki Forestry & Paper	EURO STOXX Basic Resources			Ethibel Sustainability Index (ESI) Excellence
OMX Stockholm				Euronext Vigeo World, Europe and Eurozone 120
OMX Stockholm Benchmark				MSCI ESG indices
OMX Stockholm Large Cap				
OMX Stockholm Basic Materials				
OMX Stockholm Basic Resources				
OMX Stockholm Forestry & Paper				
OMX Nordic				
OMX Nordic Large Cap				
Nasdaq OMX Nordic Materials				
VINX Basic Materials				
VINX Basic Resources				

Read more about sustainability indeces in the **Sustainability 2019**.

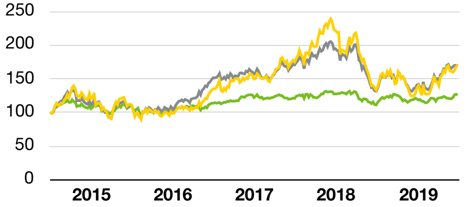
In 2016, Stora Enso shifted its strategy regarding the provision of ESG information to its stakeholders. The emphasis is to keep sustainability information widely available on the Group website to benefit and serve different stakeholders in equal manner. As a consequence, Stora Enso simultaneously reduces the number of sustainability index survey questionnaires in which it participates. The Group is targeting its participation in those questionnaires and enquiries that it has assessed to be the most material. The Company continues with this chosen strategy also in 2020.

Trading codes and currencies

	Helsinki	Stockholm	OTC
A share	STEAV	STE A	-
R share	STERV	STE R	-
ADRs	-	-	SEOAY
Segment	Large Cap	Large Cap	-
Sector	Materials	Materials	-
Currency	EUR	SEK	USD
ISIN, A share	FI0009005953	FI0009007603	
ISIN, R share	FI0009005961	FI0009007611	
CUSIP	-	-	86210M106
Reuters			STERV.HE
Bloomberg			STERV FH Equity

Stora Enso R Share vs Nasdaq Helsinki indices

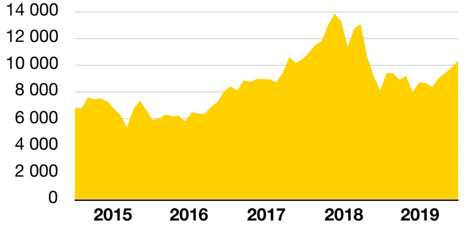
1.1.2015 = 100



- Stora Enso (EUR)
- OMX Helsinki Basic Materials (EUR)
- OMX Helsinki (EUR)

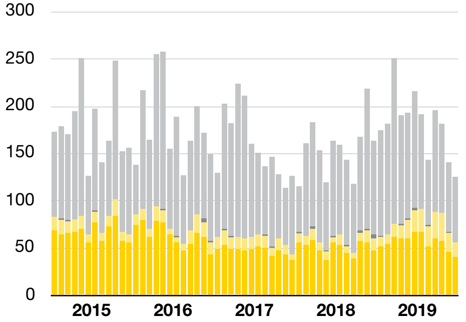
Market capitalisation on Nasdaq Helsinki

EUR million



Monthly R shares trading volumes

Number of shares, million



- Helsinki
- Stockholm
- OTC
- Alternative trading venues

Strategy
Sustainability
Financials
Governance

Financials

Key share data 2010-2019, total operations (for calculations see Calculation of key figures)

According to Nasdaq Helsinki	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Earnings per share, EUR	1.12	1.28	0.79	0.59	1.02	0.13	-0.07	0.61	0.43	0.97
– diluted, EUR	1.12	1.28	0.79	0.59	1.02	0.13	-0.07	0.61	0.43	0.97
– excl. IAC, EUR	1.34	1.29	0.89	0.65	1.24	0.40	0.40	0.33	0.63	0.79
Equity/share, EUR	9.42	8.51	7.62	7.36	6.83	6.43	6.61	7.32	7.45	7.87
Dividend and distribution/share, EUR	0.50[1]	0.50	0.41	0.37	0.33	0.30	0.30	0.30	0.30	0.25
Payout ratio, %	45	39	52	63	32	231	-429	49	70	26
Dividend and distribution yield, %										
A share	3.7	4.5	3.1	3.56	3.9	4.0	4.1	5.3	5.9	3.2
R share	3.9	5.0	3.1	3.62	3.9	4.0	4.1	5.7	6.5	3.3
Price/earnings ratio (P/E), excl. IAC										
A share	10.1	8.6	14.8	16.0	6.8	18.7	18.3	17.3	8.0	10.0
R share	9.7	7.8	14.9	15.7	6.8	18.6	18.3	15.9	7.3	9.7
Share prices for the period, EUR										
A share										
– closing price	13.55	11.05	13.20	10.40	8.40	7.48	7.31	5.70	5.03	7.90
– average price	12.88	16.36	11.93	8.50	8.87	7.29	6.82	6.15	7.73	6.47
– high	14.45	18.45	13.79	10.45	11.01	8.35	7.49	7.15	9.80	7.94
– low	10.85	10.75	10.26	6.56	6.70	5.73	5.42	5.10	4.70	5.30
R share										
– closing price	12.97	10.09	13.22	10.21	8.39	7.44	7.30	5.25	4.63	7.69
– average price	11.05	14.61	11.54	7.88	8.70	7.16	5.79	5.08	6.28	6.03
– high	13.05	18.29	13.75	10.28	10.95	8.38	7.54	5.95	8.99	7.79
– low	9.10	9.92	9.70	6.50	6.58	5.71	4.76	4.14	3.73	4.15
Market capitalisation at year-end, EUR million										
A share	2 388	1 948	2 328	1 836	1 483	1 324	1 295	1 010	891	1 400
R share	7 939	6 175	8 094	6 250	5 135	4 547	4 464	3 212	2 835	4 709
Total	10 328	8 123	10 422	8 085	6 618	5 871	5 756	4 222	3 726	6 109
Number of shares at the end of period, (thousands)										
A share	176 257	176 313	176 392	176 507	176 532	177 056	177 096	177 148	177 149	177 150
R share	612 363	612 307	612 228	612 113	612 088	611 564	611 524	612 391	612 389	612 389
Total	788 620	788 620	788 620	788 620	788 620	788 620	788 620	789 538	789 538	789 538
Trading volume, (thousands)										
A share	1 299	3 068	6 768	1 254	1 641	1 553	1 656	831	1 402	1 887
% of total number of A shares	0.7	1.7	3.8	0.7	0.9	0.9	0.9	0.5	0.8	1.1
R share	679 475	610 300	571 717	765 122	798 507	731 067	828 401	977 746	1 237 898	1 194 245
% of total number of R shares	111.0	99.7	93.4	125	130.5	119.5	135.5	159.7	202.1	195.0
Average number of shares (thousands)										
basic	788 620	788 620	788 620	788 620	788 620	788 620	788 620	788 620	788 620	788 619
diluted	789 533	789 883	790 024	789 888	789 809	789 210	788 620	788 620	788 620	788 619

[1] Board of Directors' proposal to the AGM for distribution of dividend.
IAC = Items affecting comparability

Read more about incentive programmes in Note 21 and Management interests in Note 7.

Debt investors

Funding strategy

Stora Enso's funding strategy is based on the Group's financial targets. Stora Enso should have access to sufficient and competitively priced funding at any time to be able to pursue its strategy and achieve its financial targets. Stora Enso's debt structure is focused on the capital markets and commercial banks. Stora Enso maintains consistent dialogue with fixed-income community with informative and transparent communication and meetings in conferences and road-shows.

Funding is obtained in the currencies of the Group's investments and assets (primarily USD, EUR, SEK and CNY). Commercial paper markets are used for short-term funding and liquidity management.

Public debt structure as at 31 December 2019

	EUR	USD	SEK
Public issues	EUR 300 million 2023	USD 300 million 2036	SEK 3 000 million 2021
	EUR 300 million 2027		SEK 3 000 million 2024
	EUR 300 million 2028		
Private placements	EUR 125 million 2025		SEK 1 000 million 2026
	EUR 25 million 2027		

Debt programmes and credit facilities as at 31 December 2019

	EUR	SEK
Commercial paper programmes	Finnish Commercial Paper Programme EUR 750 million	Swedish Commercial Paper Programme SEK 10 000 million
EMTN (Euro Medium-Term Note programme)	EUR 4 000 million	
Back-up facility	EUR 600 million sustainability linked revolving credit facility 2023[1]	

[1] Undrawn committed credit facility EUR 600 million. Part of the pricing for the facility agreement is based on Stora Enso's Science Based Targets to combat global warming by reducing greenhouse gases, including CO_2.

Stora Enso has integrated sustainability agenda to its funding and financial services. The Group has the long-term aim to secure funding partners that have sustainability as a fundamental part of their agenda. We aim to influence and develop the financial markets to ensure that sustainability becomes an integral part of decisions and credit evaluation. For more information, please see Stora Enso's **Sustainability 2019**, section Investors or visit our website storaenso.com/investors.

Green Bonds

Stora Enso issued its first Green Bonds in February 2019. The bonds were issued under its EMTN (Euro Medium Term Note) programme, and the total aggregated principal amount of the transaction was SEK 6 000 million. The proceeds were used to finance acquisition of forest assets in Sweden. There are no financial covenants connected to the bonds. The bonds are listed on the Luxembourg Stock Exchange. Read more about acquisition of forest assets in Sweden in Note 4, Acquisitions and disposals, and **Sustainability 2019**.

Rating strategy

Stora Enso Group's target is to have at least one public credit rating with the ambition to remain investment grade and sustain such metrics throughout business cycles. The present rating and outlook from Moody's and Fitch Ratings are shown below.

Ratings as at 31 December 2019

Rating agency	Long/short-term rating	Valid from
Fitch Ratings	BBB- (stable)	8 August 2018
Moody's	Baa3 (stable) / P-3	1 November 2018

Stora Enso's current credit ratings are: Baa3 with stable outlook from Moody's and BBB- with stable outlook from Fitch Ratings. Both ratings correspond to an Investment Grade rating, and there were no changes in the ratings during 2019.

Stora Enso's goal is to ensure that rating agencies continue to be comfortable with Stora Enso's strategy and performance. The Company's strategy is to achieve liquidity well in line with the comfort level of the agencies. Review meetings are arranged with the Stora Enso management annually, and regular contact is maintained with the rating analysts.

Read more about debt and loans in Note 26.

Financials

Limited Assurance

Stora Enso as a taxpayer

Stora Enso's operations generate value through taxes for governments around the world. In 2019, Stora Enso paid again more than EUR 1 billion into public sectors, including EUR 767 million in collected taxes.

Stora Enso aims to be transparent with respect to economic value generation. For this purpose, Stora Enso makes a voluntary commitment to openly provide details of the taxes paid by the group to governments in its main countries of operation. This commitment to our stakeholders is fully in line with Stora Enso's values to 'Do what's right' and 'Lead'.

Stora Enso's tax policy

As a responsible and prudent taxpayer, Stora Enso is committed to ensure that the Group observes all applicable tax laws, rules and regulations in all jurisdictions where it conducts its business activities. Stora Enso follows international transfer pricing guidelines and local legislation. In addition to our legal and regulatory requirements, our tax principles comply with our values. Furthermore, we seek to ensure that our tax strategy is aligned with our business and commercial strategy. We only undertake tax planning that is duly aligned to economic activity. This means that all tax decisions are made in response to commercial activity, and tax is only one of many factors that are taken into account when making business decisions.

As with any other business expense, however, we have an obligation to manage our tax costs as part of our financial responsibility to societies and shareholders. We are therefore willing to respond to tax incentives and exemptions granted by governments on reasonable grounds, and we currently have operations in countries that offer favourable tax treatments, where their location is also justified by sound commercial considerations.

Stora Enso has operations in the following locations that offer favourable tax treatments:

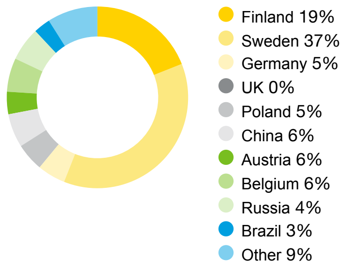
- The joint operation Montes del Plata operates a pulp mill in a Special Economic Zone in Uruguay.
- Stora Enso's two forestry companies in Guangxi, China are entitled to exemption from corporate income tax and value added tax on their sales, and our related industrial company is entitled to reduced tax rates until 2025.
- Stora Enso conducts business, mainly consisting of sales services, in the United Arab Emirates, Singapore and Hong Kong.
- For logistical and operational reasons, pulp from the Group's joint operations in Brazil and Uruguay is traded via a pulp sourcing and marketing company based in the Netherlands.
- AS Stora Enso Latvija has been granted a corporate income tax credit relating to an investment project. The credit is available for utilisation against tax arising on profit distribution in future years.

Our commitment to tax transparency is also reflected in our relationships with tax authorities and governments. We seek to work positively, proactively and openly with tax authorities on a global basis, aiming to minimise disputes and to build confidence wherever possible.

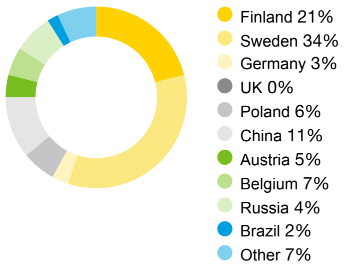
Stora Enso's tax footprint

In 2019, Stora Enso paid EUR 1 265 million (1 276 million in 2018) in taxes to governments in countries where the group has operations. A total of EUR 498 (489) million was paid directly by the group (taxes borne) while EUR 767 (787) million was collected on behalf of governments (taxes collected).

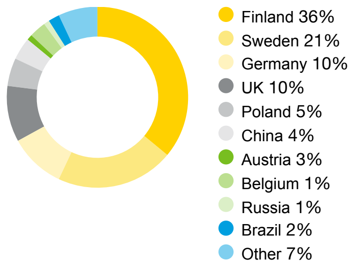
Total taxes borne 2019



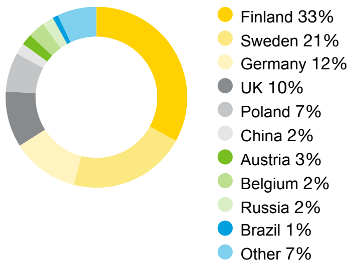
Total taxes borne 2018



Total taxes collected 2019



Total taxes collected 2018



Taxes paid in major countries of operation

		Year Ended 31 December – Taxes borne							
		Corporate income tax		Employment taxes		Operational taxes		Total	
EUR million	**Primary activity**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Finland	Production	0	1	76	90	20	13	96	104
Sweden	Production and sales	84	71	93	89	7	7	184	167
Germany	Production and sales	10	-1	11	12	4	5	25	16
UK	Sales	0	0	1	1	0	0	1	1
Poland	Production and sales	13	17	7	6	5	7	25	30
China	Production and sales	7	8	15	14	7	29	29	51
Austria	Production and sales	14	12	13	13	1	0	28	25
Belgium	Production and sales	17	18	10	10	4	4	31	32
Russia	Production and sales	10	11	3	3	7	5	20	19
Brazil	Production	3	2	3	3	8	3	14	8
Other		20	13	20	19	5	4	45	36
Total		**178**	**152**	**252**	**260**	**68**	**77**	**498**	**489**

		Year Ended 31 December – Taxes collected								Total taxes paid	
		VAT & similar[1]		Payroll taxes		Other taxes		Total			
EUR million	**Primary activity**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Finland	Production	37	35	143	143	96	78	276	256	372	360
Sweden	Production and sales	77	78	85	87	0	0	162	165	346	332
Germany	Production and sales	51	69	25	25	0	0	76	94	101	110
UK	Sales	73	79	2	2	0	0	75	81	76	82
Poland	Production and sales	25	42	10	10	0	0	35	52	60	82
China	Production and sales	20	8	10	11	0	1	30	20	59	71
Austria	Production and sales	11	9	16	16	0	0	27	25	55	50
Belgium	Production and sales	3	6	8	9	0	0	11	15	42	47
Russia	Production and sales	10	11	2	1	0	0	12	12	32	31
Brazil	Production	4	3	2	2	7	6	13	11	27	19
Other		27	34	22	20	1	2	50	56	95	92
Total		**338**	**374**	**325**	**326**	**104**	**87**	**767**	**787**	**1 265**	**1 276**

[1] VAT, goods and services taxes and similar turnover related taxes

Stora Enso did not pay any corporate income tax in Finland in 2019 because of tax losses carried forward from previous years. The tax losses of EUR 328 million (332 million) carried forward in Finland are the result of several factors including high closure and restructuring costs incurred in the past.

All companies within the scope of Stora Enso's tax footprint are consolidated or joint operations, which have been consolidated proportionally with Stora Enso's share amounting to at least 50%. Consolidation includes all companies that have either at least 10 employees or a turnover of EUR 5 million or above.

If a Stora Enso company was in a recovery position regarding VAT or energy taxation in a specific country, tax payments for this company have been reported at NIL.

Taxes borne include all tax and tax-like payments that Stora Enso has paid as own taxes. Tax-like payments include other forms of government revenue raised outside of the tax regime, such as payments for emission rights or social security payments.

Taxes collected include all tax and tax-like payments that Stora Enso has collected on behalf of the government, including e.g. payroll taxes as well as VAT and similar sales-related taxes paid by Stora Enso. The economic burden for such taxes ends up with the buyer or final consumer.

Stora Enso's tax footprint figures also reflect governmental incentives granted in the form of reduced tax rates or tax exemption, by reporting lower tax payments. However, governmental support is often granted in the form of subsidies, particularly in relation to energy consumption or favoured investments, which are not considered in our tax footprint calculations.

Financials

Unaudited

Capacities by mill in 2020

Packaging Materials

Consumer board	Location	Grade	Capacity 1 000 t
Beihai	CHN	LPB, CKB, FSB, FBB	470
Fors	SWE	FBB	455
Imatra	FIN	SBS, FBB, LPB	1 195
Ingerois	FIN	FBB	280
Skoghall	SWE	LPB, CUK	885
Total			**3 285**

Containerboards	Location	Grade	Capacity 1 000 t
Heinola	FIN	SC fluting	300
Ostrołeka	POL	Testliner, PfR fluting, sack paper, wrapping paper	725
Varkaus	FIN	Kraftliner, white-top kraftliner	390
Total			**1 415**

Barrier coating	Location	Grade	Capacity 1 000 t
Beihai	CHN	Barrier coating	80
Skoghall (Forshaga)	SWE	Barrier coating	120
Imatra	FIN	Barrier coating	415
Total			**615**

Packaging Solutions

Corrugated packaging	Grade	Capacity million m²
Baltic states	Corrugated packaging	**145**
Kaunas		
Riga		
Tallinn		
Finland	Corrugated packaging	**150**
Lahti		
Kristiinankaupunki		
Poland	Corrugated packaging	**435**
Łódz		
Mosina		
Ostrołęka		
Tychy		
Russia	Corrugated packaging	**365**
Arzamas		
Balabanovo		
Balabanovo offset		
Lukhovitsy		
Sweden	Corrugated packaging	**275**
Jönköping		
Skene		
Vikingstad		
Total	Corrugated packaging	**1 370**

China Packaging	Location	Grade	Capacity million pcs	Capacity million m²
Gaobu, Dongguan	CHN	Consumer packaging	390	30
Jiashan, Zhejiang	CHN	Consumer packaging	145	20
Qian'an, Hebei	CHN	Consumer packaging	335	25
Wu Jin, Jiangshu[1]	CHN	Consumer packaging	65	10
Total			**935**	**85**

[1] New plant, investment on-going

Financials

Biomaterials

Mill	Location	Grade	Division	Capacity 1 000 t
Enocell	FIN	Short, long-fiber and dissolving pulp	Biomaterials	490
Skutskär	SWE	Short, long-fiber and fluff pulp	Biomaterials	540
Sunila	FIN	Long-fiber pulp	Biomaterials	375
Montes del Plata (50% share)	URU	Short-fiber pulp	Biomaterials	730
Veracel (50% share)	BRA	Short-fiber pulp	Biomaterials	575
				2 710

Chemical Pulp

Mill	Location	Grade	Division	Capacity 1 000 t
Heinola	FIN	Neutral Sulphite Semi-Chemical Pulp	Packaging Materials	285
Kaukopää, Imatra	FIN	Short and long-fiber	Packaging Materials	825
Nymölla	SWE	Short and long-fiber	Paper	340
Ostrołęka	POL	Long-fiber	Packaging Materials	120
Oulu[1]	FIN	Long-fiber	Paper	265
Skoghall	SWE	Long-fiber	Packaging Materials	375
Tainionkoski, Imatra	FIN	Short and long-fiber	Packaging Materials	195
Varkaus	FIN	Short and long-fiber	Packaging Materials	310
Veitsiluoto	FIN	Short and long-fiber	Paper	375
Chemical Pulp Total (incl. Biomaterials)				**5 800**
of which market pulp[2]				2 150

[1] Oulu Mill conversion into kraftliner production will start in September 2020
[2] market pulp defined as dried pulp shipped out from the mill to external customers.

Deinked Pulp (DIP)

Mill	Location	Grade	Division	Capacity 1 000 t
Hylte	SWE	DIP	Paper	290
Langerbrugge	BEL	DIP	Paper	680
Maxau	GER	DIP	Paper	295
Ostrołęka	POL	Recycled fiber based pulp	Packaging Materials	615
Sachsen	GER	DIP	Paper	430
Total				**2 310**

CTMP

Mill	Location	Grade	Division	Capacity 1 000 t
Beihai	CHN	BCTMP	Packaging Materials	210
Fors	SWE	CTMP	Packaging Materials	185
Kaukopää	FIN	CTMP	Packaging Materials	220
Skoghall	SWE	CTMP	Packaging Materials	270
Total				**885**

Lignin

Mill	Location	Product	Division	Capacity 1 000 t
Sunila	FIN	Lignin	Biomaterials	50
Total Lignin				**50**

Xylose

Mill	Location	Product	Division	Capacity 1 000 t
Raceland[1]	USA	Xylose	Biomaterials	10
Total Xylose				**10**

[1] Demonstration plant

Wood Products

Mill	Location	Sawing Capacity 1 000 m³	Further Processing Capacity 1 000 m³	Pellet capacity 1 000 t	CLT capacity 1 000 m³	LVL capacity 1 000 m³
Ala	SWE	400	50	100	-	-
Alytus	LIT	210	115	-	-	-
Amsterdam	NLD	-	80	-	-	-
Bad St. Leonhard	AUT	360	105	-	80	-
Brand	AUT	440	295	-	-	-
Gruvön[1]	SWE	370	150	100	50	-
Honkalahti	FIN	310	70	-	-	-
Imavere	EST	340	160	100	-	-
Impilahti	RUS	160	10	25	-	-
Launkalne[2]	LAT	250	60	30	-	-
Murow	POL	300	210	-	-	-
Nebolchi	RUS	180	45	40	-	-
Näpi	EST	50	180	25	-	-
Pfarrkirchen[3]	GER	-	145	-	-	-
Planá	CZE	390	220	-	-	-
Uimaharju[4]	FIN	240	-	-	-	-
Varkaus	FIN	210	35	-	-	75
Veitsiluoto[5]	FIN	200	-	-	-	-
Ybbs	AUT	700	450	-	110	-
Zdírec	CZE	580	220	80	-	-
Total		**5 690**	**2 600**	**500**	**240**	**75**

[1] Gruvön CLT ramping up
[2] Launkalne pellets ramping up
[3] Pfarffkirchen sawmill has been divested, the transaction is expected to be completed in the first quarter of 2020
[4] Uimaharju sawmill belongs to division Biomaterials
[5] Veitsiluoto sawmill belongs to division Paper

Biocomposites

Mill	Location	Product	Division	Capacity 1 000 t
Hylte	SWE	Biocomposite	Wood Products	15
Total Biocomposite				**15**

Paper

Mill	Location	Grade	Capacity 1 000 t
Anjala	FIN	Impr. news, book, LWC	435
Hylte	SWE	News	480
Kvarnsveden	SWE	SC, news, impr. news	565
Langerbrugge	BEL	SC, news, impr. news, dir.	555
Maxau	GER	SC	530
Nymölla	SWE	WFU	485
Oulu[1]	FIN	WFC	810
Sachsen	GER	News, impr. news,directory	310
Veitsiluoto	FIN	LWC, MWC, WFU	790
Total			**4 960**

[1] Oulu Mill conversion into kraftliner production will start in September 2020.

Abbreviations used in the tables:

BCTMP	bleached chemi-thermo-mechanical pulp
CKB	coated kraft back board
CLT	cross-laminated timber
CTMP	chemi-thermo-mechanical pulp
CUK	coated unbleached kraftboard
DIP	deinked pulp
FBB	folding boxboard
LPB	liquid packaging board
LVL	laminated veneer lumber
LWC	light-weight coated paper
MWC	medium-weight coated paper
PfR	paper for recycling
SBS	solid bleached sulphate board
SC	super-calendered paper
WFC	wood free coated paper
WFU	wood free uncoated paper

The formula: (Sum of net saleable production of two best consecutive months / Available time of these two consecutive months) × Available time of the year

Financials

Unaudited

Information for shareholders

Annual General Meeting (AGM)

Stora Enso Oyj's Annual General Meeting (AGM) will be held on Thursday 19 March 2020 at 4.00 p.m. Finnish time at the Marina Congress Center, Katajanokanlaituri 6, Helsinki, Finland.

Nominee-registered shareholders wishing to attend and vote at the AGM must have shares that would entitle to being registered in the Company shareholders' register on the record date 9 March 2020 and must be temporarily registered in the Stora Enso shareholders' register by 16 March 2020. For shares registered through Euroclear Sweden and for holders of ADRs the timetable may vary and earlier dates apply. Instructions for submitting notice of attendance is given in the invitation to the AGM, which can be consulted on Stora Enso's website at storaenso.com/agm.

AGM and dividend in 2020

9 March	Record date for AGM
19 March	Annual General Meeting (AGM)
20 March	Ex-dividend date
23 March	Record date for dividend
30 March	Dividend payment

Dividend

The Board of Directors proposes to the AGM that a dividend of EUR 0.50 per share will be paid to the shareholders for the fiscal year ending 31 December 2019. The dividend payable on shares registered with Euroclear Sweden will be forwarded by Euroclear Sweden AB and paid in Swedish crowns. The dividend payable to ADR holders will be forwarded by Citibank N.A. (Citi) and paid in US dollars.

Publications dates for 2020

30 January	Financial results for 2019
Week 7	Annual Report 2019
21 April	Interim report for January-March
21 July	Half-year report for January-June
20 October	Interim report for January-September

Distribution of financial information

Stora Enso's **Annual Report 2019** consists of four sections: Strategy, Sustainability, Financials, and Governance. You can find the highlights of the year and all reports as downloadable PDF files at storaenso.com/annualreport.

Summary and Governance are available in English, Finnish and Swedish. Strategy, Sustainability and Financials are available in English. The official financial statements (in Finnish) and a list of principal subsidiaries (in English) can be found on the company's website.

Interim reports and **Half-year reports** are published in English, Finnish and Swedish at storaenso.com/press.

Information for holders of American Depositary Receipts (ADRs)

The Stora Enso dividend reinvestment and direct purchase plan is administered by Citibank N.A. The plan makes it easier for existing ADR holders and first-time purchasers of Stora Enso ADRs to increase their investment by reinvesting cash distributions or by making additional cash investments. The plan is intended for US residents only. Further information on the Stora Enso ADR programme is available at citi.com/DR.

Contact information for Stora Enso ADR holders

Citibank Shareholder Services
Computershare
P.O. Box 43077
Providence, Rhode Island 02940-3077
Email: citibank@shareholders-online.com

Toll-free number: (877)-CITI-ADR
Direct dial: (781) 575-4555

Contacts

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storaenso.com
group.communications@storaenso.com

Governance covers Stora Enso's governance policy, practices, and actions, as well as our remuneration statement.

Governance

Part of Stora Enso's Annual Report 2019

THE RENEWABLE MATERIALS COMPANY

Contents

Print optimised
A4

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Corporate Governance in Stora Enso 2019

Governance

The duties of the various bodies within Stora Enso Oyj ("Stora Enso" or the "Company") are determined by the laws of Finland and by the Company's corporate governance policy, which complies with the Finnish Companies Act and the Finnish Securities Market Act. The rules and recommendations of the Nasdaq Helsinki Oy and Nasdaq Stockholm AB stock exchanges are also followed, where applicable. The corporate governance policy is approved by the Board of Directors ("Board").

Stora Enso complies with the Finnish Corporate Governance Code 2020 issued by the Securities Market Association (the "Code") with the exception of the Remuneration Statement, which is prepared according to the Finnish Corporate Governance Code 2015. The Code is available at cgfinland.fi. Stora Enso also complies with the Swedish Corporate Governance Code ("Swedish Code"), with the exception of the deviations listed in Appendix 1 of this Corporate Governance Report. The deviations are due to differences between the Swedish and Finnish legislation, governance code rules and practices, and in these cases Stora Enso follows the practice in its domicile. The Swedish Code is issued by the Swedish Corporate Governance Board and is available at corporategovernanceboard.se.

This Corporate Governance Report is available as a PDF document at storaenso.com/investors/governance.

General governance issues

The Board and the President and CEO are responsible for the management of the Company. Other governance bodies have an assisting and supporting role.

The Stora Enso group prepares Consolidated financial statements and Interim Reports conforming to International Financial Reporting Standards (IFRS), and publishes Annual Reports as well as Interim Reports in Finnish, Swedish and English language. Stora Enso Oyj prepares its Financial statements in accordance with the Finnish Accounting Act.

The Company's head office is in Helsinki, Finland. It also has head office functions in Stockholm, Sweden.

Stora Enso has one statutory auditor elected by the shareholders at the Annual General Meeting (AGM).

To the maximum extent possible, corporate actions and corporate records are taken and recorded in English.

Objectives and composition of governance bodies

The shareholders exercise their ownership rights through the shareholders' meetings. The decision-making bodies with responsibility for managing the Company are the Board and the CEO. The Group Leadership Team (GLT) supports the CEO in managing the Company.

Day-to-day operational responsibility rests with the GLT members and their operation teams supported by various staff and service functions.

Governance bodies

Shareholders' meeting
Shareholders' Nomination Board

Board of Directors
Financial and Audit Committee – Renumeration Committee – Sustainability and Ethics Committee

President and CEO
Ethics and Compliance Management Committee – Group Leadership Team (GLT)

Auditing
Internal Audit | External Audit

Shareholders' meetings

The Annual General Meeting of shareholders (AGM) is held annually to present detailed information about the Company's performance and to deal with matters such as adopting the annual accounts, setting the dividend (or distribution of funds) and its payment, and appointing the Chair, Vice Chair and the members of the Board of Directors as well as the Auditor.

Shareholders may exercise their voting rights and take part in the decision-making process of Stora Enso by attending shareholders' meetings. Shareholders also have the right to ask questions of the Company's management and Board of Directors at shareholders' meetings. Major decisions are taken by the shareholders at Annual or Extraordinary General Meetings. At a shareholders' meeting, each A share and each ten R shares carry one vote.

The Board of Directors convenes a shareholders' meeting by publishing a notice to the meeting at the Company's website not more than three (3) months before the last day for advance notice of attendance mentioned in the notice to the meeting and not less than three weeks before the date of the meeting. In addition, the Company publishes details on the date and location of the meeting, together with the address of the Company's website, in at least two Finnish and two Swedish newspapers. Other regulatory notices to the shareholders are delivered in the same way.

The AGM shall be held yearly by the end of June in Helsinki, Finland. The Finnish Companies Act and Stora Enso's Articles of Association specify in detail that the following matters have to be dealt with at the AGM:

- presentation and adoption of the annual accounts
- presentation of the report of the Board of Directors and the Auditor's report
- use of the result and distribution of funds to the shareholders
- resolution concerning discharge of the members of the Board and the CEO from liability
- presentation of remuneration policy and/or report
- decision on the number and the remuneration of the members of the Board and the Auditor
- election of the Chair, Vice Chair and other members of the Board and the Auditor
- any other matters notified separately in the notice to the meeting.

In addition, the AGM shall take decisions on matters proposed by the Board of Directors. A shareholder may also propose items for inclusion in the agenda provided that they are within the authority of the shareholders' meeting and the Board of Directors was asked to include the items in the agenda no later than on the date set out by the Company, which must be not earlier than four weeks before the publication of the notice to the meeting and which will be announced at the Company's website no later than by the end of the financial year preceding the AGM.

An Extraordinary General Meeting of Shareholders is convened when considered necessary by the Board of Directors or when requested in writing by the Auditor or shareholders together holding a minimum of one tenth of all the shares to discuss a specified matter which they have indicated.

In 2019
Stora Enso's AGM was held on 14 March 2019 in Helsinki, Finland. Of all issued and outstanding shares in the Company a total of 59.4% of all shares (57.8% in 2018) and a total of 80.9% of all votes (71.4%) were represented at the meeting, with 91.6% of all A shares (78.1%) and 50.1% of all R shares (52.0%) represented. All Board and GLT members as well as the Company's Auditor were present at the meeting. The AGM in addition to regular matters authorised the Board to decide on a share issue or share repurchase covering a maximum of 2 000 000 R shares in order to carry out the Company's compensation or remuneration schemes. No Extraordinary General Meetings of Shareholders were convened in 2019.

Shareholders' Nomination Board

Shareholders at the Annual General Meeting (AGM) have established a Shareholders' Nomination Board to exist until otherwise decided and to annually prepare proposals to the shareholders' meeting concerning:

- the number of members of the Board;
- the Chair, Vice Chair and other members of the Board;
- the remuneration for the Chair, Vice Chair and members of the Board;
- the remuneration for the Chair and members of the committees of the Board.

The AGM has approved the Charter of the Shareholders' Nomination Board and shall approve any proposed amendments of the Charter, other than technical updates.

The Shareholder's Nomination Board according to its Charter comprises four members:

- the Chair of the Board;
- the Vice Chair of the Board;
- two members appointed annually by the two largest shareholders (one each) as of 31 August.

The Board through its Chair shall ensure that the annual appointment of the members to the Shareholders' Nomination Board is carried out as set out in the Charter as decided by the AGM. The Board Chair shall annually convene the first meeting of the Shareholders' Nomination Board, which shall elect its Chair amongst its members that annually are appointed by the Company's two largest shareholders.

The Shareholders' Nomination Board shall serve until further notice, unless the AGM decides otherwise. Its members are elected annually and their term of office shall end when new members are elected to replace them.

In 2019
The Shareholders' Nomination Board in 2019 comprised four members: Jorma Eloranta (Chair of the Board), Hans Stråberg (Vice Chair of the Board) and two other members appointed by the two largest shareholders, namely Harri Sailas (Solidium Oy) and Marcus Wallenberg (FAM AB). Marcus Wallenberg was elected Chair of the Shareholders' Nomination Board.

The main tasks of the Shareholders' Nomination Board were to prepare the proposals for the AGM 2020 concerning Board members and their remuneration. In addition, the Shareholders' Nomination Board has reviewed relevant parts of the Company's new Remuneration Policy and approved the proposal as regards Board remuneration. The Shareholders' Nomination Board during its working period 2019–2020 convened five (5) times. Each member of the Shareholders' Nomination Board attended all the meetings. Jorma Eloranta and Hans Stråberg have not participated in the preparations or the decision-making regarding Board remuneration.

In its proposal for the AGM 2020, the Shareholders' Nomination Board proposes that of the current members of the Board of Directors – Jorma Eloranta, Elisabeth Fleuriot, Hock Goh, Mikko Helander, Christiane Kuehne, Antti Mäkinen, Richard Nilsson and Hans Stråberg be re-elected members of the Board of Directors until the end of the following AGM and that Håkan Buskhe be elected new member of the Board of Directors for the same term of office. It is proposed that Jorma Eloranta be elected Chair of the Board and Hans Stråberg Vice Chair of the Board. The Shareholders' Nomination Board also proposes that the annual remuneration for the Chair, Vice Chair and members of the Board of Directors as well as for the Chairs and members of Board Committees be increased by approximately 2.5–3 percent.

For the purpose of carrying out its tasks, the Shareholders' Nomination Board has received the results of the yearly evaluation of the Board of Directors as well as the assessment of each director's independence of the Company and of significant shareholders. The Board performance evaluation material has also included a report on Board member interviews by the Chair of the Board of Directors. The Shareholders' Nomination Board has taken the results of the Board evaluation and the requirements relating to director independence into account in its work. The Shareholders' Nomination Board further considers the principles of the Board Diversity Policy in preparing its proposal. The Shareholders' Nomination Board has a Charter that defines its tasks and responsibilities in more detail.

Remuneration
No remuneration is paid for members of the Shareholders' Nomination Board as decided by the AGM. The Shareholders' Nomination Board Charter is presented at storaenso.com/investors/governance.

Composition of the Shareholders' Nomination Board in 2019

Jorma Eloranta[1], member	**Hans Stråberg[1], member**
Chair of Stora Enso's Board of Directors	Vice Chair of Stora Enso's Board of Directors
Marcus Wallenberg, Chair	**Harri Sailas, member**
Chair of Stora Enso's Shareholders' Nomination Board. Born 1956. B.Sc. (Foreign Service). Chair of the Board of Directors of FAM AB.	Member of Stora Enso's Shareholders' Nomination Board. Born 1951. Econ. Chair of the Board of Directors of Solidium Oy.

[1] Curriculum vitae of Jorma Eloranta and Hans Stråberg, see page 15.

Board of Directors (Board)

Stora Enso is managed by the Board acting in accordance with the Finnish Companies Act as well as other applicable legislation.

According to the Company's Articles of Association, the Board comprises six to eleven ordinary members appointed by the shareholders at the AGM for a one-year term. The majority of the directors shall be independent of the Company. In addition, at least two of the directors comprising this majority shall be independent of significant shareholders of the Company. A significant shareholder is a shareholder that holds at least 10% of all the Company's shares or the votes carried by all the shares or a shareholder that has the right or the obligation to purchase the corresponding number of already issued shares. The independence is evaluated yearly in accordance with the Finnish Corporate Governance Code.

All directors are required to deal at arm's length with the Company and its subsidiaries and to disclose circumstances that might be perceived as a conflict of interest.

The shareholders at the AGM decide the remuneration of the Board members (including the remuneration of the members of the Board committees).

The Board supervises the operation and management of Stora Enso and decides on significant matters relating to strategy, investments, organisation and finance.

The Board is responsible for overseeing management and for the proper organisation of the Company's operations. It is likewise responsible for overseeing the proper supervision of accounting and control of financial matters.

The Board has defined a working order, the principles of which are published on page 6 of this report and on the Company's website.

Governance

The AGM elects the Chair and Vice Chair of the Board. Should the Chair or Vice Chair of the Board of Directors resign or become otherwise unable to act as Chair or Vice Chair during their term of office, the Board may elect a new Chair or Vice Chair from among its members for the remaining term of office.

The Board yearly agrees on focus areas for the Board's work during the upcoming year constituting the Board Agenda.

The Board appoints the CEO, Chief Financial Officer (CFO) and other GLT members. The Board approves the main organisational structure of the Company.

The Board reviews and determines the remuneration of the CEO, which is described in the Annual Report and on the Company's website. The Board and each of its Committees evaluates its performance annually. The results of the Board's evaluation are reviewed by the Board and shall be communicated to the Shareholders' Nomination Board, which shall take the results of the Board evaluation into account in its work. The Board also reviews the corporate governance policy annually and amends it when required.

The Board's work is supported through its committees - the Financial and Audit Committee, the Remuneration Committee and the Sustainability and Ethics Committee. Each committee's Chair and members are appointed by the Board annually.

The Board meets at least five times a year. The Board members meet regularly without management in connection with the Board meetings.

Board Diversity Policy

The Company has established a Board Diversity Policy setting out the principles concerning the diversity of the Board. The Shareholders' Nomination Board shall in connection with preparing its proposals for the nomination of directors to the AGM consider the principles of the Company's Board Diversity Policy.

Directors shall be nominated on the basis of their merits and with consideration of the benefits of diversity and the principles that the Company refers to as Diversity of Thought, including but not limited to criteria of diversity such as gender, age, nationality and individual differences both in professional and personal experiences. The merits of directors include knowledge of the operational environment of the Company, its markets and of the industry within which it operates, and may include elements such as financial, sustainability or other specific competency, geographical representation and business background as required in order to achieve the appropriate balance of diversity, skills, experience and expertise of the Board collectively. The foremost criteria for nominating director candidates shall be the candidates' skills and experiences, industrial knowledge as well as personal qualities and integrity. The composition of the Board as a whole shall reflect the requirements set by the Company operations and its development stage. The number of directors and the composition of the Board shall be such that they enable the Board to see to its duties efficiently. Both genders shall be represented on the Board and the aim of the Company shall be to strive towards a good and balanced gender distribution.

The Shareholders' Nomination Board has taken the principles of the policy into account in its work. The Shareholders' Nomination Board finds that the composition of the Board as proposed to the AGM 2020 reflects diversity and a good variety of skills and experiences among the Board members following the principles set out in the Board Diversity Policy except as regards the aim to ensure a good and balanced gender diversity.

The Board Diversity Policy is presented at storaenso.com/investors/governance.

In 2019

The Board had nine members at the end of 2019, all of them independent of the Company. The Board members are also independent of significant shareholders of the Company with the exception of Richard Nilsson (Investment Manager at FAM AB), Göran Sandberg (Executive director of majority shareholders of FAM AB) and Antti Mäkinen (CEO of Solidium). Hans Stråberg having served on the Board for more than ten years, is based on an overall evaluation concluded independent of the Company.

The Board members nominated at the AGM in 2019 were Jorma Eloranta (Chair), Hans Stråberg (Vice Chair), Elisabeth Fleuriot, Hock Goh, Mikko Helander, Christiane Kuehne, Antti Mäkinen, Richard Nilsson and Göran Sandberg. The Board convened 12 times during the year. The members' participation rate in meetings amounted to 100%.

In its meeting after the AGM on 14 March 2019 the Board discussed focus areas for its work. The Board agreed that these areas for the year to come should be (1) acceleration of growth, (2) improvement of efficiency and productivity and (3) talent management. Various matters have been discussed, reviewed and decided in the Board based on the agenda. Further, the CEO has on a monthly basis reported progress on the same to the Board.

The Board has conducted an internal self-evaluation relating to the Board's work, which together with the evaluation of the Board members' independence has been provided to the Shareholders' Nomination Board for information. The Board performance evaluation has also included Board member interviews performed by the Board Chair, the result of which has been reported to the Shareholders' Nomination Board. For detailed information about the Board members and their share ownerships, see pages 15-16.

Board Diversity in 2019

The Board has during 2019 been composed of nine members representing five different nationalities and a diverse range of experience from global companies and industrial sectors. All Board members have university degrees from different fields with a majority in the field of economics and finance in addition to which two members hold a doctorate degree. All members have vast experience from global companies either from earlier operative positions or through board memberships. A detailed description of the educational and professional backgrounds of the Board members can be found on pages 15-16.

The Board members represent a good knowledge of the operational environment of the Company as well as particular experience of amongst others sustainability, financial competence and the business environment relevant to the operations of the Company. The age of the Board members during 2019 varied from 48 years to 68 years and the Board was composed of two women and seven men.

The Shareholders' Nomination Board has in 2019 considered its previous evaluation of competencies that may be further strengthened in the long term Board succession planning. In its proposal for the AGM 2020 the Shareholders' Nomination Board has proposed a Board composition that includes two women and seven men in the age range of 49 years to 69 years and representing a total of five different nationalities. The proposed new Board member Håkan Buskhe would bring a strong industrial operative background and management as well as industrial competence and experience to the Board and would in the view of the Shareholders' Nomination Board add strong value to the Board as a collective.

The aim of the Shareholders' Nomination Board going forward is to continuously evaluate the long-term competencies that would benefit the Board work as well as ensure that a Diversity of Thought is maintained on the Board. The Shareholders' Nomination Board particularly notes that the aim going forward is to strengthen the gender distribution of the Board with view of ensuring a good and balanced gender distribution in accordance with the Company's Board Diversity Policy.

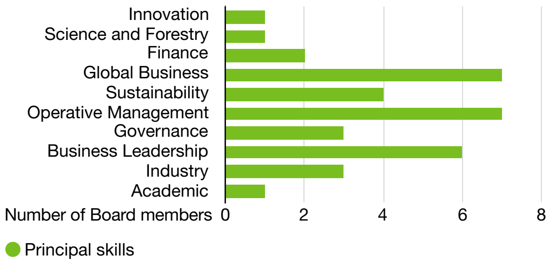
Board skills matrix

			Independent of		Committee memberships 2019			
Name	**Director since**	**Principal skills**	**Company**	**Owners**	**FAC**	**SECo**	**RemCo**	**Other current listed boards**
Jorma Eloranta	2016	Global Business, Business Leadership, Operative Management, Governance	yes	yes	Member		Chair	1
Hans Stråberg	2009	Global Business, Business Leadership, Operative Management, Industry	yes	yes			Member	3
Elisabeth Fleuriot	2013	Global Business, Operative Management, Business Leadership, Sustainability	yes	yes	Member			
Hock Goh	2012	Global Business, Operative Management, Business Leadership, Sustainability	yes	yes		Member		3
Mikko Helander	2019	Global Business, Business Leadership, Operative Management, Industry	yes	yes				
Christiane Kuehne	2017	Global Business, Operative Management, Business Leadership, Sustainability	yes	yes		Chair		
Antti Mäkinen	2018	Finance, Operative Management, Governance	yes	no			Member	2
Richard Nilsson	2014	Finance, Industry, Governance, Global Business	yes	no	Chair			
Göran Sandberg	2017	Science and Forestry, Academic, Innovation, Sustainability	yes	no		Member		

● yes ● no

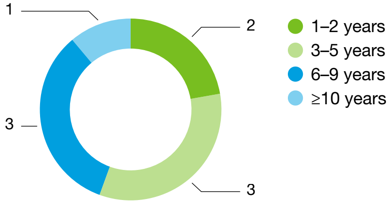
The table sets out the primary skills of each Board member. The fact that an item is not highlighted for a Board member does not mean that such member does not possess that qualification or skill.

Principal skills

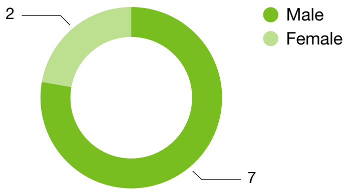


Board diversity in figures

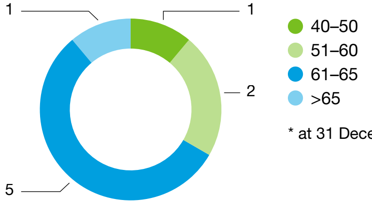
Tenure
Number of persons



Gender
Number of persons



Age*
Number of persons



* at 31 December 2019

Working order of the Board

The working order describes the working practices of the Board. A summary of key contents is presented below.

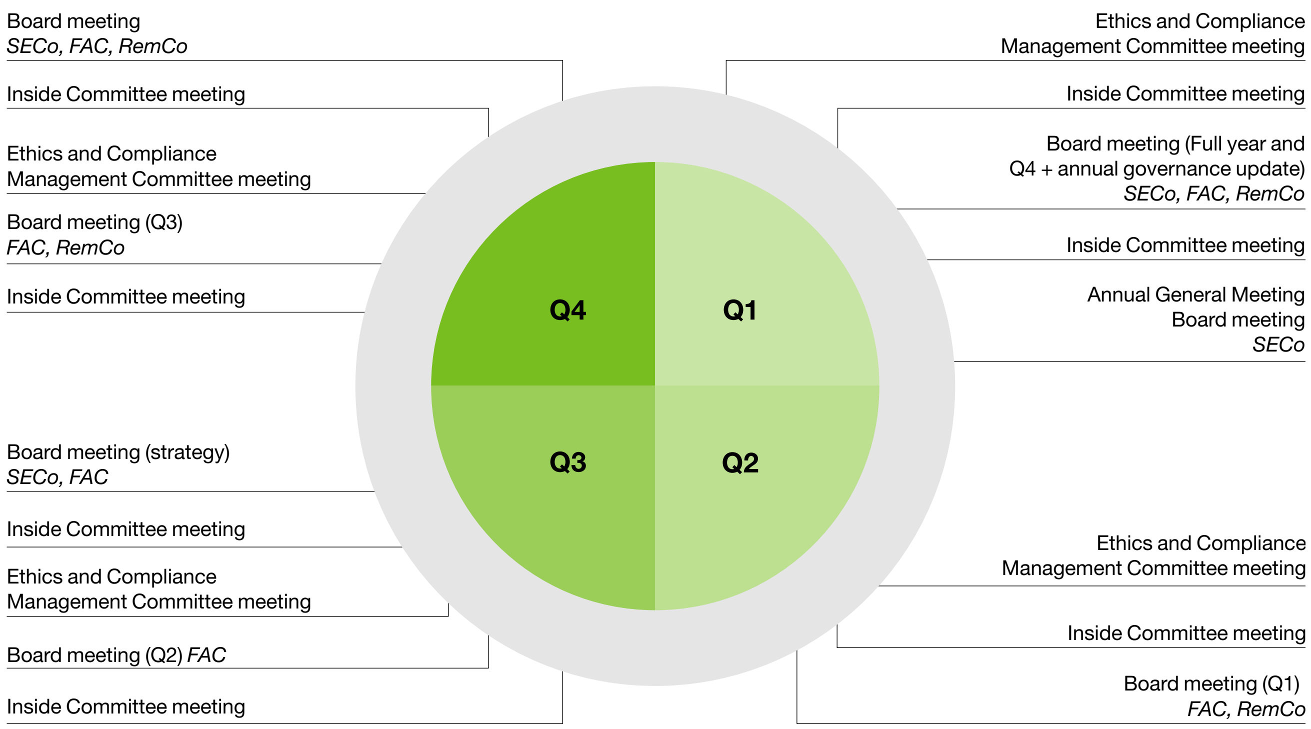
Board meetings

- occur regularly, at least five times a year, according to a schedule decided in advance;
- special Board meetings, if requested by a Board member or the CEO, be held within 14 days of the date of request;
- agenda and material shall be delivered to Board members one week before the meeting.

Information

- the Board shall receive information monthly concerning financial performance, the market situation and significant events within the Company's and the group's operations;
- Board members shall be informed about all significant events immediately.

The Board of Directors' and management's annual working cycle



Quarterly
- Meetings with auditors
- Divisional Business and Innovation Review meetings

Monthly
- GLT meetings
- Investment Working Group meetings

SECo = Sustainability and Ethics Committee
FAC = Financial and Audit Committee
RemCo = Remuneration Committee

Matters to be handled at Board meetings

- matters specified by the Finnish Companies Act;
- approval of business strategy;
- organisational and personnel matters;
  - decisions concerning the basic top management organisation;
  - decisions concerning the composition of the GLT;
  - remuneration of the CEO;
  - appointment and dismissal of the CEO and approval of heads of divisions and other members based on CEO's proposal;
  - appointment of Committee Chairs and members;
  - remuneration of GLT members based on CEO's proposal;
  - review talent management and succession planning process (in particular CEO);
- economic and financial matters:
  - approval and review of annual budget;
  - approval of loans and guarantees, excluding intra-group loans and guarantees;
  - approval of share repurchases, if any, as well as report of share repurchases;
  - approval of Group Risk Management Policy according to Financial and Audit Committee's proposal;
- investment matters:
  - approval of investment policy of the group;
  - approval of major investments;
  - approval of major divestments;
  - receive relevant analyst meeting presentations and analyst reports;
- other matters:
  - report of the CEO on the group's operations;
  - reports of the Remuneration Committee, Financial and Audit Committee and Sustainability and Ethics Committee by the chairs of the respective committees. The recommendations and proposals by the Shareholders' Nomination Board shall be reported to the Board by the Chair of the Board;
  - approval and regular review of the Corporate Governance Policy and the charters of the Board Committees;
  - annual self-assessment of Board work and performance as well as independence;
- other matters submitted by a member of the Board or the CEO.

Governance

Board committees

The tasks and responsibilities of the Board committees are defined in their charters, which are approved by the Board. All the committees evaluate their performance annually, are allowed to use external consultants and experts when necessary and shall have access to all information needed. Each committee's Chair and members are appointed by the Board annually.

Financial and Audit Committee

The Board has a Financial and Audit Committee to support the Board in maintaining the integrity of the Company's financial reporting and the Board's control functions. It regularly reviews and monitors the system of internal control and internal audit as well as its efficiency, management and reporting of financial risks, the audit process, the Company's procedures for monitoring related party transactions and the annual corporate governance statement. It makes recommendations regarding the appointment of external auditor for the Parent Company and the main subsidiaries and monitors the auditor's independence.

The Committee comprises three to five Board members, who are independent and not affiliated with the Company. The members of the Committee must have sufficient expertise and experience to be able to challenge and evaluate the Company's internal accounting function and internal and external audit functions. At least one member must have the relevant expertise in accounting and auditing as required by applicable regulation. The Financial and Audit Committee meets regularly, at least four times a year. The Committee members meet the external and internal auditors regularly without the management being present. The Chair of the Committee presents a report on each Financial and Audit Committee meeting to the Board. The tasks and responsibilities of the Financial and Audit Committee are defined in its charter, which is approved by the Board. Financial and Audit Committee members may receive remuneration solely based on their role as directors. The compensation is decided by the shareholders at the AGM.

In 2019

The Financial and Audit Committee comprised three members in 2019: Richard Nilsson (Chair), Jorma Eloranta and Elisabeth Fleuriot.[1] The Committee convened eight times. The members' participation rate in meetings amounted to 100%.

The main task of the Committee is to support the Board in maintaining the integrity of Stora Enso's financial reporting and the Board's control functions. To fulfil its task the Committee regularly reviews the Company's system of internal control, management and reporting of financial and enterprise risks as well as the audit process. Furthermore, the Committee has increased its focus on IT security and closely monitors related risks. International Accounting Standard IAS 41 concerning biological asset valuation has been in focus during the year in particular due to the Company's acquisition of Swedish forest assets. Also the implementation of the Company's new guidance on the monitoring of related party transactions has been a focus area. The Committee further reviews relevant material compliance related cases relating to the integrity of financial reporting or fraud investigations that have been reported to Internal Audit and Ethics and Compliance during the year.

Remuneration

Chair EUR 20 600 per annum and member EUR 14 400 per annum as decided by the AGM.

The Financial and Audit Committee Charter is presented at storaenso.com/investors/governance.

[1] The Committee prior to the AGM on 14 March 2019 comprised the following four members: Richard Nilsson (Chair), Jorma Eloranta, Christiane Kuehne and Antti Mäkinen.

Remuneration Committee

The Board has a Remuneration Committee which is responsible for recommending and evaluating executive nominations and remunerations (including reviewing and recommending the CEO's remuneration), evaluating the performance of the CEO, and making recommendations to the Board relating to management remuneration issues generally, including equity incentive remuneration plans. There is a Remuneration Committee representative present at the AGM to answer questions relating to the management remuneration. The Board appoints the CEO and approves his/her remuneration as well as the nomination and compensation of other members of the Group Leadership Team (GLT).

The Committee comprises three to four Board members, who are independent and not affiliated with the Company. The Remuneration Committee meets regularly, at least once a year. The Chair of the Remuneration Committee presents a report on each Remuneration Committee meeting to the Board. The tasks and responsibilities of the Remuneration Committee are defined in its charter, which is approved by the Board. Remuneration Committee members may receive remuneration solely based on their role as directors. The compensation is decided by the shareholders at the AGM.

In 2019

The Remuneration Committee comprised three members in 2019. The members were Jorma Eloranta (Chair), Antti Mäkinen and Hans Stråberg.[1] The Committee convened ten times. The members' participation rate in meetings amounted to 100%.

During 2019 the Committee has been in charge of the recruitment process relating to the election of a new CEO. In addition, the main tasks of the Committee has been to recommend, evaluate and approve executive nominations and remunerations, and to make recommendations to the Board relating to management remuneration in general, including short and long term incentive programmes. The Committee has further reviewed the external reporting on executive remuneration and prepared for the Board's and the Shareholders' Nomination Board's approval the new Stora Enso Remuneration Policy, which will be presented to the AGM 2020.

Remuneration

Chair EUR 10 300 and member EUR 6 200 per annum as decided by the AGM.

The Remuneration Committee Charter is presented at storaenso.com/investors/governance.

[1] The Committee prior to the AGM on 14 March 2019 comprised the following three members: Jorma Eloranta (Chair), Elisabeth Fleuriot and Hans Stråberg.

Sustainability and Ethics Committee

The Board has a Sustainability and Ethics Committee which is responsible for overseeing the Company's sustainability and ethical business conduct, its strive to be a responsible corporate citizen, and its contribution to sustainable development. The Committee regularly reviews Stora Enso's Sustainability Strategy and Ethics and Compliance Strategy and, in accordance with Stora Enso's corporate governance structure, oversees their effective implementation as well as reviews the Company's external sustainability reporting. In its work the Committee takes into consideration Stora Enso's Purpose and Values as well as the Stora Enso Code and Business Practice Policy.

The Committee comprises two to four Board members who are nominated annually by the Board. The members are independent of and not affiliated with Stora Enso. At least one Committee member is expected to have sufficient prior knowledge and experience in handling responsibility and ethics matters.

The Committee meets regularly, at least two times a year. The Chair of the Committee presents a report on each Sustainability and Ethics Committee meeting to the Board. The tasks and responsibilities of

In 2019

The Sustainability and Ethics Committee comprised three members in 2019: Christiane Kuehne (Chair), Hock Goh and Göran Sandberg.[1] The Committee convened four times. The members' participation rate in meetings amounted to 100%.

The Committee in each of its meetings reviews the areas relevant for the Committee's work, including safety and sustainability matters as well as ethics and compliance matters. The Committee further reviews safety status and sustainability and ethics and compliance KPI's, sustainability reporting as well as relevant sustainability and safety initiatives and processes carried out during the year. An important part of the Committee's work consists of overseeing reported compliance cases.

Remuneration

Chair EUR 10 300 and member EUR 6 200 per annum as decided by the AGM.

The Sustainability and Ethics Committee Charter is presented at storaenso.com/investors/governance.

[1] The Committee prior to the AGM on 14 March 2019 comprised the following three members: Anne Brunila (Chair), Hock Goh and Göran Sandberg.

the Committee are defined in its charter, which is approved by the Board. Sustainability and Ethics Committee members may receive remuneration solely based on their role as directors. The compensation is decided by the shareholders at the AGM.

Management of the Company

Chief Executive Officer (CEO)
The CEO is in charge of the day-to-day management of the Company in accordance with the Finnish Companies Act and the instructions and orders issued by the Board. It is the duty of the CEO to ensure that the Company's accounting principles comply with the law and that financial matters are handled in a reliable manner.

The Board approves the main organisation, including the functions reporting to the CEO. At the end of 2019 the CEO was directly in charge of the following functions, which also reported to her:

- Divisions* (Consumer Board, Packaging Solutions, Biomaterials, Wood Products, and Paper)
- CFO (responsible for Accounting, Controlling, Corporate Finance and M&A, Efora, Energy Services, Investment Process, Enterprise Risk Management, Internal Audit, Investor Relations, Tax, Treasury)
- IT
- Human Resources
- Legal, General Counsel
- Communications
- Sustainability
- Sourcing and Logistics
- CEO Office (responsible for Wood Supply*, innovation and R&D, and special strategic projects)

The CEO is also responsible for preparatory work with regard to Board meetings. In addition, the CEO supervises decisions regarding key personnel and other important operational matters. One of the GLT members acts as deputy to the CEO as defined in the Finnish Companies Act.

Group Leadership Team (GLT)
The GLT is chaired by the CEO. The GLT members are appointed by the CEO and approved by the Board. At the year end 2019, the eleven GLT members were the CEO, the CFO, the heads of the divisions, HR, Legal (who is also General Counsel), Communications, Sustainability, and Sourcing and Logistics.

The GLT assists the CEO in supervising the Group and divisional performance against agreed targets, portfolio strategy, ensuring the availability and value-creating allocation of Group funds and capital, and statutory, governance, compliance and listing issues and policies.

The GLT meets regularly every month, and as required.

* As of 1 January 2020 the Wood Supply organisation will function under Stora Enso's new Forest Division, starting separate segment reporting as a Division as of this date. As of 1 January 2020 the Division Consumer Board will be named Packaging Materials.

Group Leadership Team as at 31 December 2019

President and CEO
Annica Bresky

- **Consumer Board**[1] – Hannu Kasurinen
- **Packaging Solutions**[2]
- **Biomaterials** – Markus Mannström
- **Wood Products**[3] – Jari Suominen
- **Paper** – Kati ter Horst
- **Forest**[4]
- **CFO, Country Manager Finland** – Seppo Parvi
- **Legal, Country Manager Sweden**[5] – Per Lyrvall
- **Communications** – Ulrika Lilja
- **HR**[5] – Malin Bendz
- **Sustainability** – Noel Morrin
- **Sourcing and Logistics** – Johanna Hagelberg

Karl-Henrik Sundström, CEO, was as a member of the Group Leadership Team until 30 November 2019.
Stora Enso has established a new Forest Division and starts reporting it separately as of 1 January 2020.

[1] Packaging Materials as of 1 January 2020
[2] David Ekberg, acting Head of Packaging Solutions as of 6 December 2019, not member of GLT.
Gilles van Nieuwenhuyzen, EVP, Packaging Solutions was a member of the Group Leadership Team until 6 December 2019.
[3] Seppo Toikka, acting Head of Wood Products as of 1 January 2020, not member of GLT.
[4] Jari Suominen, EVP, Head of Forest Division as of 1 January 2020
[5] Malin Bendz, EVP, HR until 15 January 2020. Per Lyrvall, acting Head of HR as of 16 January 2020.

In 2019
The GLT had 11 members at the end of 2019. The GLT convened 12 times during the year. Important items on the agenda in 2019 were safety issues, financial performance, strategy and transformation, sustainability, customer-driven innovation, reviewing the operations of the Group, planning and following up investment and other strategic projects, digitalisation, and preparatory work for Board meetings.

Divisions and other functions
The divisions are responsible for their respective line of business and are organised and resourced to deal with all business issues. The CEO steers the divisions through quarterly and as needed in Business Performance Reviews as well as the GLT meetings.

Strategic investment projects are approved on group level following the mandate by the CEO and Board of Directors. Each Division will in addition be granted an annual allocation intended for smaller annual replacement and development needs in relation to investments. All projects are reviewed by the Investment Working Group (IWG) comprising group and division representatives and headed by the CFO (also the allocation proposals are made by IWG).

Innovation is organised and executed within the divisions to drive market and customer focus. The progress of innovation efforts is evaluated in quarterly Business and Innovation Reviews with the CEO, CFO, Head of Innovation, the division Head, and the division Innovation Head. Innovation funding is supported from group level by both the innovation and the digitalisation fund, where divisions make proposals, which are then reviewed and decided by IWG.

Sustainability work is led by the Executive Vice President (EVP), Sustainability, who reports directly to the CEO and is a member of the GLT. Everyday sustainability topics are managed by Group Sustainability team together with Human Resources, Legal, Wood Supply, and Sourcing and Logistics functions, and divisions. Each of business divisions has its own Head of Sustainability, who reports directly to the Head of the division. Other key functions, such as and Sourcing and Logistics, have sustainability organisations to support their management teams. The everyday implementation of Stora Enso's Sustainability Agenda is the responsibility of line management supported by functional experts at all levels. Stora Enso's sustainability work is steered by Sustainability Council, which includes members from five divisions, Sourcing and Logistics function, and subject matter experts from Group Sustainability team. It is chaired by the EVP, Sustainability. The CEO has the ultimate responsibility for the successful implementation of Stora Enso's sustainability strategy.

The Company has user boards for certain cross-functional service functions (Logistics, IT, Energy and parts of Wood Supply). These user boards consist of representatives of the divisions using these services. The user boards supervise and steer the operations of the respective functions.

The Company has established proper disclosure policies and controls, and process for quarterly and other ongoing reporting.

Other supervisory bodies and norms

Auditor

The AGM annually elects one auditor for Stora Enso. The Financial and Audit Committee monitors the auditor selection process and gives its recommendation as to who should serve as auditor to the Board for the purpose of making the proposal to the shareholders at the AGM. The auditor shall be an authorised public accounting firm, which appoints the responsible auditor.

Auditor's fees and services

	Year Ended 31 December	
EUR million	**2019**	**2018**
Audit fees	4	4
Audit-related	0	0
Tax fees	0	0
Other fees	0	1
Total	**4**	**5**

In 2019

The Board in 2019 on the recommendation of the Financial and Audit Committee proposed that PricewaterhouseCoopers Oy be re-elected auditor by the AGM 2019 for the second year as the Company's auditors. The AGM 2019 elected PricewaterhouseCoopers Oy as auditor for a term of office expiring at the end of the AGM 2020.

Internal Audit

Stora Enso's Internal Audit is an independent, objective assurance and consulting activity designed to add value and improve the operations of Stora Enso. Internal Audit helps the organisation to accomplish its objectives by providing a systematic, disciplined approach to evaluate and improve the effectiveness of internal control, risk management and governance processes.

Internal Audit reports regularly about the status of the audits and audit findings to the Financial and Audit Committee, Board of Directors. Administratively Internal Audit reports to the CFO. The Financial and Audit Committee approves the appointment of the Head of Internal Audit following the recommendation by the CEO.

Internal Audit plan is risk and assurance-based and focuses to core-processes, supporting processes and investments in different divisions and mills. Internal audit executes during the year possible special engagements based on separate request and agreed with management and Financial and Audit Committee. Financial and Audit Committee approves Internal Audit Annual Plan and Charter.

Ethics and Compliance Management Committee

Stora Enso's Ethics and Compliance Management Committee supervises and monitors legal and regulatory ethics and compliance related policies, implementation and maintenance of processes and tools regarding the same, and concrete compliance issues and cases in the field of business practices. The Ethics and Compliance Management Committee consists of the General Counsel (Chair), CEO, CFO, Head of HR, Head of Communications, Head of Sustainability and Head of Internal Audit with the Legal Counsel dedicated to compliance matters being the secretary. The Ethics and Compliance Management Committee shall convene at least four times every year.

Ethics and Compliance

Stora Enso is committed to taking responsibility for its actions, to complying with all applicable laws and regulations wherever it operates, and to creating and maintaining ethical relationships with its customers, suppliers and other stakeholders. The Stora Enso Code is a single set of values defined for all employees, to provide guidance on the Company's approach to ethical business practices, environmental values, and human and labour rights. These same values are applied wherever Stora Enso operates. In 2011 the company established its Business Practice Policy to complement the Code, which further sets out Stora Enso's approach to ethical business practices and describes the processes for reporting on violations thereof. The Business Practice Policy was revised in 2016 in order to streamline and simplify policies and guidelines. Continuous e-learning, communication, face-to-face training and sign-off are organised in order to ensure that these are part of the everyday decision-making and activities at Stora Enso.

Stora Enso uses an index to monitor and evaluate employee perceptions of the work on topics covered by the Stora Enso Code. The index is based on employee responses to related questions in the annual employee survey. After five years of continuous improvements, the index decreased one unit to 84 in 2019 (85 in 2018). The target is to continue the previous positive trend and further efforts will therefore be put on communication and training in 2020.

In order to enhance the supervision and monitoring of legal and regulatory compliance related policies and issues, Stora Enso has established its Ethics and Compliance Management Committee. In addition, Compliance Forums, comprising of heads of key functions, in divisions, group functions and Chinese operations play an important role in risk assessing and monitoring compliance within their respective areas. The Compliance Forums use the Ethics and Compliance Self-Assesment Tool (T.E.S.T.) to give them a better overview of the progress their units are making in policy implementation, compliance measures taken, and possible gaps and risks in compliance. Results of the T.E.S.T. are covered in Compliance Forums and action plans developed and followed up accordingly.

Stora Enso's employees are encouraged to report any suspected cases of misconduct or unethical behaviour to their own supervisor, or to Human Resources or Legal functions. Employees may also confidentially report their concerns to the Head of Internal Audit. Stora Enso uses an additional external service through which employees globally, and in certain locations also external stakeholders, can anonymously report potential non-compliance cases by phone, mail, or online. This service, which covers all of Stora Enso's units, is available 24/7.

Insider administration

The Company complies with EU and Finnish insider regulation as well as the guidelines of Nasdaq Helsinki Oy. The Company's internal insider guidelines are published and distributed throughout the group. Stora Enso's legal function and the General Counsel are responsible for the procedures relating to inside administration, including monitoring compliance with applicable regulation, keeping of inside lists and internal training. The Company has established an Inside Committee composed of the CEO, CFO as well as representatives of Communications, IR and Legal for the purpose of continuously reviewing pending projects and the existence of inside information in the Company.

The Company expects the management and all its employees to act in the way required of an insider. All unpublished information relating to the Company's present and future business operations shall be kept strictly confidential.

Persons discharging managerial responsibilities (PDMR's) in Stora Enso are the members of the Board, the CEO and the CFO, as well as other members of the Group Leadership Team (GLT). PDMR's, as well as their closely related persons, are subject to a duty to notify the Company and the Finnish Financial Supervisory Authority of all transactions with the securities of the Company.

The Company also keeps a list of persons that are involved in the preparation of interim reports and financial results, which is approved by the General Counsel (Closed Period List). Persons included in the list are e.g. members of the Division management teams, members of Financial Communications and Investor Relations as well as the heads and certain team members of Treasury, Group Accounting and Controlling and Legal.

Persons, who participate in the development and preparation of a project that constitutes inside information, are considered project specific insiders. A separate project-specific insider register is established when required by the decision of the General Counsel or Assistant General Counsel.

The insider guidelines do not permit Stora Enso PDMR's or persons involved in the preparation of interim reports or financial results and entered into the Closed Period List to buy or sell any of the Company's securities (i.e. shares, options and synthetic options) during the closed period defined below or when they possess information that could have a material impact on the Stora Enso share price.

Closed period
Stora Enso closed period starts when the reporting period ends or 30 days prior to the announcement of the results, whichever is earlier and lasts until the results are announced. The dates are published in the financial calendar at storaenso.com/investors.

During closed periods Stora Enso PDMR's or persons entered into the Company's Closed Period List are not allowed to trade in Company securities.

Guidelines for Related Party Transactions
The principles applicable to monitoring of Stora Enso related party transactions are set out in Stora Enso's Guideline for Related Party Transactions. The Guideline defines Stora Enso related parties and sets out the decision-making order and principles for monitoring related party transactions including a description of Stora Enso internal controls. Information on material transactions with related parties is set out in Note 31 of Stora Enso's consolidated financial statements.

Stora Enso business activities may include regular or less frequent transactions with related parties. Transactions with related parties shall always promote the purpose of the Company and be concluded on acceptable terms and in the interest of the Company, as well as in compliance with prevailing regulation. Internal controls have been designed to ensure that related party transactions are duly monitored and identified.

Related party transactions, which are part of the ordinary course of business and undertaken on market terms are approved in accordance with the Company's internal guidelines. Any transaction which would not meet these terms must be reported to the Financial and Audit Committee and approved by the Board of Directors. The Board of Directors is responsible for overseeing the processes established for monitoring related party transactions.

Internal control and risk management related to financial reporting

Internal control over financial reporting
The system of internal control related to financial reporting in the Stora Enso group is based upon the framework issued by the Committee of Sponsoring Organisations (COSO) and comprises five principal components of internal control: the control environment, risk assessment, control activities, information and communication, and monitoring.

The internal controls related to financial reporting are designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with applicable laws and regulations, generally accepted accounting principles and other requirements for listed companies.

Control environment
Stora Enso's control environment sets the tone of the organisation providing the company purpose and values, policies, processes and structures as a foundation for carrying out internal control across the organisation. Stora Enso has a formal Code that sets forth its rules. To complement the Code, Stora Enso has a Business Practice Policy, which further sets out Company's approach to ethical business practices and describes the processes for reporting on violations thereof. All employees are expected to comply with the Code and the Business Practice Policy. Continuous e-learning, face-to-face training and sign-off are organised in order to ensure that these are part of the everyday decision-making and activities at Stora Enso.

The Board, supported by the Financial and Audit Committee, has the overall responsibility for setting up an effective system of internal control and risk management. Responsibility for maintaining effective risk management and internal controls over financial reporting is delegated to the CEO. The GLT and senior management issue corporate guidelines in accordance with Stora Enso's policy management process. These guidelines stipulate responsibilities and authority and constitute the control environment for specific areas, such as finance, accounting, investments, purchasing and sales. These responsibilities have been described in Stora Enso's Risk and Control Policy which also outlines the responsibilities of the first and second line of defense. Group Internal Control function, under the CFO's supervision, is responsible for group-wide internal control governance and processes, whereas divisions, various support and service functions are accountable for operating effective internal controls.

Risk assessment
Stora Enso's management specifies objectives relating to the preparation of financial statements. The Company applies an annual process to establish the overall materiality and to identify significant financial statements accounts and disclosures. Relevant objectives and risks for processes are identified and evaluated to determine Stora Enso's minimum internal control requirements for all business units and support functions. The assessment of risks includes risks related to fraud and irregularities as well as the risk of loss or the misappropriation of assets. Information on the development of essential risk areas and executed and planned activities in these areas are regularly communicated to the Financial and Audit Committee. A comprehensive description of Stora Enso's risk management can be found at storaenso.com/investors.

Control activities
Stora Enso's control activities are the policies, procedures and organisational structures in place to ensure that management directives are carried out and that necessary action is taken to address risks related to the achievement of objectives relating to financial reporting. Stora Enso's minimum internal control requirements are aimed at preventing, detecting and correcting material accounting and disclosure errors and irregularities and are performed on all company levels. They include a range of activities such as approvals, authorisations, verifications, reconciliations, reviews of operating performance, the security of assets and the separation of duties as well as general IT controls.

Information and communication
The Company's information and communication channels support the completeness and correctness of financial reporting. For example, the management communicates information about Stora Enso's financial reporting objectives, financial control requirements, policies and procedures regarding accounting and financial reporting to all employees concerned. The management also communicates regular updates and briefings regarding changes in accounting policies and reporting and disclosure requirements. Subsidiaries and operational units make regular financial and management reports to the management, including the analysis of and comments on financial performance and risks. The Board receives monthly financial reports. The Company has internal and external procedures for anonymous reporting of violations related to accounting, internal controls and auditing matters.

Monitoring
The Company's financial performance is reviewed at each Board meeting. The Financial and Audit Committee reviews all Interim Reports and the Board approves them before they are released by the CEO. The annual financial statements and the Report of the Board of Directors are reviewed by the Financial and Audit Committee and approved by the Board. The effectiveness of the process for assessing risks and the execution of control activities are monitored continuously at various levels. Information on the development of essential risk areas and executed and planned activities in these areas are regularly communicated to the Financial and Audit Committee. Monitoring involves both formal and informal procedures applied by management and processes owners, including reviews of results which are compared against the set budgets and plans, analytical procedures and key performance indicators. Stora Enso is utilizing an internal control tool to facilitate and automate internal control processes, control performance, continuous controls monitoring and quarterly internal control reporting to management. In 2019 Stora Enso has further strengthened the use of the internal control tool and increased control automation.

Stora Enso has a separate internal auditing organisation which in addition to the Group Internal Control function monitors independently the design and operating effectiveness of internal controls over financial reporting. The role, responsibilities and organisation of Internal Audit are described under Other supervisory bodies and norms on page 9.

Remuneration Statement

This Remuneration statement describes Stora Enso's main principles of remuneration and the remuneration paid to members of the Board of Directors, President and CEO and other members of the Group Leadership Team (GLT). The first part of this report describes Stora Enso's remuneration decision-making procedure and remuneration principles. The second part describes the implementation in 2019 (Remuneration Report).

The Remuneration statement has been prepared in accordance with the Finnish Corporate Governance Code of 2015. The aforementioned Code is available at cgfinland.fi. Stora Enso also complies with the Swedish Corporate Governance Code ("Swedish Code"), with the exception of the deviations listed in Appendix 1 of the Corporate Governance Report. The deviations are due to differences between the Swedish and Finnish legislation, governance code rules and practices, and in these cases Stora Enso follows the practice in its domicile. The Swedish Code is issued by the Swedish Corporate Governance Board and is available at corporategovernanceboard.se.

Decision-making procedure

The shareholders at the AGM decide annually on the remuneration of the Board members (including the remuneration of the members of Board committees). The proposals for the AGM concerning the remuneration for the Chair, Vice Chair and members of the Board as well as the remuneration for the Chair and members of the committees of the Board are prepared by the Company's Shareholders' Nomination Board, which is composed of representatives of the main shareholders of the Company as well as Board member representatives and described in more detail on page 3 of the Corporate Governance Report.

The Board appoints the CEO and approves his/her remuneration as well as the compensation of other GLT members. The Board's Remuneration Committee prepares remuneration related matters and proposals for the Board and is further responsible for ensuring that management compensation policies are aligned with the Company's objectives and shareholder interest.

Main principles of remuneration

Stora Enso remuneration principles – general overview

Stora Enso aims to provide a level of remuneration that motivates, encourages, attracts and retains employees of the highest calibre. To maximise the effectiveness of the remuneration policy, careful consideration will be given to aligning the remuneration package with shareholder interests and best market practice.

A fundamental element in the remuneration principles is the concept of pay-for-performance, and an important aspect of Stora Enso's approach to remuneration is to look at the total remuneration provided to employees. Stora Enso's total remuneration mix consists of:

- annual fixed salary
- variable pay components as short-term incentives (cash) and longterm incentives (shares when applicable)
- long-term employee benefits (pension, medical and health benefits)
- other benefits (car, housing, etc. when applicable)

Regular external benchmarking is crucial to ensure that compensation levels are competitive with the external marketplace. The marketplace is defined as those peer companies with whom Stora Enso competes for recruiting talents and retention of current employees for similar positions. The market will vary depending on functional area and level of the positions concerned.

Compensation review is an annual process with the aim to ensure that Stora Enso employees are being rewarded in accordance with our remuneration policy for employees and local regulations, such as labour laws and collective agreements.

The GLT annually reviews the performance and potential ratings, as well as the succession planning of its top management in order to secure global principles with local applications.

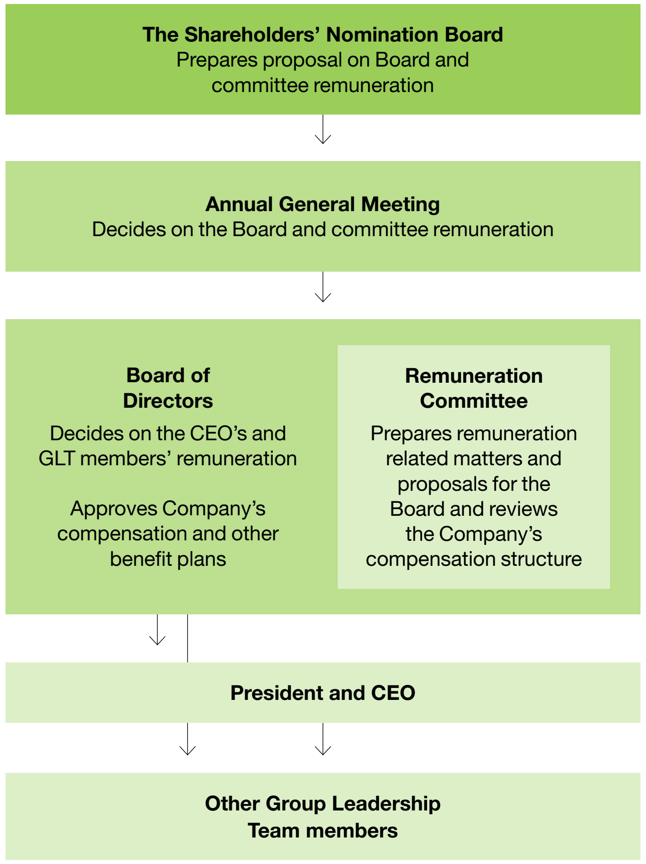
Board member remuneration principles

Remuneration of the Board of Directors is decided annually by the shareholders at the AGM. The AGM in 2019 resolved in accordance with the proposal of the Shareholders' Nomination Board that the members of the Board of Directors be paid the following annual remuneration for their term of office expiring at the end of the AGM 2020:

- for the Chair of the Board of Directors EUR 192 000
- for the Vice Chair of the Board of Directors EUR 109 000, and
- for other members of the Board of Directors EUR 74 000 each.

The annual remuneration for the members of the Board shall be paid in Company shares and cash so that 40% will be paid in Stora Enso R shares to be purchased on the Board members' behalf from the market at a price determined in public trading, and the rest in cash. The shares will be purchased within two weeks from the publication of the interim report for the period 1 January 2020–31 March 2020 or as soon as possible in accordance with applicable legislation. The Company will pay any costs and transfer tax related to the purchase of Company shares. The Company has no formal policy requirements

Remuneration decision-making procedure



for the Board members to retain shares received as remuneration. In addition, the AGM decided that the following annual remuneration be paid to the members of the Board Committees:

- for the Chair of the Financial and Audit Committee EUR 20 600, and
- for the members of the Financial and Audit Committee EUR 14 400 each,
- for the Chair of the Remuneration Committee EUR 10 300, and
- for the members of the Remuneration Committee EUR 6 200 each,
- for the Chair of the Sustainability and Ethics Committee EUR 10 300, and
- for the members of the Sustainability and Ethics Committee EUR 6 200 each.

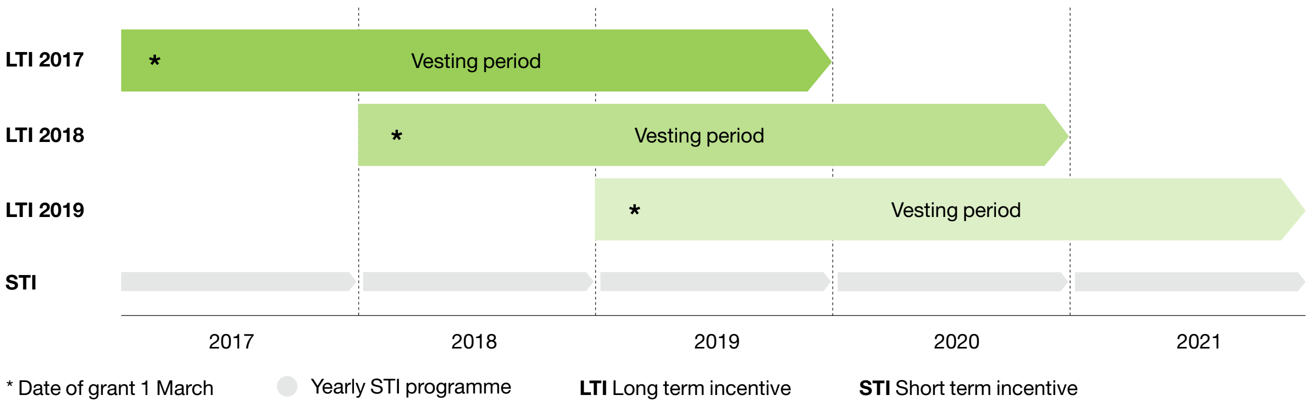
CEO remuneration principles
The President and CEO has been employed by Stora Enso since 1 May 2017 and assumed the position as President and CEO on 1 December 2019. She has a notice period of six months with a severance payment of twelve months salary on termination by the Company but with no contractual payments on any change of control. The President and CEO's benefits include pension provisions. The President and CEO's pension plan consists of a defined contribution pension plan with contributions of 30% of pensionable salary. Pensionable salary consists of base pay, vacation pay, and actual paid Short Term Incentive. The retirement age is sixty-five years.

Short Term Incentive (STI) programme for CEO
The CEO is entitled to a STI programme decided by the Board each year giving a maximum of 75% of annual fixed salary. The STI for 2018 and 2019 was based 70% on financial measures and 30% on Individual Key Targets.

Long Term Incentive (LTI) programmes for CEO
The CEO participates in 2017, 2018 and 2019 share based LTI programmes. The programmes have three-year targets and vest in one portion after three years. The 2017 programme is related to performance periods 2017-2019, the 2018 programme is related to performance periods 2018-2020 and the 2019 programme is related to preformance periods 2019-2021. Three quarters (75%) of the opportunity in the 2017 programme is in Performance Shares, where shares will vest in accordance with performance criteria proposed by the Remuneration Committee and approved by the Board of Directors. One quarter (25%) of the opportunity is in Restricted Shares, for which vesting is only subject to continued employment. The opportunity under the 2018 and 2019 programme is in Performance Shares only. The financial success metric in the Performance Share programme is 3-year EVA (Economic Value Added) and EPS (Earnings per Share) for the Stora Enso Group.

GLT remuneration principles
GLT members in Stora Enso receive a monthly salary, which in addition to a salary payment includes customary fringe benefits, such as mobile phones and cars. GLT members further have the possibility to receive yearly awards in the Company's short term and long term incentive programmes for management.

Share-based compensation plan



2019 CEO remuneration (1 January–30 November)

Base salary	EUR 887 000 in 2019.
Short-term incentive	The CEO is entitled to a STI programme decided by the Board each year giving a maximum of 75% of annual fixed salary.
Long-term incentive	Outstanding LTI programmes include the yearly programmes of 2017, 2018 and 2019. The CEO had the potential to receive a maximum of 224 693 shares before taxes in the LTI programmes from 2017, 2018 and 2019 when his GLT membership ended. These shares are forfeited at end of employment, except for the LTI 2017 shares which have been earned at the time employment ended and vest at the normal vesting date in March 2020.
Other benefits	Benefits include mobile phone and insurance.
Pension	Retirement age is 65. Pension plan consists of collectively agreed pension plan in Sweden (ITP2) and a defined contribution (DC) top up pension plan.
Termination of assignment	Notice period of six months with a severance payment of twelve months salary on termination by the company but with no contractual payments on any change of control.

2019 CEO remuneration (1 December–31 December)

Base salary	EUR 75 000 in 2019.
Short-term incentive	The CEO is entitled to a STI programme decided by the Board each year giving a maximum of 75% of annual fixed salary.
Long-term incentive	Outstanding LTI programmes include the yearly programmes of 2017, 2018 and 2019. The CEO has the potential to receive a value corresponding to a maximum of 27 160 shares before taxes under the 2019 LTI programme that will be settled in 2022.
Other benefits	Benefits include mobile phone, car, and insurance.
Pension	Retirement age is 65. The President and CEO's pension plan consists of a defined contribution pension plan with contributions of 30% of pensionable salary.
Termination of assignment	Notice period of six months with a severance payment of twelve months salary on termination by the company but with no contractual payments on any change of control.

2019 GLT remuneration, other than CEO

Annual salary	GLT members receive a monthly salary. In total for all GLT members EUR 3 756 000 in 2019.
Short-term incentive	GLT members are eligible for STI with up to a maximum of 50% or 60% of their annual fixed salary, payable the year after the performance period.
Long-term incentive	Outstanding LTI programmes include the yearly programmes of 2017, 2018 and 2019. The GLT members can potentially receive total of maximum 196 273 shares before taxes in the 2019 programmes that will be settled 2022.
Other benefits	Benefits include mobile phones, cars, and insurances.
Pension	GLT members may retire at 65 years of age with pensions consistent with local practices in their respective home countries.
Termination of assignment	Contracts of employment provide for notice of six months prior to termination with severance compensation of twelve months' basic salary if the termination is at the Company's request.

In accordance with their respective pension arrangements, GLT members may retire at sixty-five years of age with pensions consistent with local practices in their respective home countries. Contracts of employment provide for notice of six months prior to termination with severance compensation of twelve months' basic salary if the termination is at the Company's request.

Short Term Incentive (STI) programmes for the GLT other than the CEO

The GLT members have STI programmes with up to a maximum 50% or 60% of their annual fixed salary, payable the year after the performance period. 70% of the STI for 2018 and 2019 was based on financial measures and 30% on Individual Key Targets.

The financial performance metrics in the STI programme are EBITDA and Working Capital Ratio. The Individual Targets are based on a balanced scorecard approach within the categories of Customer, People, Sustainability and Special Projects.

Long Term Incentive (LTI) programmes for GLT other than the CEO

The LTI programmes have three-year targets and vest in one portion after three years.The absolute maximum vesting level is 100% of the number of shares granted. The opportunity under the 2019 programme is in Performance Shares, where the shares vest in accordance with performance criteria proposed by the Remuneration Committee and approved by the Board of Directors.

The financial success metric in the Performance Share programme is 3-year EVA (Economic Value Added) and EPS (Earnings per Share) for the Stora Enso Group.

Remuneration Report 2019

Board remuneration in 2019

In 2019, the Board members of Stora Enso were compensated as set out in the following chart. Based on the decision of the AGM 2019, 40% of the Board remuneration was paid in Stora Enso R shares purchased from the market. In addition, Board members may receive a yearly compensation based on their positions as Chair or members of Board committees.

CEO remuneration

The total compensation for the current President and CEO in the period 1 December to 31 December 2019 amounted to EUR 100 000, including annual salary, customary fringe benefits (such as car and mobile phone) STI and LTI programmes, and pension costs. The total compensation for the former CEO in the period 1 January to 30 November 2019 amounted to EUR 2 569 000, including annual salary, customary fringe benefits (such as mobile phone) STI and LTI programmes, and pension costs.

The CEO has the potential to receive a value corresponding to a maximum of 27 160 shares before taxes under the 2019 LTI programme. The grant value EUR 331 018 is based on the share price at grant date and assuming the maximum vesting level during the three-year vesting period is achieved. There has been no settlement of shares to the CEO during the year.

GLT remuneration excluding CEO

The total compensation for the GLT members excluding CEO in 2019 amounted to EUR 9 038 000 including annual salary, customary fringe benefits (such as mobile phone) STI and LTI programmes, and pension costs. The total number of GLT members was 11 at year end 2019, including also the CEO.

Under the 2019 LTI programme, GLT members (in GLT at year end) can potentially receive a value corresponding to 196 273 shares before taxes, assuming the maximum vesting level during the three-year vesting period (2019–2021) is achieved. Total number of shares actually transferred will be lower because a portion of shares corresponding to the tax obligation will be withheld to cover the income tax.

The fair value of employee services received in exchange for share based compensation payments is accounted for in a manner that is consistent with the method of settlement either as cash settled or equity settled as described in more detail in Note 21 of the Financials 2019. For the equity settled part, it is possible that the actual cash cost does not agree with the accounting charges as the share price is not updated at the time of the vesting. The figures in the Group Leadership Team Remuneration table refer to individuals who were executives at the time of settlement.

During the year, the number of shares settled for executives (GLT members at settlement date) from previous awards amounted to 128 076, having a cash value at the 1 March 2019 settlement date of EUR 1 560 947 before taxes based on the share price at that date.

Board Remuneration

	Year Ended 31 December	
EUR	2019[1]	2018
Chair	192 000	175 000
Vice Chair	109 000	103 000
Board Member	74 000	72 000

[1] 40% of the Board remuneration in 2019 was paid in Stora Enso R shares purchased from the market and distributed as follows: to Chair 6 695 R shares, Vice Chair 3 801 R shares, and members 2 580 R shares each. The Company has no formal policy requirements for the Board members to retain shares received as remuneration.

Board and Committee remuneration

	Year Ended 31 December				
	2019			2018	
EUR thousand (before taxes)	Cash	Value of shares[1]	Total[4]	Total	Committee memberships
Board members at 31 December 2019					
Jorma Eloranta, Chair	140	77	217	200	Remuneration, Nomination[2,3], Financial and Audit
Hans Stråberg, Vice Chair	71	44	115	109	Remuneration, Nomination[2,3]
Elisabeth Fleuriot	58	30	88	78	Financial and Audit
Hock Goh	50	30	80	78	Sustainability and Ethics
Mikko Helander	44	30	74	0	
Christiane Kuehne	54	30	84	86	Sustainability and Ethics
Antti Mäkinen	50	30	80	86	Remuneration
Richard Nilsson	65	30	95	93	Financial and Audit
Göran Sandberg	50	30	80	78	Sustainability and Ethics
Former Board members					
Anne Brunila (until 14 March 2019)	0	0	0	82	
Total remuneration as Directors[1]	**582**	**331**	**913**	**891**	

[1] 40% of the Board remuneration, excluding Committee remuneration, in 2019 was paid in Stora Enso R shares purchased from the market and distributed as follows: to Chair 6 695 R shares, Vice Chair 3 801 R shares, and members 2 580 R shares each. The Company has no formal policy requirements for the Board members to retain shares received as remuneration.
[2] Stora Enso's Shareholders' Nomination Board has been appointed by the AGM in 2016 to exist until otherwise decided. The Shareholders' Nomination Board according to its Charter as approved by the AGM comprises of four members: the Chair and Vice Chair of the Board of Directors, as well as two members appointed by the two largest shareholders (one each) as of 31 August each year. No separate remuneration is paid to members of the Shareholders´ Nomination Board.
[3] Marcus Wallenberg, appointed by FAM AB, is Chair of the Nomination Board. Harri Sailas is the member of the Shareholders' Nomination Board appointed by Solidium Oy. Jorma Eloranta and Hans Stråberg were appointed as members of the Shareholders' Nomination Board in their roles as Chair and Vice Chair of the Board of Directors.
[4] The Company additionally pays the transfer tax for share purchases for each member, in line with AGM decision, which amount is considered also taxable income for each member.

The aggregate remuneration paid to the CEO and GLT members in 2019

	Year Ended 31 December						
	2019				2018		
EUR thousand	**CEO[1]**	**Former CEO[2,4]**	**Others[3]**	**GLT Total**	**CEO**	**Others**	**GLT Total**
Remuneration[7]							
Annual salary	75	887	3 756	4 717	905	3 589	4 494
Local housing (actual costs)	0	0	0	0	0	22	22
Other benefits	2	19	373	394	20	385	405
Termination benefits	0	0	0	0	0	0	0
Short term incentive programme[6]	0	571	1 467	2 039	611	1 089	1 700
Long term incentive programme[6]	0	566	1 508	2 073	845	2 431	3 276
	77	**2 043**	**7 104**	**9 224**	**2 381**	**7 516**	**9 897**
Pension Costs							
Mandatory plans	23	62	1 396	1 481	66	1 296	1 362
Stora Enso voluntary plans[5]	0	464	539	1 003	478	447	925
	23	**526**	**1 934**	**2 484**	**544**	**1 743**	**2 287**
Total Compensation	**100**	**2 569**	**9 038**	**11 708**	**2 925**	**9 259**	**12 184**

[1] CEO remuneration consists of remuneration delivered to Annica Bresky from her appointment as President and CEO on 1 December 2019.
[2] Former CEO remuneration consists of remuneration delivered to Karl-Henrik Sundström for the period up until his last day as CEO (30 November 2019).
[3] Amounts include payments related to Annica Bresky until 30 November 2019 and Gilles van Nieuwenhuyzen until 6 December 2019. Payments related to the new GLT member Hannu Kasurinen have been included from 4 December 2019.
[4] For the former CEO, Short term incentives for the financial year 2019 will be paid out on the normal payout date in March 2020. The former CEO did not receive any other termination benefits such as severance pay.
[5] The former CEO participates in the Swedish Executive Pension Plan where pension accruals are unfunded for all participants, the liability is calculated and insured in accordance with Swedish legislation. The liability for the former CEO amounts to EUR 3 052 thousand.
[6] The pay-outs for Short term incentive in March 2019 were based on 2018 results and for Long term incentive payouts in March 2019 were based on 2016–2018 results. Disclosed amounts are included for the executives who were GLT members at the time of the payment.
[7] Remuneration for executives is disclosed only for the period during which they were GLT members.

CEO and GLT share interests

Stora Enso recommends and expects GLT members to hold Stora Enso shares at a value corresponding to at least one annual base salary. Stora Enso shares received as remuneration are therefore recommended not to be sold until this level has been reached. Stora Enso GLT members, including the CEO, held on 31 December 2019 shares in the Company as follows:

Executives in office at the year end	**R Shares held[1]**	**Performance share opportunity[2]**	**Restricted share opportunity[2]**
Annica Bresky	0	76 561	8 397
Seppo Parvi	32 202	63 149	6 454
Malin Bendz	19 162	44 776	4 539
Johanna Hagelberg	16 039	48 164	5 091
Kati ter Horst	38 772	81 011	8 043
Hannu Kasurinen	31 486	17 903	5 967
Ulrika Lilja	25 732	42 304	4 471
Per Lyrvall[3]	59 362	60 516	6 450
Markus Mannström	18 392	52 084	3 601
Noel Morrin	33 756	49 256	5 382
Jari Suominen	37 985	59 337	6 121
Total, serving officers[4]	**312 888**	**595 061**	**64 516**

[1] None of the GLT members holds A shares.
[2] Potential shares to GLT members listed here are gross of taxes for the LTI programmes started in 2017, 2018, and 2019 covering three year periods during 2017–2021, with vesting in 2020, 2021 and 2022 respectively.
[3] Spouse holds 1 257 of the shares.
[4] The Company recommends and expects GLT members to hold Stora Enso shares at a value corresponding to at least one annual base salary. Stora Enso shares received as remuneration are therefore recommended not to be sold until this level has been reached.

The following Executive Officers also served in 2019	**R shares held when GLT membership ended**	**Performance share awards when GLT membership ended[2]**	**Restricted share awards when GLT membership ended[2]**	**Effective date of GLT membership ending**
Karl-Henrik Sundström[1]	166 011	204 343	20 350	30 November 2019
Gilles van Nieuwenhuyzen	19 610	82 042	8 797	6 December 2019

[1] 41 700 of the shares are held by a related party (Alma Patria AB).
[2] These shares are forfeited at end of employment, except for the LTI 2017 shares which have been earned at the time employment ended and vest at the normal vesting date in March 2020.

Members of the Board of Directors

Jorma Eloranta

Born 1951. M.Sc. (Tech), D.Sc. (Tech) h.c.

Position
Chair of Stora Enso's Board of Directors since April 2017, Vice Chair April 2016–April 2017. Member of Shareholders' Nomination Board since April 2016. Chair of the Remuneration Committee since April 2017 and member since April 2016. Member of the Financial and Audit Committee since April 2017.

Board memberships
Chair of the Board of Finnish Fair Foundation. Member of the Board of Cargotec. Vice Chair of the Supervisory Board in Finnish Naval Foundation. Chair of the Board and CEO of Pienelo Ltd.

Principal work experience and other information
President and CEO of Metso 2004–2011, President and CEO of Kvaerner Masa-Yards 2001–2003 and President and CEO of Patria Industries Group 1997–2000. Executive Vice President of Finvest Group and Jaakko Pöyry Group 1996 and President of Finvest 1985–1995.

Total remuneration 2019, EUR[1]	216 700
Meeting attendance	12/12
FAC attendance	8/8 ●
RemCo attendance	10/10 ●
SECo attendance	
Shareholding[2]	Owns 1 150 A shares and 27 076 R shares in Stora Enso.
Independent member	Yes

Hans Stråberg

Born 1957. M.Sc. (Eng.).

Position
Vice Chair of Stora Enso's Board of Directors since April 2017 and member since April 2009. Member of Shareholders' Nomination Board since April 2017. Member of the Remuneration Committee since March 2010.

Board memberships
Chair of the Board of Atlas Copco AB, Roxtec AB, CTEK Holding AB and AB SKF. Member of the Board of Investor AB, Mellby Gård AB, Hedson Technologies International AB and Anocca AB.

Principal work experience and other information
President and CEO of AB Electrolux 2002–2010. Several management positions at Electrolux in Sweden and the USA 1983–2002.

Total remuneration 2019, EUR[1]	115 200
Meeting attendance	12/12
FAC attendance	
RemCo attendance	10/10 ●
SECo attendance	
Shareholding[2]	Owns 41 291 R shares in Stora Enso.
Independent member	Yes

Elisabeth Fleuriot

Born 1956. M.Sc. (Econ.).

Position
Member of Stora Enso's Board of Directors since April 2013. Member of the Financial and Audit Committee since March 2019.

Board memberships
Board member and Chair of CSR Committee at G4S.

Principal work experience and other information
President and CEO of Thai Union Europe Africa 2013–2017. Senior Vice President, Emerging Markets and Regional Vice President, France, Benelux, Russia and Turkey, in Kellogg Company 2001–2013. General Manager, Europe, in Yoplait, Sodiaal Group 1998–2001. Several management positions in Danone Group 1979–1997.

Total remuneration 2019, EUR[1]	88 400
Meeting attendance	12/12
FAC attendance	7/7[3] ●
RemCo attendance	
SECo attendance	
Shareholding[2]	Owns 23 731 R shares in Stora Enso.
Independent member	Yes

Hock Goh

Born 1955. B. Eng. (Hons) in Mechanical Engineering.

Position
Member of Stora Enso's Board of Directors since April 2012. Member of the Sustainability and Ethics Committee since April 2017.

Board memberships
Member of the Board of AB SKF, Santos Australia and Vesuvius Plc.

Principal work experience and other information
Operating Partner of Baird Capital Partners Asia 2005–2012. President of Network and Infrastructure Solutions, Schlumberger Ltd 2002–2005 and President Asia, Schlumberger Ltd 1998–2002.

Total remuneration 2019, EUR[1]	80 200
Meeting attendance	12/12
FAC attendance	
RemCo attendance	
SECo attendance	4/4 ●
Shareholding[2]	Owns 28 484 R shares in Stora Enso.
Independent member	Yes

Mikko Helander

Born 1960. M.Sc. (Tech.).

Position
Member of Stora Enso's Board of Directors since March 2019.

Board memberships
Chair of the Board of Ilmarinen until 31 December 2019. Chair of the Board of Finnish Commerce Federation. Vice Chair of the Board of the Confederation of Finnish Industries EK. Member of the Board of Finnish Chambers of Commerce and Rajamme Vartijain Säätiö foundation. Member of the Delegation of Finnish Business and Policy Forum EVA. Member of the supervisory Board of Finnish Fair Foundation.

Principal work experience and other information
President and CEO of Kesko Oyj since 2015. CEO of Metsä Board Oyj 2006–2014 and Metsä Tissue Oyj 2003–2006. Several management positions in Valmet Oyj 1984–1990 and 1993–2003. Managing Director of Kasten Hövik Oy 1990–1993.

Total remuneration 2019, EUR[1]	74 000
Meeting attendance	10/10[4]
FAC attendance	
RemCo attendance	
SECo attendance	
Shareholding[2]	Owns 4 298 R shares in Stora Enso.
Independent member	Yes

FAC = Financial and Audit Committee
RemCo = Remuneration Committee
SECo = Sustainability and Ethics Committee

● Chair ● Member

[1] Detailed description of Board Remunerations and Committee Memberships as decided by the AGM in 2019 on page 13.
[2] Shares held by Board members and related parties. Board members' related parties held no Stora Enso shares.
[3] Meetings attended out of the meetings held after election as FAC member.
[4] Meetings attended out of the meetings held after election as Board member.

The independence is evaluated in accordance with Recommendation 10 of the Finnish Corporate Governance Code. The full recommendation can be found at cgfinland.fi. A significant shareholder according to the recommendation is a shareholder that holds at least 10% of all company shares or the votes carried by all the shares or a shareholder that has the right or the obligation to purchase the corresponding number of already issued shares.

Christiane Kuehne

Born 1955. LL.M., B.B.A.

Position

Member of Stora Enso's Board of Directors since April 2017. Chair of the Sustainability and Ethics Committee since March 2019.

Board memberships

Member of the Board of James Finlays Ltd, Wetter Foundation and Foundation Pierre du Bois.

Principal work experience and other information

Operative roles within the Nestlé Group 1977–2015. Her last operative role at Nestlé was as Head of Strategic Business Unit Food with strategic responsibility for the food business of Nestlé at global level.

Total remuneration 2019, EUR[1]	84 300
Meeting attendance	12/12
FAC attendance	
RemCo attendance	
SECo attendance	2/2[3] ●
Shareholding[2]	Owns 8 292 R shares in Stora Enso.
Independent member	Yes

Antti Mäkinen

Born 1961. LL.M.

Position

Member of Stora Enso's Board of Directors since March 2018. Member of the Remuneration Committee since March 2019.

Board memberships

Member of the Board of Rake Oy, Metso Oyj and Sampo Oyj. Chair or a member of the shareholders' nomination boards of several listed companies.

Principal work experience and other information

CEO of Solidium Oy since 2017. Several leading management positions within Nordea Corporate & Investment Banking, most notably as Head of Corporate Finance in Finland, Head of Strategic Coverage unit and as Co-Head for Corporate & Investment Banking, Finland 2010–2017. CEO of eQ Corporation and its main subsidiary eQ Bank Ltd. 2005–2009.

Total remuneration 2019, EUR[1]	80 200
Meeting attendance	12/12
FAC attendance	
RemCo attendance	9/9[4] ●
SECo attendance	
Shareholding[2]	Owns 4 717 R shares in Stora Enso.
Independent member	Yes/no[5]

Richard Nilsson

Born 1970. B.Sc. (BA and Econ.).

Position

Member of Stora Enso´s Board of Directors since April 2014. Chair of the Financial and Audit Committee since April 2016 and member since April 2015.

Board memberships

Member of the Board of Directors of IPCO AB and group companies.

Principal work experience and other information

Investment Manager at FAM AB since 2008. Pulp & paper research analyst at SEB Enskilda 2000–2008, Alfred Berg 1995–2000 and Handelsbanken 1994–1995.

Total remuneration 2019, EUR[1]	94 600
Meeting attendance	12/12
FAC attendance	8/8 ●
RemCo attendance	
SECo attendance	
Shareholding[2]	Owns 20 834 R shares in Stora Enso.
Independent member	Yes/no[6]

Göran Sandberg

Born 1955. Ph.D.

Position

Member of Stora Enso's Board of Directors since April 2017. Member of the Sustainability and Ethics Committee since April 2017.

Board memberships

Member of the Board of the Marcus Wallenberg Foundation for Promoting Scientific Research in the Forest Industry and the Wallenberg Foundations AB.

Principal work experience and other information

Professor in Plant Biology and professor at the Swedish University of Agricultural Science and the Umeå University. Executive director of the Knut and Alice Wallenberg Foundation and the Marianne and Marcus Wallenberg Foundation. Member of the Royal Swedish Academy of Science, the Royal Swedish Academy for Agriculture and Forestry Sciences, and the Royal Swedish Academy of Engineering Sciences. His previous positions include Vice chancellor of Umeå University 2005–2010, Chair of Umeå Plant Science Center 1996–2004, Chair of SciLifeLab Sweden 2013–2016 as well as Board member of the Human Protein Atlas project and the Wallenberg Wood Science Center.

Total remuneration 2019, EUR[1]	80 200
Meeting attendance	12/12
FAC attendance	
RemCo attendance	
SECo attendance	4/4 ●
Shareholding[2]	Owns 6 792 R shares in Stora Enso.
Independent member	Yes/no[7]

FAC = Financial and Audit Committee
RemCo = Remuneration Committee
SECo = Sustainability and Ethics Committee

● Chair ● Member

[1] Detailed description of Board Remunerations and Committee Memberships as decided by the AGM in 2019 on page 13.
[2] Shares held by Board members and related parties. Board members' related parties held no Stora Enso shares.
[3] Meetings attended out of the meetings held after election as SECo chair.
[4] Meetings attended out of the meetings held after election as RemCo member.
[5] Antti Mäkinen is independent of the company but not of its significant shareholders due to his position as the CEO of Solidium Oy.
[6] Richard Nilsson is independent of the company but not of its significant shareholders due to his employment at FAM AB.
[7] Göran Sandberg is independent of the company but not of its significant shareholders due to his position as executive director of majority shareholders of FAM AB, a significant shareholder of the company.

The independence is evaluated in accordance with Recommendation 10 of the Finnish Corporate Governance Code. The full recommendation can be found at cgfinland.fi. A significant shareholder according to the recommendation is a shareholder that holds at least 10% of all company shares or the votes carried by all the shares or a shareholder that has the right or the obligation to purchase the corresponding number of already issued shares.

Anne Brunila was Member of Stora Enso's Board of Directors since April 2013 until her resignation on 14 March 2019. She was independent of the company and the significant shareholders.

Strategy
Sustainability
Financials
Governance

Members of the Group Leadership Team

Annica Bresky

Born 1975. M.Sc. (Engineering), MBA.

Position
President and Chief Executive Officer (CEO). Member of the GLT since 2017. Joined the company in 2017. President and CEO since 1 December 2019.

Board memberships, principal work experience and other information
Executive Vice President, Consumer Board Division 2017–2019. President and CEO of Iggesund Paperboard AB, part of the Swedish Holmen Group 2013–2017. Mill Director at BillerudKorsnäs AB 2010–2013. Prior to that engineering and superintendent positions at Stora Enso's Kvarnsveden Mill in 2001–2010. Member of the Board of AB Fagerhult.

Shareholding
Does not own any Stora Enso shares.

Seppo Parvi

Born 1964. M.Sc. (Econ.).

Position
Chief Financial Officer (CFO), Deputy CEO. Country Manager Finland and member of the GLT since 2014. Joined the company in 2014.

Board memberships, principal work experience and other information
CFO and EVP, Food and Medical Business Area at Ahlstrom Corporation 2009–2014. CFO for Metsä Board (M-real) 2006–2009. Prior to that various line management positions at the packaging company Huhtamäki, including responsibilities such as paper manufacturing within Rigid Packaging Europe and General Manager for Turkey. Deputy Chair of the Board of the Finnish Forest Industries Federation and Pohjolan Voima Oy. Member of the Board of Ilmarinen and East Office of Finnish Industries Oy.

Shareholding
Owns 32 202 R shares in Stora Enso.

Malin Bendz

Born 1976. B.Sc. (Personnel Mgmt & Org. Development), MBA.

Position
Executive Vice President, HR until 15 January 2020. Member of the GLT since 2016. Joined the company in 2000.

Board memberships, principal work experience and other information
Several international positions in human resources, business development and purchasing. Member of the Stora Enso Paper division management team 2015–2016, Renewable Packaging management team 2012–2014 and Latin America Division Management team 2004–2008.

Shareholding
Owns 19 162 R shares in Stora Enso.

Johanna Hagelberg

Born 1972. M.Sc. (Industrial Eng. & Mgmt) and M.Sc. (Eng. and Mgmt of Manufacturing Systems).

Position
Executive Vice President, Sourcing and Logistics. Member of the GLT since 2014. Joined the company in 2013 as SVP Sourcing, Printing and Living.

Board memberships, principal work experience and other information
Chief Procurement Officer at Vattenfall AB 2010–2013. Prior to that leading Sourcing positions at NCC, RSA Scandinavia and within the Automotive Industry. Member of the Board of Bufab AB.

Shareholding
Owns 16 039 R shares in Stora Enso.

Kati ter Horst

Born 1968. MBA (International Business), M.Sc. (Marketing).

Position
Executive Vice President, Paper Division. Member of the GLT since 2014. Joined the company in 1996.

Board memberships, principal work experience and other information
Senior Vice President, Paper Sales, Stora Enso Printing and Living until 2014. Prior to that several managerial positions in the paper business. Vice Chair of the Board of EURO-GRAPH asbl. Member of the Board of Finnish Forest Industries Federation, Outokumpu Oyj and Climate Leadership Coalition.

Shareholding
Owns 38 772 R shares in Stora Enso.

Hannu Kasurinen

Born 1963. M.Sc. (Econ.).

Position
Executive Vice President, Consumer Board Division (Packaging Materials Division as of 1 January 2020). Member of the GLT since 4 December 2019. Joined the company in 1993.

Board memberships, principal work experience and other information
SVP, Liquid Packaging and Carton Board in Consumer Board Division until December 2019. Prior to that several leadership positions in Stora Enso, including Group Treasurer, SVP of Strategy and EVP of Wood Products Division.

Shareholding
Owns 31 486 R shares in Stora Enso.

Governance

Ulrika Lilja

Born 1975. M.Sc. (BA and Econ.).

Position
Executive Vice President, Communications. Member of the GLT since 2014. Joined the company in 2014 as Senior Vice President Communications, Stora Enso Printing and Living.

Board memberships, principal work experience and other information
Director of External Communications at SSAB 2010–2013. Prior to that several leading communications positions at OMX Stockholm Stock Exchange and Neonet. Member of the Board of Swedish Association of Communication Professionals.

Shareholding
Owns 25 732 R shares in Stora Enso.

Per Lyrvall

Born 1959. LL.M.

Position
Executive Vice President, Legal, General Counsel. Country Manager Sweden. Acting Head of HR as of 16 January 2020. Member of the GLT since 2012. Joined the company as Legal Counsel in 1994. General Counsel since 2008. Country Manager Sweden since 2013.

Board memberships, principal work experience and other information
Prior to joining Stora Enso legal positions at Swedish courts, law firms and Assi Domän. Member of the Board of Montes del Plata and Bergvik Skog AB. Deputy Member of the Board of Skogsindustrierna.

Shareholding
Owns 58 105 R shares in Stora Enso directly and 1 257 R shares through related persons (spouse).

Markus Mannström

Born 1963. M.Sc. (Paper Tech.).

Position
Executive Vice President, Biomaterials Division. Member of the GLT since 2015. Joined the company in 2001.

Board memberships, principal work experience and other information
Chief Technology Officer (CTO) of the company 2015–2017. Member of the Renewable Packaging division management team 2009–2014. Member of the Board of Teollisuuden Voima Oyj, Montes del Plata, Veracel and Tree to Textile. Deputy Member of the Board of Pohjolan Voima Oy.

Shareholding
Owns 18 392 R shares in Stora Enso.

Noel Morrin

Born 1958. B.Sc. Joint Honours, First Class (Chemistry and Biology).

Position
Executive Vice President, Sustainability. Member of the GLT since 2015. Joined the company in 2015.

Board memberships, principal work experience and other information
Group SVP for Sustainability & Green Support at Skanska AB 2005–2015. Group Environment Director at RMC plc 1999–2005. Prior to that senior roles at the UK National Environmental Technology Centre, the British NGO Business in the Community and the global chemical company ICI plc.

Shareholding
Owns 33 756 R shares in Stora Enso.

Jari Suominen

Born 1969. M.Sc. (BA).

Position
Executive Vice President, Wood Products Division until 31 December 2019. Executive Vice President, Forest Division as of 1 January 2020. Member of the GLT since 2014. Joined the company in 1995.

Board memberships, principal work experience and other information
Senior Vice President, Head of Building and Living Business Area until 2014. Prior to that several managerial positions in paper and wood products businesses. Chair of Finnish Wood Products Industry Association. Member of the Board of Tornator. Member of the supervisory board of Varma Mutual Pension Insurance Company. Deputy Member of the Board of East Office of Finnish Industries Oy.

Shareholding
Owns 37 985 R shares in Stora Enso.

Karl-Henrik Sundström, CEO, was a member of the Group Leadership Team until 30 November 2019.

Gilles van Nieuwenhuyzen, EVP Packaging Solutions, was a member of the Group Leadership Team until 6 December 2019.

David Ekberg, acting Head of Packaging Solutions as of 6 December 2019, not a member of GLT.

Seppo Toikka, acting Head of Wood Products as of 1 January 2020, not a member of GLT.

Appendix 1

Due to differences between the Swedish and Finnish legislation, governance code rules and corporate governance practices Stora Enso's Corporate Governance deviates in the following aspects from the Swedish Corporate Governance Code:

Rule 1.3 The company's nomination committee is to propose a chair for the annual general meeting. The proposal is to be presented in the notice of the meeting.

- According to Finnish annual general meeting (AGM) practice, the Chair of the Board of Directors opens the meeting and proposes the chair for the AGM. The proposed chair is normally an attorney-at-law.

Rule 2.1 The nomination committee is also to make proposals on the election and remuneration of the statutory auditor.

- According to the Finnish Code, the Financial and Audit Committee shall make a recommendation on the auditor election for the Board, which shall give its proposal on the matter to the AGM.

Rule 9.6 The shareholders' meeting is to decide on all share and share-price related incentive schemes for the executive management.

- The company's incentive schemes are established by the Board of Directors. If the programmes include the issuance of new shares or disposal of shares held by the Company then such issuance of share or an authorisation to the Board of Directors to decide on such issuance of shares will be subject to shareholder approval.

Rule 9.9 Guidelines regarding remuneration to the board and executive management are also to cover salary and other remuneration to other members of the executive management.

- According to the Finnish Code, the remuneration guidelines (called policy according to the Finnish Code) is not to cover other executives than the CEO and Deputy CEO, and shall cover all Board remuneration.

Rule 10.5 The remuneration report is to contain a reference to where in the company's annual report the information required by Chapter 5, Sections 40–44 of the Swedish Annual Accounts Act (1995:1554) is to be found.

- The Company reports in accordance with the Finnish accounting regulation and does therefore not include this note in it's remuneration report.

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