

SO GOOD!

FOR BRANDS
LOOKING FOR THE
EXTRAORDINARY, CKB
MADE BY STORA ENSO
IS PLASTIC-FREE,
STRONG WITHOUT
EXCESS WEIGHT, AND
FOOD-SAFE. THERE IS
NO OTHER BROWN.



OPRO
BLAC
BLAC
No



storaenso

Stora Enso

Annual Report 2021

Contents

About this report

For 2021, Stora Enso is publishing one combined report covering our strategy, financials, sustainability reporting, corporate governance and remuneration. Stora Enso acknowledges the concept of double materiality in its sustainability strategies and reporting. Sustainability topics that are considered to present the most significant financial opportunities and risks for Stora Enso are highlighted in the strategy section: climate change, biodiversity and the circular economy. Stora Enso's environmental and social impacts are covered in this report in the sections on our strategy and our sustainability reporting.



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Audited
 The sustainability reporting has 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 CO₂e emissions.





Growth in key businesses resulted in record high profitability.

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Stora Enso is the renewable materials company

Part of the global bioeconomy, Stora Enso is a leading provider of renewable products in packaging, biomaterials, wooden construction and paper, and one of the largest private forest owners in the world. We believe that everything that is made from fossil-based materials today can be made from a tree tomorrow. Sustainability and responsible business practices are deeply embedded in our strategy. Our low-carbon, fiber-based products are renewable and recyclable. They offer solutions to climate change and promote positive impacts on the environment, thus enabling our customers to become more eco-friendly. We employ some 22,000 people. Our shares are listed at the Helsinki (STEAV, STERV) and Stockholm (STE A, STE R) stock exchanges. In addition, the shares are traded in the USA as ADRs.



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



Our products replace fossil-based materials.

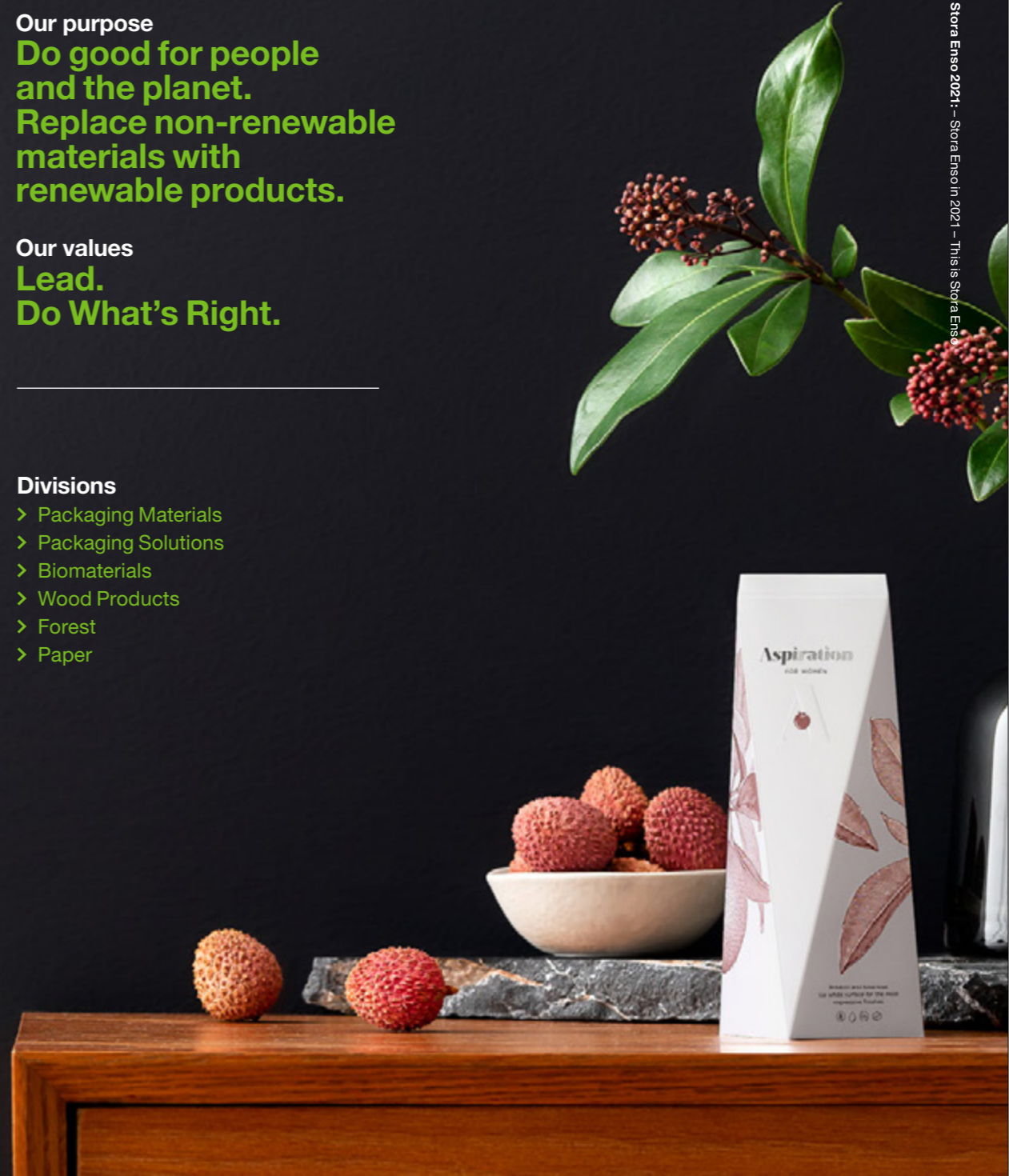


Our renewable products contribute to a circular bioeconomy.

Our purpose
Do good for people and the planet.
Replace non-renewable materials with renewable products.

Our values
Lead.
Do What's Right.

- Divisions**
- > Packaging Materials
 - > Packaging Solutions
 - > Biomaterials
 - > Wood Products
 - > Forest
 - > Paper





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Record high results across key business areas

In 2021, we made significant progress in our strategic ambition to lead in sustainability and transform into 'The renewable materials company'. Our focus on growth in leading market positions has resulted in record high profitability and a strong balance sheet.

Proof of resilient and adaptable business

Looking at our performance in 2021, Stora Enso showed tremendous adaptability and resilience. We delivered record high results across our key business areas, overcoming macroeconomic turbulence and supply chain disturbances. Group revenue increased by 19% YoY while operational EBIT increased by 135% YoY. Our net debt ratio to EBITDA of 1.1 was below the target of less than 2. These are results to be proud of and a testimony of our continuous improvements and strategic progress.

Although uncertainties remain as new pandemic-related challenges continue to surface, the year carried many positives. We have found new ways of working safely to deliver products and services at the same high standard and pace as before the pandemic. By investing in a culture of learning and empowerment, we create a more agile business with enhanced customer intimacy. An increased demand for eco-friendly products, the hard work of our people, and our resilient business model have together supported our strong performance. I believe our achievements in 2021 provide a stellar example of a company striving towards one common goal: driving sustainable growth.

Sustainability is core to our strategy

Stora Enso is one of the world's largest private forest owners. Sustainably managed, our growing forests have a positive climate impact, both as a carbon sink and through circular end-products. A flexible wood supply chain and accessibility is also fundamental for our innovation agenda. Global megatrends, with sustainability at the core, call for fossil-free materials and new applications for renewable and innovative materials. Our customers are increasingly aware of the advantages of products which are circular and climate friendly. It is our job to continue to deliver solutions to meet those needs. We foresee significant growth potential for our products within packaging, biomaterials innovations and building solutions, and this is where we focus strategic efforts and investments.

Strong demand for eco-friendly solutions

A strong demand for our packaging materials and solutions has been a major driver behind our solid 2021 results. In light of sustainability trends and the pandemic, the need for eco-friendly and hygienic food packaging is more important than ever. A shift in the packaging industry continues to accelerate, underlined by the rising demand for fossil-free,



Need for eco-friendly and hygienic food packaging is more important than ever.

Reaching key targets

EUR million	2021	2020	2019	2018	2017	Target	Performance against target
Growth (excl. Paper)	28.7%	-8.7%	-3.0%	4.1%	8.5%	>5% per annum	●
Net debt to operational EBITDA	1.1	2.3	2.0	1.1	1.4	<2.0	●
Net debt to equity	0.22	0.33	0.43	0.31	0.38	<0.6	●
Operational ROCE excl. Forest ¹	17.8%	7.0%	12.8%	n/a	n/a	>13%	●
Dividend per share (EUR)	0.55 ²	0.30	0.30	0.50	0.41	See below ³	●
Climate: Reduction of fossil CO ₂ e emissions (scope 1 and 2)	-14%	-13%	Baseline	n/a	n/a	-50% by 2030 ⁴	●
Climate: Reduction of fossil CO ₂ e emissions (scope 3)	-2%	-11%	Baseline	n/a	n/a	-50% by 2030 ⁴	●
Circularity ⁵	93%	n/a	n/a	n/a	n/a	100% by 2030	●
Biodiversity: Forest certification coverage ⁶	99%	99%	99%	n/a	n/a	≥96%	●

¹The Forest division figures available only 2019 onwards

²Dividend proposal

³To distribute 50% of EPS excluding fair valuations over the cycle

⁴A decrease of 50% by the end of 2030 from a 2019 baseline year

⁵% of technically recyclable products, based on production volume

⁶The share of owned and leased lands covered by forest certification schemes

● Achieved
● In progress

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Dividend proposal per share EUR 0.55



bio-based and recyclable packaging for everyday use. At the same time, consumer behaviour is changing rapidly with growing e-commerce related to increased home deliveries of retail goods, groceries and take-away food. All this, in turn, boosts market size and demand for sustainable packaging.

We are leading in sustainable consumer packaging with strong market positions, and are investing to meet a growing demand. Our liquid packaging board site in Skoghall, Sweden will add significant capacity following a EUR 97 million investment. Our EUR 350 million kraftliner conversion in Oulu, Finland started up in 2021, with profitability already ahead of schedule. In the beginning of 2022, we decided to move forward with a feasibility study for a second conversion in the Oulu site for production of premium carton board. Also, to improve recycling throughout Central and Eastern Europe, we have announced an investment to build

a large-scale recycling facility in Poland together with Tetra Pak. The investment represents an important milestone towards a circular future.

Capturing new revenue in growth markets

Stora Enso is the world's largest producer of lignin, one of the main building blocks of a tree. Lignin has a wide array of potential applications. Following more than six years of investments in extensive research and innovation, our pilot plant in Sunila, Finland started producing lignin-based hard carbon. Our product Lignode is a sustainable alternative to carbon-based battery anodes in electric vehicles. We predict that this opportunity alone has significant sales potential.

Wood-based building solutions is another key growth area, addressing the need to replace less climate-friendly construction materials such as concrete and steel. Prefabricated wooden elements, such as beams, bearing elements and walls, offer higher construction efficiency while significantly reducing the carbon footprint of a building. With the building and construction industry representing approximately 40% of the world's CO₂ emissions, governments and real estate developers are increasingly recognising the sustainability advantages of wooden buildings. In 2021, we launched several new concepts to grow our market share of wooden construction in industrial buildings, office buildings, residential multistorey and schools. Here, we are well positioned to capture new business as the share of wood used in building projects is expected to grow more than 10% by 2030.

Our products contribute to a greener world

To support our strategic objectives, we have renewed our sustainability ambitions. We take a regenerative stance within climate, circularity, and biodiversity. This means putting greater emphasis on rebuilding

and making a positive climate contribution within the planetary boundaries, rather than just minimising impact. By 2050, we aim to offer 100% regenerative solutions. To reach this goal, we have set ambitious 2030 science-based targets to reduce greenhouse gas emissions by 50%, aligning with the 1.5-degree scenario. Furthermore, 100% of our products will be technically recyclable by 2030.

Our forest management practices will also evolve to not only support forest growth, but to also restore and enhance biodiversity. To enable continuous improvement, our progress will be monitored through third-party approved biodiversity indicators. A positive contribution on nature and living species through our forest operations allows for resilient ecosystems that thrive and flourish. We will use our own forest land as a development platform with the aim to make us a frontrunner in this important area.

Strategic actions for long term value creation

Sustainable growth remains central in everything we do. Paper products have continued their structural decline and we took the difficult decision to close two paper sites: Kvarnsveden in Sweden and Veitsiluoto in Finland. We also divested our Sachsen site

in Germany. These decisions were necessary to maintain a competitive paper business. Once fully restructured, our paper business will represent around 10% of total revenues. By the end of the year, as a result of these actions and market recovery, we could see a significant improvement in the supply and demand balance for paper in Europe.

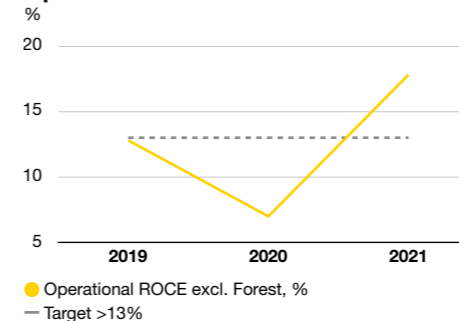
We made significant progress in 2021, strengthening our position for continued growth. This is bolstered by business resilience, a strong safety and people agenda and a proactive and flexible approach to customer collaboration. Stora Enso continuously evolves, and we have the ability and raw material platform to make our business truly integral in the green revolution. Circular products from the forest are part of the solution to combat climate change, a legacy that we will pass on to future generations.

We are committed to the UN Global Compact's ten principles and the UN's Guiding Principles on Business and Human Rights.

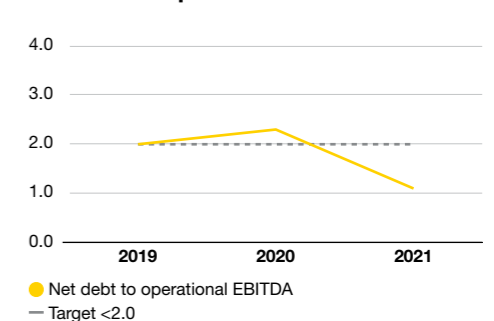
The renewable future grows in the forest.

Annica Bresky
President and CEO

Operational ROCE excl. Forest



Net debt to operational EBITDA



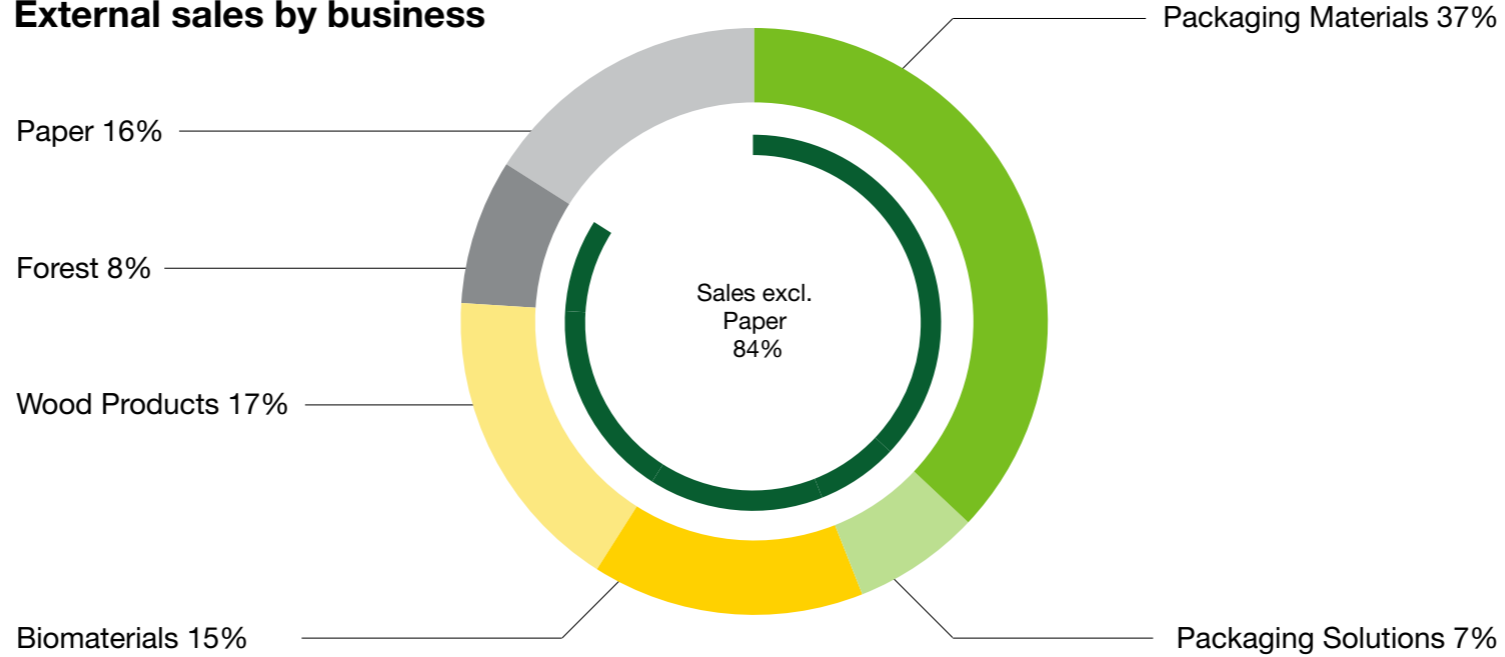


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Our year at a glance

External sales by business



Operational ROCE
excl. Forest:
17.8%
(Target >13%)

Operational EBIT (EUR)
1,528 million

Key figures

EUR million	2021	2020	2019
Sales	10,164	8,553	10,055
Operational EBITDA	2,184	1,270	1,614
Operational EBITDA margin	21.5%	14.9%	16.0%
Operational EBIT	1,528	650	1,003
Operational EBIT margin	15.0%	7.6%	10.0%
Operational ROCE excl. Forest division, %	17.8%	7.0%	12.8%
Cash flow from operations	1,752	1,344	1,991
Cash flow after investing activities	1,101	680	1,386
Earnings per share (EPS) excl. FV, EUR	1.19	0.45	0.61
EPS (basic), EUR	1.61	0.79	1.12
Net debt/last 12 months' operational EBITDA ratio	1.1	2.3	2.0
Forest assets' fair value ¹	7,966	7,314	5,175

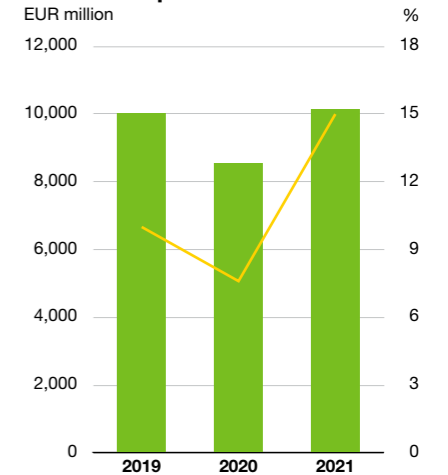
¹ Total forest assets value, including leased land and Stora Enso's share of Tornator

Accelerating growth
in sustainable packaging:
Investing

**EUR
97 million**

in expanding board production to capture the increased demand from e-commerce and consumer awareness of ecological materials.

Sales and operational EBIT



● Sales, EUR million
— Operational EBIT, %



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Highlights 2021

In 2021, Stora Enso took major steps in implementing its strategy by focusing on key high growth areas. These are areas in which we already hold leading positions and can grow both with existing and new customers, in existing and new markets.



New 2030 targets to reach our 2050 ambition of 100% regenerative products
 Stora Enso's ambition is to offer 100% regenerative products and solutions by 2050. The Group is also committing to new 2030 targets for its key sustainability priorities: climate change, biodiversity and circularity. Our new climate target is aligned with the Paris agreement and Science-Based Targets.

Our new, converted packaging line serves global customers in demanding end-uses.

› Read more on page 30



CLT – growth potential in construction

Interest in wooden buildings is increasing. We capture this growth potential by investing in new wooden element mills. Our new line for cross-laminated timber in the Czech Republic will start production during 2022. Our new Building Solutions innovation centre will drive product development, offer knowledge on wooden construction, research and collaboration with partners.



Lignode – attractive growth opportunities through partnering

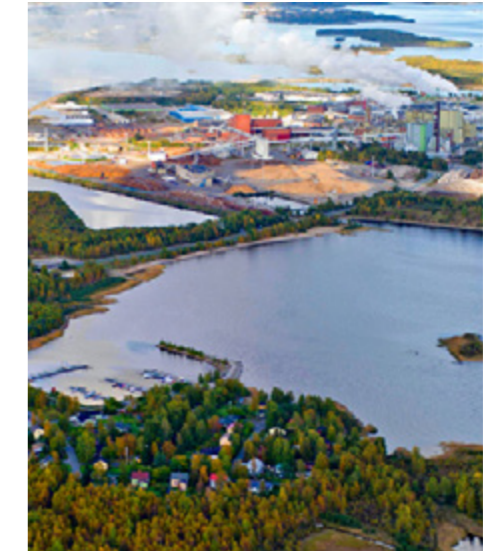
Stora Enso's pilot facility for producing Lignode, a wood-based carbon for the anode in batteries, started its operations. The material is designed to replace synthetic and non-renewable graphite in batteries.

› Read more on page 34



We are partnering with Tetra Pak to triple recycling of beverage cartons in Poland.

› Read more on page 30



Restructuring paper business

Two of our paper mills were closed and one divested during the year. The paper market is in structural decline, which has been further accelerated by the Covid-19 pandemic. We invested in our other paper mills to increase competitiveness in the remaining business.

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Driving shareholder value through effective capital allocation

Stora Enso's promise is that everything that is made from fossil-based materials today can be made from a tree tomorrow. This forms the core of our strategy and is the foundation of our innovation agenda.

Resilience from diversified business

Our diversified business portfolio creates resilience to changing market dynamics and fluctuations in demand, while enabling flexibility for an evolving business. Global megatrends such as urbanisation, digitalisation, changing lifestyles, global warming and eco-awareness, all underpin our growth opportunities.

Innovation for long-term growth

We see significant prospects to expand our total addressable market, and we aim to grow by more than 5% per year over the cycle (excl. the Paper division). By investing in innovation, we help our customers become 100% circular.

Sustainability driving our strategy

We develop products and solutions based on renewable materials made from sustainably sourced trees. Sustainability is a natural part of our strategy and business conduct. We foresee long-term, accelerating demand for renewable, recyclable, and regenerative products.

Our products drive benefits for our customers

We grow our business by offering our customers a wide range of unique, differentiated and customer-led innovative products.

Value from our forests

Stora Enso is one of the largest global private forest owners. Our forest asset is a scarce real asset and a guarantee of a solid balance sheet. It is also an important raw material which provides us with competitive wood supply, giving us tactical flexibility, synergies, and value.

Performance culture power our business edge

Leadership is a top priority for Stora Enso. It is the strongest driver for performance, company culture and personal wellbeing. The decentralised operating model empowers our people to strengthen the execution of our strategy. Our divisions are agile with quick decision-making close to the market.



Focused and disciplined capital allocation drives shareholder value

Strong cash flow generation

Allocating capital for sustainable profitable growth

- Capex: at or below depreciation over the cycle
- Organic growth: in segments with leading market positions
- Selective M&A: mainly in Packaging Solutions and Building Solutions

Returning capital to shareholders

- Dividends: Distribute 50% of EPS excluding fair valuation over the cycle

Strong cash flow generation and a solid balance sheet play key roles in our capital allocation. We invest in sustainable and profitable growth projects in our strategic focus areas.



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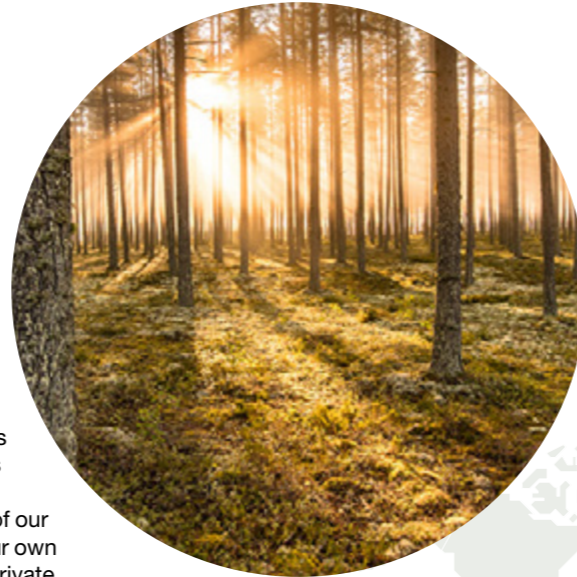
Serving global markets

Stora Enso operates worldwide and focuses on utilising its expertise in renewable materials to create value in packaging, biomaterials, wooden construction and paper. We combine global resources with local presence, service offerings and sustainability expertise.

Asia

The demand for Stora Enso's products, especially consumer board, is growing rapidly in China and in other Asia-Pacific markets. Our consumer board site in Guangxi, China, serves the Asian markets with virgin fiber-based board, and our operations also include eucalyptus plantations. We supply our customers in Asia through our global operations, from production sites in Europe, South America and China.

- Production unit
- Sales office
- Design Studio
- Innovation Centre
- Forests and plantations



Europe

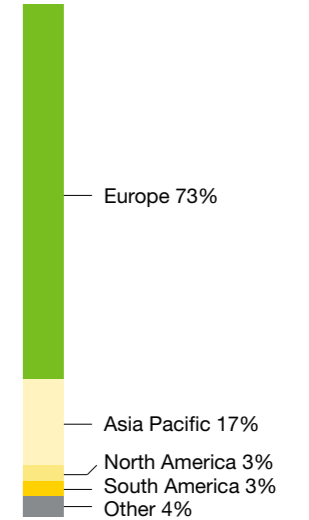
Most of our sales and operations take place in Europe, where we are one of the leading producers of packaging board, pulp, wooden products and paper. Stora Enso has six innovation and research centres in Northern and Central Europe. In Northern Europe, we source most of our main raw material – wood – from our own forests, our forest associates and private forest owners.

South America

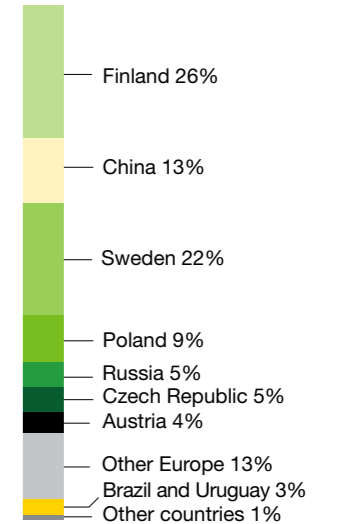
South America is important for Stora Enso's strategy of obtaining high-quality and cost-competitive pulp from tree plantations. In Brazil, we have a 50/50% investment with Suzano in the Veracel Cellulose pulp site. The Montes del Plata pulp site in Uruguay is a 50/50% joint operation between Stora Enso and Arauco.



Sales by destination



Employees by country¹



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

› For more information, see Note 3.



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Our business model

To mitigate climate change, the global community must take swift and systemic action to reduce emissions. Forests offer a solution. Growing trees absorb carbon, and our products, such as packaging and wooden buildings, store it during their life cycle. Our products help customers and society at large to reduce CO₂ emissions by providing low-carbon alternatives to solutions based on fossils and other non-renewable materials.

Diversified product offering brings resilience

Growth: Packaging, building solutions, and new biomaterials	Foundation: Classic wood products	Cash: Paper
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Forest ownership

Forests
Through our own forests, we ensure continuous regeneration of vital and well-growing forests, as well as a steady, long-term supply of renewable wood resources for our products.

Growing trees absorb CO₂. Carbon is stored together with wood-based products, which can then be recycled as raw material and used for energy generation at the end of their life.

Suppliers

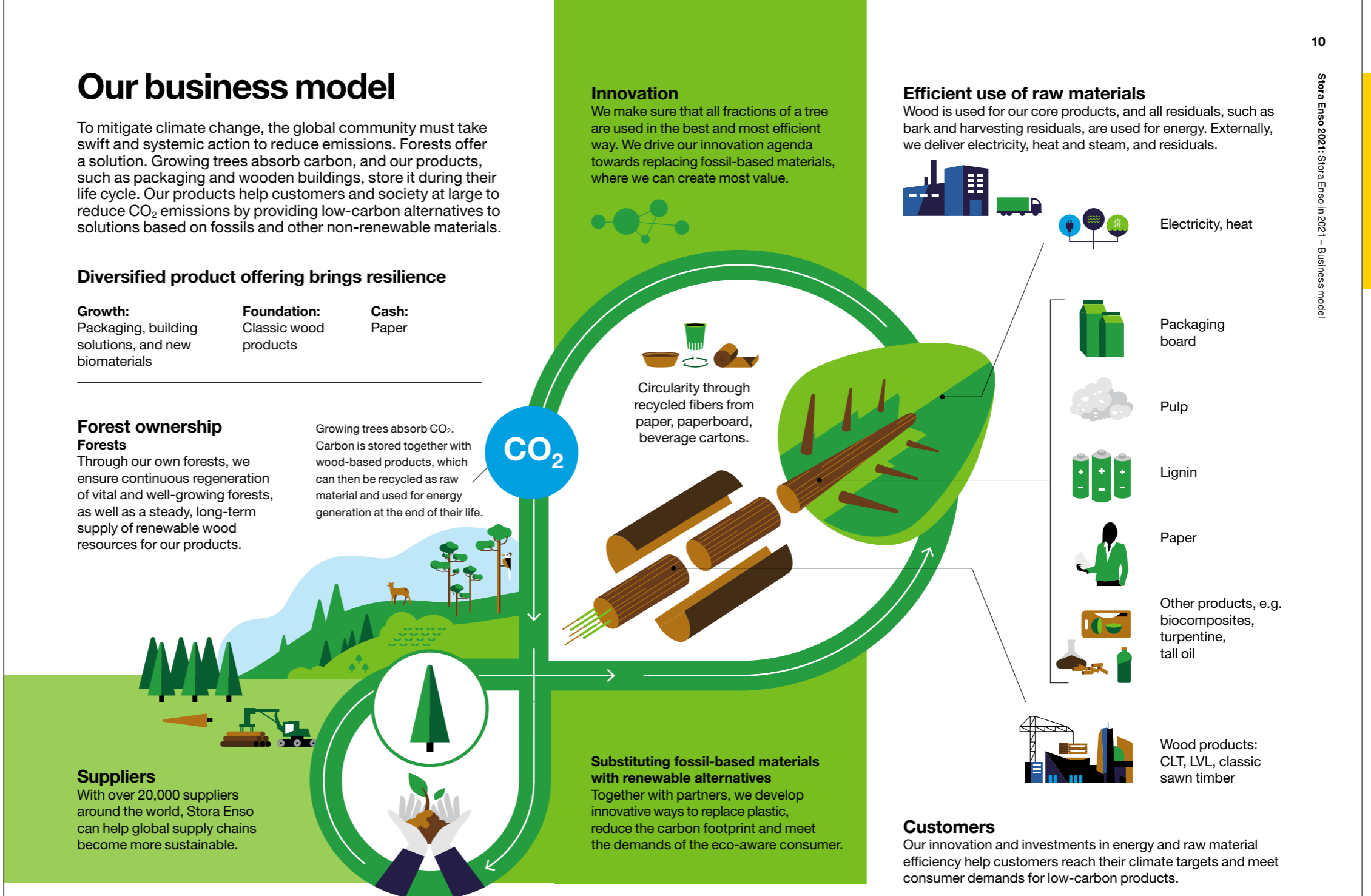
With over 20,000 suppliers around the world, Stora Enso can help global supply chains become more sustainable.

Innovation

We make sure that all fractions of a tree are used in the best and most efficient way. We drive our innovation agenda towards replacing fossil-based materials, where we can create most value.

Efficient use of raw materials

Wood is used for our core products, and all residuals, such as bark and harvesting residuals, are used for energy. Externally, we deliver electricity, heat and steam, and residuals.



Customers

Our innovation and investments in energy and raw material efficiency help customers reach their climate targets and meet consumer demands for low-carbon products.

Accelerated growth in packaging, building solutions, and biomaterials innovations.



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Sustainable, profitable growth

Stora Enso’s products substitute materials from finite, fossil-based sources with products and solutions that are renewable, recyclable and store carbon. Sustainably managed growing forests absorb carbon dioxide from the atmosphere. Stora Enso is committed to a climate change target aligned with a 1.5 degree scenario. We always strive to reuse resources and products as well as to minimise waste in the transformation towards a circular bioeconomy.

Climate change and resource scarcity affect the environment as well as economies and society as a whole. The demand for food, clothing, housing and energy are increasing with the growing middle class. At the same time, sustainability actions, technology developments, and new consumer demographics and preferences are changing demand. There is strong pressure to maximise the efficient use of raw materials and to make the value chains circular. This is supported with lifecycle thinking, hand in hand with rising consumer demand for eco-friendly products that enable a reduced carbon footprint.

Our products help our customers reach their sustainability targets.

Global megatrends underpin our business strategy

Global megatrends drive the demand for renewable materials and underpin our growth opportunities. Below are some examples of the long-term opportunities these trends create for Stora Enso.

Eco-awareness

Climate change requires us to use natural resources more efficiently, and more and more consumers demand sustainable products. Investors and other financial institutions are increasingly considering companies’ impacts on climate change and biodiversity in their investment strategies. Policy makers and regulators are shaping regulation to mitigate and adapt to climate change and to halt biodiversity loss.

The numbers relating to increased eco-awareness are quite substantial: over a third of consumers are prepared to pay up to 25 percent more for a more sustainable option and 85 percent of

people indicate having shifted their purchase behaviour towards more sustainable options. Sustainability is becoming an important purchase criterion and 60 percent of consumers already consider it as such¹.

Digitalisation

Technology development will drive change in business models, productivity and manufacturing. Our digitalisation programme aims to increase safety and efficiency in our operations as well as to develop new innovative services and ways of doing business. One of our focus areas includes creating new digital services for customers to extend the lifetime of the products they purchase from us. For example, we have co-created a large sized IoT sensor technology which can detect moisture and strain in building materials. Digitalisation also enables certified traceability systems which trace the origin of our raw materials. We work to increase and invest in precision forestry and digitalisation for forest growth and more accurate forest planning, and in tree breeding for future-fit forests.

Demographic changes

Demographic development can change demand for products and materials. Ongoing global changes in demographics include an ageing population, driving demand for hygiene and tissue products and pharma. A growing global middle class increases consumption and demand for premium goods, and urbanisation is affecting building models. Close to 68% of the population are expected to live in urban areas by 2050, creating significant opportunities for more sustainable living². The packaged food market is still expected to grow and reach USD 3.86 trillion by 2026³. Fulfilling these needs requires a more conscientious and circular approach to material use as well as sustainable, user-friendly and intelligent packaging solutions.

¹ Simon Kucher & partners, 2021: Global Sustainability Study 2021
² United Nations, 2018 Revision of World Urbanization Prospects, 2018
³ Strait Research: Packaged Food Market and Regional Outlook – Forecast Till 2026





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Our diversified business model creates resilience, flexibility and synergies

Stora Enso serves markets for food and beverages, e-commerce, hygiene, personal care, retail and consumer goods, pharma, energy, adhesives, wooden construction, biomaterials, and more.

Stora Enso has been through a multi-year transformation from primarily a paper company, to become a global renewable materials company. Today, our strategy is to drive the green revolution by accelerating our growth in packaging, building solutions, and biomaterials innovations. We do that through building

on leading market positions in high-margin products, strong and competitive assets, best-in-class industry competence and control of the renewable resource wood.

Our forests are the foundation and both initiate our integrated value chain and underlying sustainability throughout the whole value chain.

To strengthen our strategy execution, we decentralised our operating model in 2021. This will further empower the businesses, and move the decision-making closer to our customers.

Working towards a regenerative future

The new sustainability framework and 2050 ambition provide a long-term direction that will help shape markets and steer innovation and advocacy to secure our businesses.

- Biodiversity
- Climate
- Circularity

Stora Enso contributes to the transformation of the materials system in three areas where it has the biggest impact and opportunities: climate change, biodiversity, and circularity.

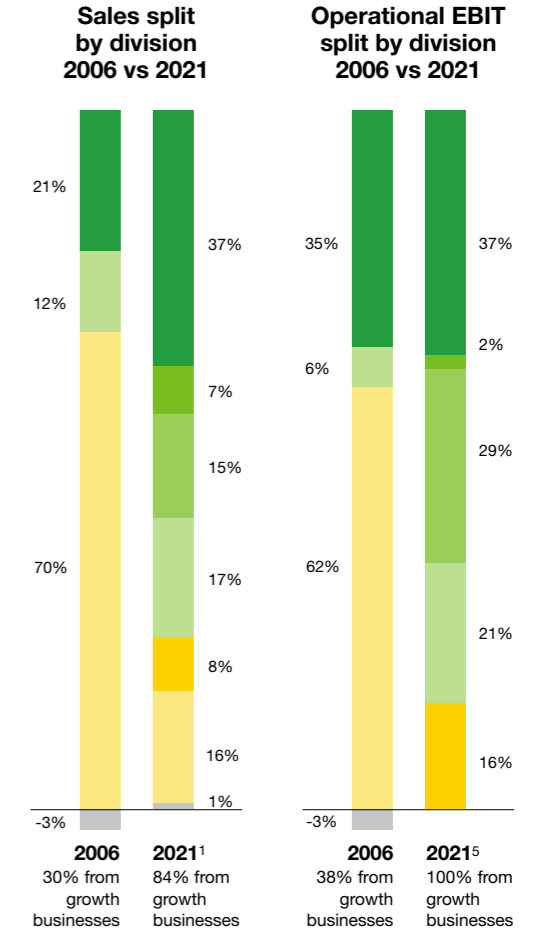
By adopting a regenerative stance, we are shifting our sustainability goals from minimising negative environmental impacts to becoming a net positive¹ contributor within the defined focus areas.

These ambitions stand on a foundation of conducting our everyday business in a responsible manner and proactively manage the impacts from our operations and value chain.

¹ "Net positive" refers to a way of doing business where our products are being recycled, we remove more CO₂ from the atmosphere than we emit, and we enhance biodiversity.

Sustainability embedded in key processes

- Strategy process and business reviews with the divisions
- Product management and innovation
- Investments
- Mergers and acquisitions



¹ External sales in 2021
² In 2006 included in Packaging Materials
³ In 2006 includes merchants
⁴ In 2006 includes Forest
⁵ Excluding divisions with negative impact (Paper, Other & eliminations)

During 2006–2021, Stora Enso transformed from being primarily a paper business into a renewable materials company with a focus on growth segments.

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Packaging

Major brands and retailers are looking for ways to replace plastics and be more circular. In 2021, we saw increasing demand for our renewable solutions across our strategic focus areas. Given the rising demand for plastic-free and circular packaging, our sustainable packaging businesses are a key area for growth. We are collaborating with brand owners, retailers and converting partners to drive sustainable packaging innovation to reduce plastics and minimise waste. We are investing in expansion in attractive end-user segments to accelerate our growth, underpinned by strong demand. During 2021, we completed the conversion of a paper line in one of our mills to kraftliner, targeting global customers in demanding packaging end-uses. As there is a strong growth in these grades, we are looking at a new investment to drive growth in segments such as food packaging and e-commerce. We are investing in an expansion in liquid packaging and other consumer boards, strengthening our capacity to produce high-quality and cost-competitive grades within these growing core segments.

Building solutions

There are attractive growth opportunities in the building industry, offering wooden alternatives to construction materials with a larger carbon footprint, such as concrete and steel. The construction industry is facing the major challenge of

reducing carbon emissions and waste. Our aim is to capture a larger share of the wood construction value chain through value-add solutions, such as pre-fabricated wooden elements, new models and services. Hence, we are building a new cross-laminated timber (CLT) line in the Czech Republic, and developing partnerships to increase digitalised solutions in the whole construction value chain.

Biomaterials Innovation

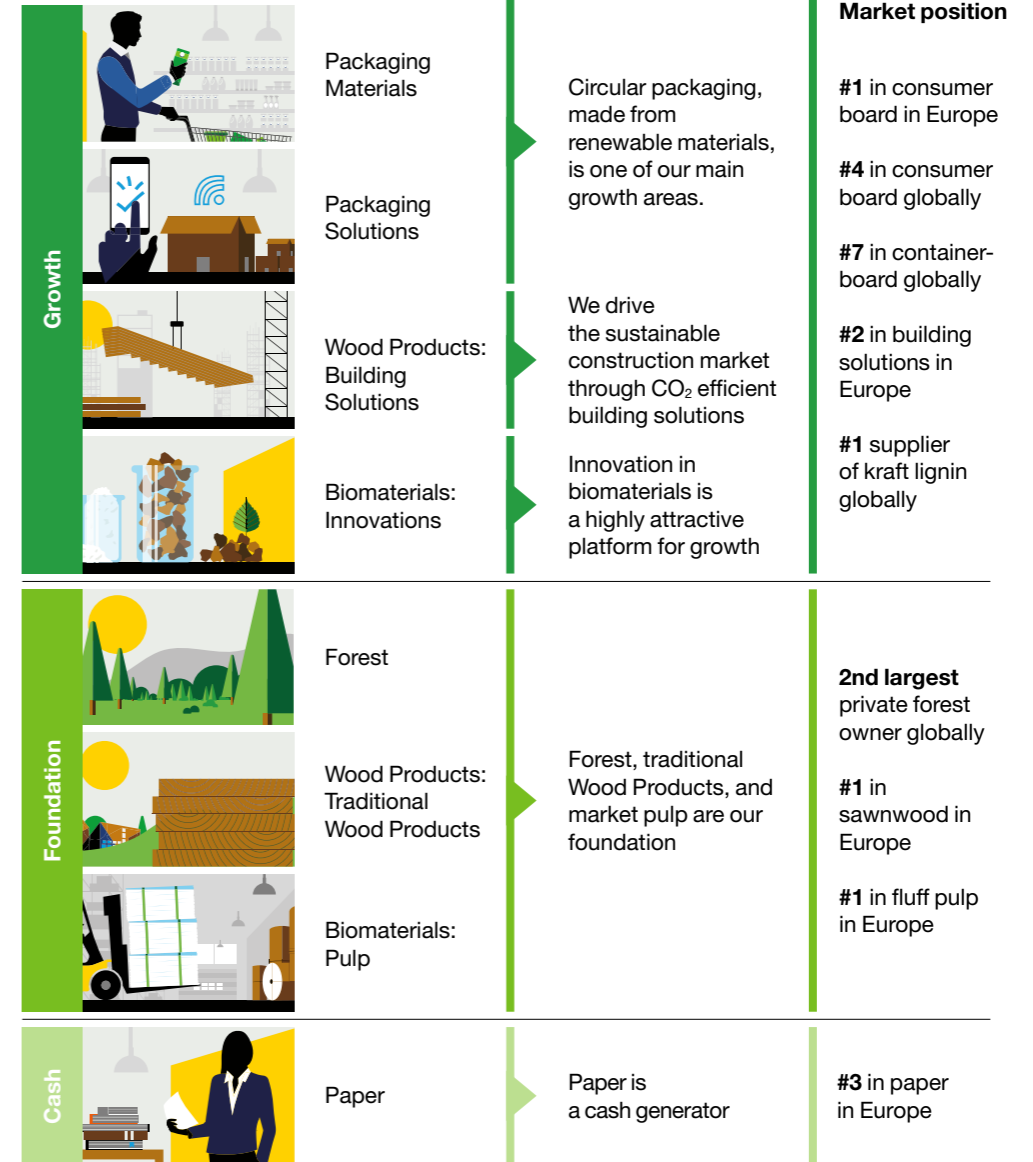
In biomaterials, we focus on bringing innovative and sustainable materials to the market. Through know-how, strategic collaborations and partnerships, we are working to accelerate breakthrough innovations in, for example, lignin-based carbon for energy storage, bio-binders, and carbon fiber. Our pilot facility for producing bio-based carbon materials for batteries started operations in 2021. We also have a partnership in the production of bio-based carbon fiber. The co-development is driven by the need for high-performance carbon fiber in transportation, construction and power generation. Another example of our innovations is our new bio-based packaging foams, which address the need for climate-friendly, renewable and circular cushioning materials in inner packaging.

In **paper**, our focus is on reducing costs, capacity management and making the remaining business competitive.

Our sustainable products respond to customers' need to replace fossil-based materials.

Stora Enso's strategy

We create value for our shareholders by growing our leading positions in packaging, biomaterials innovations and building solutions.





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Sustainability drives our innovation and growth

Innovation plays a key role in reaching our strategic growth ambitions and sustainability targets. Our innovation initiatives focus on areas where we see strong business opportunities, including new sustainable packaging materials and barriers, low-carbon building solutions, and breakthrough technologies within the Biomaterials division, such as Lignode (kraft lignin), carbon for the anode part of batteries. In forestry, our innovation efforts are focused on digitalisation, such as new remote sensing technologies and data processing as tools in precision forestry development. Sustainability is a major driver in our

innovation efforts. We respond to customer demand for products which can reduce their CO₂ footprint, and help them reach their sustainability targets.

We are moving into piloting and scale-up phases with several of our key initiatives and we work across the value chain with customers, partners, suppliers, research and academic institutions, and start-ups to drive open innovation and accelerate speed to market. Together, we can find and develop innovative ways to replace plastic, reduce the carbon footprint and meet the demands of the eco-aware consumer, with the aim of offering 100% regenerative products.

Everything that is made from fossil-based materials today can be made from a tree tomorrow.



Innovation focus areas



New applications for fiber-based materials: formed fiber, wood foam



Bio-based barriers for packaging



Biomaterials innovations: carbon for energy storage, bio-binders, carbon fiber

To drive development and innovation, Stora Enso has strategic partnerships and cooperation with universities and leading research groups. In the Nordics, these partnerships include Aalto University, Chalmers University of Technology, the Royal Institute of Technology and the Swedish University of Agricultural Sciences. These partnerships give us access to the research that takes place at the frontiers of expertise and knowledge and that will shape the fiber and forest-based industries for decades to come.

Partnerships to speed up innovation and reach new customers

Cordenka
World-leading rayon producer



Development of bio-based carbon fiber

Pulpex
International packaging technology company



Sustainable paper bottles and containers

Lendlease
Real estate group



Transition towards more circular, innovative and digitalised solutions for a low-carbon construction industry



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Innovations in 2021



1

Lignode® by Stora Enso is designed to replace synthetic graphite used in electric vehicle batteries. Lignode is a sustainable, lignin-based anode material for lithium-ion and other rechargeable batteries.



2

Trayforma™ by Stora Enso is a renewable wood fiber-based packaging solution for frozen and chilled food which is safe for oven and microwave heating. Trayforma guarantees food safety and is highly formable and convertible.



3

Stora Enso and the packaging technology company Pulpex joined forces to industrialise the production of eco-friendly paper bottles and containers made from wood fiber pulp. These renewable products will offer an alternative to PET plastics and glass.



4

NeoLigno® by Stora Enso is a fully bio-based binder system, which provides healthier indoor and working environments. The launch of NeoLigno was an important step to reinforce kraft lignin as a fossil-free component in the adhesives formulations.



5

Papira and Fibrease are new bio-based foams made from wood. The foams are used for protective and thermal packaging, addressing the need for climate-friendly, renewable and circular cushioning materials. These products are fully recyclable in existing processes together with paper and paperboard.





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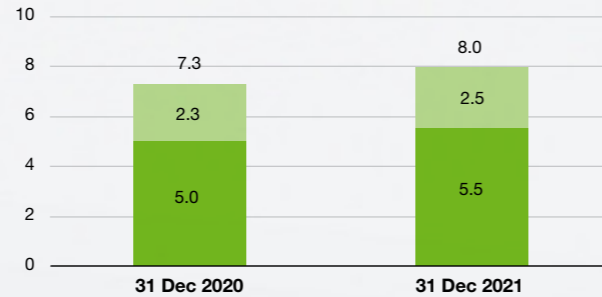
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The forest – our most valuable asset

Our forests create a solid foundation for our whole business in the long term. They are a valuable real asset that gives us both flexibility and secures long-term, competitive wood supply close to our mills. Our sustainable forest management and research and development initiatives improve yield, protect the land and promote biodiversity.

Group's forest assets value

EUR billion



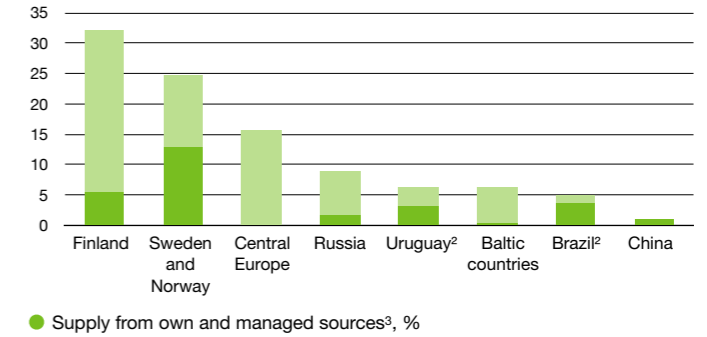
● Forest land* ● Biological assets

* including leased land and Stora Enso's share of Tornator

Stora Enso is one of the largest private forest owners in the world, with forest assets valued at EUR 8 billion (forest land and biological assets) in 2021, including forest land and biological assets of EUR 7 billion in Sweden and Finland. Globally, Stora Enso owns or leases land covering a total area of 2.01 million hectares. About 30% of our wood raw material needs are covered from our own sources and long-term supply agreements. The long-term target is to increase the value of our forest assets without compromising biodiversity and the climate aspects, such as CO₂ absorption, of forests. The loss of biodiversity will demand attention in the years to come – from all companies, but especially from companies in the bioeconomy. Years of sustainable forest management in Stora Enso give us a head start to become net biodiversity positive.

South America is important for Stora Enso's strategy of obtaining high-quality and cost-competitive pulp from tree plantations. In Brazil, we have a 50/50% investment with Suzano in the Veracel Cellulose pulp site. Our share of the eucalyptus pulp is partly used in our paper and board production sites and partly sold as market pulp. The Montes del Plata pulp site in Uruguay is a 50/50% joint operation between Stora Enso and Arauco. Stora Enso's share is sold entirely as market pulp, mainly in Europe and Asia.

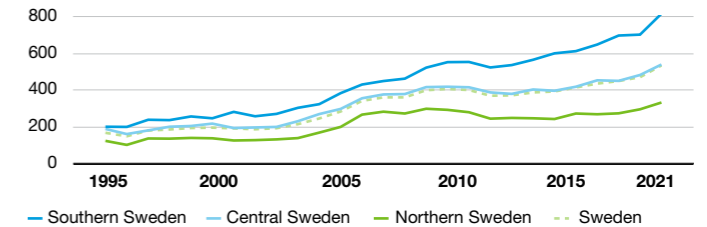
Wood procurement by region¹, %



In 2021, we harvested in own and leased forests and sourced from long-term agreements 10.4 million m³. Our deliveries to our own units were 37.6 million m³ in total.

¹ Total amount of wood (roundwood and chips) procured within these regions for delivery to our units (million m³ solid under bark).
² Figures for Brazil and Uruguay include 50% of the wood procurement of our joint operations Veracel and Montes del Plata.
³ Including wood delivered from Stora Enso's forests to third-parties.

Market transaction based forest prices in Sweden



Source: Ludvig & Co market data
Stora Enso's forest assets are located in Central and Northern Sweden.

The total amount of wood (including roundwood and wood chips) delivered to Stora Enso's mills in 2021 was

37.6 million m³ sub*

* solid under bark cubic meters

In 2021, Stora Enso invested

EUR 64 million

in future growth through silviculture and fertilisation



Creating value from our forest assets

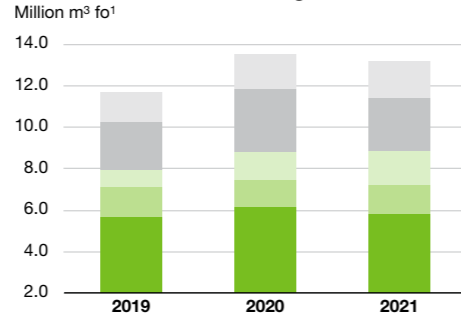
– Active forest asset management to increase forest growth, harvesting and yield

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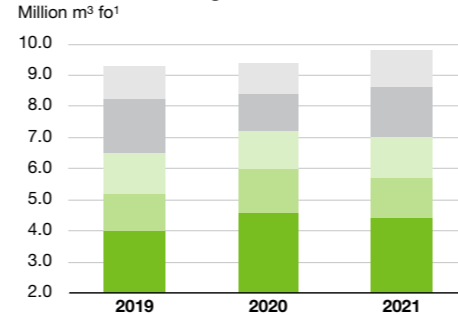
Returns from wood sales	Forest growth and asset value	Returns through land development	Cost efficient and secured wood supply	Benchmark in sustainability
<ul style="list-style-type: none"> Stabile income with increasing long-term demand Raw material efficiency – optimisation of timber value for various end uses 	<ul style="list-style-type: none"> Forests are an asset class which can provide returns and increase in value Increased wood production through innovation and sustainable forest management Efficient forest damage detection and mitigation with new technologies Yield improvement initiatives to increase harvesting sustainably in own forest by 10–15% through tree breeding, fertilization, advanced forest management practices 	<ul style="list-style-type: none"> Active land management: land development for various needs such as recreation and infrastructure development Multiply wind power capacity by 2030 supported by technology development Land swaps and compensations of protection areas Revenue streams from land sales, hunting rights, gravel sales, etc. 	<ul style="list-style-type: none"> Ensure cost-competitive wood supply supporting Stora Enso's growth plans Continuously improve the efficiency of own operations to secure cost-competitive wood supply Increased wood production through innovation and sustainable forest management 	<ul style="list-style-type: none"> Own forest as a development platform for enhancing biodiversity Biodiversity ambition 2050: Net positive impact on biodiversity within own forests and plantations through active biodiversity management A set of actions towards 2030 initiated to improve biodiversity on species, habitat and landscape levels Measurable indicators in use to verify sustainability impacts of our operations

Estimated annual forest growth



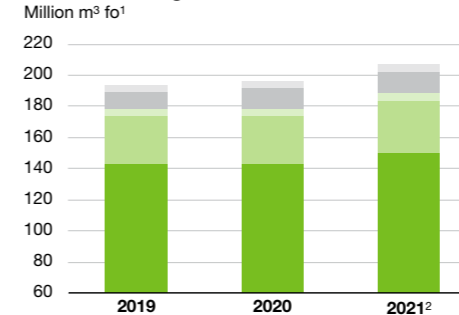
- Own forest Sweden
- Tornator (41%)
- Guangxi, China
- Montes del Plata, Uruguay (50%)
- Veracel, Brazil (50%)

Annual harvesting



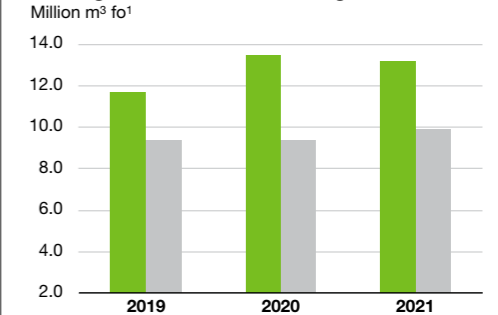
- Own forest Sweden
- Tornator (41%)
- Guangxi, China
- Montes del Plata, Uruguay (50%)
- Veracel, Brazil (50%)

Total standing stock



- Own forest Sweden
- Tornator (41%)
- Guangxi, China
- Montes del Plata, Uruguay (50%)
- Veracel, Brazil (50%)

Total growth and harvesting



- Estimated growth
 - Harvesting
- Figures cover productive area.
¹ forest cubic meters
² Standing stock increase deviates significantly from harvesting and growth related changes. More details in [Note 12](#).



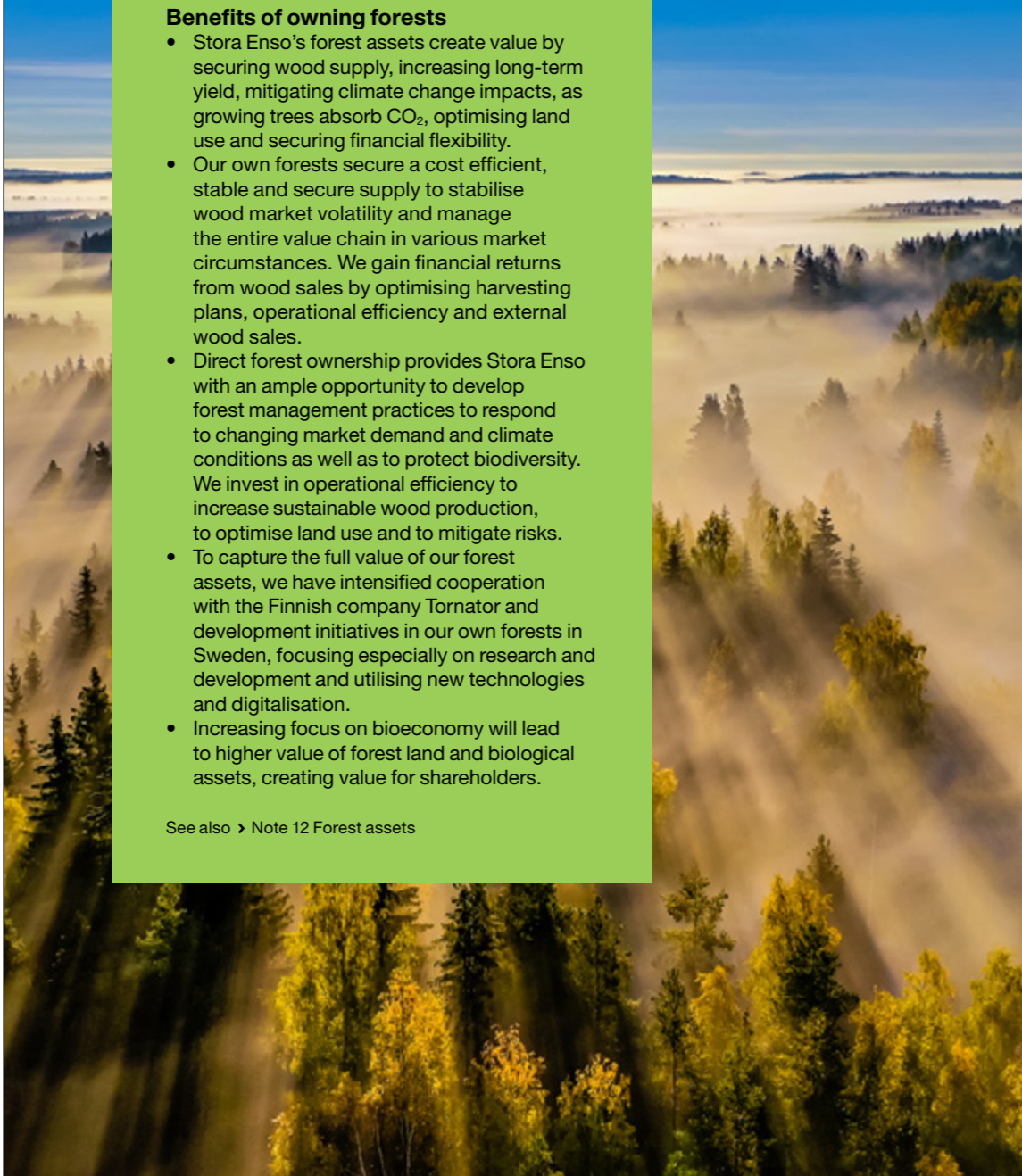
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Benefits of owning forests

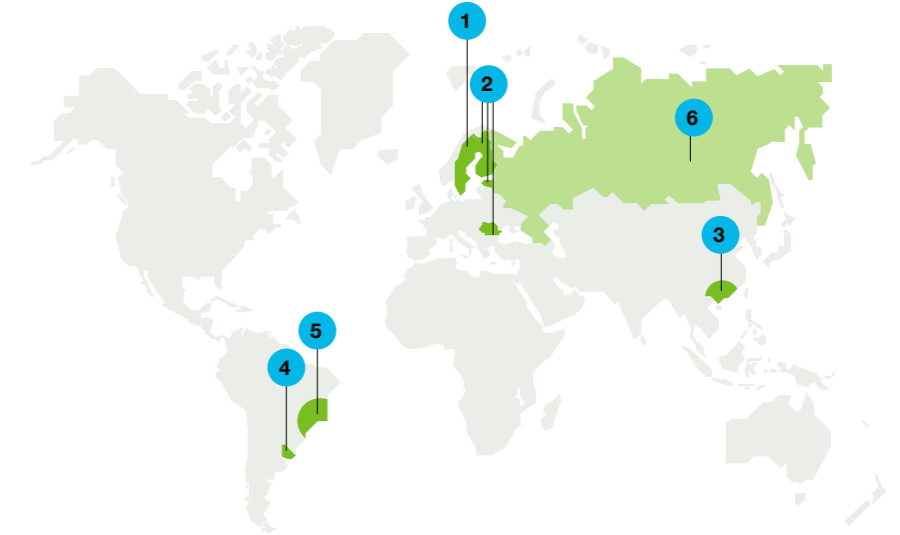
- Stora Enso’s forest assets create value by securing wood supply, increasing long-term yield, mitigating climate change impacts, as growing trees absorb CO₂, optimising land use and securing financial flexibility.
- Our own forests secure a cost efficient, stable and secure supply to stabilise wood market volatility and manage the entire value chain in various market circumstances. We gain financial returns from wood sales by optimising harvesting plans, operational efficiency and external wood sales.
- Direct forest ownership provides Stora Enso with an ample opportunity to develop forest management practices to respond to changing market demand and climate conditions as well as to protect biodiversity. We invest in operational efficiency to increase sustainable wood production, to optimise land use and to mitigate risks.
- To capture the full value of our forest assets, we have intensified cooperation with the Finnish company Tornator and development initiatives in our own forests in Sweden, focusing especially on research and development and utilising new technologies and digitalisation.
- Increasing focus on bioeconomy will lead to higher value of forest land and biological assets, creating value for shareholders.

See also > Note 12 Forest assets



Stora Enso’s productive forest land areas at the end of 2021

Total forest asset value in balance sheet EUR 8.0 billion



- | | | |
|---|--|---|
| <p>1</p> <p>Swedish forests
1,389,000 ha of forest land
Fair value:
EUR 6,017 million</p> | <p>2</p> <p>Tornator
Stora Enso’s share
263,000 ha in Finland,
27,000 ha in Estonia, and
5,000 ha in Romania
Fair value:
EUR 985 million</p> | <p>3</p> <p>Guangxi, Southern China (leased)
77,000 ha of forest land
Fair value:
EUR 387 million</p> |
| <p>14</p> <p>Montes del Plata, Uruguay
Stora Enso’s share
136,000 ha of forest land
Fair value:
EUR 468 million</p> | <p>5</p> <p>Veracel, Brazil
Stora Enso’s share
113,000 ha of forest land
Fair value:
EUR 110 million</p> | <p>6</p> <p>In addition:
Russia: 370,000 ha
(long-term harvesting rights)</p> |

Including owned land EUR 2,279 million and leased land EUR 235 million balance sheet value at the end of 2021.

> Read more about sustainable forestry on page 136



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Our products offer solutions to climate change



Sustainable Development Goals



Many of Stora Enso's actions contribute to SDG 13. Our operations are based on renewable raw materials and sustainable forest management, which contribute to climate action. Our products help to reduce CO₂ emissions by providing low-carbon, renewable, and recyclable alternatives to fossil fuels and other non-renewable materials. During 2021, we announced new science-based targets for emission reduction and new innovations.

Positive climate impacts through substituting fossil-based materials

The climate crisis is no longer a thing of the future – it is here today and we need to keep global warming below 1.5 degrees. This means almost halving global emissions over the next decade and achieving a full net zero economy by 2050 at the latest. Companies' ability to innovate and scale new solutions fast is necessary to meet this challenge. Our ambition is to offer 100% regenerative

products and solutions by 2050 – products that remove more carbon than they emit.

Forests have a key role in combatting climate change. Growing trees in sustainably managed forests absorb carbon dioxide (CO₂) from the atmosphere and, together with wood-based products, act as carbon storage. Our products help customers and society at large to reduce CO₂ emissions by providing low-carbon alternatives to solutions based on fossil fuels and other non-renewable materials. We regularly

carry out Life Cycle Assessments (LCAs) to understand and develop the environmental impact of products, including carbon footprints. Read more on page 39.

New ambitious science-based target

Stora Enso was the first forest products company to set science-based targets (SBT)¹ to reduce its greenhouse gas (GHG) emissions in 2017. We achieved the science-based target nine years ahead of time. In 2021, we raised our ambition to align with

a 1.5 degrees scenario. Our updated target is to reduce absolute scope 1 and 2 GHG emissions from operations by 50% by 2030 from the 2019 base-year. The Stora Enso Carbon Neutrality Roadmap is a key tool in our GHG scenario assessment and key actions. The roadmap guides Stora Enso's long- and short-term fossil CO₂ reduction actions. To reach the target, we will reduce fossil carbon emissions by investing in further improving the energy efficiency of production processes, and by continuing to reduce

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the use of fossil fuels. Instead, we will use more clean energy sources, including wood-based biofuels from sustainable sources. By the end of 2021, Stora Enso's scope 1 and 2 emissions were 14% lower compared to the 2019 base-year.

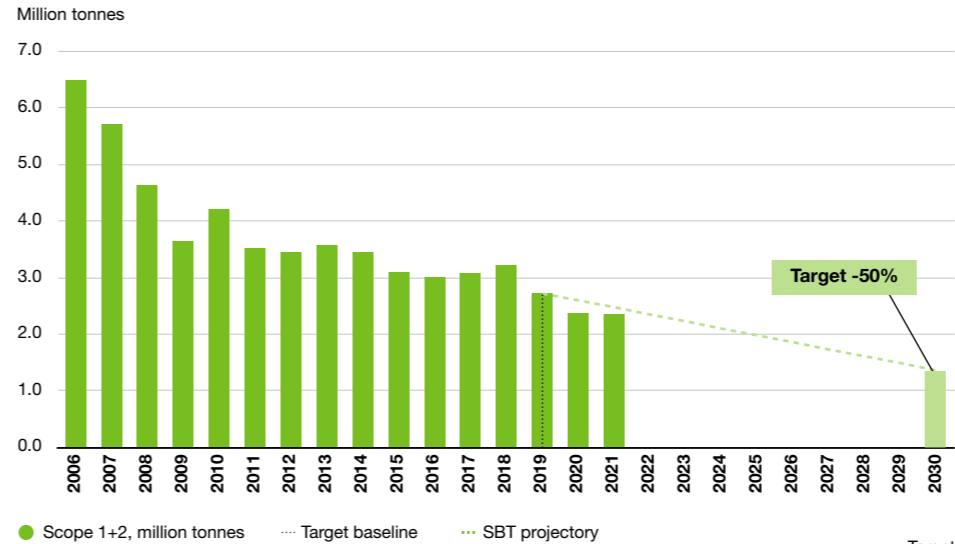
Combatting global challenges such as climate change does not happen in isolation. Value-chain emissions often represent the largest portion of companies' carbon footprint. Therefore we are also committed to the target of reducing scope 3 GHG emissions by 50% by 2030 from the 2019 base-year. To reach this target, we will further improve efficiency and lower carbon-intensity with suppliers and logistics. One important tool in implementing and enforcing emission reductions is the Stora Enso Supplier Code of Conduct, which is the common set of requirements for all our suppliers. In the most recent update in 2021, we added requirements on greenhouse gas emission monitoring, reporting and reduction in suppliers' own operations and their value chain. By the end of 2021, the scope 3 emissions were 2%² lower compared to the 2019 base-year.

¹ The Science Based Targets initiative is a collaboration between the CDP, the 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.

² Based on the most recent methodology. For more information on our scope 3 reporting, see page 45.

- › For more information on Stora Enso's reporting according to TCFD recommendations, see page 53.
- › For more information about how we work with carbon, energy and air emissions, see page 45.

Stora Enso's greenhouse gas emissions^{1, 2, 3}



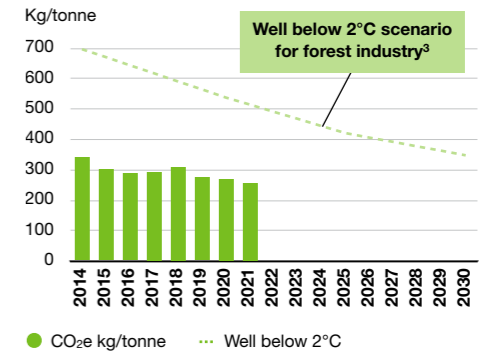
Scope 1+2	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2030
Million tonnes	6.50	5.71	4.62	3.64	4.21	3.53	3.45	3.57	3.45	3.09	3.01	3.08	3.22	2.72	2.36	2.35	-50%

¹ Covering direct and indirect absolute Greenhouse Gas (GHG) emissions as fossil CO₂ equivalents (scope 1 and 2) from Stora Enso's production units. Excluding joint operations. Includes trading of Guarantees of Origin of electricity.

² GHG emissions from our operations (scope 1+2) have been verified at reasonable assurance level by the Group's external auditor since 2015.

³ Historical figures recalculated due to additional data or organisational changes after the previous annual report.

Stora Enso's greenhouse gas emissions in relation to production^{1, 2}



Scope 1+2	2014	2015	2016	2017	2018	2019	2020	2021
kg/tonne	342	302	287	293	309	277	271	259

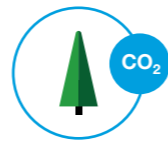
¹ Covering direct and indirect Greenhouse Gas (GHG) emissions as fossil CO₂ equivalents (scope 1 and 2) from Stora Enso's board, pulp and paper mills, and corrugated units. Excluding joint operations. Includes trading of Guarantees of Origin of electricity. Normalised figures are reported per unit of sales production of board, pulp and paper.

² Historical figures recalculated due to additional data or organisational changes after the previous annual report.

³ The latest available scenario for forest industry. Based on information from the Transition Pathway Initiative (TPI) including scenarios data from the International Energy Agency. Stora Enso's climate targets are aligned to a 1.5 degrees scenario.

Case

Stora Enso's annual climate impact¹



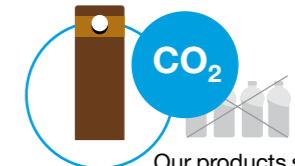
Our forests remove carbon²
-1.5
million tonnes of CO₂



Our products store carbon
-2.5
million tonnes of CO₂



Our value chain emissions³
+10.2
million tonnes of CO₂



Our products substitute fossil-based products, saving
-17.2
million tonnes of CO₂

¹ Negative value indicates a net removal from atmosphere. Calculated by the Swedish University of Agricultural Sciences (SLU) based on Stora Enso's forest and production figures: Climate effects of a forestry company – including biogenic carbon fluxes and substitution effects (2021 update).

² Net annual carbon sequestration with forward-looking simulation in Stora Enso's forest assets. Excludes purchased wood from third-party forest owners, whose forests are estimated to have an additional net carbon sequestration of -5 million tonnes of CO₂ annually. For more information, see also Carbon in Stora Enso's forests.

³ Stora Enso's fossil CO₂e emissions in 2021 including direct emissions from our operations, emissions from purchased energy as well as emissions from other sources along our value chain (Scope 1, 2, and 3). Calculated based on the guidance provided by the Greenhouse Gas Protocol.

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Protecting biodiversity

Increased ambition and new targets

Biodiversity is fundamental to both planet and people; it provides functioning ecosystems that supply oxygen, clean air, water and food. Biodiversity has been decreasing globally for decades, and more action is needed to reverse this development. At Stora Enso, biodiversity management is an integral part of our forest management practices.

Stora Enso has a solid track record of achievements in safeguarding biodiversity in its forests and tree plantations since the 1990s, for example by pioneering forest certification, restoration and various forest management practices. In 2021, we raised our ambition to safeguard and enhance biodiversity with a new programme

together with our customers, academia, environmental organisations and other partners. By adopting a regenerative stance, we are shifting our sustainability goals from minimising negative environmental impacts to becoming a net positive contributor towards biodiversity. We commit to achieving a net-positive impact on biodiversity⁴ in our own forests and plantations by 2050 through active biodiversity management and contributing to processes and standards defining the concept in forestry.

Digitalisation, remote sensing technology, and artificial intelligence enable us to take a step forward in the way we operate in forests, in the wood supply chain and in the protection and restoration of biodiversity.

Sustainable Development Goals



Our work with forests, plantations and land-use directly contributes to United Nations Sustainable Development Goal 15, which focuses on sustainable

management of all types of forests and halting biodiversity loss. Sustainable forest management safeguards forest health and productivity and protects biodiversity – while securing the long-term availability of renewable resources. This is why we closely monitor the management of the forests and plantations from which we source wood.

Read more on page 37. We support and encourage our partners to move in the same direction and we also aim to improve biodiversity globally, even beyond the forest sector, through knowledge-sharing and active participation in formulating new policies and standards.

We have developed and initiated a set of actions for the period until 2030 to improve biodiversity on the species, habitat and landscape levels. We use our own forest in Sweden as a development platform for enhancing biodiversity. Our work will be supported by a science-based monitoring programme and continuous research. We will start to share data on our progress through a new [online reporting tool](#) in 2022.

Sustainable forest management

Sustainable forest and plantation management secures the long-term availability of wood. We ensure that our forests grow more than they are harvested, and that biodiversity is promoted as an integral part of everyday forest management practices. The climate benefit and economic value from growing forests are gained while promoting biodiversity and other sustainability aspects. Our biological assets consist of standing trees to be used as raw material in pulp and mechanical wood production. Wood residues are used as biofuels in our own operations.

In addition to the wood supply from our forests and tree plantations, Stora Enso purchased wood from over 21,000 private forest owners during the year. In 2021, 88% of Stora Enso's wood came from managed semi-natural forests in Europe, most of which are privately owned. In these forests, biodiversity is maintained and enhanced across forest landscapes to enhance biodiversity in our own forests and in forests owned by private owners.

In 2021, 12% of Stora Enso's wood came from tree plantations. Similar to our managed semi-natural forests, our commercial plantations are also certified to ensure that all aspects of sustainability are taken into consideration. We never establish plantations in natural forests, protected areas or water-sensitive locations.

We only use land with low biodiversity value, such as former pastureland. In fast-growing tree plantations, the landscape typically consists of a mosaic of areas for both intensive wood production and biodiversity conservation. 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.

⁴ Net Positive refers to a way of doing business where our products are being recycled and where we remove more CO₂ from the atmosphere than we emit and enhance biodiversity.

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In all our forests, 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. For more information on how we implement biodiversity management practices in northern forests and tree plantations, see the image on the right.

Innovations for future-fit forests

We ensure that forests are regenerated and remain healthy in all circumstances. This is normally done through active planting or sowing, although in some areas active regeneration is often complemented by natural seed dispersal, leaving seed trees standing in the harvesting area, or coppicing. We test and apply modern scientific tools for tree improvement and adaptation to climate change, as well as for the management of genetic diversity. Our forest professionals, forest assets and international network create a unique set-up for innovation and development.

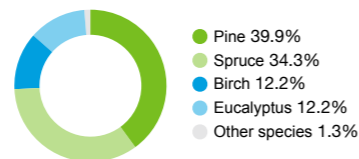
Read more:

- › Note 12 Forest assets
- › Sustainable forestry

See more examples of Stora Enso's biodiversity work:

- › New study recognises the successful Atlantic rainforest restoration
- › Cooperation on peatland restoration to enhance biodiversity

Wood procurement by species



Examples of biodiversity management practices and indicators in Stora Enso's Northern forests

Biodiversity indicators

Decaying wood

Deadwood is an important habitat for many species.

- ⇒ Amount of deadwood;
- No damage to deadwood

Tree retention

Creating variability of trees of different ages and promoting natural creation of deadwood.

- ⇒ Number of retention trees;
- No damage to retention trees

Forest structure

Rich structural variation enhances biodiversity.

- ⇒ Forest age class distribution; Deciduous rich stands;
- Mixed species stands; Number of nature value trees;
- Stands with high age; Vertical layering of tree canopies

High stumps

High stumps created during harvesting are standing deadwood that can be inhabited by birds and insects.

- ⇒ Amount of created high stumps

Protection of prioritised habitats

No harvesting done in ecologically and culturally valuable areas.

- ⇒ Area of the prioritised habitats;
- No damages to such habitats/areas

Species-specific conservation

Identifying species of particular conservation interests to actively enhance them.

- ⇒ Abundance of selected species



Controlled burning

Example of active biodiversity management to promote species requiring forest fire.

- ⇒ Size of the managed area

Soil and water protection

Avoiding damages to biodiversity connected to soils and waters.

- ⇒ No dispersal barriers in streams;
- Streams with high nature quality

Buffer zones

Buffer zones of retention trees provide and connect habitats and improve the visual quality of landscapes.

- ⇒ No harvesting in the buffer zones;
- No soil or water damages

› Read more about Stora Enso's biodiversity indicators



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Accelerating circularity

The circular economy is regenerative by design. The goal is to retain the value of the circulating resources, products, parts and materials by creating a system with innovative materials and business models. Our goal for 2050, is to provide fully transparent and circular products, that are recycled and designed to optimise the environmental and societal benefits of the wood and fiber used.

Our focus is on creating value through innovation and partnerships where new products, business models and recycling infrastructure support the development of a circular economy. Wood as a raw material gives us a natural head start: trees grow back in sustainably managed forests that store carbon. We can increase the benefits

and access raw materials through product recycling. Wood fiber products are already extensively recycled. The wood fiber can typically be recycled 5–7 times, and in some cases over 20 times, continuously storing the carbon. Once fibers get too degraded to recycle, they can be used to make bioenergy.

Recycling and a circular economy require collaboration across the value chain to drive change at all stages, from product design to collection and recycling systems.

New 2030 target

Our circular economy target outlines our commitment to transparent and circular material flows that help minimise waste and combat climate change, and that reduce

the impact on nature. The target is to achieve 100% recyclable products by 2030. By the end of 2021, 93% of our products were recyclable.¹ Already today most of our products, such as paper and packaging products, are recyclable. Going forward however, the performance will be challenged by more granular testing and stricter recyclability specifications. We also need to ensure the recyclability of new products.

¹ Based on the technical recyclability of products and their production volumes consolidated as tonnes. Technical recyclability is defined by international standards and tests when available and in the absence of these by Stora Enso's own tests that prove recyclability. The reporting scope includes Stora Enso's packaging, pulp, paper and solid Wood Products as well as biochemical by-products. The recyclability of corrugated packaging estimated in 2021 reporting and will be confirmed by further testing.

Sustainable Development Goals



Many of our actions contribute to SDG 12. During 2021, we announced a new sustainability ambition and 2030 targets, and new

investments and products as part of our business strategy. The common aim is to offer low-carbon, renewable and circular products to customers. Examples can be found throughout our Annual Report: for example, we are [partnering with Pulpex](#) to produce wood fiber-based bottles and we have started operations of a pilot plant for [wood fiber-based foam](#) production. In addition to the products, Stora Enso contributes to SDG 12 through operations and supply chains.



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Designing for circularity

Stora Enso's [Circular Design Guidelines](#) outline our commitment to contribute to a circular bioeconomy through our products and solutions. These principles serve as guidance for all our divisions, whether planning to create new processes and products or to update existing ones. These guidelines will be fully adopted in the innovation and product development processes by 2025.

We aim for 100% recyclable products by 2030.



Extending the value of materials

We continued to monitor financial value creation from new product applications based on process waste and residuals. Our utilisation rate for process residuals and waste across the Group, including internal and external uses, was 98% in 2021. Utilising side streams and waste can also bring added value. The revenues derived from residuals amounted to EUR 150 million in 2021.

In Stora Enso's operations, the Company works to minimise waste and resource use overall. Read more on page 52.

Value chain collaboration and product recycling

Stora Enso collaborates with customers and partners to develop new circular solutions and business models to replace fossil-based materials and to cut down on waste along the value chains. Read more about how we work together with our customer Tetra Pak to

significantly improve recycling of beverage cartons throughout Central and Eastern Europe, scaling up circular packaging. In 2021, Stora Enso also announced new [partnerships](#) to promote wooden buildings. Stora Enso and Lendlease will lead the transition towards more circular, innovative and digitalised solutions to help speed up the construction industry's transformation.

During 2021, we explored new [circular business models](#) by collaborating with start-ups on, for example, reusability and closed loop models. In 2021, a pilot recycling line for plastic and biocomposite materials was installed at the Hylte site in Sweden. The pilot will be used to test new business models for circular products and services. This includes recycling of new raw materials such as our own industrial side streams. In addition to recycling materials, we can take back products made of biocomposites and recycle them into new biocomposite material.

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Employees and leadership

Motivated employees are the key to success.

Leadership is the enabler needed to implement Stora Enso’s business strategy and help build a winning culture. Our business success depends on our ability to retain, develop and attract talent for our businesses. The megatrends creating business opportunities also continuously create new competence needs for our employees. Meanwhile, skills relating to areas such as digitalisation, sustainability and innovation have become crucial to our future success.

Stora Enso’s People Promise and Expectations were established in 2021 to support the business strategy. One of our goals is to provide a safe, diverse and inclusive working environment for all employees across the business operations. In addition, our culture needs to ensure that,

in everything we do, we drive customer value, perform, and allow space for innovation. Our aim is to make sure all our employees can develop their leadership skills, including leading oneself.

We believe that the foundation for physical and mental health and wellbeing in the workplace is good management of people, optimal organisation of work and an inclusive work environment. In Stora Enso, health and wellbeing are managed mainly on the local level and in teams.

Focus on employee engagement

We provide opportunities for all people to expand their knowledge and to gain skills to grow to their full potential. Our aim is to acquire and develop the right talent to ensure smooth competence transformation

for the future. Workforce planning is an important tool for this. It involves proactive workforce and skills analysis, resulting in a forecast and people activity plan to close potential skills or workforce gaps.

Our ambition is to have strong performers in all leadership positions, driving success as well as creating the culture we aim for. 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.

In 2021, we continued to run our own internal mentoring programme to enhance the learning culture further and to promote professional and personal development. Approximately 300 mentor-mentee pairs have been matched since the launch of the programme and any employee interested in mentoring can sign up to be assigned a mentor or to start mentoring. During the year, we also provided training on coaching to a large number of leaders and piloted a new concept whereby leaders can pair up to practise coaching with each other.

To promote new talent and diverse perspectives, we have been running the GROW Global Trainee Programme for several years. Within the programme, graduates are initiated into the global Stora Enso organisation during their first 16 months of employment.

To further strengthen the capabilities required for Stora Enso’s performance, our

flagship Accelerator programme was run for the third time during 2021, with a focus on the plastic-free supply chain. The Stora Enso Accelerator programme combines work with startup companies and executive training. Since launching the Accelerator programme in 2017, we have screened more than 1,600 startups from 44 countries and established further cooperation with more than 40 of these companies.

Stora Enso advances more inclusive workplaces

In 2021, Stora Enso launched a global initiative, We Belong Here, to build safer and more inclusive workplaces throughout the company. Through the initiative, Stora Enso aims to address any problems with discrimination and harassment, discuss and reflect on the reasons for and consequences of such behaviour, and make sure everyone feels safe to speak out. The initiative was started at the beginning of February 2021 and it includes workshops and other activities for all of Stora Enso’s employees globally. A total of 60% of Stora Enso’s employees participated in the workshops. In addition, there have been several country and division specific initiatives relating to promoting diversity and inclusion.

› Read more on how we work with employees and safety on pages 145–148.

Diversity by gender and age¹

	2021	2020	2019
Share of female employees, %			
All employees	24%	24%	26%
Senior managers	32%	27%	24%
Women in the Group Leadership Team	5 out of 13	6 out of 15	5 out of 11
Women in the Board of Directors	3 out of 9	2 out of 9	2 out of 9
Age groups, all employees %			
Up to 30	16%	16%	18%
31–50	54%	53%	52%
51 and over	30%	31%	29%

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

**Circular products
from the forest
are part of the
solution to combat
climate change.**



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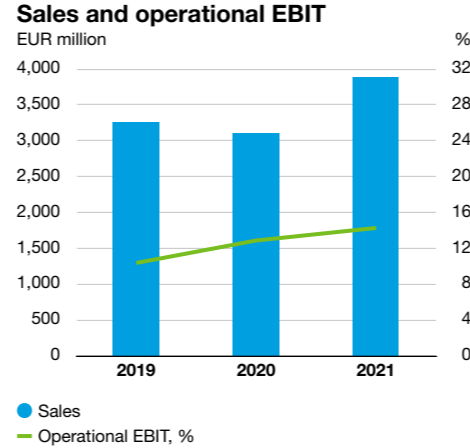
Our divisions

In 2021, we delivered record high results across our key business areas, overcoming macroeconomic turbulence and supply chain disturbances.

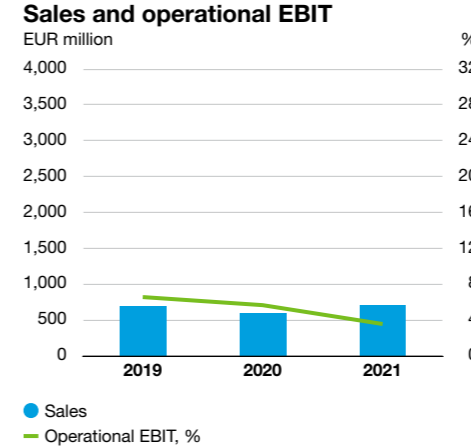
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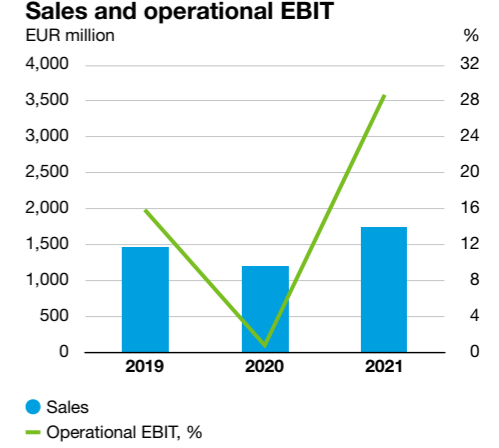
Packaging Materials



Packaging Solutions

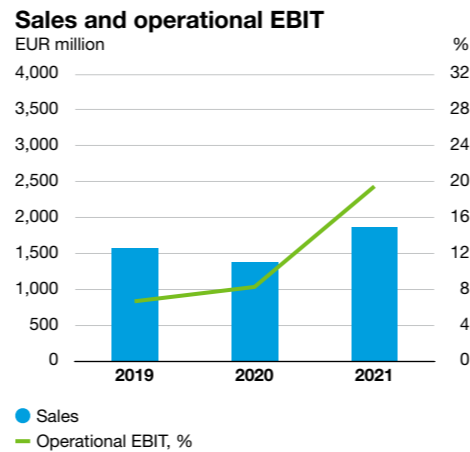


Biomaterials

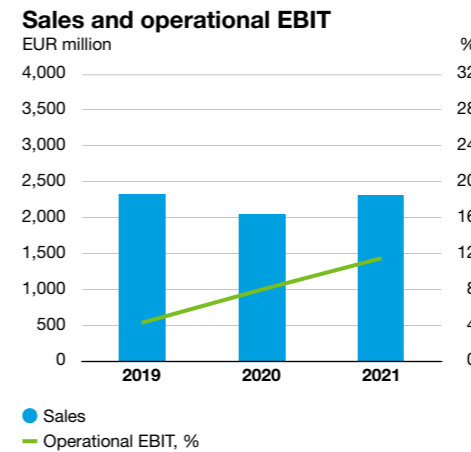


Our diversified business portfolio creates resilience to changing market dynamics and fluctuations in demand, while enabling flexibility for evolving transformation.

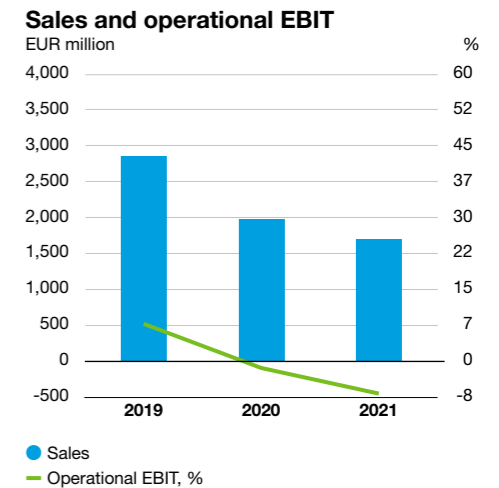
Wood Products



Forest



Paper





Packaging Materials

The Packaging Materials division aims to lead the development of circular packaging, providing premium packaging materials based on virgin and recycled fiber. Addressing the needs of today's eco-conscious consumers, Stora Enso helps customers replace fossil-based materials with low-carbon, renewable and recyclable alternatives for their food and drink, pharmaceutical or transport packaging. A wide selection of barrier coatings enables design optimisation for various demanding packaging end-uses.

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Operational ROOC

18.0%

(Target >20%)

Employees 5,801



Share of Group employees: 25%

Share of Group Capital Expenditure¹



● Packaging Materials 54%
● Rest of the Group 46%

¹ Excluding bioasset capex

Business environment

In consumer boards, Stora Enso is a market leader in LPB (Liquid Packaging Board), FSB (Food Service Board) and CUK (Coated Unbleached Kraft) in the world or Europe. The premium consumer board market is estimated to expand globally by 2.5% in the years until 2030. In the large and growing containerboard market, Stora Enso is a niche player with world-class assets, providing high-end products manufactured from both virgin and recycled fiber. The containerboard market is fragmented, with many larger and smaller companies active. Stora Enso's growth is faster than the global packaging market.

Strategic choices



Significant growth opportunities for fossil-free and circular packaging



Attractive investment options for Packaging Materials growth

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Expert partner in circular packaging

Our customers face strong demand driven by increased consumption of everyday items as well as by e-commerce growth and the sustainability trend. To meet the needs of today's eco-conscious consumers we, in close collaboration with customers, focus our market-leading expertise on circular and low-carbon packaging. With our world-class cost-competitive integrated mills close to raw material sources, we are well invested in our consumer board and containerboard businesses, allowing us to drive innovation in sustainable packaging materials and barriers. As growth in this strategic segment continues, we build on our strong positions in demanding packaging end-uses.

Hannu Kasurinen
Executive Vice President,
Packaging Materials Division



More premium capacity for the booming containerboard market

In 2021, Stora Enso completed the conversion of a former paper machine at the Oulu site to premium kraftliner production. The product, AvantForte™ by Stora Enso, is suitable for packaging fresh, fatty or moist food, as well as for high-end e-commerce packaging. The CO₂ footprint of the product, from raw material sourcing to the final product in the warehouse, is 176kg per produced tonne.¹ This is 60% smaller than the average CO₂ footprint of European kraftliner products.² The global market demand for the product is strong and forecast to grow 2% annually. Following the successful conversion in Oulu, Stora Enso is reviewing the possibility of also converting the second line, currently idle, at Oulu.



New low-carbon material for microwavable ready-meal trays

Trayforma™ by Stora Enso is composed of a wood fiber-based material designed for microwavable food tray packaging. It is free of PET, has very low polypropylene content and a lower carbon footprint compared to traditional meal tray products. Trayforma makes possible a reduction of up to 80% of plastic in ready-meal trays and of up to 67% in CO₂ emissions.

Enhancing properties for paperboard packaging

A new dispersion barrier coating line has started at the Forshaga site in Sweden. The EUR 10 million investment included development of paperboard with barrier properties that are easier to handle in a recycling process, have a lower carbon footprint and are compostable in industrial facilities. The new dispersion barriers Aqua™ and Aqua+™ by Stora Enso are fluorochemical-free and used to produce paperboard for cups and food service packaging without a plastic layer.

Investing in European recycling

Stora Enso and Tetra Pak have joined forces to triple the annual recycling capacity of used beverage cartons (UBC) in Poland. The investment of a total of EUR 29 million includes a large-scale carton repulping line at Stora Enso's Ostrołęka site in Poland. Scheduled to be operational in 2023, the new facility will enable the separation and recovery of carton fibers, giving them a second life in packaging board production. The investment will significantly improve recycling throughout Central and Eastern Europe, a further step in circular packaging.



First carbon-neutral cartonboard in the market

Produced at the Fors site in Sweden, Performa Light is a renewable, low-carbon material for premium folding cartons. It is also available as a carbon-neutral version, Performa Light CarbonZero, a first in the market. Since 2017 and after 30 years of continuous improvement work, Fors site is fossil-carbon emission-free in electricity and steam production. From the beginning of 2022, internal logistics will also be fossil free.

¹ Based on real production in May–August 2021

² Based on FEFCO 2015 industry average and Ecoinvent data v3.8



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Packaging Solutions

The Packaging Solutions division develops and sells premium fiber-based packaging products and services. Stora Enso's high-end eco-friendly packaging products are used by leading brands across multiple market sectors, including the retail, e-commerce and industrial sectors. The portfolio includes converting corrugated board and cartonboard, and converting new materials such as formed fiber and wood foams, as well as design and sustainability services, and circular and automation solutions.



Operational ROOC

10.8%

(Target >25%)

Employees 4,361



Share of Group employees: 19%

Share of Group Capital Expenditure¹



- Packaging Solutions 6%
- Rest of the Group 94%

¹ Excluding bioasset capex

Business environment

Stora Enso holds a strong position in selected corrugated packaging markets, serving a broad range of end-use segments such as consumer electronics, home and garden, food and beverage, retail, industry and e-commerce. We have a leading position in the corrugated market in the Nordics, are among the top three in the Baltics and Poland, and we hold a strong position in the premium segment in the Russian market. In China, we hold a leading position in consumer packaging solutions for premium products such as consumer electronics and cosmetics. There are significant growth opportunities for corrugated packaging, as retail and e-commerce sales are forecast to grow by 12–15% annually in Stora Enso's geographic markets.

Strategic choices



Be the number one choice for customers focusing on premium segments



Rapidly grow new products and services



Accelerate the shift towards eco-friendly packaging



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Growth with premium sustainable packaging

We create customer value with cost-efficient packaging solutions that help replace fossil plastics and reduce emissions. Our product portfolio targets customers who focus on premium segments and benefit from innovative design services, new digital solutions and agile production. In 2021, Stora Enso received a record number of 24 international design awards for commercialised packaging solutions. Our ambition is to further develop our new offerings in 2022, such as formed fiber and circular solutions. We explore growth in new geographic markets and continue to be active within the startup ecosystem for sustainable packaging.

David Ekberg
Executive Vice President,
Packaging Solutions Division



Vogue Scandinavia – disrupting the fashion publishing industry

Stora Enso and Vogue Scandinavia entered a strategic partnership covering joint development of a renewable and recyclable magazine packaging. The package replaces the traditional single-use plastic wrapping used in magazines. The magazine and packaging are carbon neutral, made with a renewable, low-carbon raw material, and produced in an energy-efficient way. The remaining emissions are offset by using the CarbonZero service by Stora Enso, in collaboration with compensation partner South Pole.



New renewable wood foam portfolio for packaging

Stora Enso has extended its packaging offering with wood foams that are bio-based, recyclable and can be used for climate-friendly protective and thermal packaging. Stora Enso's offering consists of Papira® by Stora Enso and Fibrease™ by Stora Enso. Papira is designed for protecting fragile consumer goods such as electronic appliances. Fibrease has a high insulating capacity and is optimal for thermal packaging.



Partnering with Pulpex to produce wood fiber-based bottles

Stora Enso and packaging technology company Pulpex joined forces to industrialise the production of sustainable paper bottles and containers made from wood fiber pulp, offering an alternative to PET plastics and glass.



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Biomaterials

The Biomaterials division meets the growing demand for bio-based solutions to replace fossil-based and hazardous materials. Stora Enso uses all fractions of biomass, like lignin, to develop new solutions. Our work to replace fossil-based materials includes novel applications such as carbon for energy storage, bio-based binders and bio-based carbon fiber. Our pulp offering encompasses a wide variety of grades to meet the demands of paper, board, tissue and hygiene product producers, as well as materials from process side streams, such as tall oil and turpentine from biomass.



Operational ROOC

20.8%

(Target >15%)

Employees 1,865



Share of Group employees: 8%

Share of Group Capital Expenditure¹



- Biomaterials 15%
- Rest of the Group 85%

¹ Excluding bioasset capex

Business environment

Stora Enso's business opportunities are strongly driven by the need to replace oil-based materials – such as phenol, graphite and carbon fiber – with renewable and sustainable materials. Stora Enso has the widest pulp grades portfolio in the market, and is the leader in Europe in fluff pulp. The Biomaterials division has its own operations in Finland and Sweden, and joint operations in Brazil and Uruguay. Pulp is a growth business, with the total market growing by 2.3% or 1.5 Mt per year. The fastest-growing segment is tissue products, +3%.

Strategic choices



A focus on strengthening the competitiveness and efficiency of our pulp mills



New biomaterials are a highly attractive innovation platform



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New biomaterials are a significant innovation platform

Within biomaterials we are increasingly focusing our innovation efforts on our biochemical platform in lignin, sustainable packaging materials and bio-based barriers. We continue to speed up commercialisation of our innovation portfolio, targeting high-growth end-product markets. As a strong and specialised chemical pulp producer, we focus on maintaining and improving the cost competitiveness and efficiency of our Nordic mills as well as joint operations in Latin America. Our aim is to grow in strategic markets while striving for an uncontested position in sustainability.

Johanna Hagelberg
Executive Vice President,
Biomaterials Division



Renewable carbon fiber made from wood

Carbon fiber demand is increasing steadily at an annual growth rate of 10%. Today, 20% of the global carbon fiber supply is used by the wind energy industry. Together with our value chain partners, Stora Enso can provide the wind power plant industry, as well as others, with our NeoFiber product, a sustainable and high-performing carbon fiber from wood.



The Biomaterials division meets the growing demand for bio-based solutions to replace fossil-based materials.

Making batteries from trees

The carbon market for batteries is growing by 30% annually, and an estimated 450,000 tonnes of carbon material per year will be needed in the near future. With this surge in demand, battery producers are seeking more sustainable materials for the global electric vehicle battery market. Lignode® by Stora Enso, wood-based carbon for batteries, is made from lignin, replacing synthetic and non-renewable graphite material. Stora Enso is creating a European supply chain and sees a sales potential of around EUR 1 billion in about five years' time.



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Wood Products

The Wood Products division is one of the largest sawnwood producers in Europe and a leading provider of sustainable wood-based solutions for the construction industry globally. The growing Building Solutions business offers building concepts to support low-carbon construction and eco-friendly designs. Stora Enso develops digital tools to simplify the design and construction of building projects with wood. In addition, we offer applications for windows, doors and packaging industries, as well as pellets for sustainable heating solutions.

Operational ROOC

59.4%

(Target >20%)

Employees 4,177



Share of Group Capital Expenditure¹



¹ Excluding bioasset capex

Business environment

The potential for growth in mass timber construction in Europe, North America and globally is extensive, supported by the increase of government policies focused on a low-carbon economy. This underpins a growing wood construction market and the demand for wooden building materials such as CLT (cross-laminated timber), in which we already hold a global market share of 20%, and LVL (laminated veneer lumber).

In addition to strengthening our position as the leading supplier of wood-based construction solutions, Stora Enso aims to maintain its position as one of the largest producers of classic sawn and planed wood in Europe. Global sawn softwood is growing by 2–3% annually, and European new building construction is expected to grow by 3.4% in 2022.

Strategic choices



Seize growth opportunities in Building Solutions



Capture a larger share of the value chain

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Sustainable value-added building materials for growth

As the market shift continues towards sustainable and renewable building materials, we strive to be the best choice for customers looking to reduce their construction carbon footprint. To drive profitable growth, our focus is on further industrialising the wood construction value chain via digitalisation and the prefabrication of building elements such as walls, floors and beams. We will also continue to improve and expand our operational capabilities in sawmilling and further processing as a platform for accelerated, sustainable growth.

Lars Völkel
Executive Vice President,
Wood Products Division



Construction industry attracted by low-carbon choices

Around the world, policies that contribute to a low-carbon economy are gaining traction, creating growth opportunities for mass timber construction. In Paris, the property developer Woodeum is building the Arboretum premises with CLT elements from Stora Enso. It will be the largest office complex built entirely of wood in Europe, with a total area of 126,000 m². The materials, construction method, usage and evolution of the buildings have been designed to reduce greenhouse gas emissions and maximise their resilience.



Wellbeing with wood

In the developed world, we spend about 90% of our time indoors. An increasing amount of evidence shows that wood has beneficial effects in almost all aspects of the indoor environment. It helps reduce stress, blood pressure and heart rate, as well as promoting more creativity and productivity in the workplace. Wood is also an important part of what is called biophilic design: our desire to be connected with the natural environment.

Investing in sustainable building solutions

As a sustainable renewable material, CLT (cross-laminated timber) shows significant growth potential in construction applications. We are investing EUR 79 million in a new production line for CLT at Ždírec sawmill in the Czech Republic. The investment will further enhance our position as a global provider of high-quality engineered wooden elements and as a market leader in CLT. Construction of the line started in the first quarter of 2021, and production is expected to begin during the third quarter of 2022.



New partnerships to promote wooden building

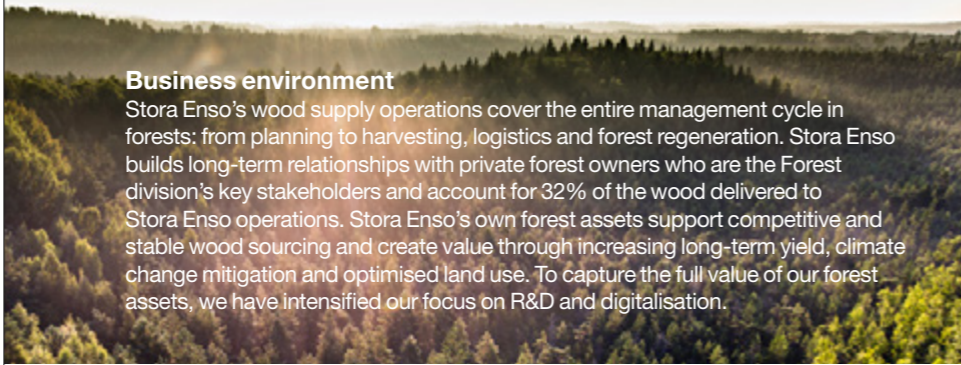
Stora Enso has agreed on a new partnership with international real estate group Lendlease to enhance the use of environmentally friendly construction products in some of the world's most recognised cities. Stora Enso and Lendlease will lead the transition towards more circular, innovative and digitalised solutions to help speed up transformation of the construction industry. Stora Enso also partnered with real estate investor Dasos Capital to promote the use of massive wood as a building material.

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Forest

The Forest division creates value through sustainable forest management, competitive wood supply and innovation. Forests are the foundation for Stora Enso’s renewable offerings. The division manages Stora Enso’s forest assets in Sweden and a 41% share of Tornator, whose forest assets are mainly located in Finland. It is also responsible for wood sourcing for Stora Enso’s Nordic, Baltic and Russian operations and B2B customers. Stora Enso is one of the biggest private forest owners in the world.



Business environment

Stora Enso’s wood supply operations cover the entire management cycle in forests: from planning to harvesting, logistics and forest regeneration. Stora Enso builds long-term relationships with private forest owners who are the Forest division’s key stakeholders and account for 32% of the wood delivered to Stora Enso operations. Stora Enso’s own forest assets support competitive and stable wood sourcing and create value through increasing long-term yield, climate change mitigation and optimised land use. To capture the full value of our forest assets, we have intensified our focus on R&D and digitalisation.

Strategic choices



The recognised leader in sustainable forest management



Research and innovation to increase forest growth



Active biodiversity management to enhance biodiversity in Stora Enso’s forests and plantations to achieve a net-positive impact by 2050



A sustainable foundation for fiber-based products

Sustainable forest management is the backbone of our business. It helps us to ensure continuous regeneration of vital forests as well as a steady, long-term supply of renewable wood resources. Biodiversity protection is an integral part of our forestry practices, demonstrated for instance by forest certification. To provide the best possible value to our customers and other stakeholders, we have stepped up our research and development efforts, as well as the use of digital solutions in our operations.

Jari Suominen
Executive Vice President,
Forest Division

Operational ROCE

5.1%
(Target >3.5%)

Employees 1,476



Share of Group employees: 6%

Share of Group Capital Expenditure¹



● Forest 4%
● Rest of the Group 96%

¹ Excluding bioasset capex



More accurate forest planning and operations with precision forestry

With a forest’s digital twin, Stora Enso can analyse, for example, the shape, height and diameter of a single tree, the structure of a forest site, and the landscape view. Improved data also supports our ambition to achieve more effective biodiversity and sustainability actions. Stora Enso focuses on developing new remote sensing technologies and data processing. In the future, we will be able to follow the development of tree species composition and deadwood creation with high granularity, helping to identify potential hot-spots for biodiversity in forest landscapes. In addition, as Stora Enso becomes more aware of the growth conditions of individual trees, this approach can help trees to adapt to the weather fluctuations caused by climate change.

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Paper

Stora Enso is one of the major paper producers in Europe, with an established customer base and a wide product portfolio for print and office use. Customers benefit from Stora Enso’s selection of paper grades made from recycled and virgin fiber, our technical and operational expertise and sustainability know-how, and our sales and customer service centre network.

Business environment

In 2021, the development in the paper market was two-fold. For the first half of the year, the Covid-19 pandemic continued to affect demand and prices negatively, while during the second half of the year, demand improved in line with economic recovery. At the same time, the industry was hit by significant increases in input costs, scarcity of Paper for Recycling, and demand exceeding production capacity for some paper grades. Going forward, the decline in paper demand is forecast to continue at the historical or a somewhat slower pace. Following restructuring in the industry, demand and supply outlook is expected to be more balanced.

Strategic choices



Strong cash generation through cost reductions, active capacity management and customer service



Higher operational independence to adapt to challenging market conditions



A sustainable transition with customers

Paper will continue to play a role in media, advertising, education, retail and office use in the future, alongside digital solutions. However, as European paper demand continues to decline, we will work closely with our customers to create sustainable value for both parties. Alongside this, we work to improve our competitiveness. Moreover, our paper products are inherently renewable and circular, and our processes are optimised for resource efficiency throughout the lifecycle of our products. Although 2021 was challenging for our paper business, with hard work, we are returning to profitability.

Kati ter Horst
Executive Vice President,
Paper Division

Cash flow after investing activities to sales¹

-4.5%
(Target >7%)

Employees 3,292



Share of Group employees: 14%

Share of Group Capital Expenditure¹



● Paper 9%
● Rest of the Group 91%

¹ Excluding bioasset capex

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.



Restructuring the paper business

To adapt to the declining demand for paper, Stora Enso restructured the paper business by closing the Veitsiluoto and Kvarnsveden paper production sites in Finland and Sweden. The Sachsen site in Germany was divested for future conversion. In addition, Stora Enso decided to invest in increased competitiveness and sustainability at the Anjala and Nymölla paper sites. As a result of these actions, Stora Enso’s paper assets are more competitive. Read more on page [146](#).

Divisions and products

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Product sustainability

Stora Enso actively works with its customers to improve material efficiency to reduce the environmental impact of its products and related processes through, for example, innovation, circular programmes, and life cycle analyses.

Product safety

Ensuring the safety of all Stora Enso's products is essential in order to safeguard the environment as well as the health and safety of our employees, customers, and end users. We require that our suppliers comply with our product safety requirements.

Our products covered by specific safety regulations include food contact materials, materials for toys, packaging for pharmaceuticals, materials for personal care and hygiene products, and construction materials. Units producing these sensitive materials follow Good Manufacturing Practices, which are a set of widely recognised guidelines incorporated into EU regulations.

We follow legislation designed to protect human health and the environment. These include the EU's regulations for chemicals (REACH) and for Biocidal Products, the Classification, Labelling, and Packaging (CLP) Regulation, and relevant food contact legislation and demands concerning food safety.

Certified sustainability

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, ISO 14001, ISO 50001, and ISO 45001 certified systems help the units to identify and meet customer requirements and to systematically improve product quality, environmental, energy, and occupational safety management. All our construction products are CE marked to guarantee that they comply with the relevant EU legislation.

More than 90% of our Paper division's own brands are covered by one or more recognised ecolabel, such as the Nordic Swan Ecolabel, EU ecolabel or Blue Angel. Many of our graphical board brands are also available as EU Ecolabel certified products. Ecolabel criteria cover the entire life cycle of a product, from the extraction of raw materials to production, product use, and disposal.

Many of our products are FSC or PEFC certified or have other verification for responsible chain-of-custody and due diligence. In 2021, Stora Enso received FSC and PEFC chain-of-custody certification for lignin. The proportion of third-party certified wood in Stora Enso's total wood supply was 99% in 2021.

Life cycle assessments

We collect and regularly update product-specific life cycle inventory data, which is typically used in Life Cycle Assessments (LCA's) conducted by our experts and customers, often in collaboration with academia, expert organisations, or industry associations. The LCAs show the potential for renewable products in substituting fossil-based alternatives, to cut CO₂ emissions.

Assessing life cycle impacts of buildings

Environmental Product Declarations (EPD), offered for all our building products, provide transparent, third-party verified information about the environmental performance of a product throughout its life cycle and are in line with relevant ISO and EN standards.

Assessing the lifecycle of our renewable products



Beverage carton used for 1L fresh milk packaging

Compared to environmental impacts of PET bottles, made either out of fossil-based PET or recycled PET, carton showed significant advantages in climate change impact category. Read more about the study and its results in different environmental impact categories [here](#).



NaturaFluff Eco by Stora Enso

NaturaFluff Eco by Stora Enso is a non-bleached fluff pulp for eco-friendly hygiene products. It has a warm natural beige colour and an approximately 30% lower carbon footprint in comparison to conventional bleached fluff pulp, without compromising on product performance.

EPDs provide important information to our customers when assessing the life cycle impacts of their construction projects. They are also an important resource for customers who wish to apply for building certification schemes or ecolabels for their products.

Carbon offsetting for products

We help our customers to reduce climate impact with our carbon-neutral offering and

services. Our priority is always to reduce fossil carbon emissions in our operations and value chain as much as we can. However, some emissions are still currently unavoidable, which is why we use carbon offsetting to be able to offer carbon-neutral packaging material already today. Read more about [carbon-neutral cartonboard](#) and how we are [partnering with Vogue Scandinavia](#) for eco-friendly fashion media.

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● Audited ● Limited assurance

In this report: The official audited financial statements in Finnish and an unofficial Swedish translation can be found on the company website > storaenso.com/download-centre

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Introduction to Stora Enso

Part of the global bioeconomy, Stora Enso is a leading provider of renewable products in packaging, biomaterials, wooden construction and paper, and one of the largest private forest owners in the world. We believe that everything that is made from fossil-based materials today can be made from a tree tomorrow. Sustainability and responsible business practices are deeply embedded in our strategy.

Our low-carbon, fiber-based products are renewable and recyclable. They offer solutions to climate change and promote positive impacts on the environment, thus enabling our customers to become more eco-friendly.

Stora Enso had 23,071 employees on average during 2021. Our sales in 2021 were EUR 10.2 billion, with an operational EBIT of EUR 1,528 million. Stora Enso shares are listed at the Helsinki (STEAV, STERV) and Stockholm (STE A, STE R) stock exchanges. In addition, the shares are traded in the USA as ADR.

Markets and deliveries

The demand for cartonboard globally remained strong over the year. Even though the pandemic presented challenges for a certain number of Stora Enso's end use segments dependent on travel and social gathering, it boosted demand in essential goods such as pharma and food. Demand in the Asian region was stronger than the more mature European and North American markets. In 2021, global demand for containerboard increased strongly, driven by elevated goods consumption, growth in e-commerce, the recovery of manufacturing back to pre-pandemic levels, and inventory replenishing. Containerboard consumption increased very strongly in North America and Europe, while it increased more moderately in Asia due to weaker growth in China.

European corrugated demand in our main markets experienced a strong 3.7%

growth mainly driven by industrial recovery and a significant surge in e-commerce. The prices in the containerboard market were at a very high level which means there was more demand than supply in corrugated packaging. The largest sales were in retail and e-commerce and in the home and garden sector.

During 2021, global demand for chemical market pulp declined by 2.8%, though it maintained the 2019 pre-pandemic levels. Softwood pulp deliveries decreased by 3.4% and hardwood pulp deliveries by 3.7% compared to 2020, whereas unbleached kraft pulp (UKP) deliveries increased by 19%. UKP continued to benefit from the OCC (old corrugated cardboard) import ban in China. Global market pulp demand has been strong in Europe thanks to the rebound in printing and writing paper production, which has more than offset the decline in tissue output, while demand reduced in Asia and North America. Destocking tissue and hygiene consumer inventories and the stronger than expected slowdown in the Chinese economy combined with global logistical challenges slowed down the global pulp demand. In 2021, the global chemical market pulp capacity increased by 1.5%, the softwood capacity increased by 0.4%, hardwood capacity by 1.1% and UKP capacity 18.9%. The overall shipment-to-capacity balance stood at 89%, 4 percent points down from 2020.

By the end of 2021, softwood pulp inventories remained elevated while hardwood inventories were at the average level. During 2021 global pulp markets experienced generally strong prices.

According to UNECE forest estimate, global sawnwood consumption grew by some 8% during 2021. Reduced production in 2020 led into price increases in North America during the latter part of 2020, and high price levels continued during the first half of 2021.

Estimated consumption of board, pulp, sawn softwood, and paper in 2021

Tonnes, million	Europe	North America	Asia and Oceania
Consumer board	10.9	9.5	28.4
Containerboard	36.2	34.5	90.0
Corrugated board (billion m ²) ¹	10.9	n/a	n/a
Chemical market pulp	17.0	7.7	35.0
Sawn softwood (million m ³)	101.2	108.2	n/a
Newsprint	3.8	1.6	5.9
Uncoated magazine paper	2.4	0.8	0.1
Coated magazine paper	3.1	1.4	2.1
Coated fine paper	3.2	2.4	9.0
Uncoated fine paper ²	6.1	5.8	28.4

¹ European focus markets (Baltics, FI, PL, RU, SE)

² PPPC WFU grade definition in China has been changed to include also non-wood based pulps which equals to approximately 9.0 million tons of additional demand.

Source: Afry Smart, ICCA, RISI, Numera, Euro-Graph, PPPC, EPIS, Hawkins Wright, Stora Enso, UNECE

Production and external deliveries

	2021	2020	Change % 2021-2020
Board deliveries, 1,000 tonnes	4,258	3,712	14.7%
Board production, 1,000 tonnes	4,685	4,063	15.3%
Corrugated packaging European deliveries, million m ²	949	902	5.2%
Corrugated packaging European production, million m ²	1,049	1,004	4.4%
Market pulp deliveries, 1,000 tonnes	2,495	2,443	2.1%
Wood product deliveries, 1,000 m ³	4,803	4,692	2.4%
Wood deliveries, 1,000 m ³	12,091	11,469	5.4%
Paper deliveries, 1,000 tonnes	2,872	3,106	-7.5%
Paper production, 1,000 tonnes	2,776	3,034	-8.5%

Exceptionally high price increases spread to other markets and increased sawn goods prices to record levels during the second and third quarters of 2021. In Europe, the market consumption increase was 8% in softwood sawnwood demand, while in North America the increase was estimated to 8% as well, yet with a clearly weakening year end that may reduce the increase. In the USA, the single-family market has been the main driver for the demand in sawnwood. In Japan, inventories in the first half of 2021 were relatively low, but in the latter part of the year increased imports improved the availability. The housing market has remained active, and

in Australia the housing demand has remained strong throughout 2021, based on strong subsidy programs with improving prices in the second half the year.

In 2021, the paper markets continued to be turbulent. Paper demand recovered modestly from the Covid-19 demand shock of 2020. Prices declined during the first half of the year but started to recover as a result of heavily increased costs and the improved supply demand balance during the second half of 2021. The supply demand balance improved as a result of significant capacity closures and conversions combined with modest demand recovery. Profitability remained challenged due

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to heavily increased costs, especially in energy and Paper for Recycling. European paper demand was +1% stronger in 2021 compared to 2020, demand increased by +2% in North America and in Asia demand remained stable compared to 2020. In 2021, global paper consumption was +1% higher than in 2020.

The Group's board deliveries totalled 4,258,000 tonnes, which was 546,000 tonnes, or 14.7% higher compared to a year ago. This was due to strong board demand and ramp-up of Oulu containerboard. Corrugated packaging European deliveries increased by 47 million m² or 5.2% to 949 million m² mainly due to higher deliveries in Poland and Russia. Market pulp deliveries increased by 52,000 tonnes, or 2.1%, to record high 2,495,000 tonnes, mainly due to higher market pulp deliveries in Biomaterials. Wood product deliveries increased by 111,000 m³ or 2.4% to 4,803,000 m³. Wood deliveries increased 622,000 m³ or 5.4% to 12,091 m³ supported by higher deliveries in Finland and Sweden. Paper deliveries totalled 2,776,000 tonnes, down 234,000 tonnes, or 7.5%, from 2020, mainly due to structural changes.

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 increased by 18.8%, or EUR 1,611 million, to EUR 10,164 (8,553) million, mainly driven by higher delivery volumes in all divisions and significantly higher sales prices in all divisions except Paper. Structural changes decreased sales by EUR 172 million, with the main changes being the Veitsiluoto and Kvarnsveden paper site closures and the Oulu paper site conversion into kraftliner production.

Operational EBIT more than doubled to EUR 1,528 (650) million, up 135.1%. Clearly

higher sales prices and higher total volumes improved profitability in all other divisions except Paper. The operational EBIT margin of 15.0% was at an all-time high.

Variable costs were EUR 430 million higher, mainly due to higher wood, paper for recycling (PFR) and energy costs. Fixed costs increased by EUR 104 million, mainly due to higher personnel costs and increased maintenance activity. The net foreign exchange rate impact decreased operational EBIT by EUR 102 million. Capital gain from forest land sales in Hylte in Sweden increased the operational EBIT by EUR 74 million and the impact from closed units was EUR 72 million positive.

Earnings per share increased by 102.1% to EUR 1.61 (0.79), and earnings per share excluding fair valuations increased by 165.0% to EUR 1.19 (0.45).

The IFRS operating profit includes a positive net effect of EUR 328 (positive 412) 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, mainly driven by increased standing stock volume estimate as well as higher market prices. There is also a positive net effect of EUR 84 (negative 52) million from Stora Enso's share of net financial items, taxes and IAS 41 forest valuations of equity accounted investments. The positive impact comes mainly from the increase in fair valuation in Stora Enso's 41% share of the equity accounted investment Tornator's forests in Finland.

Tangible and intangible asset impairments amounted to EUR 149 (57) million and there were no impairment reversals.

The Group recorded items affecting comparability (IAC) with a negative impact of EUR 354 (negative 90) million on its IFRS operating profit and a positive impact of EUR 58 (positive 19) million on income taxes. The IAC relate mainly to the restructuring in the Paper division.

The IFRS operating profit was EUR 1,568 (922) million.

Segment share of operational EBIT, IAC, fair valuations and non-operational items and operating profit/loss

EUR million	Year Ended 31 December					
	Operational EBIT		IAC, Fair Valuations and Non-Operational items		Operating Profit/Loss	
	2021	2020	2021	2020	2021	2020
Packaging Materials	556	403	-4	-12	552	391
Packaging Solutions	26	33	-3	-5	23	28
Biomaterials	495	8	11	-41	506	-32
Wood Products	364	114	-1	-3	363	111
Forest	267	162	355	360	622	522
Paper	-124	-38	-299	-20	-423	-58
Other	-48	-35	-19	-6	-67	-42
Total	1,528	650	39	272	1,568	922
Net financial items					-149	-150
Profit before Tax					1,419	773
Income tax expense					-151	-156
Net Profit					1,268	617

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 CO₂ emission rights, non-operational fair valuation changes of biological assets, adjustments for differences between fair value and acquisition cost of forest assets upon disposal and the Group's share of income tax and net financial items of EAI. The adjustments for differences between fair value and acquisition cost of forest assets upon disposal are a result of the fact that the cumulative non-operational fair valuation changes of disposed forest assets were included in previous periods in IFRS operating profit (biological assets) and other comprehensive income (forest land) and are included in operational EBIT only at the disposal date.

Items affecting comparability, fair valuations and non-operational items

EUR million	Year Ended 31 December	
	2021	2020
Impairments and impairment reversals	-141	-72
Restructuring costs excluding impairments	-227	-23
Acquisitions and disposals	11	6
Other	4	0
Items affecting comparability	-354	-90
Fair valuations and non-operational items	394	362
Total	40	271

Segment share of operative assets, operative liabilities and operating capital

EUR million	Year Ended 31 December					
	Operative Assets		Operative Liabilities		Operating Capital	
	2021	2020	2021	2020	2021	2020
Packaging Materials	4,120	3,684	914	721	3,206	2,962
Packaging Solutions	422	372	176	132	245	240
Biomaterials	2,755	2,460	236	214	2,520	2,246
Wood Products	955	766	277	218	678	549
Forest	7,131	6,566	435	372	6,696	6,194
Paper	884	1,196	761	700	123	496
Other and eliminations	970	420	131	115	839	305
Total	17,237	15,464	2,930	2,471	14,307	12,993

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Key figures

	2021	2020	2019
Sales, EUR million	10,164	8,553	10,055
Operational EBIT, EUR million	1,528	650	1,003
Operational EBIT margin	15.0%	7.6%	10.0%
Operating profit (IFRS), EUR million	1,568	922	1,305
Operating margin (IFRS)	15.4%	10.8%	13.0%
Return on equity (ROE)	13.0%	7.6%	12.1%
Operational ROCE	12.4%	5.8%	10.3%
Operational ROCE excl. Forest division	17.8%	7.0%	12.8%
Debt/equity ratio	0.22	0.33	0.43
EPS (basic), EUR	1.61	0.79	1.12
EPS excluding FV, EUR	1.19	0.45	0.61
Dividend and distribution per share ¹ , EUR	0.55	0.30	0.30
Payout ratio, excluding FV	46.3%	66.7%	49.2%
Payout ratio (IFRS)	34.3%	38.0%	26.8%
Dividend and distribution yield, (R share)	3.4%	1.9%	2.3%
Price/earnings (R share), excluding FV	13.60	34.78	21.23
Equity per share, EUR	13.55	11.17	9.42
Market capitalisation 31 Dec, EUR million	12,809	12,383	10,328
Closing price 31 Dec, A/R share, EUR	16.60/16.14	15.90/15.65	13.55/12.97
Average price, A/R share, EUR	16.68/15.70	12.06/11.52	12.88/11.05
Number of shares 31 Dec (thousands)	788,620	788,620	788,620
Trading volume A shares (thousands)	1,750	4,662	1,299
% of total number of A shares	1.0%	2.6%	0.7%
Trading volume R shares (thousands)	422,493	605,233	679,475
% of total number of R shares	69.0%	98.8%	111.0%
Average number of shares, basic (thousands)	788,620	788,620	788,620
Average number of shares, diluted (thousands)	789,126	789,182	789,533

¹ See the Board of Directors' proposal for dividend distribution.

Net financial expenses at EUR 149 (150) million were EUR 1 million lower than a year ago. Net interest expenses, at EUR 124 million, decreased by EUR 8 million, mainly as a result of the lower average interest expense rate on borrowings and the lower amount of gross debt. Other net financial expenses, at EUR 22 million, were EUR 13 million higher than a year ago, mainly due to the early repayment of interest-bearing liabilities. The 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 2 (loss of EUR 8) million, mainly due to a revaluation of foreign currency net debt in subsidiaries and joint operations located in China, Brazil, Poland and Russia.

The net tax charge totalled EUR 151 (156) million, equivalent to an effective tax rate of 10.7% (20.1%), as described in more detail in Note 9 Income taxes, of the consolidated financial statements.

The gain attributable to non-controlling interests was EUR 3 (loss 9) million, leaving a profit of EUR 1,266 (626) million attributable to Company shareholders.

Earnings per share excluding fair valuations were EUR 1.19 (0.45). Operational return on capital employed was 12.4% (5.8%).

The Group capital employed was EUR 12,976 million on 31 December 2021, an increase of EUR 1,262 million, mainly due to the increase of the fair valuation of forest assets in Sweden and shares in Pohjolan Voima.

Breakdown of Capital Employed change

EUR million	Capital Employed
31 December 2020	11,714
Capital expenditure excluding investments in biological assets less depreciation	18
Investments in biological assets less depletion of capitalised silviculture costs	-10
Impairments and reversal of impairments	-149
Fair valuation of forest assets	621
Unlisted securities (mainly PVO)	504
Equity accounted investments	125
Net liabilities in defined benefit plans	125
Operative working capital and other interest-free items, net	-84
Net tax liabilities	-83
Translation difference	157
Other changes	38
31 December 2021	12,976

Financing

Cash flow from operations was EUR 1,752 (1,344) million and cash flow after investing activities was EUR 1,101 (680) million. Working capital increased by EUR 25 (decreased 195) million, inventories increased by EUR 196 million and short-term receivables by EUR 288 million. Trade payables increased by EUR 377 million and thus had a positive impact on working capital. Payments related to the previously announced provisions were EUR 101 million.

Operative cash flow

EUR million	2021	2020
Operational EBITDA	2,184	1,270
IAC on operational EBITDA	-213	-25
Other adjustments	-194	-97
Change in working capital	-25	195
Cash Flow from Operations	1,752	1,344
Cash spent on fixed and biological assets	-645	-661
Acquisitions of equity accounted investments	-6	-2
Cash Flow after Investing Activities	1,101	680

At the end of the year, Group net interest-bearing liabilities were EUR 2,309 (2,921) million. The decrease in net interest-bearing liabilities was mainly driven by a solid cash flow from operations after investments and dividend payments. Cash and cash equivalents net of bank overdrafts decreased to EUR 1,480 (1,655) million. The net debt/equity ratio at 31 December 2021 decreased to 0.22 (0.33). The ratio of net debt to the last 12 months' operational EBITDA decreased to 1.1 (2.3) due to lower net debt and higher operational EBITDA. The average interest rate on borrowings for the full year 2021 decreased to 3.0% (3.2%) with a run-rate of 3.1% as per the end of the fourth quarter.

In December 2021 Stora Enso successfully signed a EUR 700 million revolving credit facility linked to sustainability targets. The committed revolving credit facility was fully undrawn at the year-end. The previous EUR 600 million revolving credit facility was cancelled in December 2021. Additionally, Stora Enso has access to statutory pension premium loans in Finland up to EUR 1,000 (950) million.

The forest land fair valuation increased the Group's other comprehensive income in equity by EUR 195 million. The fair valuation of cash flow hedges and equity investments fair valued through other comprehensive income increased equity by EUR 474 (decreased by EUR 91) million. This is due to a significantly higher fair valuation of the Group's shareholding in Pohjolan Voima Oy (PVO), owing to higher forward electricity prices, partly offset by net fair valuation losses 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

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Financial results – Segments

Packaging Materials division

The Packaging Materials division aims to lead the development of circular packaging, providing premium packaging materials based on virgin and recycled fiber. Addressing the needs of today's eco-conscious consumers, Stora Enso helps customers replace fossil-based materials with low-carbon, renewable and recyclable alternatives for their food and drink, pharmaceutical or transport packaging. A wide selection of barrier coatings enables design optimisation for various demanding packaging end-uses.

EUR million	2021	2020
Sales	3,898	3,115
Operational EBITDA	846	642
Operational EBITDA margin	21.7%	20.6%
Operational EBIT	556	403
Operational EBIT margin	14.3%	12.9%
Operational ROOC	18.0%	13.9%
Cash flow from operations	807	692
Cash flow after investing activities	459	299
Board deliveries, 1,000 tonnes	4,616	4,043
Board production, 1,000 tonnes	4,685	4,063

Packaging Materials division sales at EUR 3,898 (3,115) million increased by 25% mainly due to higher sales prices in containerboard and China as well as higher delivery volumes in all business units. Strong market demand was supported by production records in all production units. The ramp-up of the Oulu containerboard production was successful and ahead of schedule.

Operational EBIT at EUR 556 (403) million increased by 38% despite of cost increases. Personnel costs increased significantly, except for wood. The Oulu conversion had a positive operational EBIT impact of EUR 9 million compared to the previous year.

Packaging Solutions division

The Packaging Solutions division develops and sells premium fiber-based packaging products and services. Stora Enso's high-end eco-friendly packaging products are used by leading brands across multiple market sectors, including the retail, e-commerce and industrial sectors. The portfolio includes converting corrugated board and cartonboard, and converting new materials such as formed fiber and wood foams, as well as design and sustainability services, and circular and automation solutions.

EUR million	2021	2020
Sales	723	594
Operational EBITDA	56	61
Operational EBITDA margin	7.8%	10.2%
Operational EBIT	26	33
Operational EBIT margin	3.6%	5.6%
Operational ROOC	10.8%	13.9%
Cash flow from operations	56	51
Cash flow after investing activities	26	28
Corrugated packaging European deliveries, million m ²	1,046	999
Corrugated packaging European production, million m ²	1,049	1,004

Packaging Solutions division sales were at an all-time high of EUR 723 (594) million, up 22%, driven by strong demand and higher sales prices. The revenue from innovation and service led businesses almost doubled during the year. Examples of these businesses are formed fiber, circular solutions, and packaging automation.

Operational EBIT at EUR 26 (33) million decreased by 21%, mainly due to very high containerboard costs and investments in innovation and service led businesses. Operational EBIT for traditional businesses increased. Fixed costs increased due to higher personnel costs.

Biomaterials division

The Biomaterials division meets the growing demand for bio-based solutions to replace fossil-based and hazardous materials.

Stora Enso uses all fractions of biomass, like lignin, to develop new solutions. Our work to replace fossil-based materials includes novel applications such as carbon for energy storage, bio-based binders and bio-based carbon fiber. Our pulp offering encompasses a wide variety of grades to meet the demands of paper, board, tissue and hygiene product producers, as well as materials from process side streams, such as tall oil and turpentine from biomass.

EUR million	2021	2020
Sales	1,728	1,193
Operational EBITDA	618	127
Operational EBITDA margin	35.7%	10.7%
Operational EBIT	495	8
Operational EBIT margin	28.7%	0.7%
Operational ROOC	20.8%	0.4%
Cash flow from operations	490	96
Cash flow after investing activities	391	-1
Pulp deliveries, 1,000 tonnes	2,576	2,427

Biomaterials division sales were at an all time high at EUR 1,728 (1,193) million, up 45% due to significantly higher pulp sales prices in all grades and slightly higher delivery volumes. The market was favourable and supported by a very high operating efficiency.

Operational EBIT, at EUR 495 (8) million increased by EUR 487 million, mainly due to significantly higher sales prices in all grades, slightly higher delivery volumes, and lower energy and wood costs. Operational EBIT was negatively impacted by higher logistics costs. Foreign exchange rates had a negative impact on operational EBIT.

During the first quarter of 2021, Stora Enso permanently closed its US-based Virdia operations, which were acquired in 2014 and focused on the conversion of cellulosic biomass from sugar cane bagasse into refined sugars.

Wood Products division

The Wood Products division is one of the largest sawnwood producers in Europe and a leading provider of sustainable wood-

based solutions for the construction industry globally. The growing Building Solutions business offers building concepts to support low-carbon construction and eco-friendly designs. Stora Enso develops digital tools to simplify the design and construction of building projects with wood. In addition, we offer applications for windows, doors and packaging industries, as well as pellets for sustainable heating solutions.

EUR million	2021	2020
Sales	1,872	1,386
Operational EBITDA	410	160
Operational EBITDA margin	21.9%	11.6%
Operational EBIT	364	114
Operational EBIT margin	19.5%	8.3%
Operational ROOC	59.4%	19.1%
Cash flow from operations	313	211
Cash flow after investing activities	252	181
Wood products deliveries, 1,000 m ³	4,508	4,407

Wood Products division sales were strong at EUR 1,872 (1,386) million, up 35%, due to a favourable market, record high sales prices, and improved productivity. The classic sawn market was especially good and building solutions business continued to enjoy the favourable wood building trend.

Operational EBIT was at an all-time high at EUR 364 (114) million and increased by EUR 250 million, or 219%. Higher log prices and higher fixed costs impacted the EBIT negatively.

Forest division

The Forest division creates value through sustainable forest management, competitive wood supply and innovation. Forests are the foundation for Stora Enso's renewable offerings. The division manages Stora Enso's forest assets in Sweden and a 41% share of Tornator, whose forest assets are mainly located in Finland. It is also responsible for wood sourcing for Stora Enso's Nordic, Baltic and Russian operations and B2B customers. Stora Enso is one of the biggest private forest owners in the world.

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EUR million	2021	2020
Sales	2,311	2,046
Operational EBITDA	318	215
Operational EBITDA margin	13.7%	10.5%
Operational EBIT	267	162
Operational EBIT margin	11.5%	7.9%
Operational ROCE	5.1%	3.8%
Cash flow from operations	158	202
Cash flow after investing activities	112	165
Wood deliveries, 1,000 m ³	39,652	37,369
Operational fair value change of biological assets	82	70

Forest division sales were EUR 2,311 (2,046) million, up 13% due to higher sales prices and deliveries.

Operational EBIT at EUR 267 (162) million increased by 65%, mainly due to the realised capital gain from a large forest area sale in Hylte in Sweden.

Paper division

Stora Enso is one of the major paper producers in Europe, with an established customer base and a wide product portfolio for print and office use. Customers benefit from Stora Enso's selection of paper grades made from recycled and virgin fiber, our technical and operational expertise and sustainability know-how, and our sales and customer service centre network.

EUR million	2021	2020
Sales	1,703	1,979
Operational EBITDA	-48	66
Operational EBITDA margin	-2.8%	3.3%
Operational EBIT	-124	-38
Operational EBIT margin	-7.3%	-1.9%
Operational ROOC	-40.3%	-6.6%
Cash flow from operations	-25	110
Cash flow after investing activities	-77	36
Cash flow after investing activities to sales	-4.5%	1.8%
Paper deliveries, 1,000 tonnes	2,872	3,106
Paper production, 1,000 tonnes	2,776	3,034

Paper division sales were EUR 1,703 (1,979) million, down 14%. 2021 was a year of material restructuring of paper

assets, operations and organisation to produce positive cash flows in the future. The impact of the Veitsiluoto and Kvarnsveden site closures and the Oulu conversion on sales deliveries was negative 458,000 tonnes and EUR 434 million compared to the previous year. Paper prices also dropped significantly during the first half of 2021 due to Covid-19. The Sachsen site was divested in August 2021 and Stora Enso continues to operate the mill based on the toll manufacturing agreement until January 2023.

Operational EBIT at EUR -124 (38) million declined by EUR 86 million, or 224%, due to lower delivery volumes, significantly lower prices, and higher variable costs. In particular, energy and paper for recycling (PFR) costs were significantly higher. Fixed costs were materially lower.

Full year cash flow after investing activities was negative EUR 77 million due to negative result and significant closure costs related to the Kvarnsveden and Veitsiluoto sites. Cash flow from retained business turned positive in the fourth quarter of 2021.

Other

The segment Other includes Stora Enso's shareholding in the energy company Pohjolan Voima (PVO), and the Group's shared services and administration.

EUR million	2021	2020
Sales	1,092	928
Operational EBITDA	-9	-3
Operational EBITDA margin	-0.8%	-0.3%
Operational EBIT	-48	-35
Operational EBIT margin	-4.4%	-3.8%
Cash flow from operations	-48	-17
Cash flow after investing activities	-62	-27

Sales of the segment Other at EUR 1,092 (928) million increased from previous year mainly due to higher internal sales of energy and logistics services.

Investments and capital expenditure

Additions to fixed and biological assets including internal costs capitalised in 2021 totalled EUR 666 (687) million. The total amount includes additions in biological assets of EUR 58 (59) million.

In January, the conversion of the Oulu paper site in Finland for production of packaging board was completed. The project began in May 2019 following a decision to invest EUR 350 million, and it was completed within the budget frame.

In June, an investment of EUR 21 million was announced to improve the competitiveness and environmental performance of the Anjala-Ingerois paper and board production sites. The project will be completed during the third quarter of 2023. The Group is also investing EUR 26 million in modernising the pulp production at the Nymölla site in Sweden, making the pulp production process more competitive and sustainable for the future. The project will be completed during the third quarter of 2022.

The pilot facility for producing bio-based carbon materials from lignin began operations in July, following the EUR 10 million investment announced in 2019. Pilot production of Lignode® by Stora Enso, wood-based carbon for batteries, is being ramped up. Applications include electric vehicles and consumer electronics as well as large-scale energy storage systems.

In July, Stora Enso and Tetra Pak announced a partnership to provide circular solutions to significantly improve recycling of beverage cartons in Central and Eastern Europe. Stora Enso invests EUR 17 million into a new repulping line at its Ostrołęka site in Poland that will recover carton fibers. Tetra Pak will build another line that will separate and recover polymers and aluminium. The recycled fibers will be integrated into Stora Enso's recycled board, while the separated polymers and aluminium will be used in, for example, pellets and foils.

Both lines will be operational at the beginning of 2023.

In October, Stora Enso announced an investment of EUR 97 million to expand the board capacity at the Skoghall site in Sweden. The investment will accelerate growth in strategic packaging segments and markets and is expected to be completed during the second half of 2023. With the completion of the feasibility study, Stora Enso decided not to go ahead with the originally planned pulp capacity expansion.

A EUR 23 million investment announced in December, will increase flexibility in production at the Varkaus packaging board mill and enable increased use of recycled fiber. The investment will be completed by the end of 2022.

Stora Enso is conducting a pre-feasibility study regarding the conversion of the second idle former paper line at its Oulu site in Finland into a packaging board line. The pre-feasibility study will be completed in early 2022.

The other main projects ongoing at the end of 2021 were the investment in new production line for cross laminated timber (CLT) at Ždírec Mill in the Czech Republic and the wood handling upgrade investment at Imatra Mills in Finland.

Innovation, research and development

Stora Enso's total spend on innovation, research and development in 2021 was EUR 133 (146) million, equivalent to 1.3% (1.7%) of total sales. 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 employed approximately 400 people in six R&D centres.

Stora Enso's innovation and growth focus is on the development of sustainable packaging applications to replace plastic-based materials, bio-based barriers solutions

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for packaging, innovative biomaterials or high-end applications, and the development of sustainable wooden-based materials and components in Building Solutions which store carbon and improve buildings' energy efficiency.

Intellectual property (IP) is an important tool to protect and secure Stora Enso's development of innovative products, the way we work and how we build our brand. During 2021, Stora Enso continued to refine its patent portfolio, with priority founding patent applications filed. Over 430 patents were granted worldwide during the year.

For more information on Stora Enso's Innovation and R&D, please see the section [Our strategy](#).

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 [49–53](#), including Stora Enso's reporting according to Task Force on Climate-related Financial Disclosures (TCFD) recommendations.

Business model

Part of the global bioeconomy, Stora Enso is a leading provider of renewable products in packaging, biomaterials, wooden construction and paper, and one of the largest private forest owners in the world. Sustainability is deeply embedded in our business strategy and responsible business practices. A description of Stora Enso's business model can be found at the beginning of the Report of Board of Directors.

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. Stora Enso supports all seventeen SDGs, and goals 12 (Responsible consumption and production), 13 (Climate action), and 15 (Life on land) have been identified as most relevant where the Group has the largest impact through its operations and products.

Sustainability governance

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 2021.

Stora Enso's Sustainability Policy describes its overall approach and governance model. At the same time, the Code of Conduct and other policies, guidelines, and statements on specific sustainability topics all further elaborate the approach, while also guiding the Group's employees in their everyday work. These documents are available at storaenso.com/sustainability.

More information on Stora Enso's approach to sustainability is included in the sections [Our strategy](#) and [Sustainability reporting](#).

Covid-19 pandemic

The global pandemic has underscored the importance of our work on the social agenda. During the year, Stora Enso continued to promote the health and safety of its employees and others working in its premises through various measures. The following official recommendations

and careful planning have ensured that the Group's maintenance turnarounds during the year were successfully executed without any serious Covid-19 escalations. To ensure that Stora Enso's employees are well informed and to support their wellbeing, the Group has communicated on the situation and its response to Covid-19 regularly throughout the year. In addition, remote working has been recommended and supported for Stora Enso's employees when possible. Hybrid working has become a part of many units' working practices during the autumn 2021. Read more on our adaption to the global pandemic and work on social agenda on pages [145](#) and [147](#).

Environmental matters

Sustainable forestry and biodiversity

Key policy: Wood and fiber sourcing, and land management policy

Stora Enso is, as part of setting ambitious biodiversity goals and new sustainability targets in 2021, committed to achieving a net-positive impact on biodiversity in its own forests and plantations by 2050 through active biodiversity management. Stora Enso's comprehensive biodiversity programme includes an action plan 2021–2030 with measures to improve biodiversity on the species, habitat and landscape levels. The company uses its own forest in Sweden as a platform for continuously developing new biodiversity management practices to be adapted to local conditions and implemented in different geographical areas when feasible. Measures to be developed, tested and used in our own forests in Sweden include: application of modern digital tools to improve accuracy of planning and operations; increasing amount of deadwood and broad-leaved trees, especially birch; continuous cover forestry in suitable areas; and increasing use of controlled burning in forest regeneration. Stora Enso has initiated a holistic and adaptive Biodiversity Monitoring Programme, which monitors and measures

the state of biodiversity and the impact of Stora Enso's operations on biodiversity with more than 15 science-based indicators.

Currently, Stora Enso follows its progress in sustainable forestry with a key performance indicator (KPI) that measures the proportion of land in wood production and harvesting owned or leased by Stora Enso that is covered by forest certification schemes. At the end of 2021, Stora Enso owned or leased lands covering a total area of 2.01 million hectares (2.02 million hectares in 2020). The majority of Stora Enso's owned or leased lands are located in Sweden. For more details, see the [Note 12](#). The Group's target is to maintain the high level of 96%. In 2021, the certification coverage amounted to 99% (99%¹ in 2020).

In 2021, the total amount of wood (including roundwood and wood chips) delivered to our mills was 37.6 million m³ (solid under bark) (35.0 million m³ in 2020). The proportion of third-party certified wood in the Group's total wood supply was 77% (78%).

Climate change

Key policy: Energy and carbon policy
Stora Enso updated its science-based targets in 2021 to reduce absolute scope 1 and 2 greenhouse gas (GHG) emissions from operations by 50% by 2030 from the 2019 base year, in line with the 1.5-degree scenario. In 2021, Stora Enso also committed to a target to also reduce scope 3 GHG emissions by 50% by 2030 from the 2019 base year.

In 2021, Stora Enso's absolute GHG emissions (scope 1 and 2) were 14% lower than the benchmark level (13% lower in 2020). During 2021, the emissions decreased slightly, partly due to less fossil-intensive electricity purchased for sites in Finland.

¹ Reporting on total land area and its forest certification coverage aligned with financial reporting on forests assets. Historical figures recalculated for comparability. For more information, see [Note 12](#).

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Stora Enso's estimated GHG emissions elsewhere along the value chain (scope 3) were 2% lower than the benchmark level (11% lower in 2020). The scope 3 emissions increased partly due to recovered production during 2021.

Circularity

Key policy: Stora Enso's Circular Design Guidelines

Stora Enso's circular economy target outlines its commitment to transparent and circular material flows that help minimise waste and combat climate change, and that reduces the impact on nature. The interim targets for this include achieving 100% recyclable products by 2030. By the end of 2021, 93% of our products were recyclable.¹

Water

Key policy: Stora Enso's Environmental Guidelines

The objective of the Group's KPIs on total water withdrawal and process water discharges is to drive a downward trend from our 2016 baseline of 59 m³ and 27 m³ per saleable tonne of product, respectively. In 2021, our total water withdrawal was 60 m³ per saleable tonne (60 m³ in 2020) and our process water discharges amounted to 31 m³ per saleable tonne (31 m³ in 2020). During the recent years, the normalised performance as per tonne has been affected by lower production levels in the Paper division. The amount of water required at Stora Enso's board, pulp and paper mills is not directly related to production volumes, and wastewater treatment, in particular, requires a regular flow of water to function properly.

¹ Based on the technical recyclability of products and their production volumes consolidated as tonnes. Technical recyclability is defined by international standards and tests when available, such as PTS and CTP, and in absence of these by Stora Enso's own tests that prove recyclability. The reporting scope includes Stora Enso's packaging, pulp, paper and solid wood products as well as biochemical by-products. The recyclability of corrugated packaging is estimated in 2021 reporting and will be confirmed by further testing.

Social and employee matters

Employees

Key policies: Minimum HR requirements

On 31 December 2021, there were 22,094 (23,189) employees in the Group. The average number of employees in 2021 was 23,071, which was 1,384 fewer than the average number of employees in 2020. The numbers include 50% of the employees at Veracel in Brazil and Montes del Plata in Uruguay. In 2021, Stora Enso closed down the Kvarnsveden and Veitsiluoto sites due to structurally declining paper market, affecting 1,100 employees in total. Read more in the chapter Employees in the Sustainability reporting section.

Personnel expenses totalled EUR 1,351 (1,270) million or 13.3% of sales. Wages and salaries were EUR 1,017 (966) million, pension costs EUR 165 (152) million and other employer costs amounted to EUR 162 (151) million.

At the end of 2021, the Group's top four countries in respect to the number of employees were Finland, Sweden, China, and Poland. 24% (24%) of employees were women.

Personnel turnover in 2021 was 13.2% (12.7%). Illness-related absenteeism amounted to 3.8% (3.6%) of total theoretical working hours.

The Group's wages in relation to minimum wages and approach to living wages are described in the chapter Employees. Remuneration to the Board of Directors and key management is described in Note 7 of the consolidated financial statements.

Safety

Key policy: Health and Safety policy

In 2021, our Total Recordable Incident (TRI) rate increased to 6.2 (6.1). The milestone for 2021 was 4.0. In October 2021, Stora Enso experienced the death of a contractor employee, due to a forklift collision at the Veracel joint operation in Brazil. The incident and the root causes have

been investigated together with the local authorities. The learnings from this tragic event will be acted upon to prevent such accidents from recurring. The milestone for 2021 was not achieved. Even though Stora Enso's safety performance is stable over the past years, it is not reflecting the Group's dedication of everybody home safe, every day.

Sustainable sourcing

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 Supplier Code of Conduct (SCoC), including all categories and regions. By the end of 2021, 96% of Stora Enso's total spend on materials, goods, and services was duly covered (96% at the end of 2020), which exceeds our target to maintain at least the level of 95%.

Community

Key policies: Human Rights Policy, Guidelines for Social Responsibility

During 2021, Stora Enso continued to address land and natural resource rights in Guangxi, China and Bahia, Brazil.

Guangxi, China

Stora Enso leases 77,000 hectares of land in Guangxi province China, of which 53,600 hectares is leased from state-owned forest farms. The remaining 23,400 hectares, or 30% of the total area, is social land leased from village collectives, individual households, and local forest farms.

Parts of the land leased by Stora Enso have been occupied for up to ten years for the purpose of growing crops and trees on a small scale. In some cases, the occupiers are claiming rights to the land based on historical land ownership documents that have been superseded by state ownership in successive land reform processes. Recovery of occupied land continued in 2021, with

6,650 hectares of land still under occupation at the end of the year.

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.

At the end of 2021, 111 hectares or 0.1% of productive land owned by Veracel remained occupied by movements not involved in the agreements.

At the end of 2021, the total land area owned by Veracel was 211,000 hectares, of which 82,000 hectares are used for growing eucalyptus for pulp production. Approximately half of Veracel's lands are dedicated to protecting local biodiversity by restoring and conserving the natural Atlantic rainforest.

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's annual Slavery and Human Trafficking Statement is available at storaenso.com/sustainability.

Human rights are embedded in the day-to-day business activities. While Stora Enso considers all human rights to be important, and respects them, the human rights identified as having the highest priority remain the primary focus of work:

- Health and safety
- Fair labour (fair employment conditions, forced labour, freedom of association, non-discrimination and non-harassment)

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- Land and natural resource rights acquisition and management
- Grievance mechanisms
- Children's rights (relevant to the forest sector).

In 2019 Stora Enso identified 24 human rights-related development actions in Group function processes. Twenty-two of the actions were completed in 2020, and the two remaining actions were completed in 2021. In preparation for the upcoming EU directive on mandatory human rights due diligence Stora Enso carried out a number of initiatives, including a workshop with key employees across the company and an external law firm, and initiated a working group to help bring the organisation into compliance.

Anti-corruption and bribery matters

Key policies: Business practice policy, the Stora Enso Code (Code of Conduct)
A total of 117 (86 in 2020) potential non-compliance cases were reported in 2021. In recent years there has been a steady increase in the number of reported cases, most likely due to more focus on ethical conduct, compliance and whistleblowing, both internally and externally. A total of 98 (84¹) investigations of potential non-compliance were completed, which also included open cases from previous years. Proven cases leading to disciplinary action, legal action and/or process improvements were identified in 26 (34¹) of the investigations. Based on the Group's categorisation, 9 (10) of the proven cases were related to corruption and/or fraud, resulting in employee dismissal or a disciplinary process.

Furthermore, 11 (11) of the proven cases were related to discrimination, harassment and/or bullying. Remediation plans have been or are being implemented together with relevant management representatives.

¹ Restated

EU Taxonomy

The European Commission presented a new growth strategy in 2019, the European Green Deal with the aim to reduce net greenhouse gas emissions to zero by 2050 and to support economic growth through the most efficient and sustainable use of natural resources.

Regulation (EU) 2020/852 of the European Parliament and Council (the 'Taxonomy Regulation') was introduced for a common classification system for sustainable economic activities. The aim is to scale up sustainable investments and redirect capital flows towards technologies and businesses considered sustainable.

Stora Enso supports the ambitious goals set by the EU Taxonomy. The current legislation focuses on economic activities with a substantial contribution to climate change mitigation and adaptation. When it comes to the forest-based value chain, the current scope of the climate taxonomy has its focus on forest management and long-lived wood products as part of the construction industry. Consequently, Stora Enso's own forest management in the Nordics and manufacturing of certain energy efficient building components are eligible within the climate taxonomy criteria.

The EU Taxonomy is still developing, and it is important to note that the current legislation does not cover all sustainable activities on the market. In driving the transition to zero carbon emissions, the emphasis is on the most carbon intensive industries, as well as on green energy and innovations. As a forest company, Stora Enso is, not at the core of the current legislation and therefore only has few relevant economic activity categories to report on. Since the forest industry and its main products are largely out of the scope of the EU Taxonomy, the Taxonomy eligible KPI figures are low.

Stora Enso's Annual Report 2021 provides extensive information on the Group's sustainability performance, including details on Greenhouse Gas (GHG)

emissions and the climate impacts beyond legislative requirements of the climate taxonomy and the EU Taxonomy in general. As the legislation is still developing and is expected to expand into other areas relevant to our products and operations, going forward we will update our taxonomy reporting accordingly.

During 2021, Stora Enso established an internal working group for EU Taxonomy, led by Group Finance and consisting of members from Group Sustainability, Public Affairs, Investor Relations, and the Forest division. The reporting preparation was overseen by a steering group, consisting of the Chief Financial Officer (CFO), Executive Vice President (EVP) for Sustainability, and the Senior Vice Presidents (SVP's) for Public Affairs, Group Controlling and Investor Relations.

Accounting principles

In the supplementing EU Regulation (EU) 2020/852 (published 6.7.2021) Article 10 states that non-financial undertakings shall only disclose the proportion of the Taxonomy eligible and Taxonomy non-eligible economic activities in their total turnover, capital and operational expenditure and the relevant qualitative information for fiscal year 2021 reporting.

One of the main goals of EU Taxonomy is to prevent 'green washing'. Stora Enso respects this and has taken a conservative approach when reporting the taxonomy-eligible figures, thus not including items that are not specifically mentioned in the taxonomy. Although the 2021 figures are reported based on eligibility, the alignment criteria are already considered in cases where the assessment based on the economic activity description has been unclear.

EU Taxonomy requires companies to comment on how double counting has been avoided in the taxonomy-eligible economic activities (numerator), i.e. allocation of turnover, capital expenditure and operating expenditure. Stora Enso has made

allocations based on cost structures and ensured that the cost elements are separate for each activity.

Turnover

Turnover includes the external sales of taxonomy eligible activities. The denominator is Stora Enso Group's total sales and rental income in 2021, which respectively include the IFRS15 and the IFRS16 income, according to the EU Taxonomy definition of turnover. Taxonomy eligible turnover (numerator) includes the sales of roundwood from forests owned by Stora Enso to third-parties, seedling sales from Nordic forest nurseries, external sales of bio-based electricity and heat, turnover from certain wooden elements and components for buildings (LVL, CLT, construction beam, industrial components and classic planed), turnover generated from waste water treatment.

Capital expenditure

Eligible capital expenditure relates to turnover generating and taxonomy eligible assets and economic activities, or projects where turnover is expected within the next five years, or the activity supports climate change mitigation or adaptation by reducing greenhouse gas emissions. The denominator is the Group's total capital expenditure in 2021, as presented in the line additions, excluding goodwill additions, in the [Note 11](#) Intangible assets, property, plant and equipment and right of use assets, and the [Note 12](#) Forest assets. Taxonomy eligible capital expenditure allocations (numerator) are determined based on the external turnover generation. The energy related capital expenditure is allocated in proportion to the external distribution of total energy generation. All investments related to granulated lignin and hard carbon, which can be used as a battery component, are included. See the Investments and capital expenditure section for further details about Stora Enso's capital expenditure.

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Operating expenditure

Eligible operating expenditure relates to turnover generating and taxonomy eligible assets and economic activities, and includes all direct non-capitalised costs to operate the asset that were possible to single out. The salary costs of employees who perform repairs, maintenance and services of eligible fixed assets are excluded. The denominator amount includes the Group's total short-term leases (according to IFRS 16), R&D costs, maintenance materials and services, and Nordic silviculture costs. Taxonomy eligible operating expenditure allocations (numerator) are determined based on the external turnover generation. The energy related operating expenditure is allocated in proportion to the external distribution of total energy generation.

Taxonomy eligible activities

The Group's economic activities were assessed, and the following Taxonomy-eligible economic activities generating external turnover were recognised and included in numerators:

- 1.3. Forest management
 - Forest management activities and silviculture services in Stora Enso's own forests. External turnover, capital expenditure and operating expenditure related to wood sourced from Stora Enso's own forests and seedling sales from Stora Enso's Nordic forest nurseries.

- 1.4 Conservation forestry
 - Rainforest restoration direct operating expenditure in Veracel joint operations (50%), Brazil.
- 3.4. Manufacture of batteries
 - Capital expenditure related to granulated lignin and hard carbon. External turnover expected within the next few years.
- 3.5. Manufacture of energy efficiency equipment for buildings
 - External turnover, capital expenditure, and operating expenditure related to manufacturing of door, window, and roofing components (LVL, CLT, construction beam, industrial components and classic planed).
- 4.15. District heating/cooling distribution
 - Capital expenditure related to building a connection to municipal district heating network. External turnover expected within the next few years.
- 4.20. Cogeneration of heat/cool and power from bioenergy
 - External turnover from electricity and heat sales, and related capital expenditure and operating expenditure.
- 5.3 Construction, extension, and operation of wastewater collection and treatment
 - External turnover related to wastewater treatment.

Proportion of taxonomy eligible activities

	Total		Taxonomy eligible		Taxonomy non-eligible	
	EUR million	%	EUR million	%	EUR million	%
Turnover ¹	10,177	5%	483	95%	9,694	
CAPEX	666	4%	27	96%	639	
OPEX	619	6%	38	94%	581	

¹ In the taxonomy, turnover includes also rental income, therefore the figure differs slightly from the Group sales.

Environmental investments and liabilities

In 2021 Stora Enso's environmental investments amounted to EUR 50 (91) million. These investments were mainly to improve the quality of air and water, to enhance resource and energy efficiency, and to minimise the risk of accidental spills.

Stora Enso's environmental costs in 2021 excluding interest and including depreciation totalled EUR 207 (195) million. These costs include taxes, fees, refunds, permit-related costs, and repair and maintenance costs, as well as wastewater treatment chemicals and certain other materials.

Provisions for environmental remediation amounted to EUR 75 (91) million at 31 December 2021, 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 29 (18) 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 and scenario planning, we enhance opportunities and manage risk in order to reduce threats which may prevent us from reaching our business goals.

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 predominantly through Group policies the appropriate and acceptable level of risk.

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 monitoring of the cybersecurity risk. 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 Chief Strategy and Innovation Officer, is responsible for the design, development and monitoring of the top-down implementation of the Group risk management framework. Each division and Group function 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.

Risk management process

Risk management is embedded in all decision-making processes, with holistic risk assessments conducted also as part

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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 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 semi-annual 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.

Main risks

Macroeconomy, geopolitics, and currency rates

Stora Enso operates in more than 30 countries and changes in global economic conditions, such as sharp market corrections and foreign exchange volatility, could, therefore, have a negative and material impact on its profit, cash flows and financial position. In 2021, the global economy has been returning to more normal market conditions following the economic shock triggered by the Covid-19 pandemic. However, the risk of setbacks or delays remain, due to new virus variants and possible vaccine hesitancy.

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 by 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.

Mitigation measures and opportunities

Stora Enso has a diversified portfolio of businesses which mitigates exposure to any one country or product segment. The external environment is continuously monitored and planning assumptions take account of important near- to medium-term and long-term drivers and risks related to key macro-economic factors. The compliance to

the Board-approved risk appetite is closely monitored and cash flow and liquidity are actively managed. Stora Enso hedges 15–50% 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 a deterioration in trading conditions. In the event of a significant deterioration in general economic condition and in main leading economic indicators, the Group has a possibility to implement cost reduction measures to offset the impact on margins from deterioration in sales.

Competition and market demand

The packaging, pulp, paper and wood products industries are mature, capital intensive and highly competitive. Stora Enso's principal competitors include several large international forest products companies and numerous regional and more specialised competitors. Customer demand is influenced by the general economic conditions and inventory levels and affects product price levels. Product prices, which tend to be cyclical, 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 2021.

Operating profit: Impact of changes +/- 10%, EUR million

Segments	Price	Volume
Packaging Materials	364	130
Packaging Solutions	70	21
Biomaterials	157	76
Wood Products	184	63
Forest	228	16
Paper	157	29

Mitigation measures and opportunities

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.

Stora Enso, as one of the biggest private forest owners in the world, also benefits from a strategic renewable resource base. The Group's expertise in wood and wood based renewable materials is focused on responding to changing customer and consumer preferences, driven by climate change. Products based on renewable materials with a low carbon footprint help customers and society at large to reduce CO₂ emissions by providing an alternative to solutions based on fossil fuels or other non-renewable materials.

Sourcing

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 energy also makes Stora Enso susceptible to changes in energy market prices. There is also an increased risk of disturbances in the supply chain due to cyber incidents, pandemic related lockdown measures, political instability and other drivers related to global trade.

The following table shows Stora Enso's major cost items.

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Composition of costs in 2021

Operative costs	% of costs	% of sales
Logistics and commissions	11%	10%
Manufacturing costs		
Fiber	37%	31%
Chemicals and fillers	9%	7%
Energy	7%	6%
Material	6%	5%
Personnel	15%	13%
Other	9%	8%
Depreciation	6%	6%
Total costs and sales	100%	86%
Total operative costs and sales in EUR million	8,695	10,164
Equity accounted investments (EAI), operational		59
Operational EBIT (EUR million)		1,528

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 fiber, 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. 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.

Mitigation measures and opportunities
Input cost volatility is closely monitored at the business unit, divisional and group level and a consistent long-term energy risk management is applied. 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. Stora Enso hedges price risks in raw material and end-product markets and supports the development of financial hedging markets. A wide range of suppliers are used and monitored 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. The sustainability requirements for suppliers and audit schemes cover 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.
Stora Enso also has an opportunity to add value and bring innovation to its business globally by building strong and measurable relationships with the best suppliers as well as enforcing harmonised sourcing processes to increase capabilities, increase tender quality to reduce cost, and develop sustainable suppliers.

Regulatory changes
Stora Enso's businesses may be affected by political or regulatory developments in any of the countries and jurisdictions where it operates, including changes to forest, biodiversity, environmental, fiscal, tax or other regulatory regimes. Potential impacts include higher costs and capital expenditure to meet new requirements, the expropriation of assets, imposition of royalties or other taxes targeted at the industry, and requirements for local ownership or beneficiation.

The EU Green Deal and its climate targets for 2030 and 2050 have resulted in a proliferation of future legislation which have been further advanced in 2021 and may impact Stora Enso's future operations. The policy initiatives from the European Commission will include policies and legislation on areas such as EU Forest and Biodiversity strategies, the Renewable Energy Directive, EU Emission Trading System (ETS), Sustainable products initiative,

Packaging and Packaging waste revision as well as EU taxonomy.
The EU taxonomy regulation progressed during 2021, but uncertainty remains on how much Stora Enso's economic activities are within the taxonomy's scope, as the regulation develops further. Good management of financial and 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.
Political decisions driven by increasingly polarised public debate on forest resources, could limit the availability of wood, increase costs and reduce investment opportunities.
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, local officials may pursue administrative measures to reclaim some of the formerly granted investment subsidies or to impose penalties on Stora Enso, and the outcome of such a process could result in a negative financial impact on Stora Enso.

Mitigation measures and opportunities
Active monitoring of regulatory and political developments in the countries where Stora Enso operates as well as participation in policy development mainly through industry associations and other partnership programmes are important risk mitigation regarding regulatory changes. Regulatory changes can also bring significant opportunities by driving market growth for sustainable products and create competitive advantage through resource efficiency and renewability.

Climate change – physical impacts
Long-term (25–30 years) changes in precipitation patterns, periods of drought, frequent extreme weather events and higher average temperatures that increase the risk of forest fires and insect outbreaks, could

cause damage to operations, forests and tree plantations, affecting forests asset values and regional wood prices. Milder winters could also have an impact on the harvesting and transport of wood and related costs in northern regions. More frequent extreme weather events also increase the risk of disruptions in the production, logistics and supply of raw materials and energy.

Mitigation measures and opportunities
Physical risks are to a great extent subject to risk transfer and thereby within the cover of Stora Enso's property and business interruption insurance programs. With regards to forest and plantation assets, Stora Enso benefits from strategic resilience through geographical diversification within the asset portfolio. Diligent plantation planning is ensured to avoid frost sensitive areas and R&D programmes are applied to increase tolerance to 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.
Nordic forests in Finland and Sweden could also 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 assets and an indirect impact related to market wood availability and costs.

People and capabilities
Competition for personnel is intense and Stora Enso may, in the long term, not be successful in attracting or retaining qualified personnel. The loss of key employees, the inability to attract new or adequately trained employees, or a delay in hiring key personnel could seriously harm Stora Enso's business and impede reaching the Group's strategic objectives. Labour market disruptions and strikes, especially in times of restructuring and redundancies due to

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divestments and mill closures or during labour market negotiations, could also have adverse material effects on Stora Enso's business, financial position and profitability.

Mitigation measures and opportunities

Stora Enso manages the risks and loss of key talents through a combination of different actions. Some of the activities aim towards 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.

Stora Enso recognises the opportunity of skilled and dedicated employees being essential for success. Engaged high performing people enable the implementation of transformation strategy and commercial success.

Personal safety – employees and wider workforce

Failure to maintain high levels of safety management can result in harm to Stora Enso'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, damage to reputation, or an inability to attract and retain skilled employees. Government authorities could additionally enforce the closure of our operations on a temporary basis.

Personnel safety and 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, travelling, working and living in countries with security or crime concerns. Focusing on the security of key personnel is also important from a business continuity perspective.

Mitigation measures and opportunities

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 top management and throughout the company. The approach to safety extends to contractors, suppliers, and on-site visitors. Everyone is encouraged to give feedback and provide ideas on how to further improve safety. Additionally, safety is promoted among contractors and suppliers through a dedicated e-learning. The Group also emphasise the importance of safety by asking suppliers for information on their safety performance in the tendering process.

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

Leading health and safety performance can potentially strengthen the brand as an employer, as well as improved engagement, efficiency and productivity.

Physical assets

The installed capacity of Stora Enso's production facilities have an inherent risk of potential for failure or off-specification operations, which could result in poor product quality, unplanned production downtime, lower output or increased production costs. It may also impact the company's ability to meet delivery commitments and the business plan. In some instances, the risks are the result of inherent design deficiencies, failures in the mode of operation or operating practices. The most significant asset risks lie predominantly in

integrated pulp and board production and related energy generation.

Mitigation measures and opportunities

Protecting production assets and business results is a high priority for Stora Enso. This is achieved through structured methods of identifying, measuring and controlling different types of process risk and exposure. Divisional risk specialists manage this process together with insurance companies and other loss prevention specialists. Each year a number of technical risk inspections are carried out at production units. Risk improvement programmes and cost-benefit analyses of proposed investments are managed via internal reporting and risk assessment tools. Internal and external property loss prevention guidelines, fire loss control assessments, key machinery risk assessments and specific loss prevention programmes are also utilised. Planned stoppages for maintenance and other work are important to keep machinery in good order. Preventive maintenance programmes and spare part criticality analyses are utilized to secure the high availability and efficiency of key machinery.

Product safety and compliance

Some of our products are used for 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.

Mitigation measures and opportunities

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, Stora Enso mills have certified relevant ISO quality management systems. Furthermore, contractual liability limitation and insurance protection are used to limit the risk exposure to Stora Enso.

The Group recognises the opportunity of differentiation and value creation through superior product quality and the highest level of product conformity.

Information technology, security, and digitalisation

Stora Enso is dependent on IT systems for both internal and external communications and for the day-to-day management of its operations. Information systems, personnel and facilities are subject to cyber security risk, such as ransomware. In addition, 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, breach of data privacy regulation and other business critical information.

Mitigation measures and opportunities

The management of risks is actively pursued in the Information Risk Management System and best practice change management and project methodologies are applied. We actively work to prevent cybercrime. A number of security controls have been implemented to strengthen the protection of confidential information and to facilitate compliance with international regulations.

Opportunities may arise from efficient operations, performance optimisation, innovative product offerings, and new customer services through digitisation and sophisticated IT systems, as well as new

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technologies offering significant potential for higher level of process optimisation and automation, generating new business and enhanced value propositions for customers and consumers.

Strategic investments

To succeed with the implementation of its strategy, Stora Enso has to understand the needs of its customers 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, therefore, have serious impacts on the company's financial performance. Significant, unforeseen changes in costs or an inability to sell the envisaged volumes or achieve planned price levels may prevent Stora Enso from achieving its business goals.

Mitigation measures and opportunities

Risks are mitigated through profound and detailed pre-feasibility and feasibility studies which are prepared for each large investment. Investment guidelines stipulate the process, governance, risk assessment, management and monitoring procedures for strategic projects, including climate related risk factors. The guidelines also require that the calculation of potential cost and income for CO₂ 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.

Mergers, acquisitions, and divestments

Failure to realise the expected benefits from an acquisition of a company or asset can have serious financial impacts on Stora Enso. The Group can also 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. Divestments or business restructuring may involve additional costs due to historical and unaccounted liabilities as well as reputational impacts.

Mitigation measures and opportunities

Rigorous M&A guidelines, including due diligence procedures are applied to the evaluation and execution of all acquisitions. Structured governance and policies such as the policy for responsible right-sizing, are followed when making restructuring decisions. A strong balance sheet and cash flow enable value enhancing M&A, when the timing and opportunity are right.

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 associated to e.g. capital markets regulation, company and tax laws, customs, environment, human rights, and safety, as well as areas covered by policies such as the Stora Enso Code and Business Practice Policy, e.g. fraud, anti-trust, corruption, conflict of interests and other misconduct. Breaches may lead to high compliance and remediation costs including prosecution costs, fines, penalties, and contractual, financial and reputational damage.

Mitigation measures and opportunities

Stora Enso's Ethics and Compliance Programme, which includes policy setting, promoting values, training, knowledge sharing and grievance mechanisms, is continuously updated and developed. Other compliance mechanisms include Stora Enso Group's internal control system and Internal Audit assurance, as well as Supplier Code of Conduct in supplier contracts, risk assessments, trainings, 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.

Focus on ethics in a wider sense, not mere compliance with laws and regulations, promotes a value-driven and more successful business, fosters accountability and enhances corporate reputation.

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. In the [online index table](#), we list our disclosures with reference to TCFD recommendations, and refer to those locations where these issues are addressed in our annual reporting. The location references are complemented in the index with additional information, as necessary.

Scenario analysis in 2021

The TCFD recommendations encourage companies to use a scenario analysis to help ensure that their strategies are resilient to climate change in a range of possible future states. Leading practice shows that this is best approached by breaking down the full scope of scenario analysis into a set of smaller scopes considering asset type and geography, and to apply prioritisation in conducting the full scenario analysis.

In 2020, Stora Enso developed a scenario analysis with the qualitative assessment of the physical climate impacts on the Nordic forests and the Group's business until 2050.

This work was based on the Business-As-Usual scenario by the International Panel for Climate Change (RCP 8.5 scenario) that would deliver a temperature increase of 4–5 degrees by the end of the century. The climate change attributes considered are pests, diseases, droughts, wildfires, floods, periods of frost, water scarcity, changes to precipitation patterns, rise in sea level and changing temperatures. In 2021, the work with physical climate impacts continued by a deeper analysis of measures improving resiliency of the forests against the negative impacts of global warming. Results show that sustainable forest management practices as well as possibilities to monitor and to react to events such as forest fires and diseases, play an important role in mitigating the negative impacts of climate change.

During 2021, Stora Enso assessed a business impact scenario for 2030 according to the global transition required to limit the global average temperature increase in line with the Paris agreement of 1.5 degrees (RCP 1.9). The assessment was done based on the TCFD transition categories as part of the Group's annual strategy process.

The work concluded that the overall transition to a low carbon, circular bioeconomy is well aligned with Stora Enso's strategy. The Group's strategy is to provide sustainable, renewable alternatives to fossil-based solutions, presenting attractive growth opportunities going forward. The Group's innovation, product development and investments in energy and raw material efficiency also help customers to reach their climate targets as well as meet consumer demands for low-carbon products.

The scenario work also showed that potential new regulations and market mechanisms motivated by the ambitions to limit climate change and its effects on the society and environment could impact Stora Enso's operating costs by limiting wood harvesting volumes or forest management practices as well as

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increasing greenhouse gas emission costs and energy prices. Sustainable product initiatives and requirements may also have an impact on the Group's future market access, product demand growth and product development requirements.

During 2022, Stora Enso plans to further integrate TCFD recommendations into the strategy and enterprise risk management processes.

Corporate governance in Stora Enso

Stora Enso complies with the Finnish Corporate Governance Code 2020 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 part of this report. The deviations are due to differences between 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.

European Commission inspection

As announced in Stora Enso's stock exchange release on 12 October 2021, the European Commission has conducted unannounced inspections in locations at several member states at the premises of companies active in the wood pulp sector. Stora Enso was included in the European Commission's inspection at its headquarters in Kanavaranta, Finland.

Stora Enso is cooperating fully with the authorities. As stated by the Commission, the fact that they carry out such inspections does not mean that the companies are guilty of anti-competitive behaviour nor does it prejudice the outcome of the investigation itself.

Stora Enso is under strict confidentiality rules regarding the details of the ongoing European Commission investigation and cannot pre-empt or speculate regarding the next steps or eventual outcome of the investigation.

Legal proceedings in South 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, at the time of the decision, BRL 20 (EUR 3) 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.

Changes in Group management

René Hansen was appointed EVP, Brand and Communications and a member of the Group Leadership Team. He joins Stora Enso from a position as Vice President, Head of Brand Management at Yara International. He started in February 2022. He succeeds Ulrika Lilja, EVP, Communications and Marketing, who left her position at Stora Enso in September.

Johanna Hagelberg, previously EVP, Sourcing and Logistics, was appointed EVP Biomaterials division. The previous EVP Biomaterial division, Markus Mannström, left his position at Stora Enso in December.

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 2021, a total of 10,366 A shares converted into R shares were recorded in the Finnish Trade Register. On 31 December 2021, Stora Enso had 176,244,049 A shares and 612,375,938 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 237,481,642.

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.

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Major shareholders as of 31 December 2021

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	—	3.0%	10.0%
4 Ilmarinen Mutual Pension Insurance Company	4,172,492	17,749,856	2.8%	2.5%
5 Varma Mutual Pension Insurance Company	5,163,018	1,140,874	0.8%	2.2%
6 MP-Bolagen i Vetlanda AB	4,885,000	1,000,000	0.7%	2.1%
7 Elo Mutual Pension Insurance Company	2,000,000	7,441,225	1.2%	1.2%
8 Erik Johan Ljungberg's Education Foundation	1,780,540	2,336,224	0.5%	0.8%
9 SEB Investment Management	—	9,919,387	1.3%	0.4%
10 Bergslaget's Healthcare Foundation	626,269	1,609,483	0.3%	0.3%
11 The State Pension Fund	—	5,000,000	0.6%	0.2%
12 Unionen (Swedish trade union)	—	3,332,750	0.4%	0.1%
13 The Society of Swedish Literature in Finland	—	3,000,000	0.4%	0.1%
14 Avanza Pension Insurance	146,151	1,324,521	0.2%	0.1%
15 SEB AB, Luxembourg Branch	2,177	2,071,635	0.3%	0.1%
Total	168,379,155	94,718,495	33.4%	74.9%
Nominee-registered shares ³	75,090,688	483,768,342	70.9%	52.0%

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 2021

By size of holding, A share	Shareholders	% of shareholders	Shares	% of shares
1-100	6,068	57.00%	244,818	0.10%
101-1,000	3,994	37.50%	1,418,159	0.80%
1,001-10,000	543	5.10%	1,248,051	0.70%
10,001-100,000	26	0.20%	525,222	0.30%
100,001-1,000,000	1	—	134,144	0.10%
1,000,001-	7	0.10%	172,673,655	98.00%
Total	10,639	100.00%	176,244,049	100.00%

By size of holding, R share	Shareholders	% of shareholders	Shares	% of shares
1-100	14,206	34.30%	707,943	0.10%
101-1,000	20,948	50.60%	8,508,098	1.40%
1,001-10,000	5,689	13.80%	15,163,846	2.50%
10,001-100,000	442	1.10%	11,968,082	2.00%
100,001-1,000,000	66	0.20%	20,903,216	3.40%
1,000,001-	23	0.10%	555,124,753	90.70%
Total	41,374	100.00%	612,375,938	100.00%

According to Euroclear Finland.

This list includes only directly registered shares in Euroclear Finland. E.g. Stora Enso's Swedish shareholders are listed under their nominee bank in this list.

Ownership distribution as at 31 December 2021

	% of shares	% of votes
Solidium Oy ¹	10.7%	27.3%
FAM AB ²	10.2%	27.3%
Social Insurance Institution of Finland (KELA)	3.0%	10.0%
Finnish institutions (excl. Solidium and KELA)	11.3%	8.2%
Swedish institutions (excl. FAM)	5.5%	4.8%
Finnish private shareholders	3.8%	2.3%
Swedish private shareholders	4.2%	2.7%
ADR holders	1.8%	0.6%
Under nominee names (non-Finnish/ non-Swedish shareholders)	49.6%	16.7%

¹ Entirely owned by the Finnish State.

² As confirmed to Stora Enso.

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Outlook

Global megatrends such as an increased eco awareness, an accelerated focus on combatting climate change, and digitalisation underpin Stora Enso's business strategy and the demand for its renewable and eco-friendly products, both short and long term.

The general macroeconomic environment and the pandemic are persisting uncertainties. However, the market demand for Stora Enso's products across all divisions is supporting sustained commercial momentum. Measures such as pricing, flexibility in sourcing and logistics, as well as hedging are in place to manage volatility.

Guidance

Stora Enso's full year 2022 operational EBIT is estimated to be approximately in line with the full year operational EBIT for 2021 (EUR 1,528 million).

Short-term risks and uncertainties

Covid-19 and its economic and societal consequences continue to pose a critical threat to the world and Stora Enso's business environment. Global vaccine inequality and new lockdowns and restrictions in many countries to contain the spread of new virus mutations risk compounding social fractures and slow the economic recovery and demand.

While growing geopolitical tensions and divergence may slow economic growth and dampen consumer sentiments, the boundaries of international law and cooperation in tense geopolitical areas, such as the Russia-Ukraine border and the Taiwan strait, are also increasingly being tested and the risk of large-scale conflicts and serious market disruptions have increased short term.

Commodity, energy, and logistics prices and availability of transportation are likely to remain volatile going forward as a result of continued supply chain disturbances, growing tensions between Europe and Russia, China's energy shortage, and

transition challenges from disinvestment in fossil fuel reserves. This could have a material impact on Stora Enso, since the Group's operational and financial performance is susceptible to rapid changes in the cost or availability of raw materials such as roundwood and paper for recycling, and in energy and transport costs.

Moreover, 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 flow and financial position. Many of these risks are increasing as inflation has accelerated in many countries because of pandemic-related disruptions to supply chains combined with resurgent consumer demand and higher commodity prices.

Sensitivity analysis

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 32 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 201 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 150 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 36 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 transaction risk 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 would be approximately positive EUR 171 million, negative EUR 19 million and positive EUR 35 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 in an exposure currency.

The Group's consolidated income statement on operational EBIT level is exposed to a foreign-currency translation risk worth approximately EUR 111 million expense exposure in Brazilian real (BRL) and approximately EUR 83 million income exposure in Chinese Renminbi (CNY). These exposures are arising from the foreign subsidiaries and joint-operations located in Brazil and China, respectively. For these exposures a 10% strengthening in the value of a foreign currency would have a negative EUR 11 million and a positive EUR 8 million impact on operational EBIT, respectively.

Annual General Meeting

Stora Enso Oyj's Annual General Meeting (AGM) will be held on Tuesday 15 March 2022. The Annual General Meeting 2022 will be held with exceptional procedures based on the temporary legislative act to limit the spread of the Covid-19 pandemic approved by the Finnish Parliament. This means that the shareholders of the Company and their proxy representatives may participate in the meeting and exercise their rights as shareholders only through voting in advance as well as by making counterproposals and presenting questions in advance. More information is available at storaenso.com/agm.

Proposal for the distribution of dividend

The Board of Directors proposes to the AGM that a dividend of EUR 0.55 per share be distributed on the basis of the balance sheet adopted for the year 2021. The Board of Directors has assessed the Company's

financial situation and liquidity before making the proposal. There have been no material changes in the parent company's financial position since 31 December 2021, the liquidity of the parent company remains good and the proposed dividend does not risk the solvency of the company. Stora Enso's policy is to distribute 50% of earnings per share (EPS) excluding fair valuation over the cycle. In 2021, EPS excluding fair valuation was EUR 1.19.

The Parent Company distributable shareholders' equity on 31 December 2021 amounted to EUR 1,982,524,873.43, including the profit for the period of EUR 637,203,729.97. The Board of Directors proposes to the Annual General Meeting of the Company that the distributable funds be used as follows:

A dividend of EUR 0.55 per share from the distributable shareholders' equity to be distributed on 788,619,987 shares, not to exceed EUR 433,740,992.85, which would leave EUR 1,548,783,880.58 in distributable shareholders' equity.

The dividend would be paid to shareholders who on the record date of the dividend payment, 17 March 2022, 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 24 March 2022.

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

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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 CO₂ emission rights, non-operational fair valuation changes of biological assets, adjustments for differences between fair value and acquisition cost of forest assets upon disposal and the Group's share of income tax and net financial items of EAI. The adjustments for differences between fair value and acquisition cost of forest assets upon disposal are a result of the fact that the cumulative non-operational fair valuation changes of disposed forest assets were included in previous periods in IFRS operating profit (biological assets) and other comprehensive income (forest land) and are included in operational EBIT only at the disposal date.

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 EAI.

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 (%)	$100 \times \frac{\text{Annualised operational EBIT}}{\text{Capital employed}^{1,2}}$
Operational return on operating capital, operational ROOC (%)	$100 \times \frac{\text{Annualised operational EBIT}}{\text{Operating capital}^2}$
Return on equity, ROE (%)	$100 \times \frac{\text{Net profit/loss for the period}}{\text{Total equity}^2}$
Net interest-bearing liabilities	Interest-bearing liabilities – interest-bearing assets
Net debt/equity ratio	$\frac{\text{Net interest-bearing liabilities}}{\text{Equity}^3}$
Earnings per share (EPS)	$\frac{\text{Net profit/loss for the period}^3}{\text{Average number of shares}}$
Payout ratio, excl. FV, %	$100 \times \frac{\text{Dividend distribution / share}}{\text{EPS excl. FV}}$
Dividend and distribution yield, %	$100 \times \frac{\text{Dividend distribution / share}}{\text{Closing price of share}}$
Price/earnings ratio (P/E), excl. FV	$\frac{\text{Closing price of share}}{\text{EPS excl. FV}}$
Operational EBIT	Operating profit/loss excluding items affecting comparability (IAC) and fair valuations (FV) 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 silviculture costs and damage to forests, 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	$\frac{\text{Net interest-bearing liabilities}}{\text{LTM operational EBITDA}}$
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
 Profit before tax excl. IAC and FV
 Capital expenditure
 Capital expenditure excl. investments in biological assets
 Capital employed
 Depreciation and impairment charges excl. IAC
 Operational ROCE
 Earnings per share (EPS), excl. FV
 Fixed costs to sales
 Operational ROOC
 Net debt/last 12 months' operational EBITDA ratio
 Cash flow from operations
 Cash flow after investing activities

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Consolidated income statement

EUR million	Note	Year ended 31 December	
		2021	2020
Sales	3	10,164	8,553
Other operating income	5	345	147
Changes in inventories of finished goods and work in progress		122	-84
Materials and services		-5,936	-5,043
Freight and sales commissions		-939	-806
Personnel expenses	6	-1,351	-1,270
Other operating expenses	5	-610	-394
Share of results of equity accounted investments	13	143	-1
Change in net value of biological assets	12	328	428
Depreciation, amortisation and impairment charges	10	-697	-609
Operating profit	3	1,568	922
Financial income	8	42	19
Financial expense	8	-190	-168
Profit before Tax		1,419	773
Income tax	9	-151	-156
Net profit for the year		1,268	617
Attributable to			
Owners of the Parent	18	1,266	626
Non-controlling Interests	19	3	-9
Net profit for the year		1,268	617
Earnings per share			
Basic earnings per share, EUR	32	1.61	0.79
Diluted earnings per share, EUR	32	1.60	0.79

Consolidated statement of comprehensive income

EUR million	Note	Year ended 31 December	
		2021	2020
Net profit for the year		1,268	617
Other Comprehensive Income (OCI)			
Items that will not be reclassified to profit and loss			
Equity instruments at fair value through OCI	14	501	-136
Actuarial gains and losses on defined benefit plans	20	126	20
Revaluation of forest land	12	225	1,504
Share of OCI of equity accounted investments (EAI)	13	16	12
Income tax relating to items that will not be reclassified	9	-68	-315
		800	1,086
Items that may be reclassified subsequently to profit and loss			
Cumulative translation adjustment (CTA)	28	56	-143
Net investment hedges and loans	28	14	16
Cash flow hedges and cost of hedging	27	-35	54
Share of OCI of non-controlling interests (NCI)	19	-3	1
Income tax relating to items that may be reclassified	9	9	-15
		42	-87
Total comprehensive income		2,110	1,616
Attributable to			
Owners of the Parent		2,110	1,625
Non-controlling interests	19	0	-9
Total comprehensive income		2,110	1,616

The accompanying Notes are an integral part of these consolidated financial statements.

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Consolidated statement of financial position

EUR million	Note	As at 31 December	
		2021	2020
Assets			
Goodwill	O 11	282	281
Other intangible assets	O 11	124	134
Property, plant and equipment	O 11	5,060	5,007
Right-of-use assets	O 11	441	452
		5,907	5,874
Forest assets	O 12	6,747	6,256
Biological assets	O 12	4,547	4,250
Forest land	O 12	2,201	2,005
Emission rights	O 15	137	36
Equity accounted investments	O 13	580	456
Listed securities	I 14	13	16
Unlisted securities	O 14	905	401
Non-current interest-bearing receivables	I 26	51	93
Deferred tax assets	T 9	143	117
Other non-current assets	O 15	34	28
Non-current assets		14,517	13,276
Inventories	O 16	1,478	1,270
Tax receivables	T	17	14
Operative receivables	O 17	1,449	1,145
Interest-bearing receivables	I 26	84	66
Cash and cash equivalents	I	1,481	1,661
Current assets		4,509	4,155
Total assets		19,026	17,431

EUR million	Note	As at 31 December	
		2021	2020
Equity and liabilities			
Share capital	18	1,342	1,342
Share premium		77	77
Fair value reserve		2,175	1,506
Cumulative translation adjustment	28	-195	-267
Invested non-restricted equity fund		633	633
Retained earnings		5,385	4,891
Net profit for the year		1,266	626
Equity attributable to owners of the Parent		10,683	8,809
Non-controlling Interests	19	-16	-16
Total equity		10,666	8,793
Post-employment benefit obligations	O 20	347	473
Provisions	O 22	91	102
Deferred tax liabilities	T 9	1,430	1,332
Non-current interest-bearing liabilities	I 26	3,313	3,822
Non-current operative liabilities	O 23	13	13
Non-current liabilities		5,195	5,743
Current portion of non-current debt	I 26	180	472
Interest-bearing liabilities	I 26	444	456
Bank overdrafts	I 26	1	6
Provisions	O 22	139	46
Operative liabilities	O 23	2,339	1,837
Tax liabilities	T 9	61	78
Current liabilities		3,165	2,895
Total liabilities		8,360	8,637
Total equity and liabilities		19,026	17,431

Items designated "O" comprise Operating Capital, items designated "I" comprise Interest-bearing Net Liabilities, items designated "T" comprise Net Tax Liabilities.
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Consolidated cash flow statement

EUR million	Year ended 31 December		
	Note	2021	2020
Cash flow from operating activities			
Net profit for the year		1,268	617
Adjustments and reversal of non-cash items:			
Taxes	9	151	156
Depreciation and impairment charges	10	697	609
Change in value of biological assets	12	-328	-428
Change in fair value of share awards		3	-4
Share of results of equity accounted investments	13	-143	1
CTA and profits and losses on sale of fixed assets and investments ¹	5	-54	-2
Net financial items	8	149	150
Other adjustments		17	15
Dividends received from equity accounted investments	13	16	36
Interest received		2	2
Interest paid		-123	-122
Other financial items, net		-19	-13
Income taxes paid	9	-136	-82
Change in net working capital, net of businesses acquired or sold		-25	195
Net cash provided by operating activities		1,476	1,128
Cash flow from investing activities			
Acquisition of shares in equity accounted investments	13	-6	-2
Acquisition of unlisted securities	14	-1	-14
Cash flow on disposal of subsidiary shares and business operations, net of disposed cash	4	55	-3
Cash flow on disposal of shares in equity accounted investments	13	47	0
Cash flow on disposal of unlisted securities	14	0	1
Cash flow on disposal of intangible assets and property, plant and equipment	11	105	17
Capital expenditure	3, 11	-565	-582
Investment in biological assets	12	-79	-79
Proceeds from/payment of non-current receivables, net		-4	-18
Net cash used in investing activities		-449	-681

EUR million	Year ended 31 December		
	Note	2021	2020
Cash flow from financing activities			
Proceeds from issue of new long-term debt	26	19	1,081
Repayment of long-term debt and lease liabilities	26	-940	-399
Change in short-term borrowings	26	-59	-99
Dividends paid		-237	-223
Purchase of own shares		-3	-6
Net cash used in financing activities		-1,220	354
Net change in cash and cash equivalents		-193	801
Translation adjustment		18	-9
Net cash and cash equivalents at beginning of year		1,655	863
Net cash and cash equivalents at year end		1,480	1,655
Cash and cash equivalents at year end²		1,481	1,661
Bank overdrafts at year end		-1	-6
Net cash and cash equivalents at year end		1,480	1,655

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.

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Consolidated cash flow statement

Supplemental cash flow information

EUR million	Note	Year ended 31 December	
		2021	2020
Change in net working capital consists of:			
Change in inventories		-196	101
Change in interest-free receivables:			
Current		-305	118
Non-current		-7	0
Change in interest-free liabilities:			
Current		491	-25
Non-current		-7	0
Change in net working capital, net of businesses acquired or sold		-25	195
Cash and cash equivalents consist of:			
Cash on hand and at banks		946	828
Cash equivalents		535	833
Cash and cash equivalents		1,481	1,661
Non-cash investing activities			
Total capital expenditure excluding right-of-use assets		576	589
Amounts paid		-565	-582
Non-cash part of additions to intangible assets and property, plant and equipment		11	8
Cash flow on disposals of subsidiaries and business operations			
Cash part of the consideration	4	67	-1
Cash and cash equivalents in divested companies	4	-12	-2
Net cash flow from disposal		55	-3

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Statement of changes in equity

EUR million	Fair Value Reserve											Attributable to Owners of the Parent	Non-controlling Interests	Total
	Share Capital	Share Premium and Reserve Fund	Invested Non-Restricted Equity Fund	Treasury Shares	Step Acquisition Revaluation Surplus	Equity instruments through OCI	Cash flow hedges	Revaluation reserve	OCI of Equity Accounted Investments	CTA and Net Investment Hedges and Loans	Retained Earnings			
Balance at 1 January 2020	1,342	77	633	—	4	413	-20	—	—	-136	5,116	7,429	-7	7,423
Net profit for the year	—	—	—	—	—	—	—	—	—	—	626	626	-9	617
OCI before tax	—	—	—	—	—	-136	54	1,504	12	-127	20	1,328	1	1,329
Income tax relating to OCI	—	—	—	—	—	-1	-11	-310	—	-4	-5	-330	—	-330
Total Comprehensive Income	—	—	—	—	—	-137	43	1,195	12	-131	642	1,625	-9	1,616
Dividend	—	—	—	—	—	—	—	—	—	—	-237	-237	—	-237
Acquisitions and disposals	—	—	—	—	-4	—	—	—	—	—	4	—	—	—
Purchase of treasury shares	—	—	—	-6	—	—	—	—	—	—	—	-6	—	-6
Share-based payments	—	—	—	6	—	—	—	—	—	—	-8	-3	—	-3
Balance at 31 December 2020	1,342	77	633	—	—	277	23	1,195	12	-267	5,518	8,809	-16	8,793
Net profit for the year	—	—	—	—	—	—	—	—	—	—	1,266	1,266	3	1,268
OCI before tax	—	—	—	—	—	501	-35	225	16	70	126	903	-3	900
Income tax relating to OCI	—	—	—	—	—	1	8	-46	—	2	-22	-59	—	-59
Total Comprehensive Income	—	—	—	—	—	501	-27	179	16	72	1,369	2,110	—	2,110
Dividend	—	—	—	—	—	—	—	—	—	—	-237	-237	—	-237
Acquisitions and disposals	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Purchase of treasury shares	—	—	—	-3	—	—	—	—	—	—	—	-3	—	-3
Share-based payments	—	—	—	3	—	—	—	—	—	—	—	3	—	3
Balance at 31 December 2021	1,342	77	633	—	—	778	-4	1,373	29	-195	6,650	10,683	-16	10,666

CTA = Cumulative Translation Adjustment, NCI = Non-controlling Interests, OCI = Other Comprehensive Income, EAI = Equity Accounted Investments

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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 Salmisaarenaukio 2, 00180 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 reportable segments: Packaging Materials, Packaging Solutions, Biomaterials, Wood Products, Forest, Paper and segment Other. 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 27 January 2022.

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 2021

The Group has applied the following new and amended standards and interpretations which are effective from 1 January 2021:

- Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 Interest Rate Benchmark Reform – Phase 2. The amendments relate to the modification of financial assets, financial liabilities and lease liabilities, specific hedge accounting requirements, and disclosure requirements applying IFRS 7 to accompany the amendments regarding modifications and hedge accounting. The effective date is 1 January 2021. The amendments do not have a significant impact on the Group.
- Amendments to IFRS 16 Leases: Covid-19 Related Rent Concessions. The amendment provide lessees with an exemption from assessing whether a COVID-19-related rent concession is a lease modification. The effective date is annual reporting periods beginning on or after 1 June 2020. The amendments do not have a significant impact on the Group.
- Other standards standard amendments and interpretations do not have any significant impact on the Group's consolidated financial statements or disclosures.

Changes in accounting principles

Cloud computing arrangement costs

Stora Enso has changed its accounting principles to comply with Agenda decision 2 related to IAS 38 Intangible Assets: Configuration or Customisation Costs in a Cloud Computing Arrangement. The second agenda decision addresses how a customer should account for the costs of configuring or customising the supplier's application software in a SaaS arrangement. It includes guidelines when configuration and customisation costs result in the recognition of an intangible asset, when expensed and when considered as a prepayment. The changes in accounting principles do not have any material impact on Stora Enso's consolidated financial statements or disclosures for the current or previous reporting periods.

Changes in segment reporting

Stora Enso has changed the presentation of certain consolidation adjustments in the segment reporting from 1 January 2021 onwards. When Stora Enso companies sell materials and finished products to other companies within the Group and part of the sold items remain in the receiving company's inventory at the end of the reporting period, the related internal profit is eliminated from the consolidated figures. Under previous presentation principles this internal profit has been fully eliminated at the segment level.

From 1 January 2021 onwards, this internal profit is eliminated from the segment figures only to the extent that the profit is fully internal to a single segment. Internal inventory profits from transactions

between segments are not eliminated from the segment figures and instead such elimination is done only at the Group level. The new presentation is considered to be more reflective of the division specific performance. The comparative figures have been restated accordingly. The new presentation does not affect the Group's total figures.

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, disposed companies are included up to the date when the control is lost. The subsidiaries and joint operations are listed in [Note 30](#) Group companies.

All intercompany transactions, receivables, liabilities and unrealised profits, as well as intragroup profit distributions, are eliminated. Accounting policies for subsidiaries, joint arrangements and equity accounted investments are adjusted where

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necessary to ensure consistency with the policies adopted by Stora Enso.

Associated companies over which Stora Enso exercises significant influence are accounted for by using the equity method. These companies are investments 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. More detailed information is presented in [Note 13](#) Equity accounted investments.

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. Joint ventures are joint arrangements, 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 both companies, Stora Enso's ownership is 50%. The arrangements are based on shareholders' agreements, which give Stora Enso rights to a share of returns and make the Group indirectly liable for the liabilities, as its ability to pay for the pulp is used to finance debts. In relation to its interest in joint operations, the Group recognises its share of assets, liabilities, revenues, expenses and cash flows of the joint operation. The share is determined based on rights to the assets and obligations for the liabilities of each joint operator.

- Veracel is a jointly owned 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.

- Montes del Plata is a jointly owned 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, 0.7 million tonnes, is sold entirely as market pulp. The eucalyptus is sourced mostly from the company's own forestry plantations. The mill commenced production 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 2020, 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 presented in the appropriate income statement line in the operating profit, and, for financial assets and liabilities, they are presented in the financial items in 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 income statements of Group companies with functional and presentational currencies

other than the euro are translated into the Group reporting currency using the average exchange rates of the year, whereas the statements of the financial position of these companies are translated using the exchange rates at the reporting date. The Group is exposed to currency risks arising from exchange rate fluctuations on the value of its net investment in non-euro area foreign entities. Exchange differences arising from the retranslation of net investments in foreign entities that are non-euro foreign subsidiaries, joint operations or equity accounted investments, and of financial instruments that are designated to hedge such investments, are recorded directly in equity as cumulative translation adjustment (CTA). See [Note 28](#) Cumulative translation adjustments and equity hedging for more details.

Future standard changes endorsed by the EU but not yet effective in 2021

- Amendments to IFRS 3 Business Combinations, IAS 16 Property, Plant and Equipment, IAS 37 Provisions, Contingent Liabilities and Contingent Assets and Annual Improvements 2018–2020. The amendments to IFRS 3 include minor updates to the standard. The amendments to IAS 16 prohibits an entity from deducting from the cost of an item of PPE any proceeds received from selling items produced while the entity is preparing the asset for its intended use. The amendment to IAS 37 clarifies that the direct costs of fulfilling a contract include both the incremental costs of fulfilling the contract and an allocation of other costs directly related to fulfilling contracts. Annual Improvements to IFRS Standards 2018–2020 include minor amendments to IFRS 9, IFRS 16 and IAS 41 standards. The effective date is 1 January 2022. The Group is assessing the impact of the amendments.
- No other published standards, standard amendments or interpretations which

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would be expected to have any significant impact on the Group's consolidated financial statements or disclosures.

Future standard changes not yet effective and not yet endorsed by the EU in 2021

- Amendments to IAS 1 Presentation of Financial Statements: Classification of Liabilities as current or non-current. The amendments clarify how to classify debt and other liabilities as current or non-current. The effective date is 1 January 2023. The Group is evaluating the impact of the amendments.
- Amendments to IAS 1 Presentation of Financial Statements: Disclosure of Accounting policies. The amendment requires entities to disclose their material accounting policy information rather than their significant accounting policies. The effective date is 1 January 2023. The Group is evaluating the impact of the amendments.
- Amendments to IAS 8 Accounting policies, Changes in Accounting Estimates and Errors: Definition of Accounting Estimates. The amendments introduce the definition of accounting estimates and includes other amendments to IAS 8 to help entities distinguish changes in accounting estimates from changes in accounting policies. The effective date is 1 January 2023. The Group is evaluating the impact of the amendments.
- Amendments to IAS 12 Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction. The amendments clarify how entities account for deferred tax on transactions such as leases and decommissioning obligations. The main change is related to the initial recognition exemption and in accordance with the amendment, the initial recognition exemption does not apply to transactions in which equal amounts of deductible and

taxable temporary differences arise on initial recognition. The effective date is 1 January 2023. The Group is evaluating the impact of the amendments.

- Other published standards, standard amendments or interpretations are not expected to have any significant impact on the Group's consolidated financial statements or disclosures.

Note 2 Critical accounting estimates and judgements

The preparation of consolidated financial statements in accordance with IFRS requires management to make estimates, judgements and assumptions that affect the reported assets and liabilities, as well as the disclosure of contingent assets and liabilities at the reporting date and the reported revenues and expenses during the period. These estimates, judgments and assumptions might have a significant impact on the amounts recognised in the consolidated financial statements. The estimates are based on historical experience and various other assumptions that are believed to be reasonable and reflect management's best estimates, though actual results and timings could differ from these. The estimates, judgements and assumptions are reviewed regularly and updated if there are changes in circumstances or as a result of new information. The accounting items presented below represent those matters which include the most estimation uncertainty and exercise of judgement.

Property, plant and equipment, intangible assets and right-of-use assets

The carrying amounts of property, plant and equipment and intangible assets and right-of-use assets 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, and an impairment charge is recognised whenever the carrying amount exceeds the recoverable amount. The value in use is calculated using a discounted cash flow method which is most sensitive to the discount rate as well as the expected future cash flows. The key assumptions used in the impairment testing, 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 useful 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 recoverable amount is calculated using the discounted cash flow method (value in use). Impairment charge is recognised if the carrying amount exceeds the recoverable amount. The discounted cash flow 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 capital expenditures and an assumption of the weighted average cost of capital. The discount rates used for the net present value calculation of projected cash flows reflect the best estimate of the weighted average cost of capital.

The Group has evaluated the most sensitive estimates, which, when changed,

could have a material impact on the valuation 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 are presented in [Note 10](#) Depreciation, amortisation and impairment charges.

Biological assets

The Group has biological assets in subsidiaries, joint operations and associated company. Biological assets, in the form of standing trees, are accounted in accordance with the IAS 41 Agriculture standard, which requires that the assets are measured at fair value less the costs to sell. Fair value is determined by 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, harvesting, sales price, costs and discount rate. In determining the value of biological assets, the management needs 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 harvesting and their current growth rates.

See next chapter for estimates and judgement applied in valuation of Swedish forest assets and [Note 12](#) Forest assets for more detailed information about Nordic and plantation forest assets.

Swedish forest assets

The fair value of forest assets in Sweden is determined using a market approach method, which is based on the forest market transactions in the areas where Stora Enso's forests are located. Market prices between areas vary significantly and judgement is applied to define relevant areas for market transactions used in valuation. The valuation of the forest assets is based on detailed transaction data and price statistics as

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provided by different market data suppliers. Market transaction data is adjusted to consider characteristics and nature of Stora Enso's forest assets and to exclude certain non-forest assets and transactions considered as outliers compared to other transactions. The valuation takes into account where the forest land is located, price levels and volume of standing stock. The value of the forest assets will be affected by changes in transaction prices and by how the volume of standing stock develops. Stora Enso is applying weighted three-year average market transaction prices and this is considered to include a sufficient amount of transactions and estimated to represent market conditions at the reporting date.

The value of the forest assets is allocated to biological assets and forest land. Allocation of the combined fair value of forest assets is based on the income approach where separate present values of expected net cash flows are calculated for both biological assets and forest land. The discount rate is determined as the rate at which the valuation based on market transaction prices matches the total forest assets combined cash flows for biological assets and forest land. The total net cash flows for each of the components include estimates in respect of future harvesting volumes, sales price levels, and cost development. See [Note 12](#) Forest assets for more information.

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 applied. 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 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. 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. Management considers that adequate provision has been made for future tax consequences based on the current facts, circumstances and tax laws. 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 recognised directly in equity, as disclosed in the statement of comprehensive income. See [Note 20](#) Post-employment benefit obligations for detailed information on the assumptions used in the pension obligation calculations.

Provisions

The Group has recognised provisions for known environmental, restructuring and

other obligations, where legal or constructive obligation exist as a result of past events. The amounts recognised as provisions are based on the management's best estimate of the costs required to settle the obligation. Due to uncertainty regarding the timing and amount of these costs, the actual costs might differ significantly from the original estimate. The carrying amounts of provisions are reviewed regularly and adjusted when needed to consider changes in cost estimates, regulations, applied technologies and conditions. See [Note 22](#) Provisions for more detailed information.

Accounting implications of the effects of Covid-19

The Group has continued to assess the potential accounting implications of Covid-19 pandemic. The Group has also assessed the impact on significant accounting estimates and management judgement and identified certain items, which have been evaluated in more detail. The review of significant estimates and judgements resulted in asset impairments in 2021. See [Note 10](#) Depreciation, amortisation and impairment charges for more details about impairment charges. Otherwise, the review did not result in any material adjustments to the carrying amounts of assets and liabilities or amounts recognised in the consolidated income statement.

The IAS 36 Impairment of Assets standard requires non-financial assets to be tested for impairment whenever there is an indication that those assets might be impaired. The uncertainty in the economic environment may decrease the reliability of long-term forecasts used in the impairment testing models. See [Note 10](#) for more details about impairment testing.

Trade receivables and related expected credit losses are under constant review and the credit risk may increase if the current trading conditions deteriorate further. See [Note 17](#) Operative Receivables for more details. Also the valuation of slow moving

and obsolete finished goods and spare parts are under constant review. See [Note 16](#) Inventories for more details.

The Group's units in certain countries have received various forms of assistance from the authorities intended to support employment or temporarily improve cash flows. The savings in income statement or cash flow improvements from the obtained relief measures were not significant for the Group in 2021.

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Note 3 Segment information



Accounting principles

Stora Enso's reportable segments are Packaging Materials, Packaging Solutions, Biomaterials, Wood Products, Forest, and 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 President and 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. See [Note 1](#) Accounting principles for details related to changes in segment reporting. The activities of the reportable segments are:

Packaging Materials

The Packaging Materials division aims to lead the development of circular packaging, providing premium packaging materials based on virgin and recycled fiber. Addressing the needs of today's eco-conscious consumers, Stora Enso helps customers replace fossil-based materials with low-carbon, renewable and recyclable alternatives for their food and drink, pharmaceutical or transport packaging. A wide selection of barrier coatings enables design optimisation for various demanding packaging end-uses.

Packaging Solutions

The Packaging Solutions division develops and sells premium fiber-based packaging products and services. Stora Enso's high-end eco-friendly packaging products are used by leading brands across multiple market sectors, including the retail, e-commerce and industrial sectors. The portfolio includes converting corrugated board and cartonboard, and converting new materials such as formed fiber and wood foams, as well as design and sustainability services, and circular and automation solutions.

Biomaterials

The Biomaterials division meets the growing demand for bio-based solutions to replace fossil-based and hazardous materials. Stora Enso uses all fractions of biomass, like lignin, to develop new solutions. Our work to replace fossil-based materials includes novel applications such as carbon for energy storage, bio-based binders and bio-based carbon fiber. Our pulp offering encompasses a wide variety of grades to meet the demands of paper, board, tissue and hygiene product producers, as well as materials from process side streams, such as tall oil and turpentine from biomass.

Wood Products

The Wood Products division is one of the largest sawnwood producers in Europe and a leading provider of sustainable wood-based solutions for the construction industry globally. The growing Building Solutions business offers building concepts to support low-carbon construction and eco-friendly designs. Stora Enso develops digital tools to simplify the design and construction of building projects with wood. In addition, we offer applications for windows, doors and packaging industries, as well as pellets for sustainable heating solutions.

Forest

The Forest division creates value through sustainable forest management, competitive wood supply and innovation. Forests are the foundation for Stora Enso's renewable offerings. The division manages Stora Enso's forest assets in Sweden and a 41% share of Tornator, whose forest assets are mainly located in Finland. It is also responsible for wood sourcing for Stora Enso's Nordic, Baltic and Russian operations and B2B customers. Stora Enso is one of the biggest private forest owners in the world.

Paper

Stora Enso is one of the major paper producers in Europe, with an established customer base and a wide product portfolio for print and office use. Customers benefit from Stora Enso's selection of paper grades made from recycled and virgin fiber, our technical and operational expertise and sustainability know-how, and our sales and customer service centre network.

Segment Other

The segment Other includes Stora Enso's shareholding in the energy company Pohjolan Voima (PVO), and the Group's shared services and administration.

Sales by segment

EUR million	External	Internal	Total	External	Internal	Total
	2021			2020		
Packaging Materials	3,715	183	3,898	2,999	116	3,115
Packaging Solutions	704	19	723	578	16	594
Biomaterials	1,499	229	1,728	1,025	168	1,193
Wood Products	1,766	106	1,872	1,295	91	1,386
Forest	781	1,530	2,311	698	1,348	2,046
Paper	1,644	59	1,703	1,931	48	1,979
Other	55	1,037	1,092	27	901	928
Elimination of internal sales		-3,163	-3,163		-2,687	-2,687
Total	10,164	0	10,164	8,553	0	8,553

Disaggregation of revenue

EUR million	2021	2020
Product sales	10,047	8,460
Service sales	117	93
Total	10,164	8,553

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Segment share of operating profit/loss

EUR million	Year Ended 31 December	
	Operating Profit/Loss	
	2021	2020
Packaging Materials	552	391
Packaging Solutions	23	28
Biomaterials	506	-32
Wood Products	363	111
Forest	622	522
Paper	-423	-58
Other	-67	-42
Eliminations	-8	3
Total	1,568	922
Net financial items	-149	-150
Profit before Tax	1,419	773
Income tax expense	-151	-156
Net Profit	1,268	617

Operating Capital, depreciation, impairments and impairment reversals, disposal gains and losses, and capital expenditure by segment

EUR million	Year Ended 31 December					
	Operating Capital		Depreciation/Impairments/Impairment reversals/Disposal gains and losses		Capital Expenditure ¹	
	2021	2020	2021	2020	2021	2020
Packaging Materials	3,206	2,962	255	205	330	378
Packaging Solutions	245	240	32	30	34	23
Biomaterials	2,520	2,246	99	145	88	80
Wood Products	678	549	46	46	66	34
Forest	6,696	6,194	20	21	25	20
Paper	123	496	207	122	55	80
Other	860	318	37	40	11	13
Eliminations	-21	-13	0	0	0	0
Total	14,307	12,993	697	609	609	628

¹ Excluding bioasset capex. 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, forest assets, emission rights, unlisted shares, other non-current assets, inventories, current operative receivables and liabilities, provisions and other non-current operative liabilities.

Goodwill by segment

EUR million	Year Ended 31 December	
	Goodwill	
	2021	2020
Packaging Materials	25	26
Packaging Solutions	6	6
Biomaterials	45	43
Wood Products	116	112
Forest	0	0
Paper	90	95
Other	0	0
Total	282	281

See Note 10 Depreciation, amortisation and impairment charges for more details related to recognised impairments and impairment testing.

Average personnel

Segment	Year Ended 31 December	
	2021	2020
Packaging Materials	5,801	5,557
Packaging Solutions	4,361	5,094
Biomaterials	1,865	1,822
Wood Products	4,177	4,026
Forest	1,476	1,520
Paper	3,292	4,356
Other	2,098	2,080
Total	23,071	24,455

Location	Year Ended 31 December	
	2021	2020
Austria	1,028	1,014
Baltic States	1,459	1,410
Belgium	506	527
Czech Republic	1,039	992
Finland	6,003	6,317
Germany	734	882
Poland	1,976	2,074
Russia	1,132	1,130
Sweden	5,023	5,139
Other Europe	236	262
Total Europe	19,137	19,747
Brazil	477	423
China (incl. Hong Kong)	3,006	3,729
USA	43	94
Uruguay	310	313
Other countries	98	148
Total	23,071	24,455

Year-End Personnel	As at 31 December	
	2021	2020
	22,094	23,189

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External sales by destination

EUR million	Sales by Destination	
	2021	2020
Austria	403	292
Baltic States	315	232
Belgium	102	87
Czech Republic	188	153
Denmark	108	90
Finland	610	510
France	357	357
Germany	1,049	1,053
Italy	450	339
Netherlands	207	210
Poland	548	419
Russia	307	248
Spain	246	195
Sweden	975	912
UK	395	331
Other Europe	837	738
Total Europe	7,096	6,166
Australia / New Zealand	146	129
Brazil	41	53
China (incl. Hong Kong)	1,183	860
Japan	316	242
Middle East	252	220
Uruguay	28	27
USA	320	252
Other countries	782	606
Total	10,164	8,553

Reconciliation of operating capital to total asset

EUR million	As at 31 December	
	2021	2020
Operating Capital	14,307	12,993
Operative liabilities	2,930	2,471
Interest-bearing receivables	1,629	1,834
Tax receivables	160	131
Total Assets	19,026	17,431

Operating Capital, non-current assets and capital expenditure by location

EUR million	Year Ended 31 December					
	Operating Capital		Non-current assets ¹		Capital Expenditure ²	
	2021	2020	2021	2020	2021	2020
Austria	107	111	120	121	8	7
Baltic States	151	110	72	73	9	15
Belgium	123	133	153	160	21	15
Czech Republic	162	120	158	117	39	8
Finland	3,358	2,647	2,382	2,103	296	360
Germany	-68	4	216	278	5	22
Poland	406	404	378	377	36	20
Russia	112	89	73	63	12	10
Sweden	6,777	6,447	6,951	6,623	129	124
Other Europe	92	66	6	8	1	0
Total Europe	11,219	10,130	10,508	9,923	556	580
Brazil	261	254	231	226	16	15
China (incl. Hong Kong)	1,173	1,104	1,116	1,045	18	10
Uruguay	1,636	1,485	1,514	1,415	18	19
USA	47	3	30	28	0	3
Other countries	-29	16	6	12	1	1
Total	14,307	12,993	13,405	12,649	609	628

¹ Non-current assets excluding financial instruments and deferred tax assets.

² Excluding bioasset capex.

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Note 4 Acquisitions and disposals



Accounting principles

Acquired companies are accounted in accordance with the acquisition method whereby they are included in the consolidated financial statements from the date the control over the company is obtained. Accordingly, the consideration transferred (including contingent consideration) and the acquired company's identifiable net assets are measured at fair value at the date of the acquisition. Transaction costs related to acquisition are expensed as incurred. The measurement type of non-controlling interest is decided separately for each acquisition, and measured either at fair value or non-controlling interest's proportionate share of the net assets. The excess of the consideration transferred, non-controlling interest and possible previously held equity interest over the fair value of net assets of the acquired company is recognised as goodwill, which is tested for impairment at least annually.

The disposed companies are included in the consolidated financial statements up to the date when the control is lost. The gain or loss on disposal together with cumulative translation adjustments (CTA) related to disposed companies are recognised in the consolidated income statement at the date control is lost.

Acquisition of Group companies

EUR million	2021	2020
Net assets acquired		
Property, plant and equipment and Intangible assets	0	3
Biological assets	0	22
Tax assets and liabilities	0	-5
Fair value of net assets acquired	0	20
Total purchase consideration	0	0
Fair value of net assets acquired	0	-20
Goodwill	0	-20
Cash flow on acquisition, net of acquired cash	0	0

Amounts presented in 2020 are related to Bergvik Skog AB restructuring measurement period adjustments.

Disposal of Group companies

EUR million	Year Ended 31 December	
	2021	2020
Net Assets Sold		
Cash and cash equivalents	12	2
Property, plant and equipment and Intangible assets	32	3
Working capital	10	2
Tax assets and liabilities	9	0
Interest-bearing assets and liabilities	-1	-5
Non-controlling interest	0	0
Net assets in disposed companies	62	1
Total disposal consideration	67	-1
CTA release	1	0
Transaction costs	-2	0
Total net gain/loss	4	-2
Attributable to the owners of the parent	4	-2
Attributable to the non-controlling interest	0	0

In September 2021, Stora Enso divested its 100% shareholdings in Stora Enso Laos Plantation AB and Stora Enso Lao Co Ltd to SilviCarbon. Stora Enso operated plantations in Laos since 2007, with approximately 3 800 hectares of land use rights. After the transaction, Stora Enso does not own any forest assets in Laos. The sold companies were part of the Forest division. The transaction did not have a significant impact on the Group.

In September 2021, Stora Enso divested its ECO RFID technology business to Group CCRR. The sold business was part of the segment Other. The transaction did not have a significant impact on the Group.

In May 2021, Stora Enso signed an agreement to divest its 100% shareholding in the Sachsen Mill in Germany to Model Group. Sachsen Mill is located in Eilenburg, Germany and has an annual production capacity of 310 000 tonnes of newsprint specialty paper based on recycled paper. The disposal was completed in August 2021 and Stora Enso will continue to sell and distribute Sachsen's products under a contract manufacturing agreement for a period of 18 months after the closing. During the second quarter of 2021, the Group recognised asset impairments of EUR 20 million related to the transaction. The consideration received by Stora Enso for the divestment of the shares was EUR 53 million. The final disposal loss was not significant. Sachsen Mill was part of the Paper division.

In March and June 2021, Stora Enso divested its 100% shareholdings in several wind turbine project and real estate related companies. These companies were mainly acquired in May 2019 in connection to Bergvik Skog AB restructuring. The sold companies were part of Forest division. The transactions did not have a significant impact on the Group.

In March 2020, Stora Enso divested 100% of shares of its subsidiary consisting of sawn construction timber mill at Pfarrkirchen in Germany, to the fund LEO II. – VV1 GmbH. The sold company was part of the Wood Products division. The transaction did not have a significant impact on the Group.

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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 they meet the criteria to be recognised as intangible assets in accordance with IAS 38, in which case they are capitalised as intangible assets and depreciated over their expected useful lives.

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.

Green certificates

Stora Enso is part of the local green energy production system which entitles selected mills in Europe to receive green certificates based on megawatt hours of green energy produced. Green certificates represent the environmental value of renewable energy generated and validate that the electricity has been produced from renewable sources. The certificates are typically received free of charge and can be traded to offset part of the production costs.

These certificates received are recognised at grant date market value only in the balance sheet. As such, fluctuation in market prices does not have an impact on the income statement and the income is recognised only when certificates are sold.

Other operating income and expense

EUR million	Year Ended 31 December	
	2021	2020
Other operating income		
Emission rights allocated and disposal gains	154	49
Sale of green certificates	20	24
Capital gains on sale of intangible assets and property, plant and equipment	31	3
Gains on disposal of Group company shares and business operations	36	0
Dividend and gain on sale of unlisted shares	0	1
Insurance compensation	7	5
Rent and other	83	42
Government grants	14	22
Total	345	147
Other operating expenses include		
Lease expenses	38	39
Research and development	82	100
Credit losses, net of reversals	3	4
CTA release	16	0
Materials and services include		
Emissions rights to be delivered	99	31

The Group has recorded an other operating income of EUR 154 (EUR 49) million related to emission rights. Under materials and services an expense of EUR 99 (EUR 31) million has been booked related to the cost of CO₂ emissions from production. Actual realised profits amounted to EUR 22 (EUR 16) million on the disposal of surplus rights. See [Note 15](#) Emission rights and other non-current assets for more details related to emission rights. The income from the sale of green certificates amounted to EUR 20 (EUR 24) million.

Lease expenses include expenses relating to short-term leases of EUR 10 (EUR 10) million, low-value assets of EUR 20 (EUR 22) million and variable lease payments not included in the measurement of lease liabilities of EUR 3 (EUR 3) million. Lease expenses also include service payments included in lease contracts, which are not included in the measurement of lease liabilities.

Auditor's fees and services

EUR million	Year Ended 31 December	
	2021	2020
Audit fees	4	4
Audit-related	0	0
Tax fees	0	0
Other fees	0	0
Total	4	4

Aggregate fees for professional services rendered to the Group principal auditor PwC amounted to EUR 4 (EUR 4) 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

EUR million	Year Ended 31 December	
	2021	2020
Wages and salaries	1,017	966
Pensions (see below)	165	152
Share-based remuneration (Note 21)	7	1
Other statutory employer costs	143	134
Other voluntary costs	19	17
Total	1,351	1,270

Pensions

EUR million	Year Ended 31 December	
	2021	2020
Defined benefit plans	12	16
Defined contribution plans	153	136
Total	165	152

The average number of employees in 2021 amounted to 23,071 compared with 24,455 in 2020. Pension costs are discussed further in [Note 20](#) Post-employment benefit obligations.

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In 2021, the expense of the share-based remuneration was EUR 7 (EUR 1) 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

EUR thousand (before taxes)	Year Ended 31 December				Committee memberships
	Cash	Value of shares ¹	Total ⁴	Total	
Board members at 31 December 2021					
Antti Mäkinen, Chair	129	79	208	82	Remuneration, Nomination ^{2,3}
Håkan Buskhe, Vice Chair	74	45	118	82	Remuneration, Nomination ^{2,3}
Elisabeth Fleuriot	60	30	91	91	Financial and Audit
Hock Goh	60	30	91	91	Financial and Audit
Helena Hedblom	52	30	82		Sustainability and Ethics
Mikko Helander	52	30	82	82	Sustainability and Ethics
Christiane Kuehne	56	30	87	87	Sustainability and Ethics
Richard Nilsson	67	30	97	97	Financial and Audit
Hans Sohlström	52	30	82		Remuneration
Former Board members					
Jorma Eloranta (until 19 March, 2021)	0	0	0	222	
Hans Stråberg (until 19 March, 2021)	0	0	0	118	
Total remuneration as Directors¹	602	336	939	953	

¹ 40% of the Board remuneration, excluding Committee remuneration, in 2021 was paid in Stora Enso R shares purchased from the market and distributed as follows: to Chair 4 746 R shares, Vice Chair 2 698 R shares, and members 1 831 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 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. Antti Mäkinen and Håkan Buskhe 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 2021

	Shares held
	R
Board members at 31 December 2021	
Antti Mäkinen, Chair	12,244
Håkan Buskhe, Vice Chair	5,479
Elisabeth Fleuriot	28,343
Hock Goh	33,096
Helena Hedblom	1,831
Mikko Helander	8,910
Christiane Kuehne	12,904
Richard Nilsson	25,446
Hans Sohlström ¹	11,831
Total shares held	140,084

¹ Spouse holds 179 of the shares.

The following Board members also served in 2021

	Shares held when Board membership ended	Effective date of Board membership ending
Jorma Eloranta ¹	35,435	19 March 2021
Hans Stråberg	45,389	19 March 2021

¹ Held 1,150 A shares of total amount of shares.

Group Leadership Team (GLT) remuneration and share interests

The table below includes the remuneration earned by GLT members during the year, including those shares with performance conditions that have ended and are due to vest in the coming 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 earned remuneration for GLT in 2021 amounted to EUR 11 (EUR 9) million. The total number of GLT members was thirteen (fifteen) at the year end in 2021.

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 2021, and Long term incentive programmes for the performance years 2019 to 2021 were reviewed and confirmed by the Remuneration Committee, and approved by the Board of Directors in January 2022.

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.

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Group Leadership Team remuneration

EUR thousand	Year Ended 31 December					
	2021			2020		
	CEO	Others ^{2,5}	GLT Total	CEO	Others	GLT Total
Remuneration^{1,4}						
Annual salary	981	4,695	5,676	894	3,667	4,561
Local housing (actual costs)	0	1	1	0	0	0
Other benefits	33	342	375	29	393	422
Termination benefits	0	0	0	0	0	0
Short Term Incentive programme ³	672	2,053	2,725	171	710	881
Long Term Incentive programme ³	0	137	137	189	1,212	1,401
	1,686	7,228	8,914	1,283	5,982	7,265
Pension Costs						
Mandatory plans	341	1,226	1,567	284	904	1,188
Stora Enso voluntary plans	0	735	735	0	590	590
	341	1,961	2,302	284	1,494	1,778
Total Compensation	2,027	9,189	11,216	1,567	7,476	9,043

¹ The Finnish Corporate Governance code requires companies to report remuneration that is paid or due, and due to this the figures presented in the above table do not directly reconcile with the amounts recognised as personnel expenses in the Income statement as presented in the below table Group Leadership Team remuneration in Income statement.

² Include earnings related to Ulrika Lilja until September 15, 2021 and Markus Mannström until December 13, 2021.

³ Relate to amounts due at year end, which will be paid in 2022. LTI value is calculated using the December 30, 2021 closing price of EUR 16.14. The final value of the vested shares will depend on the share price on vesting date March 1, 2022.

⁴ Remuneration for executives is disclosed only for the period during which they were GLT members.

⁵ Remuneration of GLT members increased in 2021 compared to 2020 mainly due to the fact that the number of GLT members increased, from an average of 10.96 in 2020 to an average of 13.66 in 2021.

Group Leadership Team remuneration in Income statement

EUR thousand	Year ended 31 December					
	2021			2020		
	CEO	Others	GLT Total	CEO	Others	GLT Total
Salaries and other short-term employee benefits	1,686	7,091	8,777	1,094	4,770	5,864
Long Term Incentive programme ¹	685	2,595	3,280	58	237	294
Post-employment benefits	341	1,961	2,302	284	1,494	1,778
Total recognised in Income statement	2,712	11,647	14,359	1,436	6,501	7,936

¹ The costs of long-term incentive (LTI) programmes are recognised as costs over the three year vesting period based on the share price at grant date and the estimate of equity instruments that will eventually vest.

Executives other than CEO

Short term incentive (STI) programmes for management

In 2021, 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 2021 was based on financial measures and 30% on individual key targets.

Long term incentive (LTI) programmes for management

The 2019 and 2020 LTI programmes have three-year performance periods, while the 2021 programme have three one year performance periods which are accumulated after three years. All three programmes will be settled in only one portion after three years, and the absolute maximum vesting level is 100% of the number of shares granted. The 2019 programme is

related to performance period 2019–2021, the 2020 programme is related to performance period 2020–2022 and the 2021 programme is related to performance periods 2021–2023. The opportunity under the 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.

During the year the 2021 programme was launched, in which the GLT members (in GLT at year end) can potentially receive a value corresponding to 199,456 shares before taxes, assuming the maximum vesting level during the three-year vesting period (2021–2023) 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 year end.

At the end of the year, the performance period for the 2019 programme ended, and will be settled in one portion after three years in March 2022, dependent on Economic Value Added (EVA) for the Stora Enso Group and Earnings Per Share (EPS) for the Stora Enso Group. The Performance Share programme resulted in a 0% performance outcome. Some GLT members participated in the Restricted Shares programme that ended in 2021 prior to becoming GLT members and those shares are due to be paid 2022. The number of shares due for executives (GLT members at year end) from programmes that ended during 2021 amounted to 8,258 shares. 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.

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 2021, 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 2021 was 70% based on financial measures, and 30% based on individual key targets.

Long term incentive (LTI) programmes for CEO

The CEO participates in 2019, 2020 and 2021 share based LTI programmes. The 2019 and 2020 programmes have three-year performance periods, while the 2021 programme have three one year performance periods which are accumulated after three years. All three programmes will be settled in only one portion after three years. The 2019 programme is related to performance period 2019–2021, the 2020 programme is related to performance period 2020–2022 and the 2021 programme is related to performance periods 2021–2023. The opportunity in the programmes is in performance shares, where shares vest in accordance with performance criteria proposed by the Remuneration Committee and approved by the Board of Directors.



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During the year the 2021 LTI programme was launched in which the CEO has the potential to receive a value corresponding to a maximum of 57,387 shares before taxes. The grant value of EUR 947,000 is based on the share price at the grant date, assuming a maximum vesting level during the three-year vesting period (2021–2023) 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.

At the end of the year, the performance period for the 2019 programme ended and will be settled in one portion after three years in March 2022, dependent on Economic Value Added (EVA) and Earnings Per Share (EPS) for the Stora Enso Group. No shares are due for the CEO from Performance Share programmes that ended during 2021 due to a 0% performance outcome.

Group Leadership Team share interests

Executives in office at the year end	R shares held ¹	Shares due 2022 ²	Performance share opportunity 2023–2024 ⁵	Restricted share opportunity 2023–2024 ⁵
Annica Bresky	19,763	—	132,467	—
Seppo Parvi	50,924	—	43,854	—
Tobias Bäärnman	1,207	1,752	15,029	1,300
David Ekberg	625	1,442	33,371	—
Johanna Hagelberg	28,146	—	30,993	—
Kati ter Horst	61,996	—	59,156	—
Hannu Kasurinen	37,189	2,467	52,096	—
Katariina Kravi	—	—	34,938	—
Per Lyrvall ³	73,383	—	39,059	—
Teemu Salmi	9,034	2,597	19,480	2,335
Annette Stube	—	—	32,621	—
Jari Suominen	53,168	—	44,781	—
Lars Völkel	—	—	47,473	—
Total, serving officers⁴	335,435	8,258	585,318	3,635

¹ None of the GLT members holds A shares.

² Shares due to GLT member are gross of taxes for the LTI programmes with performance periods that ended in 2021 and are due to be paid 2022. The Performance Share programme resulted in a 0% performance outcome due to be paid in 2022. Some GLT members participated in the Restricted Shares programme that ended in 2021 prior to becoming GLT members and those shares are due to be paid 2022.

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.

⁵ Potential shares to GLT members are gross of taxes for LTI programmes with performance periods that end in 2022–2023 and are due to be paid 2023–2024

The following Executive Officers also served in 2021	R shares held when GLT membership ended	Performance Share Awards when GLT Membership Ended	Restricted Share Awards When GLT Membership Ended	Effective date of GLT membership ending
Markus Mannström ¹	29,472	61,221	—	13 December 2021
Ulrika Lilja ²	22,981	42,684	—	15 September 2021

¹ These shares are forfeited at end of employment, except for the shares with performance period ending end of 2021, which have been earned at the time employment ended and vest at the normal vesting date in March 2022.

² These shares are forfeited at end of employment.

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

EUR million	Year Ended 31 December	
	2021	2020
Net financial expense in the income statement		
Financial income	42	19
Financial expense	-190	-168
Total	-149	-150
Represented by		
Interest expense		
Interest expense from borrowings measured at amortised cost	-95	-106
Net interest from interest rate derivatives measured at fair value through OCI	-15	-14
Interest expense on leases	-17	-19
Interest capitalised	1	5
Interest income on loans and receivables measured at amortised cost	2	2
Net interest expense	-124	-132
Foreign exchange gains and losses		
Currency derivatives	-39	14
Borrowings, cash equivalents and lease liabilities	37	-22
Net foreign exchange gains and losses	-2	-8
Other financial income	1	3
Other financial expense		
Financial fees	-17	-8
Fair valuation losses	-3	0
Net interest on net defined benefit liabilities	-3	-5
Net other financial expense	-22	-10
Total	-149	-150

Gains and losses on derivative financial instruments are shown in Note 27 Derivatives.

In 2021, the net interest expense decreased mainly as a result of lower average interest expense rate on borrowings and lower amount of gross debt. The amount of interest costs capitalised during the year amounted to EUR 1 (EUR 5) million, which were mainly related to Oulu site conversion project in Finland. The conversion project was completed in January 2021 and the average interest rate used for capitalisation was 3.0% (3.3%). Costs on long-term debt issues capitalised as part of non-current debt amounted to EUR 7 (EUR 11) million in the statement of financial position. During the year, EUR 4 (EUR 4) million was amortised through interest expense by using the effective interest rate method.



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Exchange gains and losses for currency derivatives mainly relate to non-hedge accounted instruments fair valued in the income statement. The amount reported as other financial income mainly consists of fair valuation gains, while other financial expense in the table above mainly relates to net financial fees for unused committed credit facilities, guarantees, negative interest on deposits and early repayment of interest bearing-liabilities.

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

EUR million	Year Ended 31 December	
	2021	2020
Current Tax	-118	-109
Deferred Tax	-34	-46
Total Income Tax	-151	-156

Income tax rate reconciliation

EUR million	Year Ended 31 December	
	2021	2020
Profit before tax	1,419	773
Tax at statutory rates applicable to profits in the country concerned ¹	-263	-165
Non-deductible expenses and tax exempt income ²	49	0
Valuation of deferred tax assets	-7	10
Taxes from prior years	39	-4
Changes in tax rates and tax laws	1	4
Profits from equity accounted investments	29	0
Other	1	1
Total income taxes	-151	-156
Effective tax rate	10.7%	20.1%
Statutory tax rate (blended)	18.5%	21.4%

¹ Includes a EUR 37 million impact from countries with tax holidays and tax benefits in 2021 and a EUR 0 million impact from tax holidays and other tax benefits in 2020.

² The tax value of non-deductible expenses of EUR 26 million has been netted against tax exempt income of EUR 75 million in 2021, and tax value of non-deductible expenses of EUR 12 million has been netted against tax exempt income of EUR 12 million in 2020.

The statutory tax rate is a weighted average of the statutory tax rates prevailing in jurisdictions where Stora Enso operates.

Change in deferred taxes in 2021

EUR million	Value at 1 Jan 2021	Income Statement	OCI	Acquisitions/ disposals	Translation difference	Value at 31 Dec 2021
Forest assets	-1,175	-70	-40	0	16	-1,268
Fixed assets	-173	75	0	-8	3	-103
Financial instruments	-11	3	8	0	1	1
Untaxed reserves	-39	-43	0	0	2	-80
Pensions and provisions	56	27	-23	0	-2	58
Tax losses and tax credits carried forward	104	1	0	0	2	107
Other deferred taxes	23	-26	0	-1	2	-2
Total	-1,215	-33	-55	-9	24	-1,287
Equity hedges (CTA)		-4	4			
Net investment loans		2	-2			
Change in deferred tax		-35	-53	-9	24	
Assets ¹		117				143
Liabilities ¹		-1,332				-1,430

¹ Deferred tax assets and liabilities have been offset in accordance with IAS 12. OCI = Other Comprehensive income, CTA = Cumulative Translation Adjustment

Change in deferred taxes in 2020

EUR million	Value at 1 Jan 2020	Income Statement	OCI	Acquisitions/ disposals	Translation difference	Value at 31 Dec 2020
Forest assets ¹	-722	-105	-310	-5	-33	-1,175
Fixed assets	-195	26	0	0	-4	-173
Financial instruments	1	0	-12	0	0	-11
Untaxed reserves	-24	-12	0	0	-3	-39
Pensions and provisions	69	-8	-3	0	-2	56
Tax losses and tax credits carried forward	84	22	0	0	-2	104
Other deferred taxes	-7	28	0	0	2	23
Total	-794	-49	-325	-5	-42	-1,215
Equity hedges (CTA)		5	-5			
Net investment loans		-1	1			
Change in deferred tax		-45	-329	-5	-42	
Assets ²		81				117
Liabilities ²		-875				-1,332

¹ Previously forest assets presented on same line as other property, plant and equipment items and to minor extent within untaxed reserves. Opening balances restated.

² Deferred tax assets and liabilities have been offset in accordance with IAS 12. OCI = Other Comprehensive income, CTA = Cumulative Translation Adjustment

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.



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Tax losses

EUR million	As at 31 December					
	Tax losses carried forward		Recognised tax values		Unrecognised tax values	
	2021	2020	2021	2020	2021	2020
Expiry within five years	417	607	7	35	79	88
Expiry after five years	343	239	60	52	11	0
No expiry	1,137	1,131	38	15	210	221
Total	1,897	1,977	106	102	300	309

Tax losses of EUR 274 (EUR 329) million relate to Finland. A deferred tax asset of EUR 55 (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 38 (EUR 25) 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 operations, for which deferred tax liabilities have not been recognised amounted to EUR 339 (EUR 323) 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.

Tax liabilities included amount of EUR 37 million in 2020 related to uncertain tax position in Sweden due to disputes concerning the deduction of interest expense. In 2021 all disputes ended successfully, and Stora Enso has consequently released the tax risk provision.

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 reliable estimate of disposal loss is available, at the latest 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

EUR million	Year ended 31 December	
	2021	2020
Depreciation and amortisation		
Intangible assets	26	30
Buildings and structures	79	84
Plant and equipment	373	370
Right-of-use assets	62	66
Other tangible assets	9	9
Total	549	559
Impairment		
Goodwill	4	0
Intangible assets	7	19
Buildings and structures	10	13
Plant and equipment	126	21
Right-of-use assets	1	2
Other tangible assets	2	2
Total	149	57
Disposal gains/losses		
Gain on sale of assets	-4	-10
Loss on sale of assets	3	3
Total	0	-7
Depreciation, amortisation and impairment charges	697	609

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.

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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 nominal terms
- Current cost structure to remain unchanged
- For goodwill testing, a five-year future period was used, after which the perpetuity value was determined using inflation based growth rates, except for Paper division for which the testing period used was the remaining expected economic life
- For intangible assets, property, plant and equipment, and ROU assets testing 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 2021 amounted to EUR 149 (EUR 57) million and resulted from business restructuring, Group company disposals and impairment testing. In 2021, mainly due to restructuring, Group company disposal, impairment testing and further deterioration of certain paper-grade market due to Covid-19 pandemic, total impairment charge of EUR 127 million was recognised in News, Uncoated Mechanical and Office CGUs in the Paper division. In 2020, certain assets in Nordic and Innovation CGU in the Biomaterials division were tested for fixed asset impairment and an impairment charge of EUR 42 million was recognised.

Goodwill impairment testing

In 2021 or 2020, the Goodwill testing did not result in any impairment. In 2021 and due to Sachsen Mill disposal, goodwill impairment of EUR 4 million was recognised in Paper - News CGU.

The most material groups of cash generating units containing goodwill

EUR million	Year ended 31 December		Year ended 31 December	
	2021	Pre-tax discount rate	2020	Pre-tax discount rate
Wood Products - Central Europe	109	8.7%	106	6.8%
Paper - Book Paper ¹	28	7.2%	28	8.2%
Paper - Uncoated Mechanical	40	7.2%	40	6.8%
Biomaterials - Nordic and Innovation	45	7.2%	43	6.8%
Other CGUs ²	60		64	
Total	282		281	

¹ CGU structure of Paper division has been changed in 2021 separating Book Paper and News Paper to their own CGUs.

² Other CGUs line is including Packaging Solutions - Europe, Packaging Materials operations in Sweden, Packaging Materials - Containerboards, Wood Products - Northern Europe, Paper - News and Paper - Office cash generating units.

The calculation of value in use is highly sensitive to discount rates, sales prices and costs. The Sensitivity analysis table below summarises amounts by which the value assigned to the key assumption must change in order for the unit's recoverable amount to be equal to its carrying amount for the CGUs and for which a reasonably possible change in an assumption could result in an impairment. In 2021 the recoverable amount for the Biomaterials - Nordic and Innovation CGU amounted to EUR 418 million compared with the carrying amount of EUR 379 million. In 2021, the recoverable amount for the Paper - News CGU amounted to EUR 161 million compared

with the carrying amount of EUR 134 million. In Paper - News CGU any reasonably possible change in discount rate would not cause carrying amount to exceed its recoverable amount.

Goodwill impairment testing sensitivity analysis

EUR million	Biomaterials - Nordic and Innovation	Paper - News
Increase in the discount rate (percentage points)	0.6%	n/a
Annual decrease in the sales prices	-0.2%	-0.6%
Annual increase in the costs	0.2%	0.6%

Summary of impairments and impairment reversals per division

EUR million	Year ended 31 December	
	2021	2020
Packaging Materials	10	0
Packaging Solutions	2	3
Biomaterials	0	42
Wood Products	0	0
Forest	1	0
Paper	131	3
Other	4	9
Total (impairment +) / (Impairment reversal -)	149	57

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.

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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 when 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

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

EUR million	Year ended 31 December				
	Computer software	Other intangible assets	Assets in progress	Goodwill	Total
Acquisition cost					
At 1 January 2020	236	102	29	1,253	1,620
Translation difference	-2	-3	-1	-4	-9
Reclassifications	17	5	-19	0	2
Additions	3	1	9	-20	-7
Disposals ¹	-20	-8	0	-535	-562
At 31 December 2020	233	98	17	695	1,044
Translation difference	2	6	0	8	16
Reclassifications	8	12	-16	0	4
Additions	6	5	6	0	17
Disposals ¹	-23	-19	0	-171	-213
At 31 December 2021	226	103	7	532	867
Accumulated amortisation and impairment					
At 1 January 2020	170	27	0	951	1,148
Translation difference	-2	-3	0	-2	-6
Disposals ¹	-20	-8	0	-535	-562
Amortisation	18	12	0	0	30
Impairment	9	9	0	0	19
At 31 December 2020	176	38	0	414	629
Translation difference	1	4	0	3	8
Disposals ¹	-22	-19	0	-171	-212
Amortisation	18	9	0	0	26
Impairment	5	2	0	4	11
At 31 December 2021	178	34	0	250	462
Net Book Value at 31 December 2021	48	69	7	282	405
Net Book Value at 31 December 2020	57	60	17	281	415

¹ Company disposals are included in Disposals line. Company disposals are discussed in more detail in Note 4 Acquisitions and disposals.

Property, plant and equipment

EUR million	Year ended 31 December					
	Land and water	Buildings and structures	Plant and equipment	Other tangible assets	Assets in progress	Total
Acquisition cost						
At 1 January 2020	129	3,376	13,438	459	345	17,746
Translation difference	-1	-84	-79	-1	-2	-167
Reclassifications	0	19	166	4	-192	-2
Reclassifications to biological assets	0	-2	-1	0	0	-4
Additions	0	16	157	4	399	576
Disposals ¹	0	-23	-424	-11	-1	-460
At 31 December 2020	128	3,301	13,256	455	549	17,690
Translation difference	0	64	48	0	1	114
Reclassifications	2	58	405	11	-480	-4
Reclassifications to biological assets	0	-1	-1	0	0	-2
Additions	0	15	214	1	328	558
Disposals ¹	-13	-82	-503	-19	-4	-620
At 31 December 2021	117	3,355	13,421	448	394	17,735
Accumulated depreciation and impairment						
At 1 January 2020	4	2,044	10,201	386	11	12,645
Translation difference	0	-21	12	0	0	-9
Disposals ¹	0	-22	-419	-11	-1	-453
Depreciation	0	82	370	11	0	464
Impairments and reversals	0	13	21	0	2	36
At 31 December 2020	3	2,096	10,186	386	11	12,683
Translation difference	0	9	-30	0	1	-20
Disposals ¹	-1	-79	-487	-19	0	-586
Depreciation	0	77	373	11	0	461
Impairments and reversals	0	10	125	2	0	137
At 31 December 2021	3	2,113	10,164	380	14	12,674
Net Book Value at 31 December 2021	114	1,242	3,256	68	380	5,060
Net Book Value at 31 December 2020	124	1,205	3,071	69	538	5,007

¹ Company disposals are included in the Disposals line. Company disposals are discussed in more detail in Note 4 Acquisitions and disposals.



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Right-of-use assets

EUR million	Year ended 31 December				Total
	Land and water	Forest land	Buildings and structures	Plant and equipment and other	
Acquisition cost					
At 1 January 2020	104	249	89	138	579
Translation difference	-2	-9	0	-2	-14
Reclassifications	0	0	-1	0	0
Reclassifications to biological assets	0	-12	0	0	-12
Additions	3	6	9	21	39
Disposals	-5	0	-3	-7	-15
Other changes	0	0	2	-1	1
At 31 December 2020	99	233	97	148	577
Translation difference	9	26	1	1	37
Reclassifications to biological assets	0	-15	0	0	-15
Additions	0	9	9	15	33
Disposals	-1	0	-4	-37	-42
Other changes	0	0	1	0	1
At 31 December 2021	107	253	104	127	591
Accumulated depreciation and impairment					
At 1 January 2020	6	7	20	38	71
Disposals	-3	0	-2	-7	-13
Depreciation	3	5	21	37	66
Impairment	1	0	0	1	2
Other changes	0	0	0	0	-1
At 31 December 2020	6	12	38	70	125
Translation difference	1	2	1	0	3
Disposals	-1	0	-4	-36	-41
Depreciation	3	5	20	34	62
Impairment	0	0	0	1	1
At 31 December 2021	8	18	55	69	150
Net Book Value at 31 December 2021	99	235	49	59	441
Net Book Value at 31 December 2020	93	221	59	79	452

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.

Intangible assets and property, plant and equipment, and right-of-use asset additions

The total capital expenditure excluding investments in biological assets for the year amounted to EUR 609 (EUR 628) million. Details of ongoing projects and future plans are discussed in more detail in the Report of the Board of Directors.

Note 12 Forest assets

Accounting principles

The forest assets of Stora Enso are defined as standing growing trees, classified as biological assets, and related forest land. 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.

Forest asset valuation is based on continuous operations and sustainable forest management, also taking into consideration environmental restrictions and other reservations. Biological assets are recognised and valued in accordance with the IAS 41 Agriculture standard at fair value and forest land assets are recognised in accordance with the IAS 16 Property, plant and equipment standard. Leased forest land assets are presented as part of right-of-use assets in [Note 11](#) Intangible assets, property, plant and equipment, and right-of-use assets.

Nordic and plantation forest assets are classified as different classes of assets due to different nature, usage and characteristics of the assets. The main difference is the short-term growing cycle of 6–12 years in plantations versus the long-term growing cycle of 60–100 years in Nordic forests. There are also differences in regeneration methods, forest management, and the use of the assets for other purposes.

Nordic forest assets include holdings in Sweden and Finland (also including minor forest asset holdings in Estonia and Romania) and plantation forest assets include holdings in China, Brazil and Uruguay. Accounting policies for the different class of forest assets are presented separately below. The Group has forest assets in its own subsidiaries in Sweden and China as well as in joint operations in Brazil and Uruguay, and in equity accounted investment in Finland. 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. At harvesting, biological assets are transferred to the inventory.

Nordic forest assets

Forest assets in Sweden are recognised at fair value and valued by using a market approach method on the basis of the forest market transactions in the areas where Stora Enso's forests are located. Stora Enso's forest assets create value by securing wood supply, increasing long-term yield, optimising land use and securing financial flexibility. They play an important role in mitigating climate change impacts, as growing trees absorb CO₂. The forests also offer opportunities for future value streams, such as wind power.

The total forest assets value is calculated with verified inventory data and regional standing stock prices, considering among others:

- regional market transaction data based on the forest assets' geographical locations,
- standing stock prices by forest cubic meter (m³ fo) combined from traded forest estates and
- regional standing stock inventory.

Information relating to forest asset transactions are available from several market sources. The market transaction information can be viewed as market-corroborated inputs. Certain adjustments are made to refine the market-corroborated inputs using unobservable inputs, therefore inputs are categorised to fair value hierarchy measurement level 3. The judgements are further explained in [Note 2](#) Critical accounting estimates and judgements.

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The total value of the forest assets in Sweden is allocated across biological assets and forest land. Allocation of the combined fair value of forest assets is based on the income approach where separate present values of expected net cash flows are calculated for both biological assets and forest land. The discount rate is determined as the rate at which the valuation based on market transaction prices matches the total forest assets combined cash flows for biological assets and forest land. The discount rate is estimated to be the same for biological assets and forest land as the nature and timing of the cash flows are similar.

Biological assets are measured at fair value in accordance IAS 41. The fair value is based on the income approach and the discounted cash flow method whereby the fair value of the biological assets is calculated using cash flows from continuous operations, taking into account the growth potential of one cycle. Forest land is measured at fair value using the revaluation method as defined in the IAS 16 standard. Fair value of forest land is measured based on income approach, including net cash flows related to trees to-be-planted in the future as well as other land related income, such as hunting rights, wind power leases and soil material sales.

Other Nordic forest assets, owned mainly in Finland through Group's 41% shareholding in the equity accounted investment Tornator, are recognised at fair value using the income approach. The valuation of biological assets is based on the discounted cash flow method calculated using cash flows from continuous operations, taking into account the growth potential of one cycle. The forest land is measured at fair value using the revaluation method as defined in IAS 16. The forest land fair value measurement is based on the income approach and the discounted cash flow method, including cash flows from trees to-be-planted in the future as well as other related income. The discount rate applied for both biological assets and forest land is determined using the weighted average cost of capital method.

Changes in the fair value of biological assets are recognised in the income statement. Changes in the fair value of forest land, net of deferred taxes, are recognised in other comprehensive income (OCI) and accumulated in a revaluation reserve in equity. Revaluation reserve is not recycled to the income statement upon disposal. If the fair value of forest land were to be less than cost, the difference would be recognised in the income statement as an impairment loss.

Plantation forest assets

In plantation forest areas, biological assets are recognised at fair value in accordance with the IAS 41 standard and based on the income approach in those areas where the Group has forest land. Fair value measurement is based on fair value hierarchy measurement level 3. Forest land is measured initially and subsequently at cost, using the cost model as defined in IAS 16 standard.

The valuation of biological assets is based on the discounted cash flow method calculated using cash flows from continuous operations and based on sustainable forest management, taking into account growth potential of one cycle. The fair value of the biological assets is based on the productive forest land. 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 is measured as the present value of the harvest from one growth cycle, taking into consideration environmental restrictions and other reservations. The discount rate applied is determined using the weighted average cost of capital method.

Young standing timber less than two years old (less than three years in Montes del Plata) is considered to be an immature asset and accounted at cost. 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 significant, which varies according to the location and species of the assets.

Changes in the fair value of biological assets are recognised in the income statement. The forest land is measured at cost and not depreciated.

The value of forest assets disclosed in the consolidated statement of financial position from subsidiary companies and joint operations amounts to EUR 6,747 (EUR 6,256) million as shown below. The Group's indirect share of forest assets held by associated companies amounts to EUR 985 (EUR 837) million. The total forest asset value amounts to EUR 7,732 (EUR 7,093) million.

Forest assets

EUR million	Biological assets		Forest land ³		Forest assets total	
	Year Ended 31 December	Year Ended 31 December	Year Ended 31 December	Year Ended 31 December	Year Ended 31 December	Year Ended 31 December
Subsidiaries and joint operations						
Value at 1 January	4,250	3,627	2,005	509	6,256	4,136
Translation differences	-43	99	-26	-12	-68	88
Unrealized change in fair value ^{1,2}	471	560	225	1,504	696	2,065
Additions	58	81	1	3	59	84
Disposals	-64	0	-5	0	-69	0
Change due to harvesting ¹	-127	-128	0	0	-127	-128
Other operative changes ¹	-17	-4	0	0	-17	-4
Reclassification from PPE	17	16	0	0	17	16
Value at 31 December	4,547	4,250	2,201	2,005	6,747	6,256
Associated companies						
Tornator Oyj (41%)	906	769	78	56	985	825
Arauco Florestal Arapotí S.A. (20%)	0	8	0	4	0	12
Value at 31 December	906	778	78	60	985	837
Total	5,453	5,028	2,279	2,065	7,732	7,093

¹ For biological assets, changes are presented in the profit and loss. For forest land, changes in fair value are recognised directly in equity.

² The impact in 2020 is mainly due to valuation and accounting principle changes for Swedish forests.

³ Not including leased forest land.

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Valuation and standing stock of forest assets in subsidiaries, joint operations and associate company

		As at 31 December 2021						
		Swedish forests	Guangxi	Veracel (50%)	MdP (50%)	Tornator (41%)	Total	
Total area	ha	1,389,000	77,000	113,000	136,000	295,000	2,009,000	
- of which owned	ha	1,389,000	—	106,000	95,000	295,000	1,884,000	
- of which leased	ha	—	77,000	7,000	41,000	—	125,000	
Productive area	ha	1,141,000	68,000	47,000	90,000	271,000	1,617,000	
Total area	Standing stock	million m ³ fo. ¹	152.6	5.0	5.0	13.9	33.0	209.5
Productive area	Standing stock	million m ³ fo. ¹	150.5	4.9	5.0	13.9	32.7	207.1
	Estimated growth	million m ³ fo. ¹	5.8	1.6	1.8	2.6	1.4	13.2
	Harvesting	million m ³ fo. ¹	4.4	1.3	1.2	1.6	1.3	9.9
	Other changes	million m ³ fo. ¹	6.2	0.4	0.0	-0.1	1.2	7.7
	Harvesting	million m ³ u.b. ²	3.7	1.0	1.0	1.3	1.2	8.2
Biological assets	EUR million	4,005	200	81	260	906	5,453	
Biological assets	Productive area	EUR/ha	3,511	2,950	1,713	2,900	3,342	3,372
Forest land	EUR million	2,012	—	26	163	78	2,279	
Total forest assets	EUR million	6,017	200	107	423	985	7,732	
Leased forest land	EUR million	—	187	2	45	—	235	

¹ Forest cubic meters

² Solid under bark (sub) cubic meters

		As at 31 December 2020						
		Swedish forests	Guangxi	Veracel (50%)	MdP (50%) ⁴	Tornator (41%)	Total ^{3,4}	
Total area	ha	1,398,000	81,000	112,000	135,000	291,000	2,017,000	
- of which owned	ha	1,398,000	—	107,000	95,000	291,000	1,891,000	
- of which leased	ha	—	81,000	5,000	39,000	—	126,000	
Productive area	ha	1,145,000	75,000	47,000	89,000	269,000	1,623,000	
Total area	Standing stock	million m ³ fo. ¹	145.0	4.3	4.4	13.0	31.8	198.5
Productive area	Standing stock	million m ³ fo. ¹	143.0	4.2	4.4	13.0	31.4	195.9
	Estimated growth	million m ³ fo. ¹	6.1	1.3	1.7	3.0	1.4	13.5
	Harvesting	million m ³ fo. ¹	4.6	1.2	1.0	1.2	1.3	9.4
	Other changes	million m ³ fo. ¹	-1.7	-0.1	0.0	0.0	0.7	-1.1
	Harvesting	million m ³ u.b. ²	3.8	1.0	0.8	1.0	1.2	7.8
Biological assets	EUR million	3,774	176	66	230	769	5,016	
Biological assets	Productive area	EUR/ha	3,298	2,359	1,412	2,597	2,860	3,089
Forest land	EUR million	1,829	—	26	150	56	2,061	
Total forest assets	EUR million	5,603	176	92	380	825	7,071	
Leased forest land	EUR million	—	183	1	37	—	221	

¹ Forest cubic meters

² Solid under bark (sub) cubic meters

³ Total figures exclude minor forest ownerships in Laos and equity accounted investment Arauco Florestal Arapoti S.A. in Brazil

⁴ MdP productive area (ha) and biological assets per productive ha recalculated based on information received after 2020 reporting

Subsidiaries and joint operations

On 31 December 2021, forest assets (excluding leases) were located by value, in Sweden 89% (90%), China 3% (3%), Brazil 2% (1%) and Uruguay 6% (6%). The total area amounts to 1,715

(1,726) thousand hectares of which 7% (7%) is leased and under 1% (1%) is restricted. From Stora Enso's total forest holdings 1,346 (1,356) thousand hectares is productive forest area. The Montes del Plata and Veracel amounts take into account the ownership share.

Swedish forests

At the end of 2021, the value of the biological assets in Swedish forests amounted to EUR 4,005 (EUR 3,774) million, related forest land amounted to EUR 2,012 (EUR 1,829) million and the total forest assets amounted to EUR 6,017 (EUR 5,603) million. The increase of EUR 414 million in the forest assets value is mainly driven by increased standing stock volume estimate especially for the retention forest areas as a significant portion of the forest areas were subject to laser scanning and improved inventory data as well as higher market prices. Foreign exchange impact and disposals decreased the value. Deferred tax liabilities related to forest assets amounted to EUR 1,237 (EUR 1,153) million. The discount rate of 3.5% (3.6%) was applied in the valuation.

The productive area in Swedish forests amounted to 1,141 (1,145) thousand hectares with a standing stock of 150.5 (143.0) million forest m³. The weighted three-year average market transaction price applied in the valuation for Swedish forests assets in 2021 is EUR 40 (EUR 39) per forest m³. The forest asset value corresponds to an average of EUR 5,270 (EUR 4,900) per ha of productive forest area.

The valuation of the forest assets is based on detailed transaction data and price statistics as provided by different market data suppliers. Market transaction data is adjusted to consider the characteristics and nature of Stora Enso's forest assets and to exclude certain non-forest assets and outliers. The valuation takes into account where the forest land is located, price levels and volume of standing stock. Market prices between areas varies significantly. Future changes in value of Swedish forest assets are impacted by changes in market transaction prices and changes in volume of standing stock, considering growth and other changes. See also [Note 2](#) for information related estimates and judgment applied in the valuation.

Forest asset location and volume

2021		North	Middle	South	Total
Productive area	ha	191,000	950,000	0	1,141,000
Percentage of total	%	17%	83%	0%	100%
Standing stock	million m ³ fo.	17.1	133.3	0.0	150.5
Percentage of total	%	11%	89%	0%	100%

2020		North	Middle	South	Total
Productive area	ha	191,000	949,000	5,000	1,145,000
Percentage of total	%	17%	83%	0%	100%
Standing stock	million m ³ fo.	16.2	125.9	0.8	143.0
Percentage of total	%	11%	88%	1%	100%

Guangxi

At the end of 2021, the value of the biological assets in Guangxi, China, amounted to EUR 200 (EUR 176) million. All the forest land in China is leased. The value increase is mainly driven by foreign exchange impact and increased volume, whereas higher costs and discount rate decreased the value. The biological assets included young standing timber with a value of EUR 33 (EUR 33) million. The discount rate of 8.6% (8.4%) used in the discounted cash flows (DCF)

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increased slightly in 2021. The productive forest area in Guangxi totals to 68 (75) thousand hectares with a standing stock of 4.9 (4.2) million forest m³.

Veracel

Veracel Celulose S.A. (Veracel) is a 50% joint operation in Brazil. Stora Enso's share of the biological assets was EUR 81 (EUR 66) million. The movement is mainly driven by increased prices, volume and growth and lower discount rate. The biological assets included young standing timber with a value of EUR 21 (EUR 22) million. The discount rate of 6.9% (8.8%) used in the DCF decreased in 2021. The related forest land is measured at cost. Stora Enso's share of the productive forest area totals to 47 (47) thousand hectares with a standing stock of 5.0 (4.4) million forest m³.

Montes del Plata

Montes del Plata (MdP) is a 50% joint operation in Uruguay. Stora Enso's share of the biological assets was EUR 260 (EUR 230) million. The movement is mainly driven by foreign exchange impact. The biological assets included young standing timber with a value of EUR 46 (EUR 46) million. The discount rate of 6.5% (6.5%) used in the DCF remained the same in 2021. The related forest land is measured at cost. Stora Enso's share of the productive forest area totals to 90 (89) thousand hectares with a standing stock of 13.9 (13.0) million forest m³.

Associated companies

Tornator

Tornator Oyj (Tornator) is a 41% owned Finnish associated company. Stora Enso's share of the biological assets was EUR 906 (EUR 769) million and the share of the forest land was EUR 78 (EUR 56) million. The increase in the fair value of biological assets is mainly driven by new growth models applied in the valuation, which are indicating that increase in the stem volume of the trees is faster than in the previous estimate as well as acquisitions, increased volume and prices. The movement in the value of forest land is mainly due to increase in other forest land related income and increase in cash flows from subsequent growth cycles. Stora Enso's share of the productive forest area totals to 271 (269) thousand hectares with a standing stock of 32.7 (31.4) million forest m³.

Arauco Florestal Arapoti

Stora Enso's 20% ownership in Arauco Florestal Arapoti S.A. was disposed in 2021. Stora Enso's share of the forest assets was not significant.

Biological asset valuation sensitivities of significant assumptions of a +/- 10% movement

EUR million	Wood market prices	Growth rate	Discount rate
Guangxi	+/-36	+/-1	+/-3
Veracel	+/-9	+/-9	+/-2
Montes del Plata	+/-28	+/-28	+8/-7

Swedish forest asset valuation is sensitive for changes in market transaction prices and volume of standing stock. A change in the average market price of forest assets of EUR 1 per forest m³ would impact the value of forest assets by EUR 150 (EUR 143) million. A change in the volume of standing stock of 1 million forest m³ would impact the value of forest assets by EUR 40 (EUR 39) million.

Note 13 Equity accounted investments

Accounting principles

Associated companies over which Stora Enso exercises significant influence are accounted for using the equity method. Stora Enso does not control associate companies alone or jointly with other parties, but has significant influence. The Group's share of the equity accounted investment profit or loss is recognised 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 together with any goodwill. 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. There is no material goodwill in the carrying amount of equity accounted investments.

The Group's share of results in equity accounted investments is reported in the operating profit to reflect the operational nature of these investments. Similarly, dividends received from equity accounted investments are presented in the net cash provided by operating activities in the consolidated cash flow statement.

Principal equity accounted investments

Company	Reportable segment	Domicile and principal place of operations	As at 31 December			
			Ownership interest %		EUR million	
			2021	2020	2021	2020
Tornator Oyj	Forest	Finland	41.00	41.00	545	402
Others					35	54
Carrying Value at 31 December					580	456

Stora Enso's 20% ownership in Arauco Florestal Arapoti S.A. was divested in 2021. The transaction did not have a material impact on the Group. Bergvik Skog AB was liquidated in 2021, there were no operations remaining in the company after Bergvik Skog AB restructuring in 2019.

Group share of equity accounted investments income statements

EUR million	Year Ended 31 December	
	2021	2020
Sales	142	131
Net operating expenses	-97	-93
Biological assets valuation	120	13
Operating Profit	166	50
Net financial items	10	-42
Net Profit before Tax	176	8
Income tax	-34	-9
Net Profit for the Year	143	-1

The average number of personnel in the equity accounted investments was 1,193 in 2021, compared with 1,575 in 2020.

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A summary of the financial information, prepared in accordance IFRS, in respect of the Group's material associate, Tornator Oyj is set out below. The Group's share of Tornator Oyj is reported in the Forest division and covers the majority of the Group's total carrying amount of equity accounted investments.

Tornator Oyj		
EUR million	2021	2020
Current assets	53	79
Non-current assets	2,440	2,040
Current liabilities	43	52
Non-current liabilities	821	850
Tax liabilities	300	236
Sales	155	141
Net profit for the year	349	52
Other comprehensive income	39	30
Total comprehensive income	388	82
Dividends received during the financial year	16	12
Net assets of the associate	1,329	980
Ownership interest	41.00%	41.00%
Carrying amount of the Group's interest in Tornator Oyj	545	402

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 545 (EUR 402) million at the year-end of 2021. The Group's share of Tornator's net profit was EUR 143 (EUR 21) million, including a biological asset valuation gain net of taxes of EUR 96 (EUR 11) million.

Aggregate information of equity accounted investments that are not individually material¹

	As at 31 December	
EUR million	2021	2020
Current assets	22	34
Non-current assets	30	36
Current liabilities	15	13
Non-current liabilities	2	1
Tax liabilities	0	2
Sales	78	73
Net profit for the year	0	-22
Dividends received during the financial year	0	23
Equity in the Group statement of financial position	35	54
Equity Accounting Value	35	54
Equity Accounting Value for Tornator Oyj	545	402
Total Equity Accounting Value	580	456

¹ Includes Bergvik Skog AB that was reported separately in 2020. Comparative figures restated accordingly.

Equity accounted investment company balances

	As at 31 December	
EUR million	2021	2020
Receivables from Equity Accounted Investments		
Non-current loan receivables	2	2
Trade receivables	1	0
Other receivables	10	0
Liabilities due to Equity Accounted Investments		
Trade payables	55	41

Total loans including interest receivable from equity accounted investments at the year-end 2021 amounted to EUR 2 (EUR 2) million.

Equity accounted investment transactions

	Year Ended 31 December	
EUR million	2021	2020
Sales to equity accounted investments	19	17
Interest on loan receivables from equity accounted investments	1	
Purchases from equity accounted investments ¹	109	130

¹ Purchases for 2020 restated.

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.

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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 securities that are classified as fair value through income statement.

Summary of values

EUR million	Year Ended 31 December	
	2021	2020
Acquisition cost at 1 January		
Listed securities	3	3
Unlisted securities	135	120
Investments classified as equity instruments	138	123
OCI in opening balance	279	415
Equity Instruments at 1 January	417	538
Translation difference	0	1
Additions	1	15
Change in fair values accounted for as OCI	501	-136
Disposals	0	-1
Income Statement - gains and losses	0	1
Carrying Amount at 31 December	918	417

Unrealised gains and losses on listed and unlisted securities

EUR million	Year Ended 31 December	
	2021	2020
Net unrealised holding gains (OCI)	780	279
Cost	139	138
Fair Value	918	417
Net unrealised holding gains (OCI)	780	279
Deferred tax	-2	-3
Net Unrealised Holding Gains Shown in Equity as OCI	778	277
Change in Net Unrealised Holding Gains Shown in Equity as OCI	501	-136

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 2021. 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 Nord Pool 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 3.84% used in the valuation model is determined using the weighted average cost of capital method. A +/- 5% change in the electricity price used in the DCF would change the valuation by EUR +119 million and -119 million, respectively. A +/- percentage point change in the discount rate would change the valuation by EUR -155 million and +98 million, respectively. The increased electricity market prices at the end of 2021 have led to decreased trading volumes in the Nord Pool electricity exchange, which may indicate a higher risk of price fluctuations in the future.

In December 2021 Teollisuuden Voima Oyj (TVO) announced that the previously delayed Olkiluoto 3 plant unit has been started up. According to TVO, electricity production at limited power level is expected to start at the end of January 2022, while the regular electricity production is expected to start in June 2022. This updated schedule has been taken into account in the year-end PVO valuation. Stora Enso's indirect share of the capacity of Olkiluoto 3 is approximately 8.9%, through its PVO B2 shares.

PVO shareholding on 31 December 2021

EUR million	Share Series	% Holding	Asset Category	Fair Value 2021	Fair Value 2020
PVO-Vesivoima Oy	A	20.6	Hydro	302	132
Teollisuuden Voima Oyj	B	15.7	Nuclear	540	257
Teollisuuden Voima Oyj	B2	14.8	Nuclear	54	0
Other	C, C2, V, M	Various	Various	4	4
Total				900	394

The valuation in 2021 amounted to EUR 900 (EUR 394) million against a cost value of EUR 130 (EUR 117) million, with the revaluation of EUR 770 (EUR 277) million being taken to other comprehensive income. The change in PVO's value is mainly caused by the increase in electricity market prices during the year. No deferred tax is recognized, as under Finnish tax regulations holdings above 10% are exempt from tax on disposal proceeds.

Principal equity instruments

EUR million	31 December 2021			
	Holding %	Number of Shares	Acquisition Cost	Fair Value
Packages Ltd, Pakistan - listed shares	6.0	5,396,650	3	13
Total Listed Securities			3	13
Pohjolan Voima Oy - unlisted shares	15.6	5,073,972	130	900
Others - unlisted securities			5	5
Total Unlisted Securities			135	905
Total Equity instruments at 31 December 2021			139	918
Total Equity Instruments at 31 December 2020			138	417

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Note 15 Emission rights and other non-current assets

Accounting principles

The Group participates in the European Emissions Trading Scheme, with the aim of reducing greenhouse gas emissions. The Group has been allocated allowances to emit a fixed tonnage of carbon dioxide (CO₂) over a fixed period of time, which are recognised as intangible assets, government grants and as liabilities for the obligation to deliver allowances equal to those emissions that have been made during the compliance period.

Intangible assets related to emission allowances are measured at level 1 fair value at the date of initial recognition. The liabilities to deliver allowances are recognised based on actual emissions and are settled using allowances on hand and measured at the carrying amount of those allowances. At the reporting date, if the market value for the emission allowances is less than the carrying amount, any surplus allowances that are not required to cover emissions made are impaired to the market value.

The Group expenses emissions made at the grant date fair value, 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 rights used at their grant date fair value.

The consolidated income statement will, thus, be neutral in respect to all the rights consumed that were within the original grant of rights. Sales of excess emission allowances are recognised as income on the delivery date. 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 own use.

Emission rights

EUR million	Year Ended 31 December	
	2021	2020
Value on 1 January	36	37
Emission allowances allocated	167	46
Sales	-35	-13
Settlement with the government	-31	-33
Value on 31 December	137	36

The liability to deliver allowances is presented in the consolidated statement of financial position in line other operative liabilities. As of 31 December 2021, the liability to deliver allowances amounted to EUR 99 (EUR 31) million as presented in Note 23 Other liabilities. The excess emission rights held at the year end were valued at EUR 38 (EUR 5) million. The emission rights have increased in 2021 due to the change in the market price of emission allowances. At the end of the financial period the market price of the emission rights was EUR 79.96 (EUR 32.54) per tonne.

Other non-current assets

EUR million	As at 31 December	
	2021	2020
Prepaid expenses and accrued income	15	15
Tax credit	3	4
Other non-current operative assets	15	9
Total	34	28

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.

EUR million	As at 31 December	
	2021	2020
Materials and supplies	422	331
Work in progress	97	65
Finished goods	689	597
Spare parts and consumables	331	329
Other inventories	23	13
Advance payments and cutting rights	55	64
Obsolescence allowance - spare parts and consumables	-125	-109
Obsolescence allowance - finished goods	-9	-12
Net realisable value allowance	-5	-8
Total	1,478	1,270

EUR 4,586 (EUR 3,844) million of inventories have been expensed during the year, which are included in the materials and supplies line and relate to materials. EUR 29 (EUR 22) million of inventory write-downs have been recognised as an expense. EUR 16 (EUR 16) 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



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used in the forward-looking loss allowance calculation model. The loss allowance model for non-defaulted receivables also takes into account a macroeconomic indicator that considers the macroeconomic developments and further incorporates forward-looking data to the 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

EUR million	As at 31 December	
	2021	2020
Trade receivables - gross carrying amount	1,175	893
Loss allowance	-26	-35
Prepaid expenses and accrued income	82	96
Other receivables	218	190
Total	1,449	1,145

Age analysis of trade receivables

EUR million	As at 31 December	
	2021	2020
Not overdue	1,093	819
Less than 30 days overdue	38	26
31 to 60 days overdue	7	0
61 to 90 days overdue	0	1
91 to 180 days overdue	0	0
Over 180 days overdue	37	46
Total	1,175	893

As at 31 December 2021, a gross amount of EUR 82 (EUR 74) 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 2021, lifetime expected credit losses for trade receivables amounted to EUR 26 (EUR 35) million. Loss allowances for trade receivables are estimated on an individual basis based on a forward-looking 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 90 (EUR 39)

million. Please refer to [Note 24](#) Financial risk management for details of customer credit risk management.

Age analysis of loss allowance

EUR million	As at 31 December	
	2021	2020
Not overdue and less than 90 days overdue	1	1
More than 90 days overdue	25	33
Total	26	35

Reconciliation of loss allowance

EUR million	As at 31 December	
	2021	2020
Opening balance at 1 January	35	38
Change in loss allowance booked through Income Statement	3	4
Write-downs	-12	-7
Closing Balance at 31 December	26	35

The actual credit losses during 2021 amounted to EUR 12 (EUR 7) 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 184 (EUR 155) 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 2021, shareholders' equity amounted to EUR 10,683 (EUR 8,809) million, compared to the market capitalisation on Nasdaq Helsinki of EUR 12,809 (EUR 12,383) million. The market values of the shares were EUR 16.60 (EUR 15.90) for A shares and EUR 16.14 (EUR 15.65) 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 2021, 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 2021, Directors and Group Leadership Team members owned 0 (1,150) A shares and 475,519 (537,921) R shares representing 0.02% of the total voting rights of

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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 2020	176,256,834	612,363,153	788,619,987
Conversion of A shares to R shares	-2,419	2,419	—
At 31 December 2020	176,254,415	612,365,572	788,619,987
Conversion of A shares to R shares	-10,366	10,366	—
At 31 December 2021	176,244,049	612,375,938	788,619,987
Number of votes as at 31 December 2021¹	176,244,049	61,237,594	237,481,643
Share Capital at 31 December 2021, EUR million	300	1,042	1,342
Share Capital at 31 December 2020, 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 3 March 2022 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 as a separate component 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 owners 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 interest is decided separately for each acquisition.

Non-controlling interests

EUR million	Year Ended 31 December	
	2021	2020
At 1 January	-16	-7
Acquisitions	0	0
Disposals	0	0
Share of profit for the period	3	-9
Share of other comprehensive income	-3	1
Dividends	0	0
At 31 December	-16	-16

Principal non-controlling interests

Company	Principal Place of Business	Proportion of Ownership Interests Held by Non-controlling Interests, %	As at 31 December	
			2021	2020
Stora Enso Pulp and Paper Asia AB Group	Sweden and China	See separate table below	-18	-18
Others	-	-	1	2
Total			-16	-16

Non-controlling interests in Stora Enso Pulp and Paper Asia AB Group

Company	Principal Place of Business	31 December 2021			31 December 2020		
		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	—	5.79	5.79	—	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

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	2021	2020
Assets	1,282	1,167
Equity attributable to the owners of the parent	-115	-114
Non-controlling interests ¹	-18	-18
Total Equity	-133	-132
Liabilities	1,414	1,298
Net profit or loss for the period	7	-54
Attributable to		
Owners of the parent	4	-44
Non-controlling interests	3	-10
Net profit or loss for the period	7	-54
Net cash flow from operating activities	90	45
Net cash flow from investing activities	-37	-36
Net cash flow from financing activities	-26	10
Net cash flow	27	19

¹ No dividends were paid to non-controlling interests in 2021 or 2020.

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Note 20 Post-employment benefit obligations



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's pension and other benefit plans amounted to EUR 165 (EUR 152) million in 2021, as shown in [Note 6 Personnel expenses](#). The majority of the plans are defined contribution schemes for which the charge amounted to EUR 153 (EUR 136) million. Total defined benefit obligations for current and former members of staff amounted to EUR 1,108 (EUR 1,210) million, though assets of EUR 762 (EUR 737) 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 347 (EUR 473) million in 2021. Interest costs are entered under financial costs. The 2021 defined benefit expense in the income statement amounts to EUR 15 (EUR 20) million and the actuarial gains recorded in other comprehensive income amount to EUR 126 (EUR 21) million. In 2022, contributions of EUR 17 million are expected to be paid.

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 71 (EUR 56) million. By contrast, the remaining obligations covered by defined benefit schemes resulted in a charge of EUR 1 (EUR 0) million excluding finance costs. Pension cover since 2001 has been organised entirely through local insurance companies. As statutory 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 7 (EUR 8) million, of which EUR 6 (EUR 7) million related to defined contribution schemes and EUR 1 (EUR 1) million to defined benefits excluding finance costs. The net defined benefit liability amounted to EUR 225 (EUR 250) million. The decrease in net liability arose mainly from benefit payments and changes in actuarial assumptions. 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, all blue-collar staff and part of white-collar staff are covered by defined contribution schemes, the charge in the Income statement being EUR 56 (EUR 55) million. Defined benefit schemes are covering the remaining of white-collar staff and resulted in a charge of EUR 8 (EUR 10) million excluding finance costs. The net defined benefit liability amounted to EUR 55 (EUR 159) million. Decrease in net liability arose mainly from changes in actuarial assumptions, mostly from an increase in discount rate, and an increase in fair value of plan assets. 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.

Other countries

The net defined benefit liability in the remaining countries amounted to EUR 37 (EUR 51) million. The most material change in liability was recognised for United Kingdom. The decrease in net liability arose mainly from changes in actuarial assumptions.

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Net defined benefit obligation reconciliation

EUR million	Defined Benefit Obligation		Fair Value of Plan Assets		Net Defined benefit liability / (asset)	
	2021	2020	2021	2020	2021	2020
Defined benefit obligation at 1 January	1,210	1,219	-737	-761	473	458
Current service cost	14	15			14	15
Past service cost	-2	2	0	-2	-2	1
Settlements	-5	0	5	0	0	0
Interest expense (+) income (-)	9	12	-6	-7	3	5
Total included in Income Statement	17	29	-1	-9	15	20
Actuarial gains and losses arising from changes in demographic assumptions	3	0			3	0
Actuarial gains and losses arising from changes in financial assumptions	-21	26			-21	26
Actuarial gains and losses arising from experience adjustments	-42	-19			-42	-19
Return on plan assets, excluding amounts included in interest expense (+) income (-)			-65	-28	-65	-28
Total rereasurement gains (-) / losses (+) included in Other Comprehensive Income	-61	8	-65	-28	-126	-21
Benefit payments	-58	-55	44	40	-14	-15
Employer contributions and refunds			1	24	1	24
Translation difference	1	9	-3	-3	-3	6
Defined benefit obligation at 31 December	1,108	1,210	-762	-737	347	473

Defined benefit plans: Country assumptions used in calculating benefit obligations

	Year ended 31 December					
	Finland		Germany		Sweden	
	2021	2020	2021	2020	2021	2020
Discount rate %	0.7	0.2	0.8	0.4	1.7	1.1
Future salary increase %	3.2	2.1	2.5	2.5	2.9	2.7
Future pension increase %	2.3	1.2	1.8	1.5	2.0	1.8
Average current retirement age	64.3	64.2	65.0	65.0	65.0	65.0
Weighted average life expectancy	87.4	87.0	87.7	87.7	88.6	88.5
Duration of pension plans	10.0	10.0	13.0	13.2	16.5	17.1

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 7.0%	Increase by 7.9%
Salary growth rate	0.50%	Increase by 1.9%	Decrease by 1.7%
Pension growth rate	0.50%	Increase by 5.6%	Decrease by 5.2%
Life expectancy	1 year	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.

Defined benefit plan summary by country as at 31 December 2021

EUR million	31 December 2021				Total
	Finland	Germany	Sweden	Other	
Present value of funded obligations	238	5	359	236	838
Present value of unfunded obligations	0	224	20	27	270
Defined benefit obligations (DBO)	238	229	379	263	1,108
Fair value of plan assets	-208	-4	-324	-226	-762
Net liability in the Balance Sheet	29	225	55	37	347
Represented by					
Defined benefit pension plans	29	225	55	12	321
Other post-employment benefits	0	0	0	25	25
Net liability in the Balance Sheet	29	225	55	37	347

Defined benefit plan summary by country as at 31 December 2020

EUR million	31 December 2020				Total
	Finland	Germany	Sweden	Other	
Present value of funded obligations	266	27	412	230	936
Present value of unfunded obligations	0	226	22	26	274
Defined benefit obligations (DBO)	266	254	434	256	1,210
Fair value of plan assets	-254	-4	-275	-205	-737
Net liability in the Balance Sheet	13	250	159	51	473
Represented by					
Defined benefit pension plans	13	250	159	27	449
Other post-employment benefits	0	0	0	24	24
Net liability in the Balance Sheet	13	250	159	51	473

Plan assets

EUR million	As at 31 December							
	2021				2020			
	Quoted	Unquoted	Total	% of total	Quoted	Unquoted	Total	% of total
Equity	122	37	159	21%	97	33	130	18%
Debt	58	55	112	15%	72	31	103	14%
Property	0	50	50	7%	0	40	40	5%
Cash	25	0	25	3%	31	0	31	4%
Assets held by insurance companies	0	308	308	40%	0	322	322	44%
Others	7	101	108	14%	13	98	111	15%
Total pension fund assets	211	551	762	100%	213	525	737	100%

Plan assets do not include any real estate or other assets occupied by the Group or the Company's own financial instruments.

The two main financial factors affecting Group's pension liabilities are changes in interest rates and inflation expectations. The aim of asset investment allocations is to neutralise these effects, secure solvency for benefit payments and maximise returns.

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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.

All share-based payment transactions are classified as equity-settled share awards. 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 year 2021, the annual incentive programmes were based on financial measures as well as individual targets. The financial success metrics in the STI programme 2021 is Operating Cash Flow.

Long term incentive (LTI) programmes

Since 2005, new share based programmes for executives have been launched every year. The 2019 programme, with performance measures that ended in 2021 and will be settled in 2022, as well as the 2020 programme have three year performance periods, while the 2021 programme have three one year performance periods which are accumulated after three years. All outstanding programmes will be settled in one portion after three years.

For the vast majority of awarded employees, three quarters (75%) of the opportunity under the 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) and Earnings Per Share (EPS) 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. Members of the GLT have been awarded performance shares only.

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.

Share awards at 31 December 2021

Number of shares	Outstanding restricted and performance share awards at year end			
	2022	2023	2024	Total
2019 programme	768,000			768,000
2020 programme		1,028,799		1,028,799
2021 programme			818,902	818,902
Total	768,000	1,028,799	818,902	2,615,701

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 7 (EUR 1) million, all of which were related to restricted and performance share awards.

Note 22 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 are measured at the management's best estimate and there is some uncertainty regarding the timing and amount of the costs. Provisions for obligations to dismantle, remove or restore assets after their use are added to the carrying amount of the assets at acquisition date and depreciated over the useful life of the asset. Provisions are discounted to their current net present value if the effect of the time value of money is material.

Environmental provisions

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 recognised as provisions. 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 provisions

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 provisions

Other provisions are recognised regarding different legal or constructive obligations, such as onerous contracts, guarantees to customers, ongoing lawsuits, claims, or similar.

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Provisions

EUR million	Environmental provisions	Restructuring provisions	Other provisions	Total provisions
Carrying Value at 1 January 2020	97	41	26	165
Translation difference	2	1	-1	2
Charge in Income Statement				
New provisions	13	17	14	45
Increase in existing provisions	5	0	2	7
Reversal of existing provisions	-8	-15	0	-22
Payments	-18	-17	-11	-47
Carrying Value at 31 December 2020	91	28	30	149
Translation difference	0	-1	0	-1
Charge in Income Statement				
New provisions	6	107	72	185
Increase in existing provisions	13	1	0	14
Reversal of existing provisions	-6	-4	-5	-15
Payments	-29	-44	-29	-101
At 31 December 2021	75	88	67	231
Allocation between current and non-current provisions				
Current provisions: Payable within 12 months	6	84	49	139
Non-current provisions: Payable after 12 months	70	4	18	91
Total at 31 December 2021	75	88	67	231

Provisions for environmental remediation amounted to EUR 75 (91) million at 31 December 2021. The most material environmental provision is based on an agreement between Stora Enso and the City of Falun that obligates the Group to purify runoff from the Kopparberg mine before releasing the water into the environment. The provision at year end amounted to EUR 37 (EUR 36) million.

The Group has undergone major restructuring in recent years, from divestments to mill closures and administrative cost-saving programmes. The obligation at the end of 2021 amounted to EUR 88 (EUR 28) million for restructuring provisions and EUR 67 (EUR 30) with respect to other provisions. The increase in restructuring and other provisions is mainly related to restructuring, divestments and other cases in Paper division. In April 2021, Stora Enso announced that it is permanently closing down pulp and paper production at Kvarnsveden Mill in Sweden and Veitsiluoto Mill in Finland. The restructuring provision related to these closures amounted to EUR 67 million on 31 December 2021.

Note 23 Operative liabilities

Non-current operative liabilities

EUR million	As at 31 December	
	2021	2020
Post-employment benefit obligations	347	473
Provisions	91	102
Share-based payments	1	1
Other payables	12	12
Total	451	588

Current operative liabilities

EUR million	As at 31 December	
	2021	2020
Trade payables	1,704	1,314
Payroll and staff-related accruals	256	233
Accrued liabilities and deferred income	155	144
Emission liabilities	99	31
Current portion of provisions	139	46
Advances received	18	26
Other payables	107	89
Total	2,479	1,883

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 long duration. A duration above the average loan maturity is approved by the Board of Directors.

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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 is presented in the following table:

Floating and fixed interest-rate position

EUR million	As at 31 December 2021		As at 31 December 2020	
	Floating rate	Fixed rate	Floating rate	Fixed rate
Non-current interest-bearing receivables ¹	5	40	1	90
Current interest-bearing receivables	0	49	0	0
Cash and cash equivalents	1,481		1,661	0
Interest-bearing liabilities ²	-974	-2,863	-1,642	-3,050
Interest-bearing assets and liabilities excluding derivatives	512	-2,774	19	-2,959
Interest-rate and cross-currency swaps	682	-682	894	-894
Interest-bearing assets and liabilities, net of derivatives	1,194	-3,456	913	-3,853

¹ Excluding interest receivable and listed securities

² Non-current interest-bearing liabilities, current portion of non-current debt, short-term interest bearing liabilities and bank overdrafts 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 4.6 (4.6) years.

As of 31 December 2021, one percentage point increase in interest rates would increase annual net interest expenses by approximately EUR 2 (EUR 5) million and a similar decrease in interest rates would decrease net interest expenses by EUR 1 (EUR 3) million. This assumes 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 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 16 (EUR 28) million before taxes in the cash flow hedge reserve in OCI regarding interest rate swaps under cash flow hedge accounting. A one percentage point parallel change up or down in interest rate would result in fair valuation gains or losses of EUR 3 million in net financial items related to cross currency swaps fair valued through profit and loss. 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 foreign-currency transaction risk arising from exchange rate fluctuations. Foreign exchange transaction risk exposure comprises both the geographical location of Stora Enso production facilities around the world, sourcing of raw materials and sales of end products in foreign currencies, mainly denominated in US dollars, British pounds and Swedish crowns. Stora Enso Group companies with functional currency other than euro are also exposed to a foreign-currency transaction risk arising from EUR denominated net cash flows in their local currencies. These EUR exposures mainly arise from Stora Enso subsidiaries located in Sweden, Czech Republic and Poland.

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 15–60% 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 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 transaction risk 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. A positive amount of exposure in the table below represents an estimated future inflow or receivable of a foreign currency amount.

Operative foreign currency transaction risk exposure

EUR million	As at 31 December 2021						As at 31 December 2020					
	EUR	SEK	USD	GBP	AUD	UYU	EUR	SEK	USD	GBP	AUD	UYU
Estimated annual net cash flow exposure in hedged foreign-currency flows ¹	995	-191	1,712	346	138	-41	920	-197	1,330	222	46	-40
Cash flow hedges for the next 12 months	-553	89	-740	-78	-38	23	-433	94	-629	-97	-21	22
Estimated annual net cash flow exposure, net of hedges	442	-101	971	268	100	-18	488	-104	700	125	24	-18
Hedging percentage as at 31 December for next 12 months	56%	47%	43%	22%	27%	57%	47%	48%	47%	44%	46%	54%
Weighted-average hedged rate against EUR ²	—	10.21	1.20	0.85	1.60	52.63	—	10.40	1.18	0.90	1.63	55.61
Operative receivables and payables net exposure	-42	5	233	32	58	-2	-8	6	192	20	26	-5
Net receivable currency hedges	16	0	-200	-26	-26	0	-10	0	-126	-14	-15	0
Net operative receivables exposure, net of hedges	-26	5	34	5	31	-2	-18	6	66	5	11	-5
Estimated annual net transaction risk exposure after hedges	416	-97	1,005	274	131	-20	470	-98	766	130	36	-24

¹ Cash flows are forecasted highly probable net operating foreign-currency cash flows in hedged currencies. The exposure presented in the EUR column relates to operative transaction risk exposure from EUR denominated cash flows in Group companies located in Sweden, Czech Republic and Poland with functional currency other than EUR.

² 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.

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The following table includes the estimated effect on the annual operating profit of a currency weakening of an exposure currency against the functional currencies of exposed subsidiaries. The sensitivities have been calculated based on a 5% movement in EUR, SEK, USD, GBP and AUD while 10% movement in UYU. These changes are estimated as reasonably possible changes in exchange rates, measured against year-end closing rates. A corresponding strengthening of the exposure currency 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 translation risk exposures are discussed more in detail under the Translation risk chapter below.

The calculation includes currency hedges and assumes that there are no changes in other underlying currencies. 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 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 in a different geographical location, have not been considered in this calculation.

Sensitivity analysis of operative foreign currency transaction risk exposure

EUR million	As at 31 December 2021						As at 31 December 2020					
	EUR	SEK	USD	GBP	AUD	UYU	EUR	SEK	USD	GBP	AUD	UYU
Exposure currency change by ¹	-5%	-5%	-5%	-5%	-5%	-10%	-5%	-5%	-5%	-5%	-5%	-10%
Effect on estimated annual net cash flows in hedged flows	-50	10	-86	-17	-7	4	-46	10	-66	-11	-2	4
Effect on cash flow hedging OCI reserve before taxes as at year end ²	28	-4	37	4	2	-2	22	-5	31	5	1	-2
Effect on net operative receivables and payables after hedges ³	1	0	-2	0	-2	0	1	0	-3	0	-1	1
Estimated annual EBIT impact⁴	-21	5	-50	-14	-7	2	-23	5	-38	-6	-2	3

¹ The sensitivity analysis for EUR denominated annual net cash flows, operative net receivables and related hedges refer to the EUR denominated transaction risk arising from EUR denominated foreign-currency cash flows in Sweden, Czech Republic and Poland with functional currency other than EUR.

² The effect on OCI cash flow hedging reserve 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 under IFRS 9. Amount effecting OCI will be recycled to operative result when the transaction realises.

³ Currency effect related to net operative receivables or payables and related hedges.

⁴ The estimated annual EBIT impact includes currency effects in respect of operative exposures in the Statement of Financial Position, forecast cash flows and the related hedges.

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

loan payables and receivables, foreign-currency internal loan payables and loan receivables and cash equivalents. Loans designated as net investment loans under IAS 21 are excluded from the table as they reduce the foreign-currency exposures on a Group level. The currency derivatives mainly hedge financial exposures in the statement of financial position. 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 currency weakening of an exposure currency against EUR. The sensitivities have been calculated based on a 5% movement in SEK, USD, CNY, and PLN. These changes are estimated as reasonably possible changes in exchange rates, measured against year-end closing rates. A corresponding strengthening of the exposure currency 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

EUR million	As at 31 December 2021				As at 31 December 2020			
	SEK	USD	CNY	PLN	SEK	USD	CNY	PLN
Foreign-currency net debt ¹	-30	-95	462	-1	-156	-108	410	51
Currency hedges	7	-31	-272	-16	135	-33	-244	-21
Net exposure after hedges	-23	-125	190	-18	-21	-140	166	30
Exposure currency change by	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%
Effect in the Income Statement²	1	6	-10	1	1	7	-8	-2

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. The nominal amount of net investment loans amounted to EUR 348 (EUR 286) million as per the year end and reduces the currency exposure for relevant currencies in the above table.

² Gains and losses are recognised as part of Net financial items in the Income Statement

Foreign exchange risk – translation risk

Translation risk results from fluctuations in exchange rates affecting the value of Stora Enso's consolidated net foreign currency denominated assets, liabilities, and income. 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 with different functional currencies than the Group.

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 following table presents the translation risk exposure in the Group's Income statement arising from the translation of subsidiaries' and joint operations' foreign-currency income statements into the presentation currency of the Group in the consolidated financial statements.



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Translation exposure in Income statement

EUR million	As at 31 December 2021					As at 31 December 2020						
	SEK	USD	GBP	BRL	CZK	CNY	SEK	USD	GBP	BRL	CZK	CNY
Translation exposure in Income Statement	-196	-129	298	-111	11	83	38	-165	81	-120	-7	28
Exposure currency change by	-5%	-5%	-5%	-10%	-5%	-5%	-5%	-5%	-5%	-10%	-5%	-5%
Effect on EBIT from translation risk exposure	10	6	-15	11	-1	-4	-2	8	-4	12	0	-1

The next table presents the translation exposure for geographical areas for which the Group has applied net investment hedging techniques to reduce the foreign-currency translation 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. The 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.

Hedged translation exposure in Equity

EUR million	As at 31 December	
	2021	2020
Translation exposure on equity in USD area ¹	1,502	1,323
EUR/USD equity hedges ²	-265	-244
Translation exposure after hedges	1,237	1,079
Sensitivity before hedges - EUR strengthening 5%	-75	-66
Sensitivity after hedges - EUR strengthening 5%	-62	-54

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.

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 2021, unused committed credit facilities were at EUR 700 (EUR 600) million. The EUR 700 million committed credit facility agreement with a syndicate of 12 banks has a maturity of five years with two one-year extensions and is used as a backup for general corporate purposes. Additionally, Stora Enso has access to various additional long-term sources of funding up to EUR 1,000 (EUR 950) 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 for the upcoming years.

Contractual maturity repayments of financial liabilities, settlement net: 2021

EUR million	2022	2023	2024	2025	2026	2027+	Total
Bond loans	0	300	293	427	98	1,390	2,508
Loans from credit institutions	117	253	41	165	4	0	578
Lease liabilities	64	50	43	35	31	165	387
Other non-current financial liabilities	0	4	0	0	0	0	4
Non-current borrowings including current portion	180	606	376	627	132	1,555	3,476
Estimated contractual finance charges	89	87	76	66	50	279	647
Contractual repayments on non-current borrowings	269	693	452	693	182	1,834	4,123
Current borrowings, carrying amounts	372	0	0	0	0	0	372
Gross-settled derivative liabilities - receipts	-1,797	0	0	0	0	0	-1,797
Gross-settled derivative liabilities - payments	1,769	0	0	0	0	0	1,769
Net-settled derivative liabilities	16	10	1	0	0	0	27
Trade payables	1,705	0	0	0	0	0	1,705
Bank overdrafts	1	0	0	0	0	0	1
Estimated contractual finance charges	5	0	0	0	0	0	5
Total Contractual Repayments at 31 December 2021	2,339	703	453	693	182	1,834	6,205

Contractual maturity repayments of financial liabilities, settlement net: 2020

EUR million	2021	2022	2023	2024	2025	2026+	Total
Bond loans	299	0	300	299	434	1,469	2,801
Loans from credit institutions	93	404	397	35	150	4	1,083
Lease liabilities	80	66	45	37	30	138	397
Other non-current financial liabilities	0	5	0	0	0	0	5
Non-current borrowings including current portion	471	475	742	371	614	1,612	4,285
Estimated contractual finance charges	98	92	79	67	59	311	706
Contractual repayments on non-current borrowings	570	566	822	439	673	1,922	4,991
Short-term borrowings, carrying amounts	413	0	0	0	0	0	413
Gross-settled derivative liabilities - receipts	-1,796	0	0	0	0	0	-1,796
Gross-settled derivative liabilities - payments	1,743	0	0	0	0	0	1,743
Net-settled derivative liabilities	27	15	11	2	1	1	58
Trade payables	1,314	0	0	0	0	0	1,314
Bank overdrafts	6	0	0	0	0	0	6
Estimated contractual finance charges	7	0	0	0	0	0	7
Total Contractual Repayments at 31 December 2020	2,283	582	833	441	674	1,923	6,736

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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 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;
- 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;
- requiring 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 financial contract and counterparty's credit rating.

At the year end 2021, 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 22 (EUR 18) million and credit rating of A+ (BBB+) 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 ageing 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 2021				31 December 2020			
	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
Electricity purchases								
- Nordic region	438,000 MWh	EUR 29.02	13	15	1,095,000 MWh	EUR 30.39	33	2
- Central Europe	87,600 MWh	EUR 43.06	4	12	201,480 MWh	EUR 42.26	9	1
Oil purchases	189,808 barrels	USD 58.06	10	2	219,516 barrels	USD 52.55	10	0

The Group is exposed to commodity and energy price volatility that will have an impact on the Group's profitability. Electricity, natural gas and oil hedge derivatives are part of energy price risk management in the Group, whilst other commodity risks are measured and hedged if economically possible. The Group hedged natural gas during the year, no hedges were outstanding at year end. 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 900 (EUR 394) 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 6 (EUR 5) million change in the fair value of commodity financial hedges 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 2021, the maturities of the energy and commodity contracts, including both financial hedges and fixed-price physical purchase agreements, ranged between 2022 and 2024. In 2020, the maturities ranged between 2021 and 2024.

In an effort to mitigate other commodity price risk exposures in relation to wood fiber price risk, the Group is a significant owner of forest assets in the Nordic region. In Sweden the Group owns 1.4 million hectares of forest land. In addition, Stora Enso holds 41% 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. The Group's forest assets are discussed in more detail in [Note 12](#) Forest assets.

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 13 (EUR 16) 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 commercial 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 Earnings per share (EPS) excluding fair valuations 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 aiming that the Net-debt-to-Operational EBITDA ratio remains below 2.0, indicating a solid financial position, and financial flexibility.

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Capital structure

EUR million	As at 31 December	
	2021	2020
Interest-bearing liabilities	3,938	4,756
Interest-bearing assets	1,629	1,836
Net debt	2,309	2,921
Equity attributable to owners of the parent	10,683	8,809
Operational EBITDA¹	2,184	1,270
Net debt to equity ratio	0.22	0.33
Net debt to operational EBITDA	1.06	2.30

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 initial recognition.

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 under current or non-current assets in the consolidated statement of financial position. 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 under current or non-current assets in the consolidated statement of financial position.

The Group's investments into equity instruments, 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 under current or non-current assets in the consolidated statement of financial position.

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](#).

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 2021 and 2020. See [Note 14 Equity instruments](#) for more information on Level 3 fair value measurement of listed and unlisted securities.

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Carrying amounts of financial assets and liabilities by measurement and fair value categories: 2021

EUR million	Amortised cost	Fair value through OCI	Fair value through income statement	Total carrying amount	Fair value	Fair value hierarchy			Note
						Level 1	Level 2	Level 3	
Financial assets									
Listed securities	—	13	—	13	13	13	—	—	14
Unlisted securities	—	900	5	905	905	—	—	905	14
Non-current interest-bearing receivables	45	6	—	51	51	—	6	—	26
Derivative assets	—	6	—	6	6	—	6	—	
Loan receivables	45	—	—	45	45	—	—	—	
Trade and other operative receivables	1,110	39	—	1,149	1,149	—	39	—	17
Current interest-bearing receivables	52	31	1	84	84	—	32	—	26
Derivative assets	—	31	1	32	32	—	32	—	
Other short-term receivables	52	—	—	52	52	—	—	—	
Cash and cash equivalents	1,481	—	—	1,481	1,481	—	—	—	
Total	2,687	990	6	3,683	3,683	13	77	905	

EUR million	Amortised cost	Fair value through OCI	Fair value through income statement	Total carrying amount	Fair value	Fair value hierarchy			Note
						Level 1	Level 2	Level 3	
Financial liabilities									
Non-current interest-bearing liabilities	3,284	7	23	3,313	3,618	—	30	—	26
Derivative liabilities	—	7	23	30	30	—	30	—	
Non-current debt	3,284	—	—	3,284	3,589	—	—	—	
Current portion of non-current debt	180	—	—	180	180	—	—	—	26
Current interest-bearing liabilities	403	35	7	444	444	—	42	—	26
Derivative liabilities	—	35	7	42	42	—	42	—	
Current debt	403	—	—	403	403	—	—	—	
Trade and other operative payables	1,960	—	—	1,960	1,960	—	—	—	23
Bank overdrafts	1	—	—	1	1	—	—	—	
Total	5,827	42	29	5,899	6,204	—	71	—	

In accordance with IFRS, derivatives are classified as fair value through income statement. In the above tables for financial assets and liabilities the cash flow hedge accounted derivatives are however presented as fair value through OCI, in line with how they are booked for the effective portion.

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Carrying amounts of financial assets and liabilities by measurement and fair value categories: 2020

EUR million	Amortised cost	Fair value through OCI	Fair value through income statement	Total carrying amount	Fair value	Fair value hierarchy			Note
						Level 1	Level 2	Level 3	
Financial assets									
Listed securities	—	16	—	16	16	16	—	—	14
Unlisted securities	—	394	7	401	401	—	—	401	14
Non-current interest-bearing receivables	91	2	—	93	93	—	2	—	26
Derivative assets	—	2	—	2	2	—	2	—	
Loan receivables	91	—	—	91	91	—	—	—	
Trade and other operative receivables	814	44	—	858	858	—	44	—	17
Current interest-bearing receivables	1	60	6	66	66	—	65	—	26
Derivative assets	—	60	6	65	65	—	65	—	
Other short-term receivables	1	—	—	1	1	—	—	—	
Cash and cash equivalents	1,661	—	—	1,661	1,661	—	—	—	
Total	2,566	515	13	3,094	3,094	16	111	401	

EUR million	Amortised cost	Fair value through OCI	Fair value through income statement	Total carrying amount	Fair value	Fair value hierarchy			Note
						Level 1	Level 2	Level 3	
Financial liabilities									
Non-current interest-bearing liabilities	3,801	19	2	3,822	4,233	—	21	—	26
Derivative liabilities	—	19	2	21	21	—	21	—	
Non-current debt	3,801	—	—	3,801	4,212	—	—	—	
Current portion of non-current debt	472	—	—	472	472	—	—	—	26
Current interest-bearing liabilities	444	11	1	456	456	—	12	—	26
Derivative liabilities	—	11	1	12	12	—	12	—	
Current debt	444	—	—	444	444	—	—	—	
Trade and other operative payables	1,547	—	—	1,547	1,547	—	—	—	23
Bank overdrafts	6	—	—	6	6	—	—	—	
Total	6,270	30	3	6,303	6,715	—	33	—	

In accordance with IFRS, derivatives are classified as fair value through income statement. In the above tables for financial assets and liabilities the cash flow hedge accounted derivatives are however presented as fair value through OCI, in line with how they are booked for the effective portion.

In the previous tables, the fair value is estimated to be equal to the carrying amount for current 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-derivative 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.

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Reconciliation of level 3 fair value measurement of financial assets and liabilities

EUR million	2021	2020
Financial assets		
Opening balance at 1 January	401	526
Gains/losses recognised in income statement	0	1
Gains/losses recognised in other comprehensive income	504	-140
Additions	1	15
Disposals	0	-1
Closing balance at 31 December	905	401

EUR million	2021	2020
Financial liabilities		
Opening balance at 1 January	0	-25
Deductions	0	25
Closing balance at 31 December	0	0

Note 26 Interest-bearing assets and liabilities



Accounting principles

Interest-bearing assets - 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 an 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 a 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.

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 right-of-use 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.

Managing Interest Rate Benchmark Reform and associated risks

A global reform on interest reference rates is underway as existing IBOR reference rates are being replaced by alternative risk-free rates. The impact of the transition is expected to be limited for the Group's external contracts. The Group has exposure to IBORs on its financial instruments that will be replaced or reformed as part of these market-wide initiatives. The Group's main IBOR exposure at 31 December 2021 was indexed to US dollar LIBOR and related amount of interest bearing liabilities outstanding at 31 December 2021 was EUR 189 million. The publication of USD LIBORs will cease after June 2023.

The Group monitors the process of transition from IBORs to new benchmark rates by reviewing the total amounts of contracts that have yet to transition to an alternative benchmark rate. The expected impact is limited and relates mainly to external long-term debt. The Group's financial instruments are mainly indexed to Euribor and Stibor reference rates and these are expected to continue to exist for now.



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Interest-bearing assets

EUR million	As at 31 December	
	2021	2020
Listed securities	13	16
Long-term derivative assets	6	2
Long-term deposits	42	87
Long-term loans to equity accounted investments	2	2
Other long-term loan receivables	1	2
Total non-current interest-bearing assets	64	109
Short-term derivative assets	32	65
Short-term deposits	49	0
Other short-term loan receivables	3	1
Cash and cash equivalents	1,481	1,661
Total current interest-bearing assets	1,565	1,726
Total interest-bearing assets	1,629	1,836

The annual average interest income rate for deposits and loan receivables during 2021 was approximately 0.1% (0.2%). Current interest-bearing receivables included EUR 3 million accrued interest at 31 December 2021. 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.

Interest-bearing liabilities

EUR million	As at 31 December	
	2021	2020
Bond loans	2,497	2,789
Loans from credit institutions	577	1,083
Lease liabilities	387	397
Long-term derivative financial liabilities (see Note 25)	30	21
Other non-current liabilities	4	5
Non-current interest-bearing liabilities including current portion	3,493	4,294
Short-term borrowings	372	413
Interest payable	34	35
Short-term derivative financial liabilities (see Note 25)	38	9
Bank overdrafts	1	6
Total Interest-bearing Liabilities	3,938	4,756

EUR million	2021	2020
Carrying value at 1 January	4,756	4,192
Proceeds of new long-term debt	19	1,081
Additions in lease liabilities	33	39
Repayment of long-term debt	-870	-333
Repayment of lease liabilities and interest	-88	-85
Change in short-term borrowings and interest payable	-42	-101
Change in derivative financial liabilities	38	-17
Translation differences and other	92	-20
Total Interest-bearing Liabilities	3,938	4,756

Events during 2021 and 2020

In December 2021, Stora Enso signed a new EUR 700 million Revolving Credit Facility (RCF) with 12 commercial banks. The maturity of the facility is five years with two one-year extensions. The pricing is partly linked to meeting emission targets on scope 1 & 2 and scope 3. Simultaneously, the existing EUR 600 million RCF with original maturity in 2023 was cancelled.

In April 2020, Stora Enso successfully issued a SEK 1,700 million green bond under its EMTN (Euro Medium Term Note) programme and Stora Enso's Green Bond Framework. The bond matures in April 2025. In June 2020, Stora Enso successfully tapped the above mentioned 2025 SEK Green Bond issued in April 2020 with an additional nominal of SEK 1,400 million. The bond consist of fixed and floating tranches and pays a floating coupon of STIBOR +2.20% and a fixed coupon of 2.375%.

Stora Enso has 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.

During 2021, Stora Enso repaid multiple credit institution loans ahead of final maturity, the total repayments of loans and bond notes amounted to a nominal of EUR 911 million. This resulted in a EUR 7 million initial modification net loss being recognised in the Income Statement.

Interest-bearing liabilities - maturities, interest rates and currency breakdown

Stora Enso's borrowings maturities range from 2022 to the longest borrowing maturing in 2036. Borrowings have either fixed or floating interest rates ranging from 0.5% (0.5%) to 7.3% (7.3%). The average interest rate on borrowings for the full year amounted to 3.0% (3.2%) with a run-rate of 3.1% as per 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 2021 net interest-bearing liabilities decreased by EUR 611 (decreased by EUR 288) million to EUR 2,309 (EUR 2,921) million. Net interest-bearing liabilities are equal to total interest-bearing liabilities less total interest-bearing assets such as cash equivalents and deposits. Cash and cash equivalents net of overdrafts decreased by EUR 175 (increased by EUR 792) million to EUR 1,480 (EUR 1,655) million as at 31 December 2021. In 2021, the total cash outflow for leases was EUR 88 (EUR 85) million including interest component of EUR 17 (EUR 19) million.

The ratio of net debt to the last 12 months' operational EBITDA was 1.1 (2.3). The net debt/equity ratio was 0.22 (0.33) as per the year-end.

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Bond loans

Issue/ Maturity Dates	Description of Bond	Interest Rate %	Currency of Bond	Nominal Value Issued	Outstanding As at 31 December		Carrying Value As at 31 December	
					2021	2020	2021	2020
All Liabilities are Held by the Parent Company					Currency million		EUR million	
Fixed Rate								
2006–2036	Global 7.250% Notes 2036	7.25	USD	300	300	300	262	242
2016–2023	Euro Medium Term Note	2.125	EUR	300	300	300	300	299
2017–2027	Euro Medium Term Note	2.5	EUR	300	300	300	299	299
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	1,750	171	174
2020–2025	Euro Medium Term Note (Green Bond)	2.375	SEK	1,550	1,550	1,550	152	155
2020–2030	Euro Medium Term Note (Green Bond)	0.625	EUR	500	500	500	495	494
Total Fixed Rate Bond Loans							1,976	1,962
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	0	3,000	0	299
2019–2024	Euro Medium Term Note (Green Bond)	Stibor+1.45	SEK	1,250	1,250	1,250	122	124
2019–2026	Euro Medium Term Note (Green Bond)	Stibor+1.60	SEK	1,000	1,000	1,000	97	99
2020–2025	Euro Medium Term Note (Green Bond)	Stibor+2.20	SEK	1,550	1,550	1,550	152	155
Total Floating Rate Bond Loans							521	827
Total Bond Loans							2,497	2,789

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Note 27 Derivatives

Accounting principles

Derivative financial instruments and hedge accounting

Derivative financial instruments are initially recognised in the consolidated statement of financial position at fair value and subsequently measured at their fair value at each reporting date according to valuation methods described in this note. 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.

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. The method of recognising the resulting gains or losses on derivative instruments is dependent on the nature of the item being hedged.

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 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.

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 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 being recognised in the income statement. Potential sources of ineffectiveness for all the aforementioned hedges also include possible effects of credit risk dominating fair value changes arising from the hedging instrument and the hedged item designated under the hedging relationship.

Cash flow hedges

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 may also use risk component hedging to hedge highly probable forecast purchases of natural gas. These purchases create natural gas price exposure which translates as a natural gas price index component and pricing margin. Natural gas risk component can be hedged by using natural gas price linked swaps, which are expected to fully offset changes in the market value of the hedged risk components. Natural gas price index risk component is separately identifiable and reliably measurable due to the pricing formula being specified in the natural gas purchase agreement.

During 2021, the Group did not enter into new interest rate swap contracts. In 2020, the Group entered into new interest rate swap contracts with a total nominal value of SEK 1,250 million. The interest rate swaps have been designated as cash flow hedges of SEK denominated floating-rate green bond and related tap issue maturing in 2025.

Changes in the fair value of derivatives designated and qualifying as cash flow hedges, and which are effective, are recognised in a separate equity category of OCI cash flow hedges reserve, 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. The unrealised gains and losses related to cash flow hedges are expected to be recycled through the income statement within one to six years with the longest hedging contract maturing in 2027 (2027). However, the majority of the contracts are expected to mature in 2022.

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 Group may hedge foreign-currency risk of external or internal foreign-currency purchases where the underlying amount purchased in a foreign-currency impacts the value of inventory in a local currency. In such cases the gains and losses are initially booked as an adjustment to raw material inventory and recycled further to finished goods inventory with being ultimately recognised in the consolidated income statement at the time when the hedged items are sold to an external customer. In case of non-current assets, 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.

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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. As at the end of 2021, the Group did not have fair value hedges.

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.

Non-hedge accounted 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 foreign-currency risk of net of operative receivables and payables, the fair value changes are recognised in operating profit under other operating income and expense. 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 by using a discounted cash flow method with the exchange of notional also included in the valuation model.

Total foreign exchange gains and losses in the income statement excluding hedges

EUR million	Year ended 31 December	
	2021	2020
Other operating income	31	-19
Other operating expense	-14	9
Borrowings, cash equivalents and lease liabilities	37	-22
Total	54	-32

Hedge gains and losses in operating profit

EUR million	Year ended 31 December	
	2021	2020
Cash flow hedge accounted derivatives		
Currency hedges	9	-2
Commodity hedges	34	-23
Total	43	-24
As adjustments to sales	6	-1
As adjustments to materials and services	37	-23
Realised from OCI through income statement	43	-24
Currency hedges ineffectiveness	-1	0
Commodity hedges ineffectiveness	0	-1
Net losses from cash flow hedges	42	-25
Non-hedge accounted derivatives		
Net receivable hedges	-17	10
Net gains/losses on non-hedge accounted derivatives	-17	10
Net hedge losses in operating profit	26	-16

In 2021, 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 1 (EUR 1) million being booked in the Group's operating profit and the loss being presented in the table above as ineffectiveness from cash flow hedges.

Hedge gains and losses in financial items

EUR million	Year ended 31 December	
	2021	2020
Cash flow hedge accounted derivatives		
Interest rate hedges ineffectiveness	-2	2
Net gains/losses from cash flow hedges	-2	2
Non-hedge accounted derivatives		
Currency derivatives	-40	14
Net gains on non-hedge accounted derivatives	-40	14
Net gains/losses in financial items	-42	16

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Nominal and fair values of derivative instruments

As at 31 December

EUR million	Nominal values	2021			2020			
		Positive fair values	Negative fair values	Net fair values	Nominal values	Positive fair values	Negative fair values	Net fair values
Currency derivatives								
Forwards: Operational cash flow hedging	1,104	4	-19	-16	1,041	40	-2	37
Options: Operational cash flow hedging	980	2	-13	-10	645	14	-1	13
Total cash flow hedge accounted	2,084	6	-32	-26	1,686	53	-3	50
Forwards: Trade and loan receivables hedging	469	1	-6	-5	436	6	-1	4
Total non-hedge accounted	469	1	-6	-5	436	6	-1	4
Total currency derivatives	2,553	7	-38	-32	2,122	59	-5	54
Commodity derivatives								
Electricity swaps: Costs hedging	16	27	0	27	42	8	-4	3
Oil swaps: Costs hedging	10	3	0	2	10	1	-1	0
Total cash flow hedge accounted	27	29	0	29	52	8	-5	3
Total commodity derivatives	27	29	0	29	52	8	-5	3
Interest rate derivatives								
Interest rate swaps: Financial expenses hedging	482	1	-8	-7	694	0	-17	-17
Cross-currency swaps: Financial expenses hedging	0	0	0	0	200	0	-6	-6
Total cash flow hedge accounted	482	1	-8	-7	894	0	-23	-23
Cross-currency swaps: Financial expenses hedging	200	0	-25	-25	0	0	0	0
Total non-hedge accounted	200	0	-25	-25	0	0	0	0
Total interest rate derivatives	682	1	-32	-31	894	0	-23	-23
Total cash flow hedge accounted	2,593	36	-40	-4	2,631	62	-32	30
Total non-hedge accounted	669	1	-31	-30	436	6	-1	4
Total derivatives	3,261	37	-71	-34	3,068	67	-33	34

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.

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Changes in fair values of hedged items and hedging instruments 2021

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	65	-66	-1
Foreign exchange risk - Net investment hedges	21	-21	0
Commodity price risk - Commodity swaps	-60	60	0
Interest rate risk - Interest rate swaps	-11	11	0
Interest rate and foreign exchange risk - Cross-currency swaps ^{2,3}	15	-18	-3

¹ Ineffectiveness booked in Operating profit.

² Ineffectiveness booked in Net financial items.

³ Cross-currency swaps are hedge accounted until the end of November 2021.

Changes in fair values of hedged items and hedging instruments 2020

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)	-51	51	0
Foreign exchange risk - Net investment hedges	-23	23	0
Commodity price risk - Commodity swaps ¹	17	-18	-1
Interest rate risk - Interest rate swaps	6	-6	0
Interest rate and foreign exchange risk - Cross-currency swaps ²	-7	9	2

¹ Ineffectiveness booked in Operating profit.

² Ineffectiveness booked in Net financial items.

Breakdown of cash flow hedging reserve and net investment hedges in equity 2021

EUR million	At 1 Jan 2021	Change in fair value recognised in OCI/CTA	Reclassified from OCI to profit and loss	Tax impact	At 31 Dec 2021
Foreign exchange risk - Operational cash flow hedging	39	-66	-10	15	-21
Commodity price risk - Commodity swaps	3	60	-34	-6	23
Interest rate risk - Interest rate swaps	-13	11	0	-2	-4
Interest rate and foreign exchange risk - Cross-currency swaps	-9	33	-25	0	-1
Cost of hedging reserve	0	-2	0	0	-1
Total cash flow hedge reserve in OCI	20	37	-69	8	-4
Foreign exchange risk - Net investment hedges	30	-20	0	4	14
Total net investment hedges in CTA	30	-20	0	4	14
Total hedging reserves	51	17	-69	12	10

Breakdown of cash flow hedging reserve and net investment hedges in equity 2020

EUR million	At 1 Jan 2020	Change in fair value recognised in OCI/CTA	Reclassified from OCI to profit and loss	Tax impact	At 31 Dec 2020
Foreign exchange risk - Operational cash flow hedging	-2	50	2	-10	39
Commodity price risk - Commodity swaps	-2	-17	24	-2	3
Interest rate risk - Interest rate swaps	-8	-6	0	1	-13
Interest rate and foreign exchange risk - Cross-currency swaps	-11	9	-7	0	-9
Cost of hedging reserve	1	0	0	0	0
Total cash flow hedge reserve in OCI	-22	35	18	-11	20
Foreign exchange risk - Net investment hedges	12	23	0	-5	30
Total net investment hedges in CTA	12	23	0	-5	30
Total hedging reserves	-10	58	18	-15	51

Financial impact of netting for instruments subject to an enforceable master netting agreement 2021

EUR million	Not offset in the statement of financial position			
	Gross amount of recognised financial instruments	Related liabilities (-) or assets (+) subject to master netting agreements	Collateral received (-) or given (+)	Net exposure
Derivative assets	38	-16	0	22
Derivative liabilities	-71	16	0	-56

Financial impact of netting for instruments subject to an enforceable master netting agreement 2020

EUR million	Not offset in the statement of financial position			
	Gross amount of recognised financial instruments	Related liabilities (-) or assets (+) subject to master netting agreements	Collateral received (-) or given (+)	Net exposure
Derivative assets	67	-25	0	42
Derivative liabilities	-33	25	0	-8

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.

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Note 28 Cumulative translation adjustment and equity hedging

Accounting principles

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, joint operations and equity accounted investments. Exchange rate differences arising from the retranslation of net investments in foreign entities that are non-euro foreign subsidiaries, joint operations or equity accounted investments, and of financial instruments that are designated as and are hedges of such investments, are recognised directly in equity in the cumulative translation adjustment (CTA). Movements in CTA (including related hedges) are shown in the consolidated statement of comprehensive income.

The cumulative translation adjustments related to disposed and liquidated entities are combined with their gain or loss on disposal. The CTA is recycled in the consolidated income statement upon disposal and liquidation.

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 Group has also applied net investment loan accounting under IAS 21 for certain intragroup loans.

Cumulative translation adjustment - movement

EUR million	Year ended 31 December	
	2021	2020
At 1 January		
CTA on net investments	-292	-148
Net investment hedges and loans	34	18
Income tax related to hedges and loans	-10	-6
Net CTA in Equity	-267	-136
CTA movement OCI		
CTA movement	42	-143
CTA release through Income Statement	14	0
Net investment hedges and loans	14	16
Income tax related to hedges and loans	2	-4
CTA movement OCI total	72	-131
At 31 December		
CTA on net investments	-235	-292
Net investment hedges and loans	48	34
Income tax related to hedges and loans	-8	-10
Net CTA in Equity	-195	-267

In 2021 the release of cumulative translation adjustments to the income statement amounted to a loss of EUR 14 (EUR 0) million and was mainly related to the divestment of 20% ownership in Arauco Florestal Arapoti S.A.

Cumulative translation adjustment - financial position

EUR million	As at 31 December					
	Cumulative Translation Adjustments (CTA)		Net Investment Hedges and Loans		Net CTA in the Statement of Financial Position	
	2021	2020	2021	2020	2021	2020
Brazil	-281	-299			-281	-299
China	83	74	28	-6	111	67
Czech Republic	38	29	-9	-9	29	20
Poland	-52	-49	17	17	-35	-32
Russia	-81	-91			-81	-91
Sweden	-97	6	47	47	-50	52
Uruguay (USD)	154	43	-34	-14	119	29
USA	4	-1			4	-1
Others	-3	-4			-3	-4
CTA before Tax	-235	-292	48	34	-187	-258
Taxes	0	0	-8	-10	-8	-10
Net CTA in Equity	-235	-292	40	25	-195	-267

The main movements in CTA in 2021 were a gain of EUR 116 (loss of EUR 122) million related to the US dollar, a loss of EUR 103 (gain of EUR 134) million related to the Swedish crown and a gain of EUR 19 (loss of EUR 90) million related to Brazilian Real.

The net amount of hedging gain included in the CTA during the period amounted to EUR 16 (EUR 13) million. At December 2021 the total amount of net investment hedges and loans amounted to a gain of EUR 40 (EUR 25) million.

Hedging instruments and unrealised hedge losses

EUR million	As at 31 December					
	Nominal amount (Currency)		Nominal amount (EUR)		Unrealised Losses (EUR)	
	2021	2020	2021	2020	2021	2020
Borrowings						
USD area	300	300	265	244	-28	-11
Total Hedging			265	244	-28	-11

The Group is currently only hedging its equity exposure to the US dollar arising from its joint operation located in Uruguay with USD functional currency.

Net Investment loans

At 31 December 2021 Net investment loans had a positive impact of EUR 27 (negative of EUR 5) million on CTA in Equity.

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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

EUR million	As at 31 December	
	2021	2020
On own behalf		
Other commitments	15	14
On behalf of equity accounted investments		
Guarantees	0	2
On behalf of others		
Guarantees	6	6
Other commitments	36	36
Total	57	58
Guarantees	6	8
Other commitments	51	50
Total	57	58

In 2021, the Group’s commitments amounted to EUR 57 (EUR 58) million. In addition, the parent company Stora Enso Oyj has guaranteed the liabilities of many of its subsidiaries and joint operations up to 1,126 EUR (EUR 1,219) million as of 31 December 2021.

Capital commitments

EUR million	As at 31 December	
	2021	2020
Total	220	207

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. The largest commitments in relation to capital expenditure relate to the board production expansion at the Skoghall site in Sweden and the CLT production expansion at the Ždírec sawmill in Czech Republic.

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. A provision has been recognised for obligations for which the related amount can be estimated reliably and for which the related future cost is considered to be at least probable.

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, local officials may pursue administrative measures to reclaim some of the formerly granted investment subsidies or to impose penalties on Stora Enso, and the outcome of such a process could result in a negative financial impact on Stora Enso.

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 South 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, at the time of the decision, BRL 20 (EUR 3) 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.

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Note 30 Group companies

Subsidiaries	Country	Group ownership, %	
		2021	2020
A/O Ladsen	Russia	100.00	100.00
AB Stabergsvikens tomter	Sweden	0.00	100.00
Anjala Fiber & Energy Oy	Finland	100.00	100.00
AO Stora Enso	Russia	100.00	100.00
AS Stora Enso Latvija	Latvia	100.00	100.00
Bergnät 1 AB	Sweden	100.00	100.00
Bergnät 2 AB	Sweden	0.00	100.00
Box Inc AB	Sweden	100.00	100.00
Cellutech AB	Sweden	100.00	100.00
Centrum Dystrybucji i Obróbkí Drewna Sp. z.o.o.	Poland	100.00	100.00
Changzhou Stora Enso Packaging Technology Co. Ltd.	China	100.00	100.00
DanFiber A/S	Denmark	51.00	51.00
Dongguan Stora Enso Inpac Packaging Co. Ltd.	China	100.00	100.00
Efora Oy	Finland	100.00	100.00
Enso Alueverkko Oy	Finland	100.00	100.00
Euro - Timber, spol. s.r.o.	Slovak Republic	100.00	100.00
FPB Holding GmbH & Co. KG	Germany	99.98	99.98
Guangxi Stora Enso Forestry Co. Ltd.	China	89.50	89.50
Herman Andersson Oy	Finland	100.00	100.00
HESPOL Sp. z.o.o.	Poland	100.00	100.00
Hälsingekogen vind AB	Sweden	0.00	100.00
Jiashan Stora Enso Inpac Packaging Co. Ltd.	China	100.00	100.00
Lumipaper Ltd	UK	100.00	100.00
Lumipaper NV	Belgium	100.00	100.00
Mena Wood Oy Ltd	Finland	100.00	100.00
OA Olonetsles	Russia	99.48	99.48
OOO Setles	Russia	100.00	100.00
OOO Setnovo	Russia	100.00	100.00
OOO Stora Enso Forest West	Russia	100.00	100.00
OOO Stora Enso Packaging BB	Russia	100.00	100.00
OOO Stora Transport	Russia	100.00	100.00
OOO Terminal	Russia	100.00	100.00
Primaskog 1 AB	Sweden	0.00	100.00
Primaskog 2 AB	Sweden	0.00	100.00
Primaskog 3 AB	Sweden	0.00	100.00
Primaskog 4 AB	Sweden	0.00	100.00
Primaskog 5 AB	Sweden	0.00	100.00
Primaskog 6 AB	Sweden	0.00	100.00
Primaskog 7 AB	Sweden	0.00	100.00
Primaskog 8 AB	Sweden	0.00	100.00
Primaskog 9 AB	Sweden	100.00	100.00
Selfly Store Oy	Finland	100.00	0.00
Skogsutveckling Syd AB	Sweden	66.67	66.67
Stora Enso China Packaging (HK) Co., Limited	Hong Kong	100.00	100.00
Stora Enso (Guangxi) Forestry Company Ltd.	China	80.08	80.08
Stora Enso (Guangxi) Packaging Company Ltd.	China	80.08	80.08
Stora Enso (HK) Ltd	Hong Kong	100.00	100.00
Stora Enso (Southern Africa) (Pty) Ltd	South Africa	100.00	100.00

Subsidiaries	Country	Group ownership, %	
		2021	2020
Stora Enso AB	Sweden	100.00	100.00
Stora Enso Amsterdam B.V.	Netherlands	100.00	100.00
Stora Enso Arapoti Holding Forestal S.A.	Brazil	100.00	100.00
Stora Enso Australia Pty Ltd	Australia	100.00	100.00
Stora Enso Austria GmbH	Austria	100.00	100.00
Stora Enso Belgium NV	Belgium	100.00	100.00
Stora Enso Bergskog 1 AB	Sweden	0.00	100.00
Stora Enso Bergskog 2 AB	Sweden	100.00	100.00
Stora Enso Bioenergi AB	Sweden	100.00	100.00
Stora Enso Bois SAS	France	100.00	100.00
Stora Enso Brasil Ltda	Brazil	100.00	100.00
Stora Enso China Co., Ltd	China	100.00	100.00
Stora Enso China Holdings AB	Sweden	100.00	100.00
Stora Enso Corbehem SAS	France	100.00	100.00
Stora Enso Danmark A/S	Denmark	100.00	100.00
Stora Enso Eesti AS	Estonia	100.00	100.00
Stora Enso Espana S.A.U	Spain	100.00	100.00
Stora Enso Fors AB	Sweden	100.00	100.00
Stora Enso France SAS	France	100.00	100.00
Stora Enso Germany GmbH	Germany	100.00	100.00
Stora Enso Holding France SAS	France	100.00	100.00
Stora Enso Holdings UK Ltd	UK	100.00	100.00
Stora Enso Ingerois Oy	Finland	100.00	100.00
Stora Enso Inpac Corrugated Packaging (Hebei) Company Limited	China	100.00	100.00
Stora Enso Inpac Hebei Protective Packaging Co., Ltd.	China	100.00	100.00
Stora Enso Inpac Packaging Co. Ltd	China	100.00	100.00
Stora Enso International Oy	Finland	100.00	100.00
Stora Enso Italia Srl	Italy	100.00	100.00
Stora Enso Japan K.K.	Japan	100.00	100.00
Stora Enso Kabel GmbH	Germany	99.98	99.98
Stora Enso Kvarnsveden Industriutveckling AB	Sweden	100.00	0.00
Stora Enso Langerbrugge NV	Belgium	100.00	100.00
Stora Enso Lao Co. Ltd	Laos	0.00	100.00
Stora Enso Laos Plantation AB	Sweden	0.00	100.00
Stora Enso LLC	Ukraine	100.00	100.00
Stora Enso Maxau GmbH	Germany	100.00	100.00
Stora Enso Mexico S.A.	Mexico	100.00	100.00
Stora Enso Middle East DMCC	United Arab Emirates	100.00	100.00
Stora Enso Narew Sp.z.o.o.	Poland	100.00	100.00
Stora Enso North American Sales, Inc.	USA	100.00	100.00
Stora Enso Oulu Holding Oy	Finland	0.00	100.00
Stora Enso Oulu Oy	Finland	100.00	100.00
Stora Enso Packaging AB	Sweden	100.00	100.00
Stora Enso Packaging AS	Estonia	100.00	100.00
Stora Enso Packaging Oy	Finland	100.00	100.00
Stora Enso Packaging SIA	Latvia	100.00	100.00
Stora Enso Packaging UAB	Lithuania	100.00	100.00

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Subsidiaries	Country	Group ownership, %	
		2021	2020
Stora Enso Paper AB	Sweden	100.00	100.00
Stora Enso Paper France SAS	France	100.00	100.00
Stora Enso Paper GmbH	Germany	100.00	100.00
Stora Enso Paper Oy	Finland	100.00	100.00
Stora Enso Paper UK Ltd	UK	100.00	100.00
Stora Enso Pension Trust Ltd.	UK	100.00	100.00
Stora Enso Plantor AB	Sweden	100.00	100.00
Stora Enso Poland S.A.	Poland	100.00	100.00
Stora Enso Polska Sp.z.o.o.	Poland	100.00	100.00
Stora Enso Portugal Lda	Portugal	100.00	100.00
Stora Enso Praha s.r.o.	Czech Republic	100.00	100.00
Stora Enso Publication Papers Oy Ltd	Finland	100.00	100.00
Stora Enso Pulp AB	Sweden	100.00	100.00
Stora Enso Pulp and Paper Asia AB	Sweden	94.21	94.21
Stora Enso Sachsen GmbH	Germany	0.00	100.00
Stora Enso Skog AB	Sweden	100.00	100.00
Stora Enso Skog AS	Norway	100.00	100.00
Stora Enso Skog och Mark AB	Sweden	100.00	100.00
Stora Enso South East Asia Pte Ltd	Singapore	100.00	100.00
Stora Enso Timber AB	Sweden	100.00	100.00
Stora Enso Timber DIY Products B.V.	Netherlands	100.00	100.00
Stora Enso Treasury Stockholm AB	Sweden	100.00	100.00
Stora Enso UK Limited	UK	100.00	100.00
Stora Enso US Inc.	USA	100.00	100.00
Stora Enso Veitsiluoto Oy	Finland	100.00	100.00
Stora Enso Verwaltungs GmbH	Germany	100.00	100.00
Stora Enso Wood Products d.o.o. Koper	Slovenia	100.00	100.00
Stora Enso Wood Products GmbH	Austria	100.00	100.00
Stora Enso Wood Products Japan K.K.	Japan	100.00	100.00
Stora Enso Wood Products Oy Ltd	Finland	0.00	100.00
Stora Enso Wood Products Planá s.r.o.	Czech Republic	100.00	100.00
Stora Enso Wood Products Sp.z.o.o.	Poland	100.00	100.00
Stora Enso Wood Products Zdirec s.r.o.	Czech Republic	100.00	100.00
Stora Enso WP Bad St. Leonhard GmbH	Austria	100.00	100.00
Stora Enso WP HV s.r.o.	Czech Republic	100.00	100.00
Stora Kopparbergs Bergslags AB	Sweden	100.00	100.00
Sydved AB	Sweden	66.67	66.67
UAB Stora Enso Lietuva	Lithuania	100.00	100.00
Virdia B2X, LLC	USA	100.00	100.00
Virdia LLC	USA	100.00	100.00
Virdia Ltd	Israel	100.00	100.00
VLAR Papier NV	Belgium	100.00	100.00

Associated companies	Country	Group ownership, %	
		2021	2020
Arauco Florestal Arapoti S.A.	Brazil	0.00	20.00
Bergvik Skog AB	Sweden	0.00	49.79
Encore Ympäristöpalvelut Oy	Finland	30.41	30.41
Honkalahden Teollisuuslaituri Oy	Finland	50.00	50.00
Kemi Shipping Oy	Finland	0.00	50.00
Kemira Cell Sp.z.o.o.	Poland	45.00	45.00
Metsäteho Oy	Finland	23.95	23.95
Oy Keskuslaboratorio - Centrallaboratorium Ab	Finland	32.24	32.24
Perkaus Oy	Finland	33.33	33.33
Pressretur AB	Sweden	50.00	33.33
Puhoksen Satama Oy	Finland	0.00	50.00
SELF Logistika SIA	Latvia	50.00	50.00
Steveco Oy	Finland	34.39	34.39
Suomen Keräyspaperi Tuottajayhteisö Oy	Finland	40.09	40.09
SweTree Technologies AB	Sweden	23.83	23.83
Tornator Oyj	Finland	41.00	41.00
Trätåg AB	Sweden	50.00	50.00
TreeToTextile AB	Sweden	27.96	25.75
ZMP GMBH	Austria	30.00	30.00
Österbergs Förpackningsmaskiner AB	Sweden	50.00	50.00

Other companies	Country	Group ownership, %	
		2021	2020
AMEXCI AB	Sweden	9.10	9.10
Arevo AB	Sweden	7.89	7.89
Clic Innovation Oy	Finland	9.87	9.87
Combient AB	Sweden	5.40	5.40
East Office of Finnish Industries Oy	Finland	4.00	4.00
Packages Limited	Pakistan	6.40	6.40
Pohjolan Voima Oy	Finland	15.61	15.61
Radioskog AB	Sweden	10.00	10.00
RK Returkartong AB	Sweden	8.40	8.40
SSG Standard Solutions Group AB	Sweden	14.29	14.29
Sölvesborgs Stuveri & Hamn AB	Sweden	7.36	7.36
Union Developement Récup. Pap.	France	10.70	10.70

Joint operations	Country	Group ownership, %	
		2021	2020
Celulosa y Energia Punta Pereira S.A.	Uruguay	50.00	50.00
El Esparragal Asociación Agraria de Responsabilidad Limitada	Uruguay	50.00	50.00
Eufores S.A.	Uruguay	50.00	50.00
Forestal Cono Sur S.A.	Uruguay	50.00	50.00
Ongar S.A.	Uruguay	50.00	50.00
Stora Enso Uruguay S/A	Uruguay	50.00	50.00
Terminal Logística e Industrial M'Bopocúa S.A.	Uruguay	50.00	50.00
Veracel Celulose SA	Brazil	50.00	50.00
Zona Franca Punta Pereira S.A.	Uruguay	50.00	50.00

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Note 31 Related party transactions

Balances and transactions between Stora Enso and its subsidiaries and joint operations have been eliminated on consolidation and are not disclosed in this note. For the other entities which are classified as the Group's related parties and disclosed in this note, their subsidiary companies are also considered as related parties.

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 2021. 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 2021. In July 2021, the Group received a notification that Wallenberg Investments AB has acquired all shares of FAM AB. Due to the indirect holding of 10.2% of Stora Enso shares and 27.3% of all votes on 31 December 2021, Wallenberg Investments AB is also classified as a related party of the Group. FAM AB remains the direct owner of the shares in Stora Enso Oyj.

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.

Group companies, including subsidiary companies and joint operations, are listed in [Note 30](#) Group companies.

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 41.0% interest in Tornator with the remaining 59.0% 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 2021 purchases of 2 (2) million cubic metres came to EUR 82 (73) million.

The Group procures wood at market prices from Kopparfors Fastigheter AB, a fully owned subsidiary of Kopparfors Skogar AB, which is completely owned by FAM AB. In 2021 the purchases from the related party amounted to EUR 29 (21) million and the sales of services by Stora Enso to the said related party amounted to EUR 0 (0) million. At the end of 2021 the Group had EUR 3 (3) million of open payables to and EUR 0 (0) million of open receivables from the related party.

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, Finlines and Ahlström Capital. The stevedoring services are provided by Steveco at market prices and in 2021 amounted to EUR 26 (23) million.

Note 32 Earnings 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	
	2021	2020
Net profit for the period attributable to the owners of the parent, EUR million	1,266	626
Total comprehensive income attributable to the owners of the parent, EUR million	2,110	1,625
Weighted average number of A and R shares	788,619,987	788,619,987
Weighted average number of share awards	505,705	561,769
Weighted diluted number of shares	789,125,692	789,181,756
Basic Earnings per Share, EUR	1.61	0.79
Diluted Earnings per Share, EUR	1.60	0.79
Total Comprehensive Income Attributable to the Owners of the Parent per Share, EUR	2.67	2.06

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Parent company income statement

EUR million	Note	Year ended 31 December	
		2021	2020
Sales	2	2,822	2,190
Changes in inventories of finished goods and work in progress + / -		16	1
Production for own use		1	1
Other operating income	3	308	187
Materials and services	4	-1,864	-1,587
Personnel expenses	5	-259	-217
Depreciation and impairment	6	-129	-127
Other operating expenses	7	-490	-442
		2,417	2,185
Operating profit		405	5
Financial income and expenses	9	351	356
Profit before Appropriations and Taxes		756	360
Appropriations	10	-119	146
Income tax expense	11	0	-1
Profit for the period		637	506

Parent company statement of financial position

EUR million	Note	As at 31 December	
		2021	2020
Assets			
Non-current assets			
Intangible assets	13	49	60
Tangible assets	13	987	876
Investments	14	8,234	8,275
Non-current assets total		9,270	9,211
Current assets			
Inventories	15	387	310
Short-term receivables	16	1,314	668
Financial securities	17	607	1,275
Cash in hand and at bank		744	678
Total current assets		3,051	2,930
Total assets		12,322	12,141
Equity and liabilities			
Equity	18		
Share capital		1,342	1,342
Share premium		3,639	3,639
Fair value reserve		-6	-6
Invested non-restricted equity fund		633	633
Retained earnings		719	449
Profit for the period		637	506
Total equity		6,964	6,563
Accumulated appropriations	19	234	167
Obligatory provisions	20	12	23
Liabilities			
Non-current liabilities	22	2,513	2,915
Current liabilities	23	2,599	2,473
Total liabilities		5,113	5,387
Total equity and liabilities		12,322	12,141



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Parent company cash flow statement

EUR million	Year ended 31 December	
	2021	2020
Cash provided by operating activities		
Profit for the period	637	506
Adjustments and reversal of non-cash items:		
Direct taxes	0	1
Appropriations	119	-146
Depreciation according to plan and impairment	129	127
Unrealised foreign exchange gains and losses	10	-38
Other non-cash items	-84	-2
Financial income and expenses	-351	-356
Change in working capital:		
Increase(-)/decrease(+)		
in current non-interest-bearing receivables	-108	18
Increase(-)/decrease(+) in inventories	-42	-14
Increase(+)/decrease(-)		
in current non-interest-bearing liabilities	159	14
Cash flow from operating activities before financial items and taxes	471	110
Interest received from operating activities	41	41
Interest paid from operating activities	-74	-66
Dividends received from operating activities	502	370
Other financial items, net	-46	13
Direct taxes paid	-2	-2
Cash provided by operating activities	892	466
Net cash provided by investing activities		
Investments in tangible and intangible assets	-140	-102
Capital gains from sale of tangible and intangible assets	3	1
Investments in other financial assets	-13	0
Investments in subsidiary shares and other capital contributions	-138	-262
Proceeds from disposal of subsidiary shares and other repayment of capital	-98	16
Proceeds from disposal of other investments	0	1
Payments of non-current loan receivables	-706	-500
Proceeds from non-current loan receivables	120	803
Net cash provided by investing activities	-972	-43
Cash flow from financing activities		
Proceeds from (issue of) long-term liabilities	1,040	1,040
Proceeds from (payment of) long-term liabilities	-1,431	-340
Proceeds from (issue of) short-term liabilities	722	892
Proceeds from (payment of) short-term liabilities	-570	-640
Dividends paid	-250	-223
Group contributions received	-14	1
Cash flow from financing activities	-503	729
Net change in cash and cash equivalents	-584	1,153
Translation differences	-18	19
Cash and cash equivalents at start of year	1,953	782
Cash and cash equivalents at year end	1,350	1,953
Cash and cash equivalents at year end includes:		
Financial securities	607	1,275
Cash in hand and at bank	744	678
Cash and cash equivalents total	1,350	1,953

Notes to the parent company financial statements

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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 fiber 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 25](#).

Equity incentive schemes

The employees covered by the scope of Stora Enso Oyj's share-based incentive schemes are awarded with shares in the company. The awarded shares and the costs of the schemes are recognised in the income statement once the shares have been earned. The principles of the Group's share opportunity programmes are presented in more detail in [Note 21](#) (Employee variable compensation and equity incentive schemes) to the consolidated financial statements.

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 24](#) 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 21](#).

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.

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Emission rights

During 2021, 0.5 million tonnes of free emission allowances in accordance with the EU Emissions Trading Directive were allocated to the company. 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 estimated 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 79.96 per tonne.

Comparability of the information for the financial period

Stora Enso Wood Products Oy merged with the parent company Stora Enso Oyj as of 31 October 2021. The merged company's share of the net sales during the financial period was EUR 51.2 million. The merger included the transfer of tangible assets totalling EUR 60.8 million and 391 employees. The merger profit of EUR 69 million is presented in [Note 3](#) Other operating income. In addition, Stora Enso Oulu Holding Oy merged with the parent company Stora Enso Oyj on 1 October 2021. The merger did not have an impact on the receiving company's result.

The derivative accounts intended to hedge trade receivables and the accounts for the exchange rate differences of sales related to these hedges were transferred from net sales to other operating income during the 2021 financial period. The comparative figures in [Note 2](#) have been changed in this respect.

The accounts for the exchange rate differences of purchases were transferred from purchases to other operating expenses during the financial period. The comparative figures in [Note 4](#) and [Note 7](#) have been changed in this respect.

Note 2 Net sales by division and market area

EUR million	Year ended 31 December	
	2021	2020
By division		
Packaging Materials	1,567	1,319
Packaging Solutions	1	4
Biomaterials	329	140
Forest	759	667
Wood Products	38	0
Other	128	60
Total	2,822	2,190
Distribution by region		
Finland	1,330	978
Other Europe	995	814
North and South America	158	119
Asia and Oceania	227	209
Africa	32	25
Others	80	43
Total	2,822	2,190

Note 3 Other operating income

EUR million	Year ended 31 December	
	2021	2020
Rent and equivalents	3	4
Gains on sale of fixed assets	1	1
Production and maintenance services	4	2
Subsidies, grants and equivalents	1	1
Administration services	177	145
Proceeds from sales of emission rights	21	16
Other operating income	32	18
Merger profit	69	0
Total	308	187

Note 4 Materials and services

EUR million	Year ended 31 December	
	2021	2020
Materials and supplies		
Purchases during the period	1,366	1,113
Change in inventories +/-	-30	8
External services	527	466
Total Materials and Services	1,864	1,587

Note 5 Personnel expenses and average number of employees

EUR million	Year ended 31 December	
	2021	2020
Salaries and fees	211	184
Statutory employer costs		
Pensions	38	27
Other personnel costs	9	6
Total	259	217

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	2021	2020
Number of employees during the financial period	3,057	2,827

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Note 6 Depreciation and impairment

EUR million	Year ended 31 December	
	2021	2020
Depreciation according to plan	124	118
Impairment of fixed assets	5	9
Total	129	127

Depreciation and amortisation on each item in the statement of financial position is included under intangible and tangible assets.

Note 7 Other operating expenses

EUR million	Year ended 31 December	
	2021	2020
Product freight	168	135
Sales commissions	39	34
Rental costs	15	15
Administration and office services	213	202
Insurance premiums	9	8
Other personnel expenses	10	10
Public and other relations	3	3
Emission rights expenses	20	16
Other operating expenses	13	13
Merger loss	0	5
Total	490	442

Note 8 Auditors' fees

EUR million	Year ended 31 December	
	2021	2020
Audit fees	1	1
Total	1	1

Note 9 Financial income and expenses

EUR million	Year ended 31 December	
	2021	2020
Dividend income		
From Group companies	486	358
From equity accounted investments	16	12
Total	503	370
Interest income from non-current investments		
From Group companies	41	37
From equity accounted investments	1	0
Total	42	37
Other interest and financial income		
From Group companies	-1	6
From others	10	12
Total	9	18
Total financial income	553	426
Interest and other financial expenses		
To Group companies	-1	0
Other financial expenses	-103	-71
Total	-104	-71
Impairment on investments		
Impairment on investments in non-current assets	-98	1
Total financial expenses	-202	-70
Total financial income and expenses	351	356
The item "Financial Income and Expenses" includes exchange rate gains/losses (net)	-27	24

Note 10 Appropriations

EUR million	Year ended 31 December	
	2021	2020
Difference between depreciation according to plan and depreciation recognised in taxation	-46	87
Group contributions received	0	59
Group contributions paid	-73	0
Total appropriations	-119	146

Note 11 Income tax expense

EUR million	Year ended 31 December	
	2021	2020
Income taxes from primary operations for the period	0	-1
Total income tax	0	-1

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Note 12 Environmental expenses

EUR million	Year ended 31 December	
	2021	2020
Materials and services	36	33
Personnel expenses	3	2
Depreciation and impairment	12	11
Total	50	46
Air quality protection	9	11
Wastewater treatment	19	20
Waste management	12	9
Soil and groundwater protection	1	0
Other environmental protection measures	9	4
Total	50	46

Note 13 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	174	12	7	193
Increases	5	0	4	9
Increases merger	3	6	0	9
Decreases	-17	4	0	-13
Reclassification	7	0	-7	1
Acquisition cost 31 Dec	172	22	5	198
Accumulated depreciation and impairment 1 Jan	-125	-8	0	-133
Accumulated depreciation merger	-2	-6	0	-8
Accumulated depreciation on decreases and reclassifications	17	-4	0	13
Depreciation for the period	-15	-2	0	-17
Impairments	-5	0	0	-5
Accumulated depreciation 31 Dec	-130	-20	0	-150
Book value on 31 December 2021	42	2	5	49
Book value on 31 December 2020	49	3	7	60

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	530	2,476	163	63	3,251
Increases	0	1	32	0	128	161
Increases merger	0	57	225	10	2	295
Decreases	0	-4	-44	-4	0	-52
Reclassification	0	2	37	4	-45	-1
Acquisition cost 31 Dec	18	586	2,726	174	149	3,654
Accumulated depreciation and impairment 1 Jan	0	-372	-1,856	-150	0	-2,377
Accumulated depreciation merger	0	-47	-176	-10	0	-234
Accumulated depreciation on decreases and reclassifications	0	4	42	3	0	50
Depreciation for the period	0	-13	-91	-3	0	-107
Impairment for the period	0	0	0	0	0	0
Accumulated depreciation 31 Dec	0	-428	-2,082	-159	0	-2,668
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 2021	20	158	644	15	149	987
Book value on 31 December 2020	20	159	620	13	63	876
Production plant and equipment						
Book value on 31 December 2021			624			
Book value on 31 December 2020			601			

Tangible assets includes capitalized interest costs EUR 2 million (EUR 2 million in 2020).

Advance payments and acquisitions in progress

EUR million	Intangible assets	Buildings and structures	Plant and equipment	Other tangible assets	Total
Acquisition cost 1 Jan	7	0	63	0	71
Increases	4	1	127	0	132
Increases merger	0	0	2	0	3
Reclassification	-7	0	-44	0	-51
Acquisition cost 31 Dec	5	1	148	0	154

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Tangible assets

Capitalised environmental expenditure

EUR million	Land and water areas	Buildings and structures	Plant and equipment	Other tangible assets	Advance payments and acquisitions in progress	2021	
						Total	
Acquisition cost 1 Jan	4	26	51	5	3		89
Increases	0	0	7	0	8		16
Increases merger	0	0	0	0	0		1
Depreciations for the period	0	-3	-7	-1	0		-11
Book value on 31 December 2021	4	24	51	4	11		95
Air quality protection	1	9	28	0	5		43
Wastewater treatment	0	2	21	1	4		27
Waste management	3	0	1	2	1		7
Soil and groundwater protection	0	13	2	0	2		17
Noise and vibration prevention	0	0	0	1	0		1
	4	24	51	4	11		95

EUR million	Land and water areas	Buildings and structures	Plant and equipment	Other tangible assets	Advance payments and acquisitions in progress	2020	
						Total	
Acquisition cost 1 Jan	4	21	57	6	0		87
Increases	0	7	2	0	3		13
Depreciations for the period	0	-2	-8	-1	0		-11
Book value on 31 December 2020	4	26	51	5	3		89
Air quality protection	1	10	36	0	3		49
Wastewater treatment	3	2	13	1	1		20
Waste management	0	1	1	2	0		4
Soil and groundwater protection	0	14	0	1	0		15
Noise and vibration prevention	0	0	0	1	0		1
	4	26	51	5	3		89

In 2021 and 2020, no environmentally based fines, charges or compensation were paid, and no subsidies or grants were received for environmental protection.

Note 14 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	6,473	1,520	37	2	180	103		8,314
Increases	765	945	0	0	13	75		1,798
Decreases	-724	-887	0	0	0	-130		-1,740
Acquisition cost 31 Dec	6,514	1,578	37	2	193	48		8,372
Impairments 1 Jan	-38	0	0	0	-1	0		-39
Increases	-98	0	0	0	0	0		-98
Impairments 31 Dec	-136	0	0	0	-1	0		-138
Book value on 31 December 2021	6,378	1,578	37	2	191	48		8,234
Book value on 31 December 2020	6,435	1,520	37	2	178	103		8,275

Note 15 Inventories

EUR million	As at 31 December	
	2021	2020
Materials and supplies	183	145
Work in progress	14	6
Finished goods	158	123
Prepayments	31	35
Total	386	310

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Note 16 Short-term receivables

EUR million	As at 31 December	
	2021	2020
Short-term loan receivables		
Receivables from Group companies		
Loan receivables	764	240
Commodity derivative receivables	0	4
Interest receivables	42	20
Total	806	263
Receivables from others		
Loan receivables	49	0
Commodity derivative receivables	23	6
Other receivables	5	52
Interest receivables	4	6
Total	82	64
Total current interest-bearing receivables	887	327
Current non-interest-bearing receivables		
Receivables from Group companies		
Trade receivables	112	100
Other receivables	60	60
Commodity derivative receivables	0	2
Total	172	162
Receivables from others		
Trade receivables	200	119
Deferred tax assets	2	3
Other receivables	23	24
Accrued income	29	32
Total	254	178
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 34.3 million (EUR 32.4 million in 2020) 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.		
EUR million	As at 31 December	
	2021	2020
Total current non-interest-bearing receivables	427	341
Total current receivables	1,314	668
Significant accruals		
Tax-equivalent receivables	3	14
Advances paid	7	7
Other accruals	19	11
Total	29	33

Note 17 Financial securities

EUR million	As at 31 December	
	2021	2020
From Group companies	72	442
From others	535	833
Total	607	1,275

Note 18 Shareholders' equity

EUR million	As at 31 December	
	2021	2020
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	-6	-10
Increase (-) / Decrease (+)	0	4
Fair value reserve 31 Dec	-6	-6
Total restricted equity	4,975	4,975
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	955	686
Dividend distribution	-237	-237
Retained earnings 31 Dec	719	449
Profit for the period	637	506
Total non-restricted equity	1,989	1,588
Total shareholders' equity	6,964	6,563
Calculation of distributable equity 31 Dec		
Fair value reserve 31 Dec	-6	-6
Invested unrestricted equity reserve 31 Dec	633	633
Retained earnings 31 Dec	719	449
Profit for the period	637	506
Total	1,983	1,582

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Note 19 Accumulated appropriations

EUR million	As at 31 December	
	2021	2020
Depreciation difference		
Intellectual property rights	-3	2
Goodwill	-1	0
Other non-current expenditure	0	-1
Buildings and structures	33	26
Plant and equipment	205	141
Total	234	167

Note 20 Obligatory provisions

EUR million	As at 31 December	
	2021	2020
Restructuring provisions	3	3
Environmental provisions	7	14
Pension provisions	1	0
Other provisions	0	4
Total	11	22

Note 21 Deferred tax liabilities and receivables

EUR million	As at 31 December	
	2021	2020
Deferred tax liability due to depreciation difference	-30	-18
Deferred tax receivable due to derivatives	2	3
Deferred tax receivable due to loss	0	32
Deferred tax receivable due to provisions	3	4
Deferred tax receivables and liabilities due to other temporary differences	-1	-9
Total deferred tax receivable	-27	12

Deferred tax liabilities and receivables excluding derivatives have not been recognised on the balance sheet.

Note 22 Non-current liabilities

EUR million	As at 31 December	
	2021	2020
Non-current liabilities		
Bonds	2,502	2,497
Loans from credit institutions	7	416
Other non-current liabilities to group companies	4	2
Total	2,513	2,915
Liabilities with maturities later than five years		
Bonds	1,383	1,462
Other non-current liabilities	4	0
Total	1,387	1,462

Specifications of Bond loans are presented in [Note 26](#) Interest-bearing liabilities in consolidated financial statements.

Note 23 Current liabilities

EUR million	As at 31 December	
	2021	2020
Current interest-bearing liabilities		
Liabilities to Group companies		
Other loans	1,677	1,491
Commodity derivative liabilities	23	6
Total	1,700	1,497
Liabilities to others		
Other loans	161	180
Commodity derivative liabilities	0	4
Interest due	27	28
Bonds	0	299
Loans from credit institutions	0	3
Total	187	514
Total current interest-bearing liabilities	1,888	2,011
Current non-interest-bearing liabilities		
Liabilities to Group companies		
Trade payables	83	71
Other loans	73	0
Commodity derivative liabilities	10	1
Accrued liabilities and deferred income	1	1
Total	166	73
Liabilities to equity accounted investments		
Trade payables	54	40
Total	54	40
Liabilities to others		
Advances received	5	3
Trade payables	375	244
Other loans	17	30
Accrued liabilities and deferred income	95	72
Total	491	349
Total current non-interest-bearing liabilities	712	462
Total current liabilities	2,599	2,473
Substantial accrued liabilities and deferred income		
Payroll payments accrued	58	41
Annual discounts	21	17
Other accrued liabilities and deferred income	17	14
Total	96	73

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Note 24 Commitments and contingencies

EUR million	As at 31 December	
	2021	2020
For Group debt		
Guarantees	1,044	1,096
For joint venture debt		
Guarantees	82	123
On behalf of Associated companies		
Guarantees	0	2
On behalf of others		
Other commitments	36	36
Other commitments, own		
Leasing commitments, in next 12 months	6	8
Leasing commitments, after next 12 months	10	7
Lease commitments	5	6
Other commitments	13	12
Total	1,196	1,289
Guarantees	1,126	1,221
Leasing commitments	16	15
Lease commitments	5	6
Other commitments	48	47
Total	1,196	1,289

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 and the occurrence of which is considered likely.

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 25 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 2021			
	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	2,007	20	-22	-2
Currency options	1,811	13	-15	-1
Commodity contracts	33	27	-27	0
Interest rate swaps	467	1	-7	-6
Non-hedge accounted derivatives				
Currency forwards	702	2	-2	0
Total	5,020	63	-72	-9
of which against subsidiaries	2,091	29	-33	-4
of which against external parties	2,930	34	-40	-5

EUR million	As at 31 December 2020			
	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	1,861	40	-34	5
Currency options	1,200	15	-12	2
Commodity contracts	84	12	-12	0
Interest rate swaps	673	0	-17	-17
Non-hedge accounted derivatives				
Currency forwards	570	6	-3	4
Total	4,387	72	-78	-5
of which against subsidiaries	1,638	7	-53	-46
of which against external parties	2,749	65	-24	40

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Fair value reserve

The net amount of the parent company's unrealised cash flow hedge losses in the fair value reserve was EUR 6.4 million, which was related to currency and interest rate derivatives. Currency and interest rate derivatives also include a loss of EUR 0.1 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 2022. The ineffective portions of hedges are recognised as adjustments to financial items, revenue or materials and services according to the hedged item. During 2021, there were no material ineffectiveness related to hedges recognised in the income statement. 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

EUR million	Year ended 31 December	
	2021	2020
Cash flow hedge accounted derivatives		
Currency hedges	-2	-1
Commodity hedges	3	-1
Total	1	-3
As adjustments to sales	-2	-1
As adjustments to materials and services	3	-1
Items realised from the fair value reserve that are recognised in the income statement	1	-3
Net losses from cash flow hedges	1	-3
Non-hedge accounted derivatives		
Currency derivatives	-4	3
Net gains on non-hedge accounted derivatives	-4	3
Net hedge gains/losses in operating profit	-3	1

Hedge gains and losses in financial items

EUR million	Year ended 31 December	
	2021	2020
Non-hedge accounted derivatives		
Currency derivatives	-11	8
Net gains/losses in financial items	-11	8

Sensitivity of currency derivatives to strengthening of EUR

EUR million	31 December 2021		
	SEK	USD	GBP
Currency change against EUR	-5.0%	-5.0%	-5.0%
Nominals of currency derivatives hedging next 12 months cash flow in EUR	0	-146	-20
Estimated effect on fair value reserve in EUR (net of taxes)	0	6	1

Sensitivity of commodity derivatives to price risk

There were no outstanding commodity derivatives related to parent company's cash flows at the end of reporting period.

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 26 Related party transactions

EUR million	31 December	
	2021	2020
Related party transactions with associated companies and joint ventures:		
Purchase of materials and supplies during the year ¹	88	77
Interest income on non-current loan receivables	1	0
Non-current loan receivables at year end	2	2
Trade payables at year end	54	40

The Group's principles for related party transactions are presented in [Note 31](#) to the consolidated financial statements.
¹2020 comparative information corrected.



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Signatures for the financial statements

There have been no material changes in the Parent Company's financial position since 31 December 2021. The liquidity of the Parent Company remains good and the proposed dividend does not risk the solvency of the Company.

28 January 2022

Antti Mäkinen
Chair

Håkan Buskhe
Vice Chair

Elisabeth Fleuriot

Hock Goh

Helena Hedblom

Mikko Helander

Christiane Kuehne

Richard Nilsson

Hans Sohlström

Annica Bresky
President and CEO

Auditor’s Report

(Translation of the Finnish Original)

To the Annual General Meeting of Stora Enso Oyj

Report on the Audit of the 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 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 2021. The financial statements comprise:

- the consolidated statement of financial position, income statement, statement of comprehensive income, statement of changes in equity, cash flow statement and notes, including a summary of accounting principles
- the parent company’s statement of financial position, income statement, cash flow statement 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 26 reporting components in 11 countries that are considered significant based on our overall risk assessment and materiality.
- Valuation of forest assets
- Provisions and contingent liabilities

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 operating profit and total assets
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.

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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 26 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

Valuation of forest assets

Refer to Note 1, Note 2 and Note 12 in the consolidated financial statements for the related disclosures.

Forest assets comprise of forest land and biological assets excluding leased forest land assets. As of December 31, 2021 the fair value of the Group’s forest assets owned through subsidiaries, joint operations and associated companies was EUR 7 732 million. The fair value of EUR 5 453 million was related to biological assets and EUR 2 279 million was related to forest land.

Forest assets in Sweden are valued by using a market approach method based on forest market transactions and volume of standing trees in those areas where the Group’s forests are located. Market prices between areas vary significantly and judgement is applied to define relevant areas for market transactions used in the valuation. In addition, market transaction data is adjusted to consider characteristics and nature of the Group’s forest assets and to exclude certain non-forest assets and transactions considered as outliers compared to other transactions. Biological asset valuation is computed based on a discounted cash flow (DCF) method in accordance with IAS 41 Agriculture. For forest land the revaluation method is applied as defined in IAS 16 Property, plant and equipment. Forest land is revalued using a DCF method based on estimated future net cash flow streams related to trees to-be-planted in the future as well as other income, such as hunting rights, wind power leases and soil material sales. Total value of biological assets and forest land agrees to the market transaction based value of forest assets as a discount rate implied by the market transactions is used in the DCF method to value these assets.

The value of biological assets outside Sweden 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 require estimates of growth, harvest, sales price and costs.

The other Nordic forest lands are revalued by using a DCF method based on its estimated future net cash flow streams related to trees to-be-planted in the future as well as other non-forest related income. The forest land for the plantations is accounted at cost.

Due to the level of judgment involved in the valuation of forest assets as well as the significance of forest assets to the Group’s financial position, this is considered to be a key audit matter.

How our audit addressed the key audit matter

We obtained an understanding of management’s forest assets valuation process, evaluated the design and tested the operating effectiveness of internal controls related to directly and indirectly owned forest assets.

- Our audit procedures over valuation of directly owned forest 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.

- In addition, specific to the market transaction based valuation in Sweden our audit procedures included:
- Assessment of the definition of relevant areas for market transactions used in the valuation;
 - Assessment of the adjustments made to the market transaction data; and
 - Validation of key inputs and data used in the valuation model including market transaction data and volume of standing trees.

We involved valuation specialists in the audit work over valuation of directly owned forest assets.

Related to indirectly owned forest 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 forest assets.

Lastly, we assessed the appropriateness of disclosures related to forest assets.

Key audit matter in the audit of the group

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 2021, the Group had environmental, restructuring and other provisions totaling EUR 231 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 making a reliable estimate, require management’s judgement to ensure appropriate accounting and 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.

How our audit addressed the 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.

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 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.

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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 identified above 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. With respect to the report of the Board of Directors, 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 10 February 2022

PricewaterhouseCoopers Oy

Authorised Public Accountants

Samuli Perälä

Authorised Public Accountant (KHT)

● Limited assurance

Stora Enso as a taxpayer

Stora Enso’s operations generate value through taxes for governments around the world. In 2021, Stora Enso paid again approximately EUR 1.2 billion into public sectors, including EUR 749 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

Stora Enso’s tax policy is approved by the CEO and is reviewed annually, with updates as necessary. 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

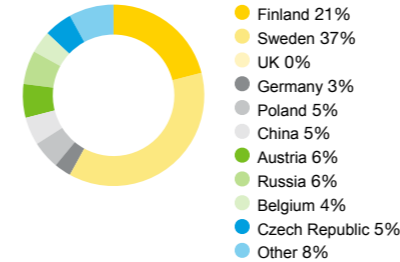
tax treatments, where their location is also justified by sound commercial considerations.

Stora Enso has operations in the following locations that offer favourable tax treatments:

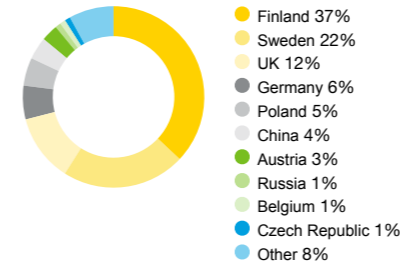
- The joint operation Montes del Plata operates a pulp mill in a Special Economic Zone in Uruguay.
- Stora Enso’s two forestry companies in Guangxi, China are entitled to exemption from corporate income tax from forestry income and value added tax on their sales, and our related industrial company is entitled to reduced corporate income tax rate 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 utilization 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. We also work with government representatives, mainly through associations, by providing corporate views and impacts at request to aid law-making and implementation.

Total taxes borne 2021

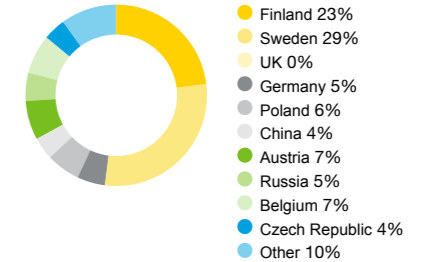


Total taxes collected 2021

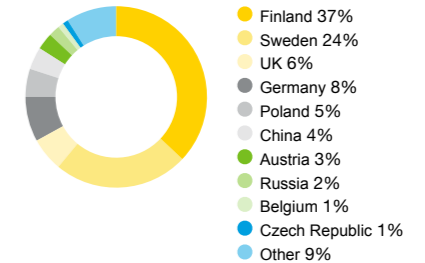


The Stora Enso tax team, reporting to the group CFO, works closely with the businesses and other internal stakeholders to identify and manage business and compliance tax risks to ensure a sustainable yet business feasible platform for operations. Internal stakeholders are continuously trained on tax related matters in order to enhance capabilities and improve overall tax compliance and tax reporting position of Stora Enso group. The tax team is involved in business changes already in the planning phase to ensure the alignment and appropriate compliance of tax rules and regulations. Tax team monitors changes in tax legislation and regularly reviews tax affairs and

Total taxes borne 2020



Total taxes collected 2020



risk management procedures to ensure that Stora Enso can identify, assess and mitigate tax risk. As part of protecting shareholder value, we act with integrity in all tax matters and accurately report the Group’s tax position to our shareholders and other stakeholders.

Stora Enso’s tax footprint

In 2021, Stora Enso paid EUR 1,184 million (980 million) in taxes to governments in countries where the group has operations. A total of EUR 435 million (369 million) was paid directly by the group (taxes borne) while EUR 749 million (611 million) was collected on behalf of governments (taxes collected).

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Taxes paid in major countries of operation

		Year ended 31 December							
		Taxes borne						Total	
EUR million	Primary activity	Corporate income tax		Employment taxes		Operational taxes		2021	2020
		2021	2020	2021	2020	2021	2020		
Finland	Production and sales	0	0	83	76	7	10	90	86
Sweden	Production and sales	64	13	90	88	6	5	160	106
United Kingdom	Sales	0	0	1	1	0	0	1	1
Germany	Production and sales	2	3	8	11	4	3	14	17
Poland	Production and sales	10	11	7	6	5	5	22	22
China	Production and sales	2	2	12	8	6	7	20	16
Austria	Production and sales	10	12	14	13	0	1	25	26
Russian Federation	Production and sales	15	9	4	3	5	5	24	17
Belgium	Production and sales	3	12	11	10	5	4	19	26
Czech Republic	Production and sales	12	8	8	7	0	0	20	15
Other		17	12	15	16	9	9	41	37
Total		136	82	252	239	48	48	435	369

		Year ended 31 December								Total taxes paid	
		Taxes collected						Total			
EUR million	Primary activity	VAT & similar*		Payroll taxes		Other taxes		2021	2020	2021	2020
		2021	2020	2021	2020	2021	2020				
Finland	Production and sales	33	35	146	144	100	47	278	226	369	312
Sweden	Production and sales	74	63	89	83	0	0	164	146	324	252
United Kingdom	Sales	88	35	2	2	0	0	90	37	90	38
Germany	Production and sales	30	32	17	20	0	0	47	52	61	68
Poland	Production and sales	26	18	11	11	0	0	37	29	59	52
China	Production and sales	19	14	10	10	0	0	29	24	49	40
Austria	Production and sales	3	5	17	15	0	0	20	20	46	47
Russian Federation	Production and sales	7	9	2	2	0	0	9	11	33	28
Belgium	Production and sales	1	1	9	9	0	0	9	9	28	35
Czech Republic	Production and sales	1	0	5	5	0	0	5	5	25	20
Other		34	27	22	19	4	5	60	52	101	88
Total		316	239	329	318	104	53	749	611	1,184	980

*VAT, goods and services taxes and similar turnover related taxes

Stora Enso paid only a small amount of corporate income taxes in Finland in 2021 because of tax losses carried forwards from previous years. The tax losses of EUR 274 million (329 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.

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Sustainability reporting

Strategy, governance, and stakeholders

Approach to sustainability

Stora Enso wants to contribute proactively to solving customer and stakeholder sustainability issues and to deliver value, looking at how positive impacts can be accelerated. Stora Enso recognises the need to stay within planetary boundaries. In 2021, Stora Enso launched a new sustainability framework that replaced the old agenda. The new framework is well suited to driving new opportunities and future-proofing the Group’s business in an environment that is constantly changing – at an ever-accelerating pace. The Group’s goal is that, by 2050, all of its products and solutions will be 100% regenerative. Read more about Stora Enso strategy on pages [12-14](#).

Stora Enso contributes to the transformation of the materials system in three areas where it has the biggest

impact and opportunities: climate change, biodiversity and circularity. During 2021, Stora Enso defined related principles to drive product innovation, guide our key business processes and work with customers and other stakeholders. The new sustainability framework builds on a strong foundation of responsible business practices.

Stora Enso has set targets and defined key performance indicators (KPIs) for its sustainability work. Progress is regularly monitored at Group level and via division-level business reviews. Consolidated results on the Group’s performance are reported annually. Selected sustainability indicators are also reported quarterly in Stora Enso’s [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.

Sustainability governance

At Stora Enso, sustainability is owned by the Board of Directors, the President and CEO (CEO), and the Group Leadership Team (GLT). The CEO has ultimate responsibility for the successful implementation of the Group’s sustainability strategy. Read more about the management of the Company on page [183](#) in the Governance section.

The Board of Directors’ Sustainability and Ethics Committee oversees the implementation of Stora Enso’s sustainability strategy and the ethics and compliance strategy. The committee met four times in 2021 and has also reviewed the sustainability disclosures in Stora Enso’s Annual Report. The main focus areas of the Committee during the year are described in the [Governance](#) section.

Alongside financial metrics, sustainability is one of the performance metrics in the remuneration of GLT members through Short-Term Incentive programmes. Members of the GLT are assigned appropriate sustainability indicators. For more information on remuneration, see the [Remuneration](#) section on page [187](#).

Sustainability governance of joint operations

Stora Enso’s 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 Stora Enso. In addition, Stora Enso is represented on the board of its equity-accounted investments, such as forest company Tornator in Finland.

Structured sustainability processes

Stora Enso’s Sustainability Policy describes the Group’s overall approach to sustainability.

In 2021, sustainability was combined with Stora Enso’s Annual Report. The Group’s sustainability reporting consists of following content in the report:

- [Message from the CEO](#)
- [Our strategy: Our business model, Climate change, Biodiversity, Circularity, Employees and leadership](#)
- [Product sustainability](#)
- [Sustainability reporting](#) – reporting on sustainability impacts.
- [GRI Index](#)
- [SASB Index](#)

External assurance:

Stora Enso’s sustainability reporting has been assured by an independent third-party provider with a level of Limited Assurance. Given the Group’s commitment to climate change mitigation and related emission data reliability, a level of Reasonable Assurance has been provided for direct and indirect fossil CO₂e emissions (Scope 1 and 2). For more information on assurance, see page [161](#).

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At the same time, the code of conduct – the Stora Enso Code – and other policies and guidelines on specific sustainability topics further elaborate company’s approach while also guiding its employees in their everyday work. During 2021, the policies and guidelines were updated to align with Stora Enso’s new sustainability framework and ambition. Stora Enso’s policies and guidelines are available at storaenso.com/en/sustainability.

Stakeholder engagement

Open dialogue with key stakeholders is crucial to identify concerns, global trends and market expectations successfully and proactively. Stora Enso’s stakeholder engagement work is based on both structured and ad hoc interaction, as well as on regular surveys on topics such as customer and employee satisfaction and investor expectations. The company also obtains important information through formal grievance channels. Engaging with stakeholders on social media also supports us in understanding their opinions and concerns locally around Stora Enso’s units, as well as on a divisional and Group level.

Materiality

Stora Enso acknowledges the concept of double-materiality in its sustainability strategies and reporting. Topics that are considered to present the most significant financial risks and opportunities for Stora Enso are highlighted: climate change, biodiversity and circularity. Stora Enso’s impacts on the environment and people are reported in both the strategy and the sustainability reporting section of the report.

In 2020, Stora Enso updated the materiality assessment for the Group’s sustainability topics, given the baseline for renewal of the Group’s sustainability framework and ambition during 2021. For more information, see the separate [Materiality Assessment 2020](#). During 2021, Stora Enso ran several workshops involving a broad representation from the company’s experts and management to update its sustainability ambition. In defining the new approach, Stora Enso worked with a renowned sustainability consultant and with stakeholder interviews to define these areas and also to align its long-term goals with the most important global trends. Trends that contributed to

the development of the Group’s updated sustainability ambition included:

- Science, notably the United Nations Intergovernmental Panel on Climate Change (IPCC), and planetary boundaries are increasingly used as the basis for sustainability targets.
- To stay within the planetary boundaries, a significant mindset change is required: the Group needs to move from doing less harm to contributing positively to the reversal of negative trends, particularly in nature loss and climate change.
- No company can achieve the required change alone; companies and stakeholders along value chains need to collaborate to change complete systems, such as the materials, food and mobility systems.
- Considering the above, as well as current international processes and policy developments and their timeline, Stora Enso defined its goal to develop 100% regenerative solutions by 2050.
- From the 2050 goal, Stora Enso developed “interim” 2030 targets to support the business and help deliver on the long-term goal.



Significant stakeholder groups for Stora Enso include:

- Consumers
- Customers
- Employees
- Forest owners
- Policy makers
- Investors
- Local communities
- Media
- NGOs
- Partners and suppliers
- Trade unions

About this section

Reporting on sustainability topics is addressed through a common four-tier framework:



Opportunities and challenges

These sections examine the external factors and global trends currently affecting the topics. Note that the corporate risk management assessment appears in the Financials part of the Annual Report.



Progress

These sections report on Stora Enso’s performance during the reporting year.



How we work

These sections describe the processes, procedures and systems Stora Enso deploys to realise the Group’s strategies and policies.



Our policies

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

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The new framework and ambition were discussed and approved by the CEO and Group Leadership Team prior to discussion by the Board of Directors and communication to stakeholders. The sustainability strategy work during 2021 has also been used as a materiality assessment guiding content selection for sustainability reporting. While the discussions did not affect the topic-level materiality outcome compared with the previous year, the new sustainability framework highlights the materiality of climate change, biodiversity and circularity, which were also identified as the most material topics earlier.

In the context of double-materiality, the Group's assessments of impacts on the environment and people complement and support the Group's Enterprise Risk Management (ERM) process focusing on financial risks and opportunities. Stora Enso's 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, including assessments of financial impacts on the company and the sustainability impacts of the Group's operations on society overall.

EU policy developments – opportunities and challenges for Stora Enso

The sense of urgency to tackle climate change gathered pace throughout 2021. At a global level, the UN conferences on biodiversity (COP15 in Kunming, China) and climate change (COP26, in Glasgow, UK) provided a focus for the international community. At the same time, the EU has sought to lead by example, and this year formally enshrined in law its commitment to reduce CO₂ emissions by 55% by 2030 and to reach net zero by 2050. The roll-out of policy and legislation from the European Green Deal, the EU's strategic Growth Strategy, has therefore continued at an increasingly rapid rate in order to turn these

ambitions into reality. Stora Enso welcomes this focus on the transition to a low-carbon, circular economy and believes that the bioeconomy, in particular, has a major role to play. Stora Enso's products provide sustainable, renewable alternatives to fossil-based solutions and the Group continues to innovate so that its raw materials are used as efficiently as possible, extracting the maximum value from them, in line with the cascading use of wood.

This year, there were numerous EU-level policy developments relevant to Stora Enso. These include the Taxonomy, which aims to channel finance to sustainable economic activities in a better way. Read more [here](#) about Stora Enso's reporting on eligible activities in relation to the Taxonomy's climate change mitigation and adaptation criteria. During the year, Stora Enso continued to engage with decision-makers and relevant stakeholders regarding the development of criteria for environmental objectives in the Taxonomy, particularly regarding biodiversity and the transition to a circular economy.

The substantial Fit for 55 climate package and the EU Forest Strategy are also particularly important. Stora Enso has actively engaged on all of these issues by providing constructive and detailed evidence to show, for example, how sustainable forest management can enhance biodiversity in the forest, while delivering optimum carbon storage as well as raw materials to replace fossil-based products. If the EU is to achieve its ambitious targets for reducing emissions, and to boost the circular economy, renewable fiber-based products must be part of the solution. Stora Enso has also seen synergies and opportunities, with EU regulation and policy consultations seeking more sustainable alternatives, for example for batteries, textiles, packaging and construction. All of these are areas where wood and wood fibers can be used for increasingly innovative applications, to replace non-renewable, traditional products

with a much higher carbon footprint. Stora Enso strongly believes that dialogue is key to good policy-making and will continue to be a constructive partner with the EU institutions as this work develops.

Collaboration with non-governmental organisations

Stora Enso actively cooperates with prioritised non-governmental organisations (NGOs) and industry associations. The Group is involved in developing industry practices related to climate change, the circular bioeconomy, sustainable forestry, human rights and business ethics, as well as in the development of sustainability reporting and assurance. Examples of Stora Enso's collaboration during 2021 can be found in the relevant sections of this report. In 2021, Stora Enso actively collaborated with international organisations including:

- 4evergreen
- Climate Leadership Coalition
- FIBS
- Global Business Initiative on Human Rights (GBI)
- Science Based Targets initiative
- The Ellen MacArthur Foundation
- The Prince of Wales' A4S Accounting for Sustainability
- The Prince of Wales' Corporate Leaders Group (CLG)
- The Forest Dialogue (TFD)
- Transparency International
- UN Global Compact
- We Mean Business Coalition
- World Business Council for Sustainable Development (WBCSD)
- World Green Building Council
- WWF

External recognition in 2021



Ecovadis

Stora Enso was included in the top 1% (industry suppliers) of the Ecovadis ethical supplier rating system, and achieved the highest recognition level (Platinum).



WBCSD

Stora Enso's Sustainability Report 2020 was one of the top ten sustainability reports globally according to the 2021 Reporting Matters publication by the World Business Council for Sustainable Development (WBCSD).



Most sustainable company

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.



Best sustainability report in Finland

Stora Enso's Sustainability Report 2020 was chosen as the best in Finland in a long-term competition by a group of independent organisations. In addition, the report was a stakeholder's choice, selected by the Finnish Climate Fund this year.

Transition Pathway Initiative (TPI)

Stora Enso was 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.

Read more > ESG indices and recognitions in 2021

Stora Enso's sustainability targets and key performance indicators (KPIs)

Sustainability topic	Key performance indicator (KPI)	2021	2020	2019	Targets	Progress comment
Transformation						
Climate	Reduction of production units' fossil CO ₂ e emissions (scope 1 and 2)	-14%	-13%	Baseline year	-50% by the end of 2030 from a 2019 base-year	In progress – the emissions continued to decrease slightly, partly due to less fossil-intensive electricity purchased for sites in Finland.
	Reduction of fossil CO ₂ e emissions in supply chain, transportation and customer operations (scope 3) ¹	-2%	-11%	Baseline year	-50% by the end of 2030 from a 2019 base-year	In progress – the scope 3 emissions increased compared to 2020, partly due recovered production.
Circularity	% of technically recyclable products ²	93%	n/a	n/a	100% by the end of 2030	In progress – strong baseline. Reporting started in 2021 covering Stora Enso's packaging, pulp, paper and solid wood products as well as biochemical by-products.
Biodiversity	% of the owned and leased lands in wood production and harvesting covered by forest certification schemes ³	99%	99%	99%	Maintain at least the coverage level of 96%	Achieved – certain purchased areas in Stora Enso's joint operations in Brazil and Uruguay were in the certification process but not yet certified by the end of 2021. During 2022, the reporting on biodiversity will be complemented with specific biodiversity indicators in a new online reporting tool.
Responsible business practices						
Environmental incidents	Number of significant non-compliance events ⁴	6	8	9	Zero non-compliance events	Not achieved – significant non-compliance events occurred despite prevention measures. For detailed incident descriptions, see Environmental incidents.
Energy efficiency	Projected energy savings, % (MWh saved/MWh total energy used, electricity and heat) ⁵	-0.6%	-0.9%	-1.4%	-0.8% annual energy saving until 2030	Not achieved – the Group's projected energy efficiency savings were partly affected by the pandemic-related work limitations at units.
Materials, residuals and waste	Process residuals utilisation rate (%) ⁶	98%	98%	98%	Maintain at least the coverage level of 98%	Achieved – stable performance with a high utilisation rate of process waste and residuals.
Water	Process water discharge per saleable tonne of pulp, paper and board (m ³ /t)	31	31	29	Decreasing trend from 2016 baseline (27m ³)	Not achieved – water performance normalised by tonne was partly affected by lower production levels in the Paper division compared to the baseline-year.
	Total water withdrawal per saleable tonne of pulp, paper and board (m ³ /t)	60	66	62	Decreasing trend from 2016 baseline (59m ³)	Not achieved – see above.
Employees	Leadership Index	n/a	84	83	85 by the end of 2022	In progress – data covering all employees not available for 2021. During the year, Stora Enso started to further digitalise its employee engagement approach, and the next global engagement survey targeted for all employees is planned for 2022.
Safety	Total Recordable Incident (TRI) rate ⁷	6.2	6.1	7.0	4.0 milestone by the end of 2021	Not achieved – Stora Enso's safety performance remained stable, but the milestone for 2021 was not achieved. The areas of improvement are being addressed in the strategic Safety Roadmap.
Business ethics	Code of Conduct Index	n/a	86	84	Positive trend	In progress – (as for Employees KPI) data covering all employees not available for 2021.
Human rights	Implementation of Human Rights due diligence programme	Remaining two development actions finalised, continuous improvements	22 out of 24 development actions finalised in Group function processes	24 development actions mapped in Group function processes	Ensure efficient implementation of human rights due diligence programme.	In progress – continued focus on human rights due diligence.
Community	Community Investment (CI): % of working hours and in-kind in the total CI	42%	41%	46%	Increase to 70% by 2023 while also increasing the total CI	In progress – the performance was partly affected by the restrictions in volunteer work and community projects during the pandemic.
Sustainable sourcing	% of supplier spend covered by our Supplier Code of Conduct	96%	96%	96%	Maintain at least the coverage level of 95%	Achieved – stable performance with high coverage.

¹ Historical scope 3 emissions recalculated against the most recent methodology in order to ensure comparability.

² Based on the technical recyclability of products and their production volumes as tonnes. Technical recyclability is defined by international standards and tests when available, such as PTS and CTP, and in the absence of these, by Stora Enso's own tests that prove recyclability. The reporting scope includes Stora Enso's packaging, pulp, paper and solid wood products as well as biochemical by-products. The recyclability of corrugated packaging estimated in 2021 reporting and will be confirmed by further testing.

³ Reporting on total land area and its forest certification coverage aligned with financial reporting on forests assets. Historical figures have been recalculated for comparability.

⁴ Environmental incidents involving a non-compliance with environmental legislation or a permit, or a significant stakeholder concern related to environmental performance.

⁵ Excluding projected energy savings from Sachsen paper mill, which was divested, and Kvarnsveden and Veitsiluoto mills, at which paper production was closed during 2021.

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

⁷ Number of incidents among our own employees per one million hours worked. Including joint operations Veracel and Montes del Plata.

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Emissions and energy

Stora Enso combats climate change with renewable materials, resource efficient production and sustainable forest management.

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Opportunities and challenges

Contributing to a low-carbon economy

Growing trees absorb carbon dioxide (CO₂) from the atmosphere and, together with wood-based products, act as carbon storage. Stora Enso's products help customers and society at large to reduce CO₂ emissions by providing low-carbon alternatives to solutions based on fossil fuels and other non-renewable materials. Stora Enso has a proactive and holistic approach to decrease the use of fossil fuels and reduce direct and indirect fossil CO₂ and other emissions. This can create new business opportunities and help manage the Group's costs and risks.

The first truly global climate agreement was approved at the Paris Climate Conference (COP21) in 2015. In December 2017, Stora Enso became the first forest products company to have its climate targets approved by the Science Based Targets initiative. The European Green Deal provides an action plan to boost the efficient use of resources by moving to a clean, circular economy, and to cut pollution. Read more on page 131.

Progress

Updated science-based target

Stora Enso updated its science-based target in 2021 to reduce absolute scope 1 and 2 greenhouse gas (GHG) emissions from operations by 50% by 2030 from the 2019 base year, in line with the 1.5-degree scenario. In 2021, Stora Enso also committed to a target to also reduce scope 3 GHG emissions by 50% by 2030 from the 2019 base year.

In 2021, Stora Enso's absolute GHG emissions (scope 1 and 2) were 14% lower than the benchmark level (13% lower in 2020). During 2021, the emissions decreased slightly, partly due to less fossil-intensive electricity purchased for sites in Finland.

Direct GHG emissions (scope 1) were 6% lower than in 2019. The GHG emissions resulting from the generation of purchased electricity and heat (scope 2) were 49% lower than in 2019.

Stora Enso's estimated GHG emissions elsewhere along the value chain (scope 3) were 2% lower than the benchmark level (11% lower in 2020). The scope 3 emissions increased partly due to recovered production during 2021.

Stora Enso's carbon footprint

In 2021, direct emissions from operations (scope 1) accounted for 21 % of Stora Enso's carbon footprint, while emissions related to electricity and heat purchased for use in operations (scope 2) accounted for 2% of the total carbon emissions. An estimated 77% of the emissions in the carbon footprint were generated elsewhere along the value chain. The majority of these scope 3 emissions were generated in: the sourcing and manufacturing of raw materials and services (34% of the scope 3 emissions); the further processing of products by customers (48%); and in the transportation of raw materials to the mills and of final products to customers (18%). To identify potential for further reducing emissions in scopes 1, 2, and 3, Stora Enso has strengthened its internal steering processes in accordance with the actions agreed in the science-based targets.

Carbon-neutral emissions

Carbon-neutral CO₂ emissions are fossil-free emissions generated during the combustion of biomass-based fuels sourced from sustainably managed forests.



Exploring carbon capture in operations

The EU aims to be climate neutral by 2050 – an economy with net-zero greenhouse gas emission, a much-needed goal to prevent global temperatures from rising above 1.5°C this century. We are exploring different opportunities to remove CO₂ and to become carbon negative in our operations. For example, our Skutskär site in Sweden is participating in a pilot project where CO₂ capture, transport and storage (CCS) technology is used to capture and store combustion gases from the pulp site processes and significantly reduce carbon dioxide emissions.

External recognition

Stora Enso is included in CDP's Climate List (A-), which identifies the global companies that are taking leadership in climate action. Stora Enso has also been named by the CDP as a Supplier Engagement Leader on climate change.

In 2021, for the fourth time running, Stora Enso ranked highly for both management quality and carbon performance in the Transition Pathway Initiative (TPI) assessment.

Stora Enso's carbon footprint 2019–2021^{1,2}

	Fossil CO ₂ equivalent (million tonnes)			Trend 19–21
	2019	2020	2021	
Scope 1: Direct emissions from our operations.	2.24	2.04	2.10	-6%
Scope 2: Emissions from purchased energy consumed in our operations. ³	0.48	0.32	0.24	-49%
Scope 3: Emissions from other sources along our value chain.	7.98	7.08	7.83	-2%
Total	10.70	9.44	10.17	-5%

¹ Covers Stora Enso production units. Excluding joint operations. Includes the trading of Guarantees of Origin for electricity.

² Historical figures recalculated due to additional data or organisational changes after the previous report. For more, see [Consolidation of sustainability statements](#).

³ The CO₂ factors we use for purchased energy (scope 2) largely follow the market-based methodology, which means that almost all our units apply CO₂ factors provided by their energy suppliers. When applying currently available location-based factors our scope 2 emissions for 2021 are 0.74 million tonnes of CO₂ equivalents (0.69 million tonnes in 2020).

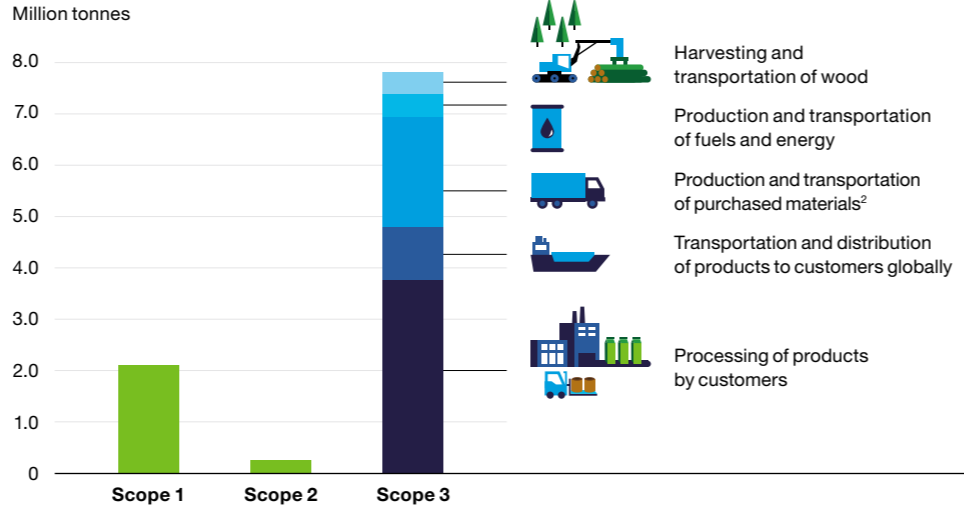


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Stora Enso's carbon footprint¹

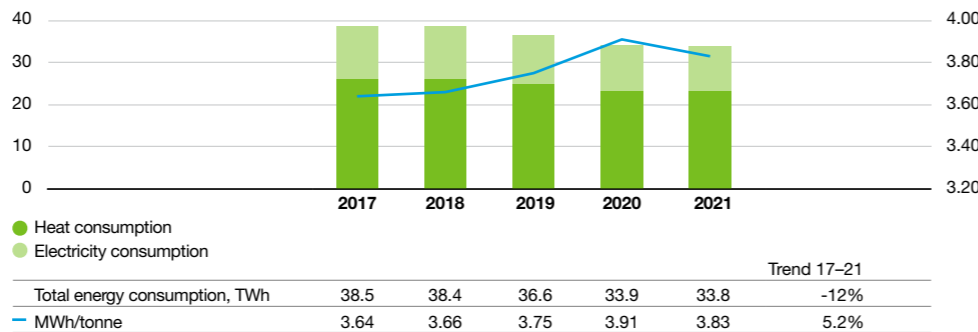
10.17 million tonnes, fossil CO₂-equivalent



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 Stora Enso's production units. Joint operations included in Scope 3 emissions. Greenhouse gas emissions from our operations (scope 1+2) have been verified at reasonable assurance level by the Group's external auditor since 2015. Scope 3 emissions are calculated based on the most recent methodology and externally assured at limited level.
² Pulp, recycled paper and board, pigments, fillers and chemicals.

Total energy consumption¹



¹ Figures cover Stora Enso's board, pulp and paper units. Excluding joint operations, heat used for electricity generation, sold energy and on-site transportation.

These emissions are carbon neutral as the forests are regenerated, and the new generation of trees absorbs CO₂ as it grows.² When forests are sustainably managed, this cycle can continue indefinitely. Our operations utilise renewable biomass fuels from forest and process residuals to a large extent, which means that the proportion of carbon-neutral CO₂ emissions in our total emissions is high. In 2021, 85% of the total direct CO₂ emissions from our own operations were carbon neutral, originating from biomass fuels.

Energy

Most of Stora Enso's production processes are energy intensive, and the Group's energy efficiency target is to achieve at least 0.8% annual energy savings by 2030. The target is followed with a KPI describing the projected fraction of energy savings per total energy use of electricity and heat. In 2021, the projected annual energy savings were -0.6% equivalent to 211 GWh (-0.9% or 310 GWh in 2020). This is estimated to eliminate over 17,000 tonnes of annual direct fossil CO₂ emissions.

Stora Enso's energy and water efficiency fund

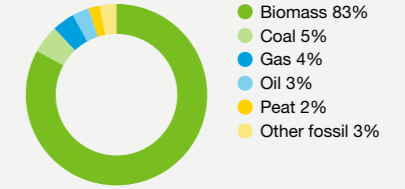
The central energy and water efficiency investment fund is another important tool to implement energy savings effectively. In 2021, this fund amounted to EUR 11 million (EUR 7 million in 2020) and was earmarked for energy and water efficiency investment projects at the Group's units. The fund financed 37 (37) projects in 2021. When fully implemented, the projects financed in 2021 are estimated to generate annual energy savings of at least 163 GWh, equivalent to 0.4% of Stora Enso's annual energy consumption.

District heating to local communities

At the end of 2021, 14 of Stora Enso's sites generated and distributed energy to local district heating systems (approximately 91%) and industrial partners (approximately 9%),

² Recommendations on Biomass Carbon Neutrality, WBCSD 2015.

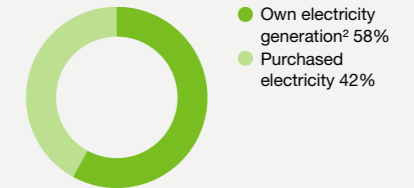
Fuels¹



Our total annual fuel consumption was 41.2 terawatt hours (TWh) in 2021 (39.1 TWh in 2020).

¹ Figures cover Stora Enso's production units. Excluding joint operations.

Electricity generation and sourcing¹



During 2021, we generated and purchased 11.5 terawatt hours (TWh) of electricity and consumed 11.1 TWh (10.9 and 10.5 during 2020). 0.4 TWh was sold (0.4).

¹ Figures cover Stora Enso's production units. Excluding joint operations.

² Including electricity from Pohjolan Voima Oyj (PVO), where Stora Enso is a minority shareholder.

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largely based on harvesting and production process residuals. In 2021, a total of 1.0 TWh of heat (0.9 TWh in 2020) was sold to these district heating systems serving 12 (12) communities. Using this amount of renewable energy instead of, for example, light fuel oil for heating resulted in estimated emission reduction savings of 0.26 million tonnes of fossil CO₂ (0.23 million tonnes).

Investigating non-fossil fuel alternatives for Beihai site

At Stora Enso's Beihai site in Guangxi province, China, coal is currently the main energy source as there are inadequate sustainable supply chains for non-fossil fuels in the region at present. The site has started gradually to move away from coal to biomass and other non-fossil fuels, as its power boiler is technically able to use a variety of fuel mixes. In 2021, the amount of wastewater sludge, bark and forest residuals used in the boiler increased slightly. In addition, the Beihai site reduced fossil CO₂ emissions by means of energy efficiency projects and by purchasing a bigger share of GHG free electricity and reducing its own coal-based electricity generation.

Detailed carbon reporting

All Stora Enso's board, pulp and paper units report quarterly on carbon emissions for Scopes 1 and 2. Direct emissions (Scope 1) include carbon dioxide, methane and nitrous oxide – with carbon dioxide accounting for approximately 93% (93% in 2020), methane for 2% (2%) and nitrous oxide for 5% (5%) of the emissions.

Material emission categories for Scope 3 emissions are updated annually or every second year. In 2021, Stora Enso developed the Scope 3 reporting, further enabling an annual update of emissions from harvesting operations and downstream transportation. Stora Enso's 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 2021, Stora Enso continued to have the reporting of its direct and indirect fossil CO₂e emissions (Scopes 1 and 2) externally assured to a Reasonable Level. For more information, see page 161.

Emissions from transportation

The GHG emissions generated during the transportation of raw materials and products, which is the most significant environmental impact associated with the Group's logistical operations, are mainly produced by external service providers. In 2021, transportation accounted for 18% of Stora Enso's Scope 3 emissions.

In the transportation of our products, sea transport accounted for approximately 67% of CO₂ emissions, while road and rail transportation accounted for 31% and 2% respectively. For more information on how Stora Enso works with its suppliers, see pages 155-156.

Other atmospheric emissions

Stora Enso's atmospheric emissions primarily result from the combustion of fuels for energy generation. Emissions include CO₂, sulphur dioxide (SO₂), nitrogen oxides (NOx) and fine particles. CO₂ contributes to climate change while SO₂ and NOx emissions affect air quality and can cause acid rain and soil acidification. The Group works to reduce SO₂, NOx and fine particles using advanced technologies such as scrubbers and boiler process control systems.

In 2021, Stora Enso's Group-wide SO₂ emissions amounted to 2,200 tonnes (2,410 tonnes in 2020), NOx emissions totalled 9,160 tonnes (8,840 tonnes), and emissions of fine particles amounted to 1,095 tonnes (1,440 tonnes). Emissions of VOC were estimated to amount to 2,160 tonnes.

How we work

Scenario-driven work
The Stora Enso Carbon Neutrality Roadmap is a key tool in the Group's GHG scenario assessments. Read more on page 20.

Evaluating risks and opportunities

Stora Enso evaluates the financial risks and opportunities related to climate change through its annual Enterprise Risk Management (ERM) process. For more information, see page 49.

Stora Enso applies precautionary management actions to mitigate and remedy potential adverse impacts on the environment and people. The Group's 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 ISO 14001 environmental management system and the ISO 50001 energy management system. By the end of 2021, 94% of the Group's energy consumption was certified to the ISO 50001 energy management system standard (94% in 2020). All the Group's production units (except Hylte Formed Fiber) are certified for the ISO 14001 standard. For unit-specific information on certificates, see pages 158-160.

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 the units to have access to a reliable and sustainable 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, see page 85 (Note 14).

Our policies

- Policy for Energy and Carbon
- Environmental Guidelines
- Supplier Code of Conduct and Practical Guidance for Stora Enso's Suppliers



Investing in environmental improvements

In connection to the conversion at the Oulu site, EUR 40 million was recently invested in environmental improvements to reduce the site's environmental impacts. Among other things, the targeted improvements included: reduced CO₂ and SO₂ emissions, a new effluent treatment plant, reduced risk of environmental pollution by rain and process waters, multi-stage combustion systems to prevent spread of odorous gasses, and several energy efficiency improvements.

Read more:

- Climate change
- TCFD

Sustainable forestry

Sustainable forestry and biodiversity are at the centre of the wider global sustainable development agenda.

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Opportunities and challenges

Acceleration of the sustainability agenda

As a renewable natural resource, wood represents a favourable alternative to fossil-based and other non-renewable materials. Growing trees absorb carbon dioxide (CO₂) from the atmosphere and, together with wood-based products, act as carbon storage. Sustainable forest management promotes vital and growing forests while ensuring the preservation of biodiversity, which is key to the resilience of forests. Stora Enso is analysing the future impacts of climate change and works to increase the resilience of forests in the face of diseases, storms and other physical risks related to the [changing climate](#).

The key role of forests in combatting climate change and harbouring biodiversity has been broadly recognised. The role of sustainable management of forests is also emphasised in the EU Biodiversity Strategy and the [EU Forest Strategy](#).

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



Progress

New comprehensive programme for enhancing biodiversity

As part of setting ambitious biodiversity goals and new sustainability targets in 2021, Stora Enso is committed to achieving a net-positive impact on biodiversity in its own forests and plantations by 2050 through active biodiversity management. Stora Enso's comprehensive biodiversity

programme includes an action plan for 2021–2030 with measures to improve biodiversity on the species, habitat and landscape levels. The company uses its own forest in Sweden as a platform for continuously developing new biodiversity management practices to be adapted to local conditions and implemented in different geographical areas when feasible. Measures to be developed, tested and used in our own forests in Sweden include, among others: application of modern digital tools to improve accuracy of planning and operations; increasing the amount of deadwood and broad-leaved trees, especially birch; continuous cover forestry in suitable areas; and increasing use of controlled burning in forest regeneration.

Stora Enso has initiated a holistic and adaptive Biodiversity Monitoring Programme, which monitors and measures the state of biodiversity and the impact of Stora Enso's operations on biodiversity with more than 15 science-based indicators. They assess the quality of our operations and the state of biodiversity in our own and privately owned forests. The biodiversity indicators cover forest landscapes, habitats and species, whereas the impact indicators evaluate Stora Enso's operations to avoid any negative impacts on biodiversity. In addition, active measures are applied to enhance biodiversity and to make sure existing measures are applied at the right time and place. Stora Enso recognises that as forests grow slowly in a cold climate, biodiversity may also develop slowly, and the Biodiversity Monitoring Programme is set up to enable assessments of progress in both the short and long term. In 2022, Stora Enso will start to share data on its progress through a new [reporting tool](#). New biodiversity management measures are

continuously developed within the framework of our collaboration with the Swedish University of Agricultural Sciences.

At the end of 2021, Stora Enso owned or leased lands covering a total area of 2.01 million hectares (2.02 million¹ hectares in 2020). The majority of Stora Enso's owned or leased lands are located in Sweden. For more details, see the tables on page 139. Stora Enso follows its progress in sustainable forestry with a key performance indicator (KPI) that measures the proportion of land in wood production and harvesting owned or leased by Stora Enso that is covered by forest certification schemes. The Group's target is to maintain the high level of 96%. In 2021, coverage amounted to 99% (99%¹ in 2020).

In 2021, the total amount of wood (including roundwood, wood chips and sawdust) delivered to Stora Enso's sites was 37.6 million m³ (solid under bark) (35.0 million m³ in 2020). 28% of the Group's wood raw material needs were covered from own sources or long-term supply agreements.

The proportion of third-party certified wood in Stora Enso's total wood supply was 77% in 2021 (78% in 2020). The Group knows the origin of all the wood it uses and 100% comes from sustainable sources. Stora Enso uses 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 system. Stora Enso's Supplier Code of Conduct

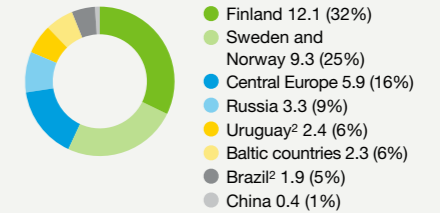
¹ Reporting on total land area and its forest certification coverage aligned with financial reporting on forests assets. Historical figures recalculated for comparability. For more information, see [Note 12](#).

Forest certification coverage for lands owned or leased by us

99%

Wood procurement by region¹

37.6 million m³



¹ Total amounts of wood (roundwood and chips) procured within these regions for delivery to our units (million m³ solid under bark).

² Figures for Brazil and Uruguay include 50% of the wood procurement of our joint operations Veracel and Montes del Plata.

Read more:

- Our forests
- Protecting biodiversity
- Note 12 Forest assets

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complements these tools by imposing strict contractual requirements on suppliers. With strict policies and various tools in place to ensure and promote sustainable forest management and wood sourcing, Stora Enso is not engaged in deforestation or depletion of the world's forests.

Stakeholder concerns and dialogues

Stora Enso works actively with its stakeholders to promote sustainable forest management. The Group is an active member of 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. In 2021, the Group actively participated in the preparation of the [Forest Sector Net Zero Roadmap](#) and new FSG Key Performance Indicators. Stora Enso also continued to support and participate in The Forests Dialogue (TFD).

To strengthen the scientific underpinnings and developments of sustainable forestry, Stora Enso has established long-term cooperation with the Swedish University of Agricultural Sciences (SLU). In 2021, Stora Enso participated in the initiative led by Greenhouse Gas Protocol and WBCSD to develop guidance on accounting for land sector activities and CO₂ removals in corporate greenhouse gas inventories.

In 2021, Stora Enso continued its cooperation with the World Wildlife Fund for Nature (WWF) in Finland and Russia and joined the WWF [Forests Forward](#) programme (read more about Stora Enso's FF projects [here](#)). In Finland, the collaboration promoted the conservation and sustainable use of forests among private forest owners by communicating the benefits of the continuous forest cover logging method, the voluntary forest protection programme METSO and water protection best practices. In Finland, Stora Enso also offers FSC forest certification services to private forest owners. In 2021, the number of members of Stora Enso

Wood Supply Finland's FSC group grew to 575 private forest owners (415 in 2020), corresponding to 104,000 hectares (79,000 hectares at the end of 2020).

In Russia, Stora Enso and WWF Russia continued to promote sustainable forest management and forest certification by compiling best practices for thinning young stands and expanding the Stora Enso FSC certification group with a new supplier. At the end of the year, the total area covered by group forestry certifications in Russia was 1.2 million hectares³ (1.3 million hectares in 2020). Stora Enso's Russian subsidiaries have been FSC certified since 2006. The Group also continued its support for the Boreal Forest Platform, a stakeholder forum organised by WWF Russia.

Stora Enso recognises that the areas where it operates are of value to different stakeholders. The Group has therefore adopted an integrated approach to land use around its plantations. This includes applied innovative land use models in Uruguay and Brazil to benefit local farmers and communities as well as the company. For more information on these integrated land use practices, see pages 153.

In 2021, sustainable forestry was a stakeholder interest as environmental NGOs were calling for increased forest protection. In Stora Enso's stakeholder communications during the year, the Group stressed its commitment to sustainable forest management, forest certification, wood traceability, biodiversity conservation and open stakeholder dialogues, and Stora Enso always ensures that all the wood it uses comes from sustainably managed sources. During the year, Stora Enso engaged in regular dialogues with NGOs and other stakeholders. The Group also encouraged its business partners and NGOs to participate in such engagements.

Protecting biodiversity in Brazil

In Brazil, Stora Enso's 50%-owned joint operation Veracel has been protecting and

restoring biological diversity in 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.

Approximately half of Veracel's 211,000 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. Between 1994 and the end of 2021, a total of 7,500 hectares of forest have been restored. 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.

Monitoring the hydrological impacts of tree plantations is an integral part of the sustainable management of Stora Enso plantation ventures. In 2021, the results from 15 years of monitoring⁴ the operating area of Veracel Celulose indicated that the management of eucalyptus forests does not impact water quality in micro-basins. According to the results, the water consumption in the plantations is similar to areas of native vegetation.

Carbon in Stora Enso's forests

In sustainably managed forests, carbon sink and storage are maintained or increased over

² Stora Enso Communications' FSC® trademark license number is FSC-N001919.

³ Including Stora Enso's Russian subsidiaries (long-term harvesting rights).

⁴ Performed by the Cooperative Program for Monitoring and Modeling in Hydrographic Microbasins (PROMAB) of the Institute for Forestry Research and Studies (Luiz de Quieroz Higher School of Agriculture/University of São Paulo).



Protecting the vulnerable sand lizard in Sweden

The sand lizard (*Lacerta agilis*) is a species of lizard that is classified as endangered even though it can be found in most of Europe, including in Stora Enso's forests in central Sweden. One of the most successful projects carried out to create suitable habitats for sand lizards can be found in Brattforsheden, in Värmland province in central Sweden. Thanks to the measures that Stora Enso has taken together with the County Administrative Board, the Swedish Forest Agency and the Diocese of Karlstad, sand lizard populations have increased remarkably in Brattforsheden.

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the forests' management cycle. During this time, harvesting and natural disturbances, growth rates related to forest ages and types, and potential other events result in short-term variation in carbon sink and storage.

Calculation of forest sink and storage is not standardised, and the selected method and reporting period impact the results. Stora Enso has estimated the carbon sequestration by the Group's own forests using two methods: 1) historical data as an annual average from three past years and 2) forward-looking simulation of 100-years management cycle conducted by the Swedish University of Agricultural Sciences (SLU).

As an average of 2019-2021, Stora Enso forests and plantations sequestered an estimated 5.0 million tonnes of CO₂ annually, while the total CO₂ stored in Stora Enso's forests and plantations was estimated to amount to 283 million tonnes. These figures include the above and below-ground biomass of trees, but currently exclude soil carbon.

In the forward-looking simulation of 100-year management cycle by the SLU, Stora Enso forests and plantations sequester annually an average of 1.5 million tonnes of CO₂ (SLU).

Both methods consolidate Stora Enso's forest assets. For more information, see Note 12.



How we work

Ensuring the sustainability of fiber

Stora Enso's approach to sustainable forest and tree plantation management is to ensure healthy and diverse ecosystems as well as the long-term availability of wood to meet

the needs of the people and the planet. Stora Enso actively supports and implements voluntary forest conservation and restoration measures on all the land it owns, leases and manages as well as in other areas where the Group purchases wood (read more on [Stora Enso's Environmental Guidelines](#) and on its [Biodiversity website](#)).

To cover all aspects of sustainability in Stora Enso's forest and plantation management, the Group applies the same comprehensive wood procurement process in all its operating regions. The Group's own forests and long-term supply agreements secure a sustainable and transparent wood supply.

Tree breeding for healthy forests

Stora Enso breeds trees for future forests in order to improve growth and resilience while maintaining genetic diversity and other sustainability qualities. Tree breeding, in other words crossing two selected elite parent trees within a breeding population to create a new generation with improved properties, is a very important way of improving forest growth. Trees can be bred for increased growth but also to be better adapted to climate change and more resilient towards diseases, storms, drought and pests. We have ongoing long-term strategic tree breeding programmes for all our forest and plantation units. In all breeding programme genetic diversity is monitored and maintained by having several and sufficiently large breeding populations, and avoiding the crossing of related parents.

In Sweden, where Stora Enso owns approximately 1.4 million hectares of land, seedlings for regeneration sites are

delivered from three Stora Enso-owned nurseries in central Sweden. In the nurseries, we produce superior seedlings for next-generation forests.

Stora Enso has ongoing research and development work in genetic engineering. As with traditional clone improvements, it will take many years to develop genetically engineered clones for commercial use. During 2021, we continued the process of establishing field trials in areas totalling approximately 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 do not currently have plans to plant genetically engineered trees in any of our commercial plantations.



Our policies

Stora Enso's policies on Wood and Fiber Sourcing and on Land Management cover 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, Stora Enso maintains continuous open dialogue with its stakeholders.

Other relevant policies that promote sustainable forestry include our:

- Environmental Guidelines
- The Stora Enso Code
- Supplier Code of Conduct



Safeguarding biodiversity

We commit to achieve a net positive impact on biodiversity by 2050 within and beyond our own forests and plantations around the world through active biodiversity management. Take a closer look at our approach to biodiversity and our indicators by watching the film in which Johan Lindman – Head of Global Forestry and Sustainability – explains our approach. Watch the video at storaenso.com.

Stora Enso monitors and measures biodiversity and the impact of its operations with more than 15 indicators.

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Forests, plantations, and land as of 31 December 2021¹

Unit	Area	Certification coverage	Details of local landscapes and protected areas
Owned land			
Swedish forest holdings	1,389,000 ha, of which 1,141,000 ha productive forest land	PEFC and FSC for 1,389,000 ha	Protected areas total 416,000 ha and consist of productive or non-productive land which has been set aside from wood production and infrastructure development either voluntarily or by legal requirements.
Montes del Plata plantations and lands, Uruguay (50%-owned joint operation with Arauco)	190,000 ha, of which 109,000 ha planted for pulp production	PEFC and FSC for 190,000 ha	Protected areas total 11,000 ha and consist of remnants of native ecosystems, such as grasslands and riparian forests, within the company's lands. Local landscape consists mainly of pasturelands and agricultural fields.
Veracel plantations and lands, Bahia, Brazil (50%-owned joint operation with Suzano)	211,000 ha, of which 82,000 ha planted for pulp production	CERFLOR (PEFC) for 189,000 ha; FSC for 189,000 ha	Protected areas total 106,000 ha, including a 6,000 ha Private Natural Heritage Reserve, and mostly consist of native forest remnants at different stages of regeneration. Local landscape consists of pasturelands and agricultural fields cleared from Atlantic rainforest between the 1950s and 1980s.
Tornator (41%-owned associated company)			
Finland	640,000 ha, of which 573,000 ha productive forest land	PEFC for 640,000 ha and FSC for 640,000 ha	Protected areas total 60,000 ha and consist of productive and non-productive land which has been set aside from harvesting either voluntarily or by legal requirements.
Estonia	66,000 ha, of which 57,000 ha productive forest land	PEFC for 66,000 ha and FSC for 66,000 ha	Protected areas total 2,300 ha.
Romania	12,000 ha, of which 12,000 ha productive forest land	PEFC for 12,000 ha and FSC for 12,000 ha	Protected areas total 160 ha.
Leased land			
Plantations and lands, Guangxi, China	77,000 ha, of which 68,000 ha planted	Chinese Forest Certification Council certificate (PEFC) for 77,000 ha; FSC for 77,000 ha	Protected areas total 3,000 ha and consist of buffer zones and other important areas for protection of watersheds and native flora and fauna. No pristine ecosystems are found in the leased lands. Local mosaic landscape includes agricultural crop fields, forest plantations and settlements.
Montes del Plata	82,000 ha, of which 70,000 ha planted	PEFC and FSC for 76,000 ha	No protected areas managed by Stora Enso as they are excluded from lease agreements.
Veracel	14,000 ha, of which 6,000 ha planted	CERFLOR (PEFC) for 9,000 ha; FSC for 9,000 ha	Protected areas total 6,000 ha and consist of native forest remnants at different stages of regeneration.
Long-term harvesting rights			
Wood Supply, Russia	370,000 ha, of which 308,000 ha productive forest land	FSC group certificate 370,000 ha	Protected areas total 24,000 ha and consist productive or non-productive land which has been set aside from wood production and infrastructure development either voluntarily or by legal requirements.

¹ Reported as total areas of the companies. Stora Enso's share corresponds to the ownership share. Including operations where Stora Enso's shareholding is significant and the size of the area exceeds 1,000 hectares.

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Materials, residuals, and waste

The world needs materials that are both renewable and recyclable – a circular bioeconomy – to combat climate change, save natural resources, and minimise waste.



Opportunities and challenges

Reduced waste, maximum value

Among the global megatrends impacting societies, markets and businesses, climate change is the greatest challenge of our time. Consumers, legislators, companies and financial institution have an increasing focus on raw materials, CO₂ emissions, circularity and waste reduction. Moreover, governments around the world are increasingly regulating the use of fossil-based materials such as plastics.

As a renewable materials company, Stora Enso operates at the heart of the bioeconomy and contributes to a circular economy. In a circular economy, more is made from less, and waste is minimised as materials are reused and recycled to maximise their value. The Group works to achieve this through circular material flows in its value chain while reducing its own process the waste to landfill to as close to zero as legally, technically and commercially possible.



Progress

Process waste and residuals

Stora Enso's production units generated a total of 3.7 million tonnes of process waste and residuals (3.4 million tonnes in 2020),

of which 98% was recycled and utilised either internally or externally (98% in 2020). The remaining 58,000 tonnes or 2% was landfilled, including mainly ash, green liquor dregs or lime mud. Stora Enso works towards zero process waste at mills in line with the Group target for all production units to maintain a process residuals utilisation rate of at least 98%.

Hazardous waste

During 2021, Stora Enso's production units generated a total of 8,410 tonnes of hazardous waste, up from 5,520 tonnes in 2020. This waste includes oils, solvents, paints, laboratory chemicals and batteries that are transported and processed by authorised contractors. In addition, 10,140 tonnes (8,720 tonnes in 2020) of sludge classified as hazardous waste was generated at the disused Falun copper mine in Sweden and handled by an authorised contractor.

Environmental management and remediation

Local environmental stewardship work, supported by third-party ISO 14001-certified environmental management systems, ensure continuous improvements in the most prioritised environmental issues, including remediation when necessary.

For Stora Enso's environmental investments and liabilities, see [Financials](#).

Paper for Recycling

In 2021, Stora Enso's paper mills used 1.7 million tonnes of recycled paper and board (1.7 million tonnes in 2020). This makes Stora Enso one of the largest Paper for Recycling (PfR) consumers in Europe. The PfR utilisation rate in its paper and board production was 22% (22%). The figures exclude Sachsen mill in Germany, the divestment of which Stora Enso completed in August 2021. The Group's use of recycled paper and board has decreased over recent years following the company strategy to focus on growth business and overall decline of paper market.



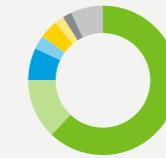
How we work

External initiatives guide the Group's work

Stora Enso applies precautionary management actions to mitigate and remedy potential adverse impacts on the environment and people. Its environmental management systems include on-site management procedures for handling chemicals, waste, residuals and emissions into the air. The environmental work at its mills, including water and energy

Utilisation of process waste and residual materials¹

3.7 million tonnes

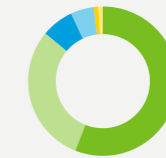


- Energy generation 62%
- Wood pellet and chipboard manufacturing 13%
- Landscaping, landfill, and road construction 7%
- Pulp manufacturing 3%
- Brick and cement manufacturing 4%
- Process waste to landfill 2%
- Agricultural use 2%
- Other 7%

¹ Covers Stora Enso's production units, as dry tonnes. Including both internal and external utilisation. Excluding joint operations.

Process waste to landfill¹

58 thousand tonnes



- Fly ash 56%
- Green liquor dregs 30%
- Lime mud 7%
- Bottom ash 5%
- Wood handling waste 1%
- Other process related wastes 1%

¹ Covers Stora Enso's production units. Excluding joint operations. In addition to process waste to landfill, Stora Enso's production units created a total of 5,715 tonnes of non-process waste to landfill, and 70,411 tonnes of process waste was sent to on-site storage facilities.

With 1.7 million tonnes of paper for recycling (PfR) used in 2021, Stora Enso is one of the largest PfR consumers in Europe.

Read more:
[Circularity](#)

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management and resource efficiency, is supported by third-party certified environmental management systems. All Stora Enso's sawmills, corrugated packaging units, and board, pulp and paper mills are certified to the ISO 14001 environmental management system. Read more in the [Environmental Guidelines](#).

Recycled paper and board

Wood and recycled fiber are the main raw materials in Stora Enso's production processes. Materials made with virgin fiber are mainly used for products with special safety requirements, such as packaging for food and pharmaceuticals. For more information about Stora Enso's wood procurement, see pages 136-139.

Wood-based fibers can typically be recycled 5-7 times, and in some cases over 20 times. After several recycling rounds, paper fibers eventually become too short to be reused but can be burned for bioenergy. Since there is no endless recycling loop, virgin fiber is needed to keep the fiber cycle going. Stora Enso 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 site in Belgium (where they accounted for 100% of used fiber in 2021), Maxau site in Germany (66%) and Hylte mill in Sweden (7%). Recovered board is used to make specific containerboard grades at Ostrołęka mill in Poland (81% of fiber used for containerboard production) and at Varkaus site in Finland.

There is a need to strengthen the recycling infrastructure in Europe. To improve resource efficiency, Stora Enso cooperates with local authorities and waste management companies, and through Stora Enso's own collection facilities, sufficient PfR is secured from industrial, commercial and domestic sources. In Poland, Stora Enso owns and manages a network of 17 depots where PfR is collected and baled for transportation to its Ostrołęka site. [Read more](#) about how

Stora Enso is working together with Tetra Pak to increase the recycling capacity in Europe. In 2021, Stora Enso announced an investment of EUR 23 million for increasing flexibility and capacity at the Varkaus containerboard site, also resulting in expanded capacity to use recycled fiber.

External collaboration

Stora Enso is part of the 4evergreen alliance – a European circular economy platform that focuses on perfecting the circularity to a 90% recycling rate by 2030, by paying special attention to household, out-of-home and on-the-go packaging. We also participate in [The Digital Watermarks Initiative HolyGrail 2.0](#) which drives new solutions to make the sorting of used packaging more effective.

Stora Enso works extensively on driving collection and recycling with the beverage carton industry through regional and global platforms. These platforms include the Alliance for Beverage Cartons and the Environment (ACE), the [EXTR:ACT](#) platform facilitating increasing beverage carton- and paper-based multi material recycling in Europe, and the GRACE alliance for driving the recycling of beverage cartons globally.



Stora Enso is a member of Factor10, the circular economy initiative of the World Business Council for Sustainable Development (WBCSD). In 2021, Stora Enso contributed to the WBCSD's new report, "The business case for circular buildings. Exploring the economic, environmental and social value." The report was launched at the WBCSD's Council Meeting and COP26 and provides the building sector with a resource to engage with real estate developers and investors on using circular materials.

Stora Enso is a signatory to the New Plastics Economy Global Commitment led by the Ellen MacArthur Foundation, in collaboration with the United Nations Environment Programme. Stora Enso's progress was disclosed in the Foundation's Global Commitment Progress Report in 2021.

Our policies

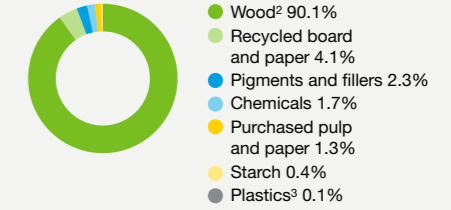
- Stora Enso Code
- Environmental Guidelines
- Policy on Wood and Fiber Sourcing, and Land Management
- Supplier Code of Conduct, Practical Guidance for Stora Enso's Suppliers, Purchasers' Instructions, Sourcing Policy, and Sourcing Guidelines

Value from waste

We continued to explore the potential to use refined wastewater residue in new products. For example, our Skoghall site in Sweden is working with the University of Karlstad and companies in the materials value chain to create bio-based products such as bioplastics and hydrogen gas from biosludge. In another collaboration between the Skoghall site and our own nursery in Sjögränd, we are exploring how the growth of pine and spruce plants can be improved using pellets based on nutrients and ash from the site.

Material use by type, %¹

41.1 million tonnes



¹ Covers raw materials used for products and their packaging, as delivered to Stora Enso's production units. Including joint operations. In 2021, approximately 95% of the Group's process raw materials were renewable: wood, starch, recycled board and paper and purchased pulp and paper. For the recycled board and paper and purchased paper 90% of the weight is accounted as an estimation for renewable content. Other process raw materials were largely or entirely non-renewable: pigments and fillers, chemicals and plastics.

² Converted from delivered cubic meters to fresh tonnes (including water content) by using an average conversion factor for tree species processed by Stora Enso.

³ Including fossil-based virgin plastics (55,500 tonnes), bio-based virgin plastics (4,700 tonnes) and recycled plastics (650 tonnes).

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Water

Water plays a central role in Stora Enso’s production processes and is a key component in forest growth.

Opportunities and challenges

Responsible water use

While water is relatively abundant in most of Stora Enso’s production locations, water stress may still impact operations locally and through the Group’s wider supply chains. Some sites are occasionally impacted by water stress in terms of availability or increased surface water temperature. Another potential risk is flooding.

Water stewardship is considered an area of increasing importance and also provides opportunities to reduce costs by using water and energy more efficiently.

Sustainably managed forests and plantations have a key role in maintaining natural water cycles. Forests and plantations need rainwater for growth, and active water management in plantations contributes to positive effects on the total water balance as well as water storage, purity and quality. Read more on page 136.

Stora Enso mainly withdraws process and cooling water from surface waters. After use, the process water is cleaned in treatment plants before discharging it back into the local environment.

Production at Stora Enso’s sites requires large amounts of water. However, only around 4% is consumed in production processes while almost 96% is recycled back into the environment. Process water is purified in treatment plants and then discharged, whereas cooling and other non-process water can be safely released without treatment. 99.8% of total water withdrawal was from surface water, 0.2% from municipal sources and less than 0.1% from groundwater in 2021.

Progress

Promoting water efficiency

Stora Enso’s strategic water goals aim to reduce impact on the sites’ water sources. Water is recycled within sites when possible, to reduce the need for water intake, the use of process water is minimised, and it is cleaned using the best available technologies. The Group targets on total water withdrawal and process water discharges are to drive a downward trend from the 2016 baselines of 59 m³ and 27 m³ per saleable tonne of product, respectively.

During recent years, Stora Enso’s water usage per tonne has been affected by lower production levels in the Paper division. In 2021, total water withdrawal was 60 m³ per saleable tonne (66 m³ in 2020) and process water discharges amounted to 31 m³ per saleable tonne (31m³ in 2020). The amount of water needed at Stora Enso’s board, pulp and paper mills is not directly related to production volumes as wastewater treatment requires a regular flow of water to function properly. This performance is not satisfactory and the Group started to assess new water targets and actions during 2021.

In 2021, approximately 3% of intake water was recycled internally by reusing cooling and non-contact water as process water (approximately 2% in 2020). Optimising recycling reduces the need for water pumping and heating, which creates energy savings and makes the purification of the remaining wastewater more efficient.

Stora Enso’s board, pulp and paper sites contribute to over 99% of the Group’s total water withdrawal. A new Group water management standard applicable to these sites was developed in 2021 to steer systematic work on the local level.

Stora Enso invested a total of EUR 11 million in water-related improvements across all operations in 2021. The central energy and water efficiency fund specifically supported water-related investments of EUR 1.5 million at the Ostroleka, Beihai, Skoghall and Nymölla sites. The investments are estimated to reduce the Group’s water discharges by 1.9 million m³ and costs by EUR 0.5 million annually.

Compliance with legislation and environmental permit limits are monitored by the sites and reported to the environmental authorities. Non-compliance and incidents are reported by sites to Group management on a quarterly basis. Significant incidents are reported immediately. For details of significant environmental incidents and violations of environmental permits in 2021, see page 144.

Water quality, effluents and water stress

As part of environmental management, Stora Enso’s board, pulp and paper sites monitor process water discharges, including the amounts of suspended solids, chemical oxygen demand, total organic carbon, phosphorous, nitrogen and adsorbable organic halogen compounds, as well as water temperature and pH. Monitoring and reporting are conducted daily, monthly or annually depending on sites’ operations and environmental permits. During 2021, the Group’s total process water discharges included 1,040 tonnes of nitrogen (940 tonnes in 2020) and 88 tonnes of phosphorus (97). The chemical oxygen demand in the Group’s total discharges was 80,100 tonnes (82,900).

Water withdrawal, consumption, and discharges^{1,2}

	2017	2018	2019	2020	2021	Trend 17–21
Total water withdrawal, million m³	590	582	591	554	529	-10%
Process water	286	285	294	281	296	3%
Cooling water (net)	304	297	297	273	233	-23%
Total water withdrawal, m³/tonne	58	58	62	66	60	3%
Water consumption, million m³	26	24	22	19	20	-23%
Water consumption, m ³ /tonne	2.6	2.4	2.3	2.2	2.3	-12%
Process water discharges, million m³	267	268	279	263	272	2%
Process water discharges, m ³ /tonne	26	27	29	31	31	21%

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

² Historical figures recalculated due to organizational changes or reporting corrections after the previous report.

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Stora Enso applies the WRI Water Aqueduct Tool to assess water-related risks at its production units. According to the tool, four of the Group's units with minor local impact operate in regions with High Baseline Water Stress: corrugated units Łódź in Poland, Tallin in Estonia and Jiashan in China, as well as Näpi sawmill in Estonia. During 2021, these units withdrew 38,000 m³ of water, which is well below 0.1% of the Group's total water withdrawal. The process water discharges of these units were 5,000 m³, which is well below 0.1% of the Group's total water discharges.

There was an outbreak of legionella-related infections in the Ghent harbour area in Belgium in 2019. A formal investigation was initiated and samples were taken from cooling towers in the area, among them the Langerbrugge site. Stora Enso has collaborated and complied with all the measures required by the authorities during the process and has used external microbiological and medical experts to

do further sampling and evaluation. After extended investigations, the court is expected to decide during the first quarter of 2022 on further proceedings in the case.

How we work

Mitigating impacts on the environment

Stora Enso's approach to water stewardship is built upon: assessment of local conditions at sites and in the water basins where it operates; mapping water use to identify potential for savings; setting goals according to group KPIs and local priorities; investments; measuring performance; and communicating and engaging with stakeholders. Stora Enso's sites set their quantified water targets based on their local context as part of their environmental management systems.

Stora Enso applies precautionary management actions to mitigate and remedy potential adverse impacts

on the environment and people. The environmental work at Stora Enso's sites, including water management and resource efficiency, is supported by third-party certified environmental management systems. All sawmills, corrugated packaging units, and board, pulp and paper sites are certified to the ISO 14001 environmental management system. Stora Enso reviews potential investments including mergers, acquisitions and divestments for risks and opportunities through its due diligence procedures including Environmental and Social Impact Assessments (ESIAs) and a Sustainability Assessment checklist for innovation projects. Read more in the [Environmental Guidelines](#).

Our policies

- Stora Enso Code
- Environmental Guidelines
- Policy on Wood and Fiber Sourcing, and Land Management

Improvements in water management

During 2021, a water management pilot project was executed at the Imatra site in Finland, which is the largest water user in Stora Enso. This resulted in systematic water use mapping and the identification of saving measures with a potential to save 1.5 million m³/year.



Investing in responsible water use

The EUR 25 million investment at Maxau site in Germany to install a new steam turbine with a closed-loop cooling system relieves pressure on the River Rhine through a lower thermal output and by withdrawing less water. It withdrew approximately 56% less water in 2021 compared with 2020.

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Environmental incidents in 2021

Stora Enso’s objective is to have no environmental incidents, but unexpected process events can occasionally result in temporary breaches. The table below provides details of environmental incidents involving non-compliance with environmental legislation or permits, or a significant stakeholder concern related to environmental performance.

Unit	Incident	Corrective action
Sunila unit	The monthly air emission limit for NOx from the bark boiler was exceeded in May. This was due to challenges in running the bark boiler on low load, requiring excess air and leading to higher emissions.	Corrective action was completed through optimisation of the process parameters for operating the bark boiler on minimum load. The situation was brought back to normal.
Wood Supply Sweden	Severe soil damage was caused to an ancient remain in April. Damage occurred while driving from a thinning and harvesting area. A minor soil preparation was also incorrectly made in the area.	A meeting to analyse the non-compliance was held in June and seven points of corrective action have been planned.
	Clearcutting and soil preparation were carried out in a Natura 2000 conservation area without permission from the County Administrative Board.	Analysis of the event was performed, and corrective action was planned and performed. One was a thematic day with additional education in routines and instructions, held in October.
	Ancient remains were damaged during soil preparations in September due to human error and non-compliance with instructions.	The case was reported to the police by the County Administrative Board. A preliminary analysis of the non-compliance has been made and corrective action is planned.
Wood Supply Finland	A contractor deviated from harvesting instructions. A brook was damaged, and trees were harvested in a protected habitat defined by the Forest Act.	Stora Enso reported the case to the Finnish Forest Centre and further action is pending feedback from the authorities.
Skutskär unit	Pitch oil leaked from the recovery boiler oil room to the harbour basin in October due to a leaking valve.	Cleaning of the sea harbour basin was executed. Improvements made to instructions, maintenance and follow-up procedures.
	No oil or other environmental impact was observed in the sea outside the site.	

Employees

Stora Enso promotes inclusion and diversity and is committed to ensuring healthy and safe workplaces.

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Opportunities and challenges

Change through people

In realising the Group’s strategy, Stora Enso’s business success will depend on its ability to retain, develop and attract new talent for its businesses. Stora Enso’s employees identify strongly with its purpose to solve global sustainability challenges, an asset the Group builds on when attracting new talent.

Progress

Leadership and performance management

Stora Enso continuously invests in the development of its leaders. During 2021, Stora Enso continued to run the Stora Enso Manager programme for first-line managers. The programme is standardised globally and delivered in nine different languages.

The Lead Through People programme targets experienced managers who are new to the company, and non-line managers. The programme supports the managers in developing their leadership skills to drive the Group’s People Promise and Expectations. At the end of 2021, the Group also launched a new leadership programme called Leading leaders, to equip its leaders with skills and tools on how to lead other leaders. During 2021, Stora Enso continued to run a series of online leadership webinars to support managers and to address challenges especially related to leading people during the pandemic.

Stora Enso’s Key Performance Indicator (KPI) for leadership has been the Leadership Index, which has been calculated based on our annual employee survey. During 2021 Stora Enso started to further digitalize

its employee engagement approach, and the next global engagement survey for all employees is planned for 2022

Stora Enso’s aim is that all of its employees are involved in at least one formal performance appraisal meeting with their manager each year. Managing the performance of its employees is an important part of engaging and motivating the Group’s workforce. Stora Enso sets and communicates clear targets for its employees, helps them understand how they contribute to the company’s success, discusses and agrees on development needs and desires, and offers opportunities to receive and give feedback regularly.

An inclusive workplace

Stora Enso believes that a good workplace is one where everyone feels they are treated fairly and with respect, where their uniqueness is appreciated and where they feel a sense of belonging and that their opinions matter. Stora Enso has zero tolerance for discrimination, harassment and bullying.

Stora Enso’s bi-annual self-assessment regarding compliance with the Group’s Minimum HR Requirements was carried out at the end of 2021. These requirements address areas such as working hours, basic employee rights, working conditions and non-discrimination. In connection with that, all unit heads are expected to complete an e-learning module about the Minimum HR Requirements.

As for gender diversity among Stora Enso’s senior management, 68% were male and 32% female at the end of 2021 (73% and 27% in 2020). The Group Leadership Team had five female and eight male members at the end of 2021.

Living wages

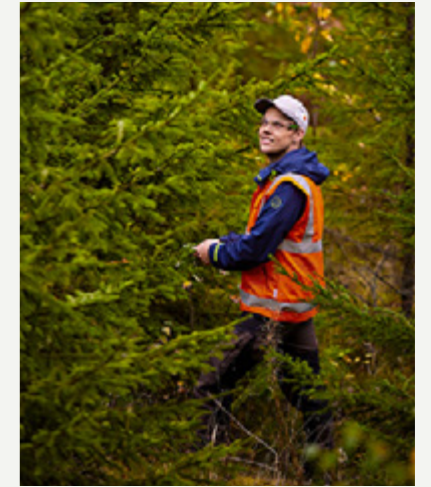
Since 2015, Stora Enso has conducted a living wage analysis every second year using the comparison data and methodology provided by BSR, a global non-profit organisation. In 2021, more countries and locations were added to the living wage analyses and the study was carried out in 13 countries, including Brazil, China, Russia and the Baltic countries. As many as 95% of the Group’s employees are located in these countries. Within these countries, the largest operational sites and offices were included, reaching a total of 44 locations globally. In all of the locations, Stora Enso’s minimum compensation was above the living wage defined by BSR.

How we work

Fair labour

Stora Enso cares for all its employees and is committed to fully respecting human rights throughout its operations. Based on Minimum HR Requirements self-assessment, which focused on labour conditions of Stora Enso employees and was conducted in 2021, the vast majority of Stora Enso’s production units are in compliance with these requirements. Units with improvement needs have established action plans to become fully compliant with the requirements.

Stora Enso continued to address areas in the Global Framework Agreement that it has signed with the labour unions IndustriAll, UniGlobal and BWI to strive for a working environment where all its employees are treated with respect and in a fair manner. Stora Enso’s bi-annual meeting with Global Unions according to the Global Framework Agreement was in November 2021. Stora Enso also works closely with



Summer jobs employed more than 1,000

A summer job or apprenticeship at one of Stora Enso’s units is an excellent way for students and graduates to utilise the skills acquired during their studies and to begin their careers at Stora Enso. During 2021, Stora Enso had over 1,200 summer employees located mainly in Finland and Sweden.

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the European Works Council in order to establish and develop an open, confidential information and consultation procedure between the company and its employees on the EU/EEA level. Stora Enso was the first company in Finland to reach an agreement with the Paperworker's Union in the labour market negotiations. The new agreement is valid for two years and four months.

Working hour recording errors in China Packaging

In late 2021, Stora Enso's Internal Audit discovered working hour recording errors in the operations of Stora Enso's China Packaging. Manufacturing personnel have been paid for overtime hours exceeding the requirements of Stora Enso's Code of Conduct, legal standards, as well as customer requirements. Internal investigations are still ongoing, but based on initial findings, the intention behind the practice was aimed at hiding overtime

hours among manufacturing personnel. Stora Enso is taking prompt action to correct the errors and to ensure that the overtime practice does not continue.

Support in restructuring situations

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

The Group's main restructuring events in 2021 include the divestment of Stora Enso's Sachsen site in Germany and the closing of the Group's US-based Virdia operations during 2021. All 230 employees at Sachsen moved to the new owner

with the transaction, and the closing of Virdia operations impacted approximately 65 Stora Enso employees.

Our policies

Stora Enso's People Promise and Expectations helps to ensure that in everything the Group does, it drives customer value, performs and allows space for innovation. Read more on page 26.

Other key documents applied in Stora Enso's people and safety management include:

- Stora Enso Code
- Supplier Code of Conduct
- Minimum Human Resources Requirements for labour conditions
- Global Framework Agreement
- Diversity Policy
- Human Rights Policy
- Human Rights Guidelines
- Stora Enso's Health and Safety Policy

Female employees' compensation compared to male employees' compensation¹

	2021	2020	2019
China	92%	90%	91%
Finland	92%	92%	95%
Poland	91%	90%	94%
Sweden	99%	99%	99%

¹ Weighted averages within each country's employee categories as applicable. Figures for the four largest countries in terms of the total number of employees.

Our lowest wages compared to local minimum wages¹

Ratio of our lowest wage to the local minimum wage

	2021	2020	2019
Brazil ²	1.1	1.2	1.1
China ³	1.0	1.0	1.0
Estonia	1.6	1.2	1.0
Latvia	1.6	1.7	1.6
Lithuania	1.3	1.4	1.5
Poland	1.0	1.1	1.2
Russia	1.2	1.6	1.4
Uruguay ⁴	1.5	1.6	1.5

¹ In most relevant locations based on internal assessment and human rights risks, compared to minimum wage levels set at the 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.

³ As of 2021, the reporting is based on the lowest wage in Stora Enso's units in China, instead of the weighted average. Historical figures restated for comparability.

⁴ Including employees of our 50%-owned joint operation Montes del Plata.

Closure of Kvarnsveden and Veitsiluoto

In April 2021, Stora Enso announced its plan permanently to close down pulp and paper production at Kvarnsveden in Sweden and Veitsiluoto in Finland due to the declining paper market, affecting 1,100 employees in total. Stora Enso has since worked closely together with its other locations, the cities of Kemi and Borlänge, and other stakeholders, to support re-employment and training of the affected employees. The effect of the different support activities will be followed up on a regular basis.

Approximately 440 employees were affected by the Kvarnsveden closure. Out of those, 136 employees had found new employment by the end of 2021, within Stora Enso or externally, or received early pension. Some 21% of the redundancies (around 70 employees) have been managed through pension agreements.

Following the closure of the Veitsiluoto site, 550 employees were permanently laid off in Finland. By the end of 2021, around 150 of them had found a new job or started studying, and around 150 employees had retired.

Stora Enso has offered financial outplacement support for affected employees in Kvarnsveden and Veitsiluoto, such as training support, relocation support and support in starting up new companies. In addition, Stora Enso has offered employment support training and enabled the matching of internal vacancies with affected employees. Additional occupational health services have also been available for affected employees.

The regrettable but necessary closure of Veitsiluoto and Kvarnsveden units has impacted the Kemi and Borlänge communities. In order to strengthen livelihood opportunities and employment in the community, Stora Enso is looking for new business opportunities for these industrial sites. For this purpose, the company has invested in a regional development programme in the Kemi region together with state authorities.

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Safety

Stora Enso promotes inclusion and diversity and is committed to ensuring healthy and safe workplaces.



Opportunities and challenges

Committed to ensuring healthy workplaces

The health and safety of Stora Enso's employees is a key priority. The Group's goal is to provide an accident-free and inclusive workplace.

In the continuing Covid-19 crisis, Stora Enso managed to find a way to protect both its employees and customer interests, by continuing to adhere to the national and local authorities' recommendations and leveraging a hybrid model of working.



Progress

Safety during a global pandemic

Following official recommendations and careful planning have ensured the Group's maintenance turnarounds during the year were successfully executed without any serious Covid-19 escalations. To ensure that Stora Enso's employees are well informed and to support their wellbeing, the Group has communicated about the situation and its response to Covid-19 regularly throughout the year. In addition, remote working has been recommended and supported for Stora Enso's employees when possible.

Enhancing safety performance

Stora Enso reports incidents and accidents using the international

Occupational Health and Safety (OHS) 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. Stora Enso uses the Total Recordable Incident (TRI) rate as its main key performance indicator (KPI) as it provides a comprehensive overview of safety performance by including less severe accidents. Stora Enso also monitors contractor accidents in separate categories for on-site accidents and logistics incidents. For more information, see page 155.

In October 2021, Stora Enso experienced the death of a contractor employee, due to a forklift collision at the Veracel joint operation in Brazil. The incident and the root causes have been investigated together with the local authorities. The learnings from this tragic event will be acted upon to prevent such accidents from recurring.

Stora Enso's milestone for 2021 was to reach a TRI rate of 4.0 by the end of 2021. In 2021, the Group's TRI rate increased to 6.2 (6.1 in 2020). Despite the Group's dedication to improve its safety performance, the milestone for 2021 was not achieved. Even though Stora Enso's safety performance has been stable over the past few years, it does not reflect the Group's dedication keeping everyone safe, every day

Analysis of Stora Enso's current performance, benchmarking with best practices in high-performing safety cultures and identification of additional improvement potential has developed into a new strategic Safety Roadmap to speed up the Group's performance improvements. This will lead to a full review of existing guidelines, development of supporting tools and Stora Enso's Safety Academy, as well as the expedited development of SMART 4 Safety, a digital safety management tool. This new roadmap, harnessing the power of everyone in Stora Enso, employees and contractors alike, points Stora Enso in the right direction, towards delivering on its ambitions.

Focus on preventive action

Regarding occupational health, Stora Enso measures illness-related absence, with a focus on encouraging units to invest in proactive health management. In 2021, illness-related absence amounted to 3.8% (3.6%) of maximum theoretical working hours of the Group's employees.

In 2021, Stora Enso continued to expand the 'Fair and Just' approach to all aspects relating to safety. The approach provides a transparent way of managing the outcome of safety investigations. It also serves as a tool to facilitate the review and discussion of safety incidents and other unsafe behaviour.

TRI rate
6.2

TRI = Total Recordable Incident

Hybrid working has become a part of many units' working practices during autumn 2021.

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Stora Enso encourages employees and contractors to identify and report unsafe situations or actions. In 2021, the average number of safety observations reported per employee was 11.6 (12.2). To facilitate reporting on safety-related topics, in 2021 the Group introduced its SMART 4 Safety tool for reporting safety observations.



How we work

Occupational safety

A company-wide safety culture means that everyone is responsible for making every workday healthy and safe – starting with the Group’s top management and throughout the company.

Providing a safe working environment and operational integrity is under constant review and improvement at Stora Enso, based on international standards, but with an ambition that reaches far beyond mere compliance. Currently 55 out of 60 operational units are externally certified according to the ISO

45001:2018 safety management standard and Stora Enso encourages supply chain partners to pursue similar certification.

Safety is on the agenda at every level, from the Board of Directors down to the local units, with active collaboration between divisional and functional representatives, and together with centralised functions in the Group’s safety steering group, safety management team and across the geographical safety management networks. Stora Enso actively engages all stakeholders for co-creation in safety, by sharing learnings, good practices, training and tools, etc. This cooperation also extends to the joint ventures in Brazil and Uruguay.

Contractor safety

Stora Enso’s approach to safety also covers work performed on behalf of Stora Enso. The process starts as early as at the tendering phase and, after selection, enters a full safety life cycle. This involves setting and reviewing expectations

and requirements for, and reviewing the performance of, our supply chain partners. We do this based on Stora Enso’s Supplier Code of Conduct and, for contracted work performed at the Group’s locations, by active collaboration together.



Our policies

Stora Enso’s Health and Safety Policy, which was renewed in 2021, defines the objectives for the Group’s safety management. It also defines the governance model for managing health and safety topics in practice and for integrating them into annual planning and reporting.

Other key documents applied in Stora Enso’s people and safety management include:

- Stora Enso Code
- Supplier Code of Conduct
- Global Framework Agreement
- Human Rights Policy
- Human Rights Guidelines

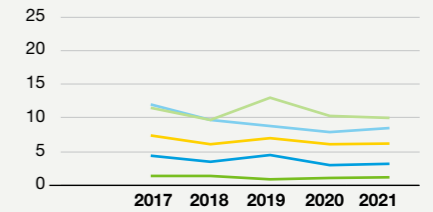
Making safety visible

In November 2021, Stora Enso organised the third Group-wide Safety Week with the theme “Safety starts with me”. The aim was to engage everyone in fostering a safety culture that promotes individual responsibility, caring, intervening and speaking out. Safety Week resulted in a range of activities across the organisation, such as “creating safety” seminar open to all employees, as well as other training, safety surveys and virtual site visits.



Total recordable incident rates (TRI)¹

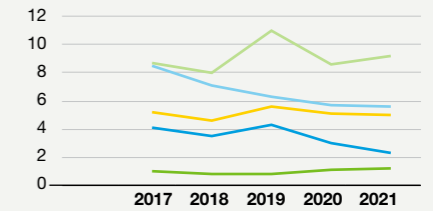
Number of incidents among our own employees per one million hours worked



	2017	2018	2019	2020	2021
China	1.4	1.4	0.9	1.1	1.2
Finland	11.5	9.7	13.0	10.3	10.0
Poland	4.4	3.5	4.5	3.0	3.2
Sweden	12.0	9.7	8.8	7.9	8.5
Group	7.4	6.1	7.0	6.1	6.2

Lost-time accident rates (LTA)¹

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



	2017	2018	2019	2020	2021
China	1.0	0.8	0.8	1.1	1.2
Finland	8.7	8.0	11.0	8.6	9.2
Poland	4.1	3.5	4.3	3.0	2.3
Sweden	8.5	7.1	6.3	5.7	5.6
Group	5.2	4.6	5.6	5.1	5.0

¹ For Stora Enso employees, including joint operations. Figures for the four largest countries in terms of the total number of employees. Reporting based on the definitions by the Occupational Safety and Health Administration (OSHA).

Business ethics

A value-driven culture promoting honesty, transparency and ethical behaviour is key to Stora Enso’s long-term success.

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Opportunities and challenges

An ethical approach beyond compliance

Stora Enso operates globally, including in high-risk markets that offer business opportunities but may entail exposure to serious compliance risks. Measures are taken to help combat corruption, follow international trade sanctions, ensure sound business practices and preserve competitive markets. Laws and regulations place high demands on companies’ control mechanisms, but also help build accountability and trust among stakeholders.

Compliance with laws and regulations is what gives a company its licence to operate. Stora Enso aims to establish a value-driven culture where people are guided by a common moral compass when faced with difficult decisions, act with integrity and speak up against misconduct or unethical behaviours.

Progress

Identifying and monitoring compliance risks

Risk assessments, control processes and comprehensive monitoring are fundamental to any compliance management system.

Stora Enso’s risk assessment procedures are outlined in the Enterprise Risk Management (ERM) instructions. These procedures cover all units and are carried out regularly, and the results are used by divisional management teams, for strategy planning by Ethics and Compliance, and in the Group-level ERM process.

To support compliance control, a third-party management tool is used for due diligence, onboarding and continuous monitoring of critical business partners. In 2021, 119 (149 in 2020) critical business partners were

reviewed using the tool. Similarly, a screening process is used when recruiting for certain top management positions.

To mitigate competition law risks, new procedures and internal control measures related to trade associations were established during the year.

The Ethics and Compliance Self-Assessment Tool (T.E.S.T.) provides divisions and functions with an overview of their progress in implementing policies and compliance measures, while also identifying and managing possible gaps and risks. The results and subsequent actions are addressed through Divisional Compliance Forums. In 2021, the assessment was conducted by 149 (170) teams in Stora Enso.

In the Group’s first year of participation in the UK Transparency International Corporate Anti-Corruption Benchmark, Stora Enso’s anti-corruption (ABC) programme was awarded an A score (90/100).

As part of the UK-China Business Environment Programme, Stora Enso piloted the independently certifiable anti-bribery management system ISO 37001 for its operations in China this year. The purpose of the programme is to help strengthen the legal and regulatory framework.

Employee involvement through engaging communication and training

Conversations about ethics are facilitated through several communications activities. As part of the We Belong Here -initiative promoting inclusion and diversity, this year’s quarterly Ethical Spotlights all focused on related topics, including ethical blindness, psychological safety and how diversity and inclusion can help mitigate compliance risks.

Volunteer Ethics Ambassadors continued their work by running training sessions and providing support in their respective units.

In 2021, Stora Enso’s white-collar employees (nearly 9,000 employees) were invited to take mandatory training on Stora Enso’s new code of conduct, as updated in 2020. At the end of the year, 95% of targeted employees had completed the training on the new code. New employees are invited to take the training within their first month and in 2022 blue-collar employees will be invited to a shorter, mobile-friendly version of the Code e-learning.

One of Stora Enso’s Key Performance Indicators (KPIs) for business ethics has been the Code index, which has been calculated based on annual employee survey responses to questions related to the Stora Enso Code. During 2021 Stora Enso started to further digitalize its employee engagement approach, and the next global engagement survey for all employees is planned for 2022.

Stora Enso employees who face elevated ethics and compliance risks due to the nature of their work, including senior leadership as well as sales, sourcing and public affairs staff, are required to complete mandatory, in-depth compliance training, COMPLY, and to annually sign off on updates. COMPLY was first launched in 2013 and is today an interactive online training application. During the year, 99% of target group employees completed the COMPLY training.

All white-collar Stora Enso employees are also required to complete training on data privacy. The completion rate reached 96% (92%) in 2021. Stora Enso’s cyber security capabilities and the maturity of Information Security Management has been independently verified over several years, including commissioned assessments

and third-party auditing, most recently in 2020.

Stora Enso sales and sourcing teams are offered tailored training on competition law and anti-corruption, including training on trade associations, joint purchasing agreements, gifts and hospitality, and the onboarding of critical business partners.

In October 2021, the European Commission conducted several unannounced inspections of companies in the wood pulp sector throughout its member states. Stora Enso is cooperating fully with the authorities. The outcome of the investigation is not yet known. Read more on page 54.

Reporting, investigating, and addressing suspected misconduct

Employees and other stakeholders are encouraged to report suspected cases of misconduct or unethical behaviour. All potential non-compliance cases involving a Stora Enso employee or a contracted third party are duly investigated by a dedicated, independent and well governed internal organisation. Cases are reported to both the Ethics and Compliance Management Committee and the Board of Directors’ Sustainability and Ethics Committee. Proven cases of non-compliance may lead to disciplinary or legal action.

Reporting is done via any of Stora Enso’s grievance channels, by personal contact, e-mail, letter, phone or anonymously via the Speak Up Hotline. A new EU-based service provider for the Speak Up Hotline was contracted in 2021. A total of 117 (86 in 2020) potential non-compliance cases were reported in 2021. In recent years there has been a steady increase in the number of reported cases, likely due to more focus on ethical conduct, compliance and whistleblowing, both internally and externally.



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A total of 98 (84¹) investigations of potential non-compliance were completed, including open cases from previous years. Proven cases leading to disciplinary action, legal action and/or process improvements were identified in 26 (34¹) of these.

Based on the Group’s categorisation, 9 (10) of the proven cases were related to corruption and/or fraud, resulting in employee dismissal or a disciplinary process. In addition 1 (2) of the cases resulted in the termination of business relationships.

Furthermore, 11 (11) of the proven cases were related to discrimination, harassment and/or bullying. Remediation plans have been or are being implemented together with relevant management representatives.

How we work

A governance framework meeting future ethics and compliance challenges

Stora Enso’s Ethics and Compliance function is a part of Group Legal, headed by

the General Counsel, which reports directly to the CEO. The Ethics and Compliance Management Committee, a governance body Chaired by the CEO, monitors legal compliance and ethical business conduct continuously and meets quarterly.

Our policies

The Stora Enso Code, the Group’s code of conduct, outlines the approach to ethical business practices, human and labour rights, and the environment. The Code is a single set

of values for all employees, applied wherever Stora Enso operates. Other relevant Group-wide policies include the Business Practice Policy, Data Privacy Policy and Supplier Code of Conduct. Guidelines provide detailed support for how to adhere to the principles set forth in the policy statements. In light of the general increase in cyber-attacks, a new external fraud guideline outlining mitigating actions, reporting requirements and investigations was introduced in 2021.

¹ Restated

Breakdown of potential non-compliance cases

	2021	2020	2019
Anti-trust	1	0	0
Conflict of interest	10	9	4
Corruption	18	6	4
Fraud	10	14	12
Discrimination, harassment and/or bullying	46	26	21
Working conditions	11	4	1
Health and safety	5	6	3
Other	16	21	12
Total	117	86	57

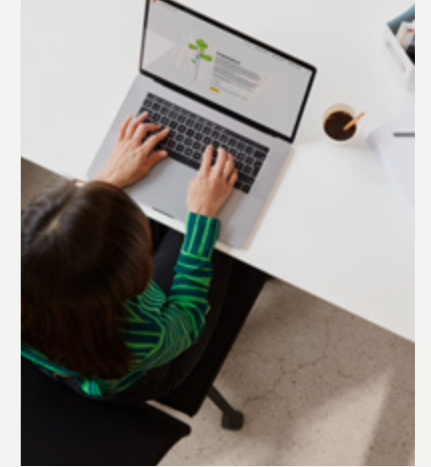
Compliance cases in 2021



¹ Including cases from previous year

² ECMC = Ethics and Compliance Management Committee. BoD = Board of Directors’ Sustainability and Ethics Committee and Board of Directors’ Financial and Audit Committee.

³ Disciplinary actions include oral or written warnings, dismissal or voluntary resigning.



To support team discussions further in Stora Enso, real-life compliance cases are published bi-monthly in the digital Ethics and Compliance Case Book.

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Human rights

When growing and harvesting trees, making products or transporting materials, Stora Enso has an impact on people.



Opportunities and challenges

Developments in human rights regulation

Many of the human rights challenges Stora Enso faces are deeply rooted in local communities and can only be effectively addressed through a long-term commitment to and close cooperation with global and local stakeholders.

During 2021, EU regulations embedding human rights were presented for companies' consultation or implementation, for example the Corporate Sustainability Reporting Directive (CSRD), the EU Whistleblower Directive and the Directive on Corporate Due Diligence and Corporate Accountability. Stora Enso supports human rights regulations that put companies on an equal standing and help to ensure that people are treated with decency and respect.



Progress

Continued focus on due diligence

In preparation for the upcoming EU directive on mandatory human rights due diligence, Stora Enso carried out a number of initiatives, including a workshop with key employees across the company and an external law firm, and initiated a working group to help bring the organisation into compliance.

Stora Enso is a member of the Supplier Ethical Data Exchange (Sedex), a platform where companies share sustainability information with multiple customers in an agreed format and level of detail to improve transparency in the value chain. By the end of 2021, 29 (30 in 2020) of 60 Stora Enso's production units were registered in Sedex. By the end of the year, 17 of the units (16 in 2020) had been audited through Sedex Member

Ethical Data Audits (SMETA) at least once since 2011.

In 2019 Stora Enso identified 24 human rights-related development actions in Group function processes. Twenty-two of the actions were completed in 2020, and the two remaining actions were completed in 2021.

Through membership of the Global Business Initiative for Human Rights (GBI) and of the World Business Council for Sustainable Development (WBCSD) Stora Enso continues to learn from peers and experts as the journey continues to embed human rights more effectively into operations and due diligence.

Actions related to the Group's highest priority human rights issues in 2021

While Stora Enso considers all human rights to be important, and respects them, the human rights identified as having highest priority remain the primary focus of work. Human rights are embedded in the day-to-day business activities. Actions and progress are reported in the relevant sections of the report:

Health and safety

- Enhancing safety performance. Read more [here](#).
- Covid-pandemic response. Read more on page [153](#).

Fair labour

- Enso's Internal Audit discovered working hour recording errors in the operations of Stora Enso's China Packaging. Read more on page [146](#).
- Audits of labour agency service providers in China. Read more on page [155](#).
- Union relations: Global Framework [Agreement](#), Stora Enso's commitment

to freedom of association is firm.

A testament to that is the Global Framework Agreement that Stora Enso signed in 2018 with the labour unions IndustriAll, UniGlobal and BWI. Approximately 80% of Stora Enso's employees were covered by CBAs.

- An inclusive workplace. Read more on pages [26](#) and [145](#).
- Slavery and Human Trafficking [Statement](#)

Land and natural resource rights acquisition and management

- Sustainable resettlement in Brazil, Bahia. At the end of 2021, 111 hectares or 0.1% of productive land owned by Veracel remained occupied by social landless movements not involved in the agreements. Read more [here](#).
- Monitoring land recovery in China, Guangxi. Recovery of occupied land continued in 2021, with 6,650 hectares of land under occupation at the end on the year. Parts of the land leased by Stora Enso in Guangxi province of China have been occupied for up to ten years for the purpose of growing crops and trees on a small scale. In some cases, the occupiers are claiming rights to the land based on historical land ownership documents that have been superseded by state ownership in successive land reform processes. Stora Enso leases 77,000 hectares of land in Guangxi, of which 53,600 hectares is leased from state-owned forest farms. The remaining 23,400 hectares, or 30% of the total area, is social land leased from village collectives, individual households and local forest farms.
- Indigenous communities' community consultations, including Free, Prior and



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

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Informed Consent (FPIC), are a key element in our human rights due diligence and forestry operations, especially concerning land leasing and indigenous peoples' rights. In Central Sweden, for example, we have had special agreements on land use with five Sámi communities since 1992 and continue to maintain good relations with them. In Brazil, Bahia, Stora Enso's joint operation Veracel maintains good relations with local Pataxó and Tupinambá communities. Some of the indigenous communities are calling for the expansion of the Barra Velha Indian Reserve. The extension would cover 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 2021, this case was still being processed by the regional federal court. Veracel remains committed to complying fully with the court's eventual decision. Read more [here](#).

Grievance mechanisms

- Access for all stakeholders. Read more on page [149](#).

Children's rights

- The child labour remediation programme¹ in Pakistan continues to focus on providing vocational training to students to improve their future employability. Read more [here](#).

Enhancing human rights training

Human rights are covered in several training modules for Stora Enso's employees. Human

rights is a core element in Stora Enso's [Code of Conduct](#) and its respective training sessions. Read more [here](#). In 2021, Stora Enso also launched updated internal minimum labour standards e-learning material designed at first for Stora Enso's unit managers, and all 68 of the targeted unit managers completed the e-learning by the end of the year. The introductory e-learning material on human rights and the deep dive on Sedex audits were also completed by a group of 400 selected employees across the company during 2021. In addition, the roll-out and awareness-raising of the updated supplier code of conduct continued throughout the year, via meetings and workshops with purchasers and suppliers.

How we work

Assessing and addressing the Group's human rights impacts

The commitment to respect human rights covers all operations, including the Group's employees, contractors, suppliers and neighbouring communities. Read more in [Stora Enso's Human Rights Guidelines](#).

Access to remedy and grievance channels

Stora Enso is committed to remedy situations where its activities have caused or contributed to adverse human rights impacts. For more information, see the [Human Rights Guidelines](#). The Group has also established grievance channels in five local languages for communities and other external stakeholders associated with Stora Enso's plantations and

site in Guangxi, China. Similar local grievance channels exist for the joint operations Veracel in Brazil and Montes del Plata in Uruguay.

Reporting on performance

Stora Enso reports on its human rights work annually and strives to align its reporting with the [UNGP reporting framework](#). Stora Enso annually publishes a [Slavery and Human Trafficking Statement](#) in accordance with the United Kingdom's Modern Slavery Act 2015 and the Australian Modern Slavery Act 2018.

Our policies

Stora Enso is committed to the United Nations Guiding Principles, which require companies to conduct due diligence to identify, assess, and remedy the impacts that their activities may have on people. The Stora Enso Human Rights Guideline lays out how human rights are integrated into our day-to-day operations.

Relevant Stora Enso policies on human rights include:

- Stora Enso Code
- Human Rights Policy
- Supplier Code of Conduct
- Human Rights Guidelines
- Environmental Guidelines

¹ As part of our responsible exit from Pakistan following the 2017 divestment of the 35% minority holding in the equity accounted investment.

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

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

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Community

With a global presence in more than 30 countries, Stora Enso engages with local communities around the world.

Opportunities and challenges

Supporting community resilience

When Stora Enso sources its main raw material wood and manufactures its products, it depends on local communities for its workforce and a social licence to operate. In its efforts to be a good corporate citizen, Stora Enso supports and works with these communities to help them thrive economically, socially and environmentally. The Covid-19 pandemic has demonstrated how important, although challenging, community engagement can be in times of crisis.

While Stora Enso is a significant employer, taxpayer and business partner in many communities, the company's operations also generate environmental and social impacts. Stora Enso's tree plantations influence land use in ways that may adversely affect the rights of local communities. The company's actions must be managed responsibly in order to minimise negative socio-environmental impacts, maximise positive influence, and maintain a constructive community dialogue that ensures a long-term license to operate.

Progress

Continued restrictions affected community engagement

Stora Enso's community investments consist of cash and in-kind donations, as well as employee working hours for voluntary community work as defined in the Business for Societal Impact (B4SI) framework. The Group's target is to increase the share of volunteer work and in-kind contributions to 70% of the total community investments by the end of

2023, with continued growth in the total community investment. The KPI excludes Stora Enso's 50%-owned joint operations in Brazil and Uruguay due the nature of community investment projects in these countries, where programmes cover wider societal issues with more long-term investment needs. The progress towards the target was slowed down in 2020 and 2021, partly by the restrictions on volunteer work and community projects that needed to be enforced to ensure the safety of employees and community members during the pandemic. In 2021, the share of volunteer work and in-kind contributions increased to 42% (41% in 2020). When including joint operations in Brazil and Uruguay, the share was 18% (19%).

The share of community investment projects in the Education category increased to 20% (14% in 2020). The share of those related to the categories of Environment and Resilient Local Communities¹ was 6% and 58% respectively (5% and 76% in 2020). During the pandemic, many of the community investment projects have consisted of donating materials, such as personal protective equipment (PPE), but also cash donations to charity organisations dedicated to health and social welfare.

In 2021, the number of Stora Enso's employees in voluntary community work decreased to 1,432 (2,684), but total volunteered hours decreased to 4,483 (6,921). Each Stora Enso employee can volunteer for 8 hours of work time per year for charitable causes. In total, the Group's voluntary community investments amounted to EUR 2.0 million (EUR 2.7 million), including 50% of the community investments by company's 50/50 joint operations in Brazil and Uruguay.

The total number of Stora Enso's voluntary community investment projects was 327 (343 in 2020), including those facilitated by joint operations.

Europe

In Europe, to grow and support its potential labour pool, Stora Enso focuses its support on education and youth employability and provides public research opportunities. To contribute to the everyday vitality of communities, the company financially supports local associations, including sports clubs and cultural activities.

Veracel, Brazil

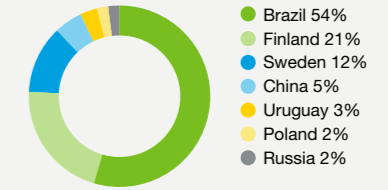
Stora Enso's 50/50 joint operation Veracel runs a pulp mill in Bahía, Brazil, with associated eucalyptus plantations. The company owns 211,000 hectares of land, of which about half is reserved for rainforest restoration and conservation. Supporting communities' income generation and employment are top priorities in Veracel's sustainability agenda.

Veracel supports local livelihoods by, for example, making some of its land available to family farmers, by providing training and technical support, and through local sourcing programmes that give preference to and provide training for local businesses when sourcing goods and services. In 2021, more than 1,470 families benefitted from Veracel's family farming programmes.

To help to support biodiversity and additional income for local families, Veracel allows honey producers to keep hives on company land. The reintroduction of

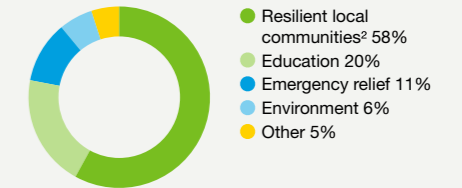
¹ Resilient Local Communities include the B4SI framework areas of Economic Development, Social Welfare, Healthy Lifestyle, and Arts and Culture.

Voluntary community investment by region¹ EUR 2.0 million



¹ Total community investment includes cash, working hours, and in-kind as defined in the B4SI framework. Including 50% of joint operations Veracel in Brazil and Montes del Plata in Uruguay.

Voluntary community investment by investment area¹ EUR 2.0 million



¹ Total community investment includes cash, working hours, and in-kind as defined in the B4SI framework. Including 50% of joint operations Veracel in Brazil and Montes del Plata in Uruguay.

² Resilient local communities include B4SI framework areas of Economic development, Social welfare, Healthy lifestyle and Arts and Culture.

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the native bees is a great environment gain, since they are pollinator agents both for the native forest and farming. Veracel also provides training in beekeeping, as well as technical and material support. During 2021, Veracel supported more than 180 honey producers.

During late 2021, a state of emergency was declared for several municipalities in Bahia following heavy rains. The flooding destroyed critical infrastructure, livelihoods and entire villages. Veracel has supported local communities with in-kind donations to rebuild and maintain infrastructure as well as by donating food parcels and mattresses for emergency relief.

Montes del Plata, Uruguay

Stora Enso's 50/50 joint operation runs a pulp mill in southwestern Uruguay with associated eucalyptus plantations. Montes del Plata owns 190,000 hectares and leases (Alianzas programme) 82,000 hectares of land. The Alianzas programme provides additional income for local farmers by enabling them to integrate eucalyptus plantations into their farms, and by promoting cattle grazing and honey production on company lands.

Montes del Plata also seeks to benefit local communities by maximising local hiring and participating in mentoring programmes. In 2021 Montes del Plata has invested in a mushroom harvesting livelihood programme for unemployed locals, in collaboration with a local university, including an incubator project for 25 individuals to develop entrepreneurship.

How we work

Working with communities through local projects

The form and frequency of our engagement with local communities is shaped by the local context. In some areas, the interaction is done through community representatives while other communities prefer direct and inclusive contact. Many of our employees live in the communities and have a deeper understanding of the local context.

Stora Enso involves local stakeholders in the planning process of its community investments, to ensure benefits for communities. The company also wants to enhance the resilience and attractiveness to existing and potential employees of the communities where it operates.

Community projects are managed and funded locally to ensure that the communities close to its operations are the main beneficiaries. The community projects are categorised under strategic focus areas: Education, Environment, and Resilient Local Communities.

Managing the impacts on local communities

Stora Enso takes precautionary and systematic action to mitigate and remedy potential adverse environmental and social impacts on local stakeholders in community development and/or monitoring. These include:

- Due diligence, in which the company evaluates the impacts that its current or potential business operations may have on

local communities and the environment. Community consultations are a key element of this work. For more information, see page 152, Stora Enso's key tools for human right due diligence.

- Third-party certified management systems at its production units that apply international standards such as ISO 14001, ISO 45001, and ISO 50001.
- Third-party forest management certification for its own forestry operations and suppliers, such as FSC and the PEFC, which also include community considerations.
- When necessary, restructuring processes and the closure of operations are realised in cooperation with the authorities to support communities through related changes, and to create opportunities for new business initiatives.
- Grievance mechanisms are available to communities close the Group's operations. For more information, see page 149.

Our policies

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

- Human Rights Policy and Guidelines
- Sponsorship and Donations Policy
- Community Investment Guidelines
- Volunteering Guideline

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



Volunteering for the environment

Mangroves play an important role in mitigating climate change by storing carbon dioxide and other greenhouse gases. Currently, large areas of mangroves in the world are endangered and in urgent need of protection and restoration. In China, Stora Enso Guangxi invested in wetland restoration and a mangrove planting programme in partnership with the local authorities. Stora Enso volunteers, together with other volunteer teams from local NGOs and the government, planted 1,350 mangrove plants donated by Stora Enso.

In 2021, our total voluntary community investment was EUR 2.0 million.

Sustainable sourcing

Stora Enso has strict requirements for all its suppliers and supports them in becoming more sustainable.

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Opportunities and challenges

Promoting supply chain sustainability

As a company with over 20,000 suppliers around the world, Stora Enso can help global supply chains become more sustainable. However, reaching a comprehensive understanding of a supplier’s sustainability performance, including their potential impacts on human rights, remains a challenge, even with strict sourcing processes and criteria in place.

The Covid-19 pandemic has brought uncertainty for business and supply chains globally. Stora Enso will continue proactively to monitor and respond to the pandemic to ensure minimal impact on our ability to purchase materials and services, serve customers and run operations.

Stora Enso runs sourcing and logistics operations in various regulatory environments. Current developments in national and EU-level legislation on supply chain due diligence, for example, may affect the way the company conducts sourcing and logistics activities in the future. In addition, Stora Enso responds to stakeholder demands concerning topics, such as supply chain transparency and renewable raw materials. By passing on these types of requirements to direct suppliers, the company can drive positive change further in supply chains.



Progress

Sustainability embedded into the sourcing process

Stora Enso’s key performance indicator (KPI) for responsible sourcing measures the proportion of total supplier spend covered by its Supplier Code of Conduct (SCoC),

including all categories and regions.¹ By the end of 2021, 96% of Stora Enso’s total spend on materials, goods and services was covered (96% at the end of 2020), which exceeds the company’s target to maintain at least the level of 95%. Stora Enso launched its updated SCoC in 2021, and held many internal training sessions in addition to numerous supplier dialogues on the updated SCoC. The new SCoC updates Stora Enso’s requirements for suppliers on topics, such as data privacy, climate change, biodiversity, ethical recruitment and reasonable remuneration for employees. Together with the SCoC, Stora Enso launched practical guidance for suppliers, which is meant to support suppliers in implementation and interpretation of the SCoC requirements and to share best practices.

As part of its tendering process, Stora Enso asks its suppliers to provide their safety and/or CO₂ emission information. These sustainability criteria are used to help make more balanced sourcing decisions and create incentives for suppliers to invest in sustainability performance. At the end of 2021, 96% of Stora Enso’s contracted suppliers’ spend was covered by the sustainability criteria (77% at the end of 2020).

Driving sustainability through supplier monitoring

Due to the global pandemic, during 2021 the new normal way of operating was online auditing. In online audits the supplier site tours, interviews and document reviews are conducted with digital communication tools. During 2021, a total of 70 Stora Enso suppliers were audited through third-party sustainability audits (22 in 2020). The third-party supplier audits were largely online audits.

The audits continued to focus on suppliers with heightened sustainability risks, as identified by the company’s country and category risk assessment. By the end of 2021, 54% of identified high-risk suppliers, by spend, were covered by third-party sustainability audits (51% in 2020).

As in previous years, the 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. Stora Enso created corrective action plans for all non-conformances and followed them up.

In 2021, Stora Enso’s third-party supplier audits included audits among four of its labour agency service providers for its China Packaging units. The contents of the SCoC were audited with a special focus on responsible recruitment practices, which Stora Enso requires all its suppliers to follow. Stora Enso also wanted to evaluate that there is no discrimination or violation of ethnic minorities’ rights. In addition to these third-party audits, Stora Enso’s Internal Audit audited China Packaging units during the year and discovered working hour recording errors. For more, see page 146.

Any suspected SCoC non-conformances identified during supplier visits or audits, or brought to Stora Enso’s attention through grievance channels, are duly investigated. The findings are discussed, and a corrective action plan is devised together with the supplier in question. The supplier must commit to the plan, and Stora Enso’s purchasers follow up on its 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 where a supplier is not willing to improve their performance, the relationship is terminated.

One supplier contract was terminated due to occupational safety issues in 2021 (none in 2020). In addition, one supplier contract was not renewed due to misconduct related to business ethics.



How we work

Strict sustainability requirements

All suppliers wishing to do business with Stora Enso must first pre-qualify during tendering or, at the latest, before a contract is drafted. To pre-qualify, suppliers must complete a questionnaire, submit confirmation of their compliance with Stora Enso’s Supplier Code of Conduct (SCoC), and complete its safety management online training.

Introducing the new sustainability framework to the supplier base

Prior to the launch of Stora Enso’s new sustainability framework in 2021, the company wanted to hear its suppliers views and current activities on the key focus areas of climate change, biodiversity and the circular economy. During 2021, Stora Enso organised five online focus group discussions, in which 25 of its top suppliers participated. The discussions were considered a very proactive format and the open discussion about the possibilities and challenges around the new focus areas was appreciated by suppliers. A need for value chain collaboration was recognised in all of the three areas. The new framework

¹ Excluding joint operations, intellectual property rights, leasing fees, financial trading, government fees such as customs, and wood purchases from private individual forest owners.

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was officially introduced to suppliers on later Supplier Day event. During the event, we held interactive teach-in sessions for suppliers on climate change, biodiversity and the circular economy. Over 340 participants from supplier companies joined the sessions, together with Stora Enso’s employees.

Carbon Road Map

In connection to Stora Enso’s new ambitious Science Based Targets for scope 3 emissions (-50% by 2030), a road map was developed with key activities to support the company’s carbon work during the next five years. It was identified that some suppliers were very advanced in their climate work, and others were just getting started. Stora Enso wants to provide an opportunity to raise the level of knowledge on climate change. To do this, the company launched a climate change and emissions-related e-learning training package for suppliers at the end of 2021. The training shares basic knowledge on climate change, walks the suppliers through how to calculate GHG emissions, and urges them to reduce their emissions by setting ambitious emission targets.

Aim to increase supply chain transparency

Stora Enso’s vision is to communicate complex supply chain sustainability topics to its customers in a simplified yet informative and transparent way. During 2021, the company partnered with a start-up

service provider to map its supply chain by creating a digital twin of one of its product category supply chains all the way to the customer. This proof of concept project revealed many opportunities to visualise material streams, but challenges related to data gathering were also identified. Stora Enso will continue to work towards creating more supply chain transparency.

On-site contractor safety

Some of Stora Enso’s 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 site maintenance projects. Stora Enso’s SCoC and sourcing process applies to all contractors. While contractors are primarily responsible for their own employees and sub-contractors, Stora Enso strives to ensure that everyone working on its premises is treated fairly and receives adequate safety training.

Using a Group-wide safety reporting platform, Stora Enso continuously monitors contractor companies’ accidents at the Group’s units to recognise patterns and to identify those with an unacceptably high accident performance compared to peers. When such behaviour is indicated by statistics, Stora Enso takes action to mitigate it, by, for example, asking the contractor to conduct root cause analyses and provide corrective action plans.

Payment terms

Stora Enso pays additional attention to small and medium-size suppliers when applying its standard payment terms. This means that Stora Enso pays their smaller suppliers within shorter payment timeframe to help them remain financially stable.

Our policies

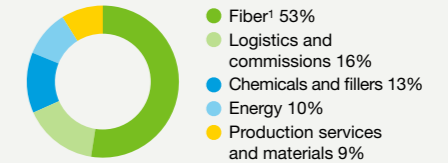
The Stora Enso Supplier Code of Conduct (SCoC), is the cornerstone of company’s approach to responsible sourcing. It is a legally binding document that imposes sustainability requirements on its suppliers concerning human and labour rights, occupational health and safety, the environment and responsible business practices. The SCoC applies to all Stora Enso’s sourcing categories globally. 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 obliged to accept the SCoC.

Several other Stora Enso policies and documents also support responsible sourcing, including:

- Stora Enso Code – code of conduct.
- Sourcing Policy, Logistics Policy
- Sourcing Guideline, Logistics Guideline
- Practical Guidance for Stora Enso’s Suppliers

Breakdown of raw material and service costs

% of our total variable costs



¹ Wood, Paper for Recycling, and purchased pulp.

As part of its tendering process, Stora Enso asks its suppliers to provide their safety and/or CO₂ emission information.

Consolidation of sustainability statements

Stora Enso regularly reviews the priorities in the Group's sustainability agenda and ensures that reporting duly addresses them. When defining the materiality of issues impacting the Group's sustainable business model, the Group also considers the expectations of major stakeholders. For more information on Stora Enso's approach to materiality, see page 130.

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Data boundaries

Unless otherwise stated, the Group's consolidated performance figures expressed in this report relate to the parent company, Stora Enso Oyj, and all the companies in which the Group holds over 50% of the voting rights directly or indirectly.

The reporting on human rights, community, occupational safety and sustainable forestry and biodiversity also includes the joint operations Veracel in Brazil and Montes del Plata in Uruguay. This is due to their materiality to the Group's sustainability impacts and stakeholder interest in relation to these sustainability topics.

The Group's consolidated environmental and energy figures include production units. Stora Enso's mechanical wood product units and packaging converting units are excluded from the water and energy intensity figures normalised per tonne of sales production. This is due to their low impact on the Group's consolidated water and energy performance and different metrics for sales production (cubic metre and square metre, respectively), compared with water- and energy-intensive board, pulp and paper units (tonnes).

In the Group's environmental and energy reporting, divestments and closures are managed according to the international Greenhouse Gas Protocol. This means that, when necessary, figures for historical performance are recalculated following the removal of divested units from the baseline. However, closed units are included in the environmental and energy targets and trend calculation baselines, as per internationally accepted rules.

Consolidated Human Resources (HR) figures in Employees reporting exclude employees of joint operations Montes del Plata and Veracel. The HR figures cover permanent and temporary employees and are expressed as a year-end 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) figures due to data availability related to a relatively small headcount and lower occupational safety risk compared to production units.

For more details, see the [online appendix on area-specific data boundaries](#).

When financial figures are reported as part of the sustainability statements, the figures are retrieved from the audited financial reporting based on the International Financial Reporting Standards (IFRS) as applicable.

Stora Enso's Greenhouse Gas (GHG) emissions are reported in accordance with the Greenhouse Gas Protocol. Read more in [Emissions and energy](#).

Significant changes during 2021

During the year, Stora Enso divested a paper mill at Sachsen in Germany and closed paper production at Kvarnsveden in Sweden and Kemi (Veitsiluoto) in Finland. The Group also completed the divestment of the trial tree plantation operation in Laos and the closure of Virdia operations in the United States.

For more information on the employee impacts of the Group's restructuring during the year, see [Support in restructuring situations](#).

For more information on acquisitions and disposals, see [Note 4](#) in Financials 2021. For information on the Group's investments in strategic growth business, see [Investments and capital expenditure](#).

In accordance with the GRI Standards

Stora Enso's sustainability reporting is also prepared in accordance with the GRI Sustainability Reporting Standards: Core option. The reporting covers all the General Disclosures as well as the topic-specific GRI Standards deemed material. The [GRI Content Index](#) lists Stora Enso's disclosures with reference to the GRI Standards and refers to the places where these issues are addressed in the reporting. The references are complemented in the index with additional information as necessary, such as reasons for omission.

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 the Group's operations or locations. If the reporting is prepared with specific data boundaries, this is also specified in connection with the respective disclosure.

Application of SASB Standards

In 2020, Stora Enso started to report in accordance with the standards of the Sustainability Accounting Standards Board (SASB), primarily targeted at investors. The reporting is based on Forest Management and Containers & Packaging sector standards. In 2021, the previously used Pulp & Paper Products

standard was updated to the Containers & Packaging standard for further alignment with the Group's business and strategic growth areas. For more background and for the SASB content index, see the [Capital Markets](#) chapter in [Financials 2021](#).

External assurance

Stora Enso's sustainability reporting 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 161. PricewaterhouseCoopers has provided a limited level of assurance covering the sustainability reporting as defined on page 129, based on an assessment of materiality and risk. Since 2015, a level of reasonable assurance has been provided for Stora Enso's reporting on direct and indirect Greenhouse Gas (GHG) 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. The Group respects and promotes these principles throughout its operations and reports on progress in this report. The Group uploads its Communication on Progress to the UN Global Compact website annually as a public record of its commitment.





Sustainability data by production unit

This table presents unit-specific information on environmental performance, production, certificates and numbers of employees.

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Unit	Number of employees ⁽¹⁾	Production capacity ⁽²⁾ 1,000 t	Products	Recovered fiber ⁽³⁾	Certificates										Fossil CO ₂ emissions													
					ISO 9001	ISO 14001	ISO 45001	ISO 50001	ISO 22000	FSSC 22000	ISO 28000	FDA	FSC® CoC	PEFC/CFCC CoC	Process waste to landfill	Hazardous waste ⁽⁴⁾	SO ₂ ⁽⁵⁾	NO _x as NO ₂	Direct CO ₂ ⁽⁶⁾	Indirect CO ₂ ⁽⁷⁾	CO ₂ on-site transport ⁽⁸⁾	Carbon neutral CO ₂ , biomass fuels ⁽⁹⁾	COD	AOX	Phosphorus	Nitrogen	Total water withdrawal	Process water discharges
					t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	
Belgium																												
Langerbrugge	363	555	④	x	x	x	x	x			x	x	25,695	58	23	292	144,411	12,284	1,392	447,213	1,074	1	6	25	8,220	6,352		
China																												
Beihai	478	590	①		x	x	x	x			x	x	549	25	157	171	471,294	5,860	1,310	41,061	267		1	27	9,058	7,559		
Dongguan	482	30*	③		x	x	x				x		0	36				4,587	0		15		0	1	140			
Jiashan ⁽¹⁰⁾	179	20*	③		x	x	x				x		0	4				1,848	2				0	0	8	4		
Qian'an	792	25*	③		x	x	x				x		0	9				12,515	23				0	0		1		
Wujin	399	10*	③		x	x	x						1	43				8,934	8									
Estonia																												
Tallinn ⁽¹¹⁾	35	15*	③		x	x	x		x	x			0	1			93	364	10						1			
Finland																												
Anjala/Ingerois	562	435/295	④ ①		x	x	x	x	x ⁽¹²⁾		x	x	0	108	21	231	102,714	4,140	469	160,566	2,005		2	60	28,810	8,856		
Enocell	284	490	②		x	x	x	x			x	x	5,674	59	122	1,056	68,480	-497	145	1,383,281	6,515	40	2	34	61,883	23,602		
Heinola Fluting	223	300	①		x	x	x	x	x		x	x	984	81	470	221	112,341	448	175	211,780	1,288		2	22	10,807	1,637		
Imatra	1206	1,650	① ②		x	x	x	x	x	x	x	x	265	1,904	94	1,559	188,068	2,623	1,488	2,165,397	23,719	81	14	253	89,607	61,877		
Kristiinankaupunki	55	20*	③		x	x	x	x	x	x			0	1			149	39	0						1	1		
Lahti	257	140*	③		x	x	x	x	x		x	x	0	367				457	7		4		0	0	30	24		
Oulu	360	450	① ②		x	x	x	x	x		x	x	118	160	19	679	60,323	7,264	1,721	1,014,131	2,042		5	49	33,999	16,342		
Sunila	244	375	② ⑤		x	x	x	x			x	x	3,995	218	64	544	42,038	1,065	561	738,616	5,717	36	7	19	37,430	15,707		
Varkaus	281	405	① ②	x	x	x	x	x			x	x	2,396	372	159	407	64,743	649	408	668,791	1,981		4	73	21,553	15,728		
Veitsiluoto ⁽¹³⁾	495	790	④		x	x	x	x	x ⁽¹⁴⁾		x	x	1,155	76	178	717	182,149	8,089	174	702,854	6,288	21	6	72	33,943	8,498		
Germany																												
Maxau	410	530	④	x	x	x	x				x	x	0	294	4	251	111,988	127,010	1,251	311,560	1,512	1	4	5	20,551	4,753		
Sachsen ⁽¹⁵⁾	142	310	④ ②	x	x	x	x				x	x	0	0			73,149	3,262		11,286					1,787	1,478		
Latvia																												
Riga	183	120*	③		x	x	x	x	x		x		0	53		2	2,265			203						16	16	
Lithuania																												
Kaunas	51	20*	③		x	x	x		x		x		0	0												2		

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Unit	Number of employees ^{a)}	Production capacity ^{b)} 1,000 t	Products	Recovered fiber ^{c)}	Certificates										Fossil CO ₂ emissions								Total water withdrawal 1,000 m ³	Process water discharges 1,000 m ³							
					ISO 9001	ISO 14001	ISO 45001	ISO 50001	ISO 22000	FSSC 22000	ISO 28000	FDA	FSC ^{e)} CoC	PEFC/CFCC CoC	Process waste to landfill ^{d)}	Hazardous waste ^{d)}	SO ₂ ^{d)}	NO _x as NO ₂	Direct CO ₂ ^{f)}	Indirect CO ₂ ^{f)}	CO ₂ on-site transport ^{g)}	Carbon neutral CO ₂ , biomass fuels ^{h)}			COD	AOX	Phosphorus	Nitrogen			
Poland																															
Łódź ⁱ⁾	278	130*	③		x	x	x			x	x			x	x	0	2	0	3	3,398		0					24				
Mosina	96	20*	③		x	x	x			x	x			x	x	0	87			430		70					1	1			
Ostrołęka Corrugated ^{h)}	267	140*	③	x	x	x	x			x	x			x	x	0	2				4,756	103									
Ostrołęka Containerboard ^{h)}	814	760	① ④	x	x	x		x		x	x			x	x	0	44	148	410	306,108		1,622	457,774		878	4	72	19,242	10,280		
Tychy	190	120*	③		x	x	x			x	x			x	x	0	4			3,512		140					23	11			
Russia																															
Arzamas	156	95*	③		x	x	x			x				x		23	19	1	6	3,185	2,619	71					26	26			
Balabanovo	323	170*	③		x	x	x			x				x		0	92	1	3	4,932	4,572	83					50	25			
Lukhovitsy	141	130*	③		x	x	x			x				x		0	75			2,627	2,735	103					31	22			
Sweden																															
Falu Rödfärg ^{j)}			⑥		x	x										0	10,141			389		10					20				
Fors	517	455	①		x	x	x	x	x	x	x			x	x	0	75	5	112		91	284	259,945		1,802	0	1	29	6,190	4,772	
Hylte Paper	313	245	④	x	x	x	x			x	x			x	x	5,868	97	1	139	8,580	85	638	221,760		987	1	1	22	21,742	4,501	
Hylte Biocomposite	30	15	③		x	x	x	x						x		0	0				10	5					65	7			
Hylte Formed Fiber	25	60*	③													0	0				4	0					38	35			
Jönköping	165	100*	③		x	x								x		0	52			317	512	31					35	11			
Kvarnsveden ^{l)}	378	565	④		x	x	x	x						x	x	0	322	14	107	3,261	180	0	226,368		1,743	1	2	38	14,221	6,409	
Nymölla	537	485	④ ②		x	x	x	x						x	x	0	56	478	491	-13,091	70	1,881	640,246		10,608	0	8	85	33,811	29,164	
Skene	117	80*	③		x	x								x		0	193				19	0					13	13			
Skoghall	666	925	①		x	x	x	x						x	x	7,028	426	143	464	49,697	138	1,552	999,205		8,689	17	11	81	41,600	26,930	
Skoghall (Forshaga)	115	120	①		x	x		x						x	x	0	625			983	3	132					9				
Skutskär	425	540	②		x	x	x	x						x	x	0	21	71	833		18	1,778	1233,589		3,008	6	8	78	36,115	18,979	
Vikingstad	64	85*	③		x	x								x		6	1			1,137	65	1					23	23			
Total board, pulp, paper, converted products																															
		11,285 ^{m)}															53,757	16,200	2,175	8,699	1,999,669	216,938	17,894	11,895,422		80,143	205	88	1,044	531,125	273,643
Total, wood products																															
		ⁿ⁾																													
Wood products units^{o)}																															
					n)	n)	n)	n)	n)	n)	n)	n)	n)	n)	n)	n)	3,844	2,346	23	463	5,265	30,451	25,385	490,172							
Grand total																															
All units																	57,601	18,547	2,198	9,162	2,004,934	247,388	43,279	12,385,595		80,143	205	88	1,044	531,125	273,643

a) Yearly average as full-time equivalents.
 b) Production capacities of integrated pulp, paper, and board mills only include paper, board and barrier coating production capacities.
 c) Mills using recovered fibre as raw material (fully or partly).
 d) Reported on the basis of country-specific definitions applied in national regulations.
 e) Total sulphur is reported as sulphur dioxide (SO₂) equivalent, but includes all sulphurous compounds.
 f) CO₂ figures are calculated using the WRI/WBCSD Greenhouse Gas Protocol and Scope 2 Guidance.
 g) Unit located in region with high baseline water stress according to the WRI Water Aqueduct Tool.
 h) FSSC 22000 for board production at Ingeröis.

i) The divestment of Sachsen paper mill was completed in August. Pulp and paper production at Kvarnsveden and Veitsiluoto ended in September.
 j) ISO 22000 certified 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) Excluding total capacities for corrugated board 1 385 million m², consumer packaging 85m² and formed fiber 60 million pieces.
 n) See separate table for Wood Products units.

Products:
 ① board and packaging paper
 ② market pulp
 ③ converted products (e.g. cores, corrugated board, formed fiber)
 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

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	Capacities						Certificates							Fossil CO ₂ emissions							
	Number of employees ^{a)}	Sawn products	Further processed	CLT	Wood pellets	LVL	ISO 9001	ISO 14001	ISO 45001	ISO 50001	FSC [®] CoC	PEFC CoC	SBP	Process waste to landfill	Hazardous waste ^{b)}	SO ₂	NO _x as NO ₂	Direct CO ₂ ^{c)}	Indirect CO ₂ ^{c)}	CO ₂ , on-site transportation ^{d)}	Carbon neutral CO ₂ from biomass ^{e)}
Wood products units	1,000 m ³	1,000 m ³	1,000 m ³	1,000 m ³	1,000 t	1,000 m ³							t	t	t	t	t	t	t	t	t
Austria																					
Bad St. Leonhard	265	360	105	80			x	x	x	x	x	x	0	82		4				1,098	
Brand	215	440	295				x	x	x	x	x	x	0	45	0	6				1,812	
Ybbs	413	700	450	110			x	x	x	x	x	x	0	110		9				3,015	
Czech Republic																					
Planá	240	390	220				x	x	x	x	x	x	334	450	1	36				1,865	24,842
Ždírec	273	580	220		80		x	x	x	x	x	x	3,280	32	1	115				2,262	127,196
Estonia																					
Imavere	312	340	160		100		x	x	x	x	x	x	32	103	4	44				1,894	58,948
Näpi ^{d)}	98	50	180		25		x	x	x	x	x	x	0	47	1	5	19			259	6,076
Finland																					
Honkalahti	109	310	70				x	x	x	x	x	x	0	29	1	22	55	1,397	1,028		39,912
Uimaharju ^{e)}	52	240					x	x	x	x	x	x	0	5		1		2,179	798		673
Varkaus	124	230	35			75	x	x	x	x	x	x	0	77				5,283	902		
Veitsiluoto	39	200					x	x	x	x	x	x	0	0	7	18		5,698	644		
Latvia																					
Launkalne	196	260	70		50		x	x	x	x	x	x	0	10	0	34	519			1,572	45,341
Lithuania																					
Alytus	264	210	115				x	x	x	x	x	x	0	26	2	15				1,150	27,892
The Netherlands																					
Amsterdam	57		80				x	x	x	x	x	x	0	1			19	1,104	7		
Poland																					
Murow	276	300	210				x	x	x	x	x	x	0	1,266	3	27				1,354	20,936
Russia																					
Impilahti	148	160	10		25		x	x	x	x	x	x	0	0		11		4,212	1,316		26,431
Nebolchi	184	180	45		40		x	x	x	x	x	x	198	0	0	49		6,489	1,249		30,224
Sweden																					
Ala	143	400	50		100		x	x	x	x	x	x	0	7	1	5	4653	4,077	1,417		
Gruvön	235	370	150	80	100		x	x	x	x	x	x	0	58	1	62		11	1,742		81,702
Wood Products units total	5,720	2,465	270	520	75								3,844	2,346	23	463	5,265	30,451	25,385	490,172	

a) Yearly average as full-time equivalents.
 b) Reporting is based on country-specific definitions applied in national regulations.
 c) All CO₂ figures are calculated using the WRI/WBCSD Greenhouse Gas Protocol and Scope 2 Guidance.
 d) Unit located in region with high baseline water stress according to the WRI Water Aqueduct Tool.
 e) Uimaharju sawmill belongs to division Biomaterials

Certificate documents can be found at storaenso.com/certificates.

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.



Auditor’s Assurance Report on sustainability reporting

To the Board of Directors and Management of Stora Enso Oyj

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Introduction

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 reporting 2021, and reasonable assurance on Stora Enso’s direct and indirect (scope 1 + 2) fossil CO₂ emissions as disclosed in the sustainability reporting. Stora Enso has defined the scope of its sustainability reporting on page 129 in this report.

Responsibilities of the Board and Management for sustainability reporting

The Board of Directors and the Group Leadership Team of Stora Enso are responsible for the preparation of the sustainability reporting, in accordance with the applicable criteria. The criteria are explained on page 157 in this report, and consists of the Global Reporting Initiative (GRI) Sustainability Reporting Standards which are applicable to Stora Enso’s sustainability reporting, and the Greenhouse Gas Protocol for CO₂ emissions, as well as the Reporting Criteria as set out in the Company’s reporting instructions. This responsibility also includes the internal control which is relevant to the preparation of the sustainability reporting that is free from material misstatement, whether due to fraud or error.

Responsibilities of the auditor

Our responsibility is to express a conclusion on the sustainability reporting based on

the procedures we have performed. 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 International Standard on Assurance Engagement (ISAE) 3000 revised, “Assurance Engagements Other than Audits or Reviews of Historical Financial Information”, to provide limited assurance on the sustainability reporting 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 CO₂ emissions as disclosed in the sustainability reporting. 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 reporting. We have evaluated the effectiveness of internal controls and the processes for collecting and consolidating CO₂ emissions data, and performed testing on a sample basis to evaluate whether the CO₂ 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 reporting, reviewing documentation, and applying analytical and other limited assurance procedures based on the auditor’s judgement. In addition, we have performed remote site visits to Heinola (Finland), Nebolchi (Russia) and Montes del Plata (joint operation, Uruguay) 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 reporting 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 CO₂ emissions which have been subject to our reasonable assurance procedures have, in all material respects, been prepared in accordance with the Reporting Criteria.

Helsinki, 10 February 2022
PricewaterhouseCoopers

Samuli Perälä
Authorized Public Accountant

Karin Juslin
Sustainability Reporting Specialist

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Information for shareholders

Annual General Meeting (AGM)

Stora Enso Oyj's Annual General Meeting (AGM) will be held on Tuesday 15 March 2022 at 2:45 EET.

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 3 March 2022 and must be temporarily registered in the Stora Enso shareholders' register by 10 March 2022. For shares registered through Euroclear Sweden and for holders of ADRs, the timetable may vary and earlier dates apply. Instructions are given in the invitation to the AGM, which can be consulted on Stora Enso's website at storaenso.com/agm.

AGM and dividend in 2022

3 March	Record date for AGM
15 March	Annual General Meeting (AGM)
16 March	Ex-dividend date
17 March	Record date for dividend
24 March	Dividend payment

Dividend

The Board of Directors proposes to the AGM that a dividend of EUR 0.55 per share will be paid to the shareholders for the fiscal year ending 31 December 2021. 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 2022

28 January	Financial results for 2021
Week 6	Annual Report 2021
28 April	Interim report for January-March
22 July	Half-year report for January-June
21 October	Interim report for January-September

Distribution of financial information

For 2021, Stora Enso has published one combined Annual Report in a pdf format covering strategy, financials, sustainability reporting, corporate governance and remuneration. You can find the report as downloadable PDF file at storaenso.com/annualreport.

The governance and remuneration sections are available in English, Finnish and Swedish. The strategy, sustainability reporting and financials sections 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

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group.communications@storaenso.com

Stora Enso in capital markets

Stora Enso ensures that all material information that may have an impact on Stora Enso’s share price is simultaneously available to the general public and the financial community. In its engagement with the capital markets, Stora Enso’s Investor Relations aims to support the brand with accurate, consistent and credible financial and strategic communications.

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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.

As at 31 December 2021, Stora Enso had 176,244,049 A shares and 612,375,938 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 237,481,642.80.

Share listings

Stora Enso shares are listed at both Nasdaq Helsinki and at 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.

As at 31 December 2021, 673,885,001 of the Company’s shares including both A and R shares were registered in Euroclear Finland, 100,916,291 A and R shares in Euroclear Sweden AB and 13,818,695 shares in ADR form at Citibank, N.A.

Share capital

On 31 December 2021, 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 10,366 A shares into R shares were recorded in the Finnish Trade Register during the year 2021.

Distribution by book-entry system, 31 December 2021

Number of shares	Total	A shares	R shares
Euroclear Finland Oy	673,885,001	164,665,469	509,219,532
Euroclear Sweden AB ¹	100,916,291	11,578,580	89,337,711
Citi administered ADRs ¹	13,818,695	-	13,818,695
Total	788,619,987	176,244,049	612,375,938

¹ Shares registered in Euroclear Sweden and ADRs are both nominee registered in Euroclear Finland.

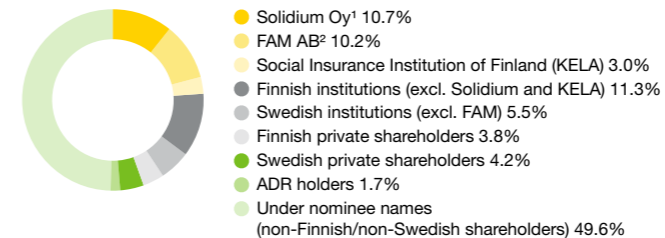
Ownership distribution, 31 December 2021

	% 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)	3.0%	10.0%	0.0%
Finnish institutions (excl. Solidium and KELA)	11.3%	8.2%	2.3%
Swedish institutions (excl. FAM)	5.5%	4.8%	1.6%
Finnish private shareholders	3.8%	2.3%	42.7%
Swedish private shareholders	4.2%	2.7%	51.4%
ADR holders	1.8%	0.6%	0.9%
Under nominee names (non-Finnish/non-Swedish shareholders)	49.6%	16.7%	1.1%

¹ Entirely owned by the Finnish State.

² As confirmed to Stora Enso.

Ownership distribution, % of shares held



¹ Entirely owned by Finnish state.

² As confirmed to Stora Enso.

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Changes in share capital 2013–2021

	No. of A shares issued	No. of R shares issued	Total no. of shares	Share capital (EUR million)
Stora Enso Oyj, 1 Jan 2013	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
Conversion of A shares into R shares, Dec 2019–Nov 2020	-2,419	2,419	-	-
Stora Enso Oyj, 31 Dec 2020	176,254,415	612,365,572	788,619,987	1,342
Conversion of A shares into R shares, Dec 2020–Nov 2021	-10,366	10,366	-	-
Stora Enso Oyj, 31 Dec 2021	176,244,049	612,375,938	788,619,987	1,342

For more historical data about the share capital, please visit storaenso.com/investors/shares

Stora Enso's activities during 2021

Stora Enso's Investor Relations activities cover equity markets to promote a fair valuation of the Company and continual access to funding sources. Investor Relations provides up-to-date information on the development of the Company's business operations, strategy, performance, markets and financial position. In 2021, The Investor Relations (IR) team conducted several individual and group meetings, mainly virtually, with equity investors, while maintaining regular contact with equity research analysts at investment banks and brokerage firms. These meetings were conducted both separately and with management members plus other experts at Stora Enso. In addition, two investor teach-in events covering biodiversity and Lignode as well as an ESG webinar were organised in 2021. No site visits were arranged due to the Covid-19 pandemic. Senior management and the IR team members also gave presentations at virtual equity investor conferences in Scandinavia, Continental Europe, the United Kingdom and North America.

Disclosure of financially material ESG topics for investors

Stora Enso's reporting has been prepared according to the SASB's Sustainability Accounting Standards for Forest Management and Containers & Packaging, located within SASB's Renewable Resources & Alternative energy section. Specific indicators in these two Standards relate to financially material topics in the industry such as sustainable forest management and certification, GHG emissions, air quality, energy management, water management, product safety, product life cycle management and supply chain management.

In Stora Enso's online SASB Content Index, the specific standard indicators are listed with references to the locations of these disclosures (supported by URL links) in Stora Enso's annual reporting. These references are complemented in the index with additional information such as explanations on reasons for omissions as necessary.

During 2021, Stora Enso started to report against the Containers & Packaging Standards. Stora Enso participated in SASB's XBRL consultation and Human Capital Research projects. Stora Enso aims to continuously improve its sustainability reporting to inform investors about the progress, targets and future direction of the Company.

In 2021, Investor Relations participated in an internal working group developing EU Taxonomy reporting.

Guidance policy

In connection with the Financial statement release for 2021, Stora Enso announced its guidance for 2022. Stora Enso's full year 2022 operational EBIT is estimated to be approximately in line with the full year operational EBIT for 2021 (EUR 1,528 million).

Closed period

Stora Enso's closed periods start when the reporting period ends or 30 days prior to the announcement of the results, whichever is earlier, and lasts until the quarterly results are announced. The dates are published in the financial calendar at storaenso.com/investors. During closed periods, Stora Enso PDMR's (Persons Discharging Managerial Responsibilities) or persons entered into the Company's Closed Period List are not allowed to trade in the Company's securities. In addition, there will be no discussions regarding financial matters with the capital markets or the financial media during the closed periods. This applies to meetings, telephone conversations or other means of communication.

Major shareholders as at 31 December 2021

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	0	3.0%	10.0%
4 Ilmarinen Mutual Pension Insurance Company	4,172,492	17,749,856	2.8%	2.5%
5 Varma Mutual Pension Insurance Company	5,163,018	1,140,874	0.8%	2.2%
6 MP-Bolagen i Vetlanda AB	4,885,000	1,000,000	0.7%	2.1%
7 Elo Mutual Pension Insurance Company	2,000,000	7,441,225	1.2%	1.2%
8 Erik Johan Ljungberg's Education Foundation	1,780,540	2,336,224	0.5%	0.8%
9 SEB Investment Management	-	9,919,387	1.3%	0.4%
10 Bergslaget's Healthcare Foundation	626,269	1,609,483	0.3%	0.3%
11 The State Pension Fund	-	5,000,000	0.6%	0.2%
12 Unionen (Swedish trade union)	-	3,332,750	0.4%	0.1%
13 The Society of Swedish Literature in Finland	-	3,000,000	0.4%	0.1%
14 Avanza Pension Insurance	146,151	1,324,521	0.2%	0.1%
15 SEB AB, Luxembourg Branch	2,177	2,071,635	0.3%	0.1%
Total	168,379,155	94,718,495	33.4%	74.9%
Nominee-registered shares ³	75,090,688	483,768,342	70.9%	52.0%

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.

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Shareholdings of other Group-related bodies as at 31 December 2021

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 2021, the Company had approximately 114,937 registered shareholders, including about 61,904 Swedish and 52,013 Finnish shareholders and about 1,020 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 624 million shares, corresponding to 79% of the total number of shares issued. The largest shareholder in the Company is Solidium Oy.

Share price performance and volumes

Helsinki

The Stora Enso R (STERV) share price increased by 3% during 2021 (21% increase in 2020). Over the same period, the OMX Helsinki Index increased by 18% (10% increase in 2020) and the OMX Helsinki Basic Materials Index by 10% (9% increase in 2020).

Stockholm

The Stora Enso R (STE R) share price increased by 5% during 2021 (16% increase in 2020). Over the same period, the OMX Stockholm Index increased by 35% (6% increase in 2020) and the OMX Stockholm Basic Materials Index increased by 21% (23% increase in 2020).

OTC

Stora Enso ADR (SEOAY) share price decreased by 4% during 2021 (32% increase in 2020). Over the same period, the Standard & Poor's Global Timber and Forestry Index increased by 15% (16% increase in 2020).

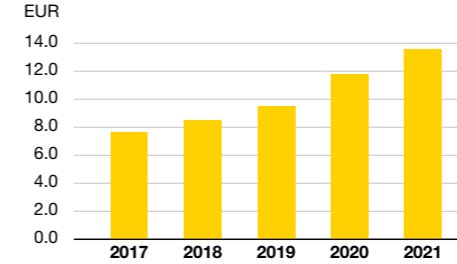
Share prices and volumes in 2021

		Helsinki, EUR	Stockholm, SEK	OTC, USD
High	A share	18.70	190.80	
	R share	17.67	179.90	20.84
Low	A share	14.45	151.00	
	R share	13.67	138.10	16.23
Closing, 31 Dec 2021	A share	16.60	168.20	
	R share	16.14	165.20	18.36
Change from previous year	A share	4%	6%	
	R share	3%	5%	-4%
Cumulative trading volume, no. of shares	A share	1,750,102	3,061,894	
	R share	422,493,406	100,029,698	8,373,928

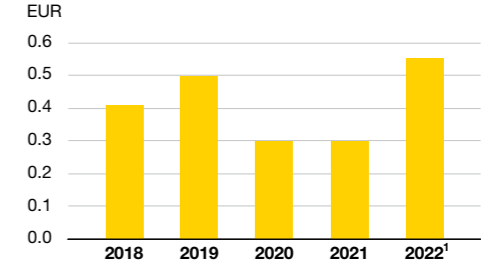
The volume-weighted average price of R shares over the year was EUR 15.70 in Helsinki (EUR 11.52 in 2020), SEK 159.14 in Stockholm (SEK 120.94 in 2020) and

USD 18.43 on the OTC in the USA (USD 12.56 in 2020). Total market capitalisation of the Company was EUR 12.8 billion (EUR 12.4 billion) at the end of 2021.

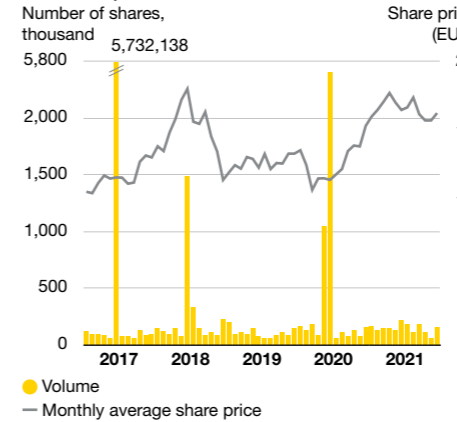
Equity per share



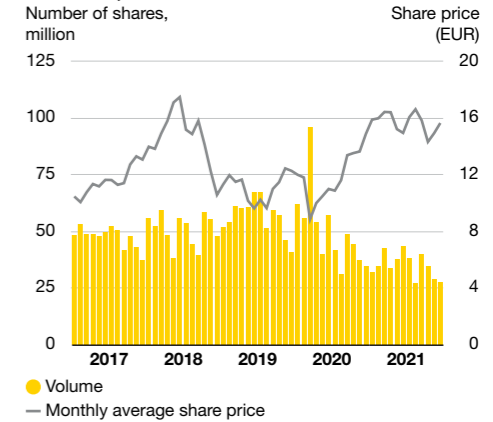
Dividend per share



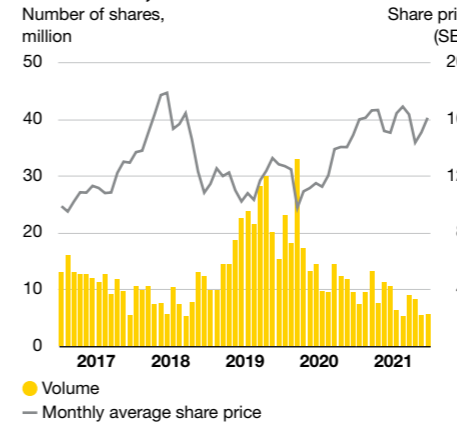
Helsinki, Stora Enso A



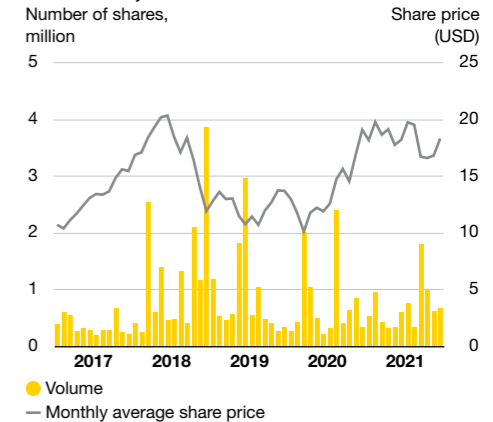
Helsinki, Stora Enso R



Stockholm, Stora Enso R



New York, Stora Enso ADR

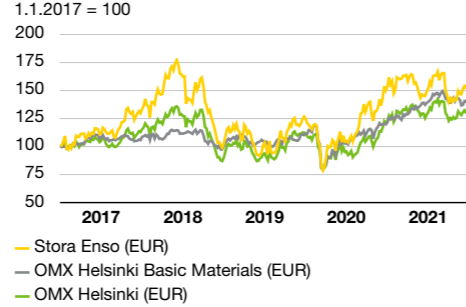




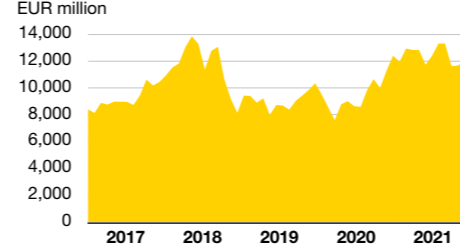
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Stora Enso R Share vs Nasdaq Helsinki indices



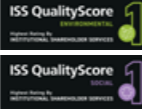




Market capitalisation on Nasdaq Helsinki



ESG indices and recognitions in 2021

Stora Enso actively participates in following ESG assessment schemes:

Rating agency	Stora Enso score	Change vs previous score	Rating against peers	Last update
 CDP DISCLOSE OR INSIGHT ACTION	Climate A- Forest A- Water B	Unchanged	Clearly above the industry average level	Q4/2021
FTSE Russell	4.2 out of 5.0	Improved from 4.1 to 4.2	Clearly above the industry average level	Q2/2021
 ISS ESG Corporate ESG Performance Prime	B- / A+	Unchanged	Among highest decile rank in the industry sector	Q2/2021
 ISS QualityScore ISS QualityScore	Governance 4 Social 1 Environment 1	Improved in Social from 2 to 1*	Clearly above the industry average level	Q4/2021
 MSCI ESG RATINGS AAA	AAA / AAA	Improved from AA to AAA	Clearly above the industry average level	Q3/2021
 SUSTAINALYTICS a Moody's company	18.0 / 40.0	Improved from 19.6 to 18.0**	Clearly above the industry average level	Q2/2021
VigeoEiris***	73 / 100	Improved from 68 to 73	Highest ranked company in the industry	Q3/2021

* "1" indicating the lowest risk
 ** "0 risk" being the highest possible score
 *** V.E. part of Moody's ESG solutions

Stora Enso is included in several stock market ESG indices worldwide. These indices provide investors with a representation of the performance of leading companies based on various categories and specific ESG criteria.

ECPI Ethical

ECPI Index family represents one of the widest ESG offer on the market covering main asset classes, geographies, and investment themes. Stora Enso is included in three ECPI ESG indices.

Euronext

Euronext helps investors identify listed companies that meet its ESG criteria which are most advanced in terms of ESG performance. Stora Enso is included in several Euronext ESG indices.

FTSE4Good Index

FTSE4Good Index Series is a series of benchmark and tradable indices for socially responsible investors, and designed to measure the performance of companies demonstrating strong ESG practices. Stora Enso is part of FTSE4Good Index.

MSCI

MSCI Inc. is the world's largest provider of ESG indices designed to help institutional investors more effectively benchmark ESG investment performance and manage, measure and report on ESG mandates. Stora Enso is part of MSCI ACWI ESG Leaders Index.

Nasdaq OMX

Nasdaq OMX ESG indices are created for responsible investments comprising the leading companies in terms of sustainability and are selected based on how well they meet the criteria for ESG topics. Stora Enso is included in the OMX Sustainability Finland Index.

STOXX

STOXX indices include leading global companies in terms of ESG criteria, based on various ESG indicators. Stora Enso is part of several STOXX ESG indices.

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Stora Enso is included in the following indices amongst others

OMX INDICES	STOXX INDICES	FTSE INDICES	MSCI INDICES	EURONEXT INDICES	SUSTAINABILITY INDICES
OMX Helsinki	STOXX Global 1800	FTSE RAFI All-World 3000	MSCI Finland	Euronext Eurozone 300	EURO STOXX Climate Transition Benchmark
OMX Helsinki 25	STOXX Global 3000	FTSE RAFI Developed 1000	MSCI Europe	Euronext Europe 500	EURO STOXX ESG Target
OMX Helsinki Large Cap	STOXX Europe Mid 200	FTSE RAFI Europe	MSCI World	EN Eurozone Next 100 EW	EURO STOXX Low carbon
OMX Helsinki Benchmark	STOXX Europe 400	FTSE Finland 25 Index	MSCI World Investable Market	Euronext Eurozone 150 EW	EURO STOXX Paris-Aligned Benchmark
OMX Helsinki Industrial Materials	STOXX Europe 600	FTSE4Good Global	MSCI ACWI	Euronext Developed Market	EURO STOXX Sustainability
OMX Helsinki Basic Materials	STOXX All Europe 800		MSCI ACWI IMI	Euronext World	STOXX Global ESG Governance Leaders
OMX Helsinki Basic Resources	STOXX Nordic				STOXX Global ESG Leaders
OMX Helsinki Forestry & Paper	STOXX Europe Maximum Dividend 40				Euronext Vigeo Euro and Europe 120 indices
OMX Stockholm	EURO STOXX				Euronext Low Carbon 100 and 300 World PAB indices
OMX Stockholm Benchmark	EURO STOXX Basic Materials				Euronext Eurozone ESG Large 80
OMX Stockholm Large Cap	EURO STOXX Basic Resources				Euronext V E Eurozone Social Focus
OMX Stockholm Industrial Materials	EURO STOXX International Exposure				Euronext Climate Europe
OMX Stockholm Basic Materials					Euronext Climate Objective 50 EW
OMX Stockholm Basic Resources					Euronext Eurozone 100 ESG
OMX Stockholm Forestry & Paper					Low Carbon 100 Europe PAB Index
OMX Nordic					OMX Sustainability Finland
OMX Nordic Large Cap					MSCI ACWI ESG Leaders Index
Nasdaq OMX Nordic Materials					ECPI EMU Ethical Equity index
Nasdaq OMX Nordic 120					ECPI EURO ESG Equity Index
Nasdaq OMX Nordic Materials					ECPI World ESG Equity Index
VINX Basic Materials					
VINX Basic Resources					

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

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Key share data 2012–2021, total operations (for calculations see Calculation of key figures)

According to Nasdaq Helsinki	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Earnings per share, EUR	1.61	0.79	1.12	1.28	0.79	0.59	1.02	0.13	-0.07	0.61
– diluted, EUR	1.61	0.79	1.12	1.28	0.79	0.59	1.02	0.13	-0.07	0.61
– excl. FV, EUR ¹	1.19	0.45	0.61	1.26	0.89	0.65	1.24	0.40	0.40	0.33
Equity/share, EUR	13.55	11.17	9.42	8.51	7.62	7.36	6.83	6.43	6.61	7.32
Dividend and distribution/share, EUR	0.55 ²	0.30	0.30	0.50	0.41	0.37	0.33	0.30	0.30	0.30
Payout ratio, %	46 ²	38	27	39	52	63	32	231	-429	49
Dividend and distribution yield, %										
A share	3.3 ²	1.9	2.2	4.5	3.1	3.56	3.9	4.0	4.1	5.3
R share	3.4 ²	1.9	2.3	5.0	3.1	3.62	3.9	4.0	4.1	5.7
Price/earnings ratio (P/E), excl. FV										
A share	14.0	35.3	22.2	8.8	14.8	16.0	6.8	18.7	18.3	17.3
R share	13.6	34.8	21.2	8.0	14.9	15.7	6.8	18.6	18.3	15.9
Share prices for the period, EUR										
A share										
– closing price	16.60	15.90	13.55	11.05	13.20	10.40	8.40	7.48	7.31	5.70
– average price	16.68	12.06	12.88	16.36	11.93	8.50	8.87	7.29	6.82	6.15
– high	18.70	16.20	14.45	18.45	13.79	10.45	11.01	8.35	7.49	7.15
– low	14.45	9.26	10.85	10.75	10.26	6.56	6.70	5.73	5.42	5.10
R share										
– closing price	16.14	15.65	12.97	10.09	13.22	10.21	8.39	7.44	7.30	5.25
– average price	15.70	11.52	11.05	14.61	11.54	7.88	8.70	7.16	5.79	5.08
– high	17.67	15.85	13.05	18.29	13.75	10.28	10.95	8.38	7.54	5.95
– low	13.67	7.25	9.10	9.92	9.70	6.50	6.58	5.71	4.76	4.14
Market capitalisation at year-end, EUR million										
A share	2,926	2,802	2,388	1,948	2,328	1,836	1,483	1,324	1,295	1,010
R share	9,884	9,580	7,939	6,175	8,094	6,250	5,135	4,547	4,464	3,212
Total	12,809	12,383	10,328	8,123	10,422	8,085	6,618	5,871	5,756	4,222
Number of shares at the end of period, (thousands)										
A share	176,244	176,254	176,257	176,313	176,392	176,507	176,532	177,056	177,096	177,148
R share	612,376	612,366	612,363	612,307	612,228	612,113	612,088	611,564	611,524	612,391
Total	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620	789,538
Trading volume, (thousands)										
A share	1,750	4,662	1,299	3,068	6,768	1,254	1,641	1,553	1,656	831
% of total number of A shares	1.0	2.6	0.7	1.7	3.8	0.7	0.9	0.9	0.9	0.5
R share	422,493	605,233	679,475	610,300	571,717	765,122	798,507	731,067	828,401	977,746
% of total number of R shares	69.0	98.8	111.0	99.7	93.4	125	130.5	119.5	135.5	159.7
Average number of shares (thousands)										
basic	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620
diluted	789,126	789,182	789,533	789,883	790,024	789,888	789,809	789,210	788,620	788,620

¹ Earnings per share (EPS) excl. FV was added to the list of non-IFRS measures in 2020 replacing the key figure of EPS excl. IAC. Comparatives are recalculated for 2018–2019. For 2012–2017 table includes EPS excl. IAC figures.

² 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](#).

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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 debt capital markets and commercial banks. Stora Enso maintains consistent dialogue with the fixed-income community with informative and transparent communication and meetings in conferences and roadshows. The Company's Treasury function is responsible for fixed income investor communication.

Funding is obtained in the currencies of the Group's investments and assets (primarily EUR, SEK, CNY and USD). Commercial paper markets are used for short-term funding and liquidity management.

In 2021, Stora Enso's liquidity and funding position continued to be strong in spite of early loan repayments. Stora Enso has approximately EUR 1.5 billion in cash and cash equivalents at 31 December 2021. The Company has EUR 700 million Committed Revolving Credit Facility fully undrawn. Additionally, the Company has access to EUR 1 billion statutory pension premium loans in Finland. Stora Enso has good access to various funding sources.

Stora Enso has an integrated sustainability agenda to its funding and financial services. The Group has a long-term aim to secure funding partners that have sustainability as a fundamental part of their agenda. Stora Enso aims to influence and develop the financial markets to ensure that sustainability becomes an integral part of decisions and credit evaluation. For more information, visit our website storaenso.com/investors.

Green Bonds

In accordance with the Green Bond Framework, proceeds from Green Bonds will be used solely to finance or refinance

projects (going back up to two years) and activities defined under the Eligible Categories presented below. The bonds are listed on the Luxembourg Stock Exchange. In 2021, Stora Enso did not issue any bonds.

Eligible Categories

To be eligible for Green Bond proceeds, the projects must fall within one of the following Eligible Categories.

1. Sustainable Forest Management
2. Renewable, Low-Carbon, and Eco-Efficient Products, Product Technologies, and Processes
3. Energy Efficiency
4. Renewable Energy and Waste to Energy
5. Sustainable Water Management
6. Waste Management and Pollution Control

Please find additional information here: [Green bond report 2021](#)

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.

Stora Enso's current credit ratings in the following table are: Baa3 with stable outlook from Moody's and BBB- with stable outlook from Fitch Ratings. Both ratings correspond to an Investment Grade rating, there were no changes in the ratings during 2021.

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 have 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](#).

Ratings as at 31 December 2021

Rating agency	Long/short-term rating	Valid from
Fitch Ratings	BBB- (stable)	8 August 2018
Moody's	Baa3 (stable) / P-3	1 November 2018

Public debt structure as at 31 December 2021

	EUR	USD	SEK
Public issues	EUR 300 million 2023	USD 300 million 2036	SEK 3,000 million 2024
	EUR 300 million 2027		SEK 3,100 million 2025
	EUR 300 million 2028		
	EUR 500 million 2030		
Private placements	EUR 125 million 2025		SEK 1,000 million 2026
	EUR 25 million 2027		

Debt programmes and credit facilities as at 31 December 2021

	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 700 million sustainability linked revolving credit facility 2026 ¹	

¹ Undrawn committed credit facility EUR 700 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 CO₂.

Corporate Governance in Stora Enso 2021

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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”). 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 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, the roles and responsibilities of which are described in more detail later in this report. 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 Financial Statements as well as Interim Reports in Finnish, Swedish, and English. Stora Enso Oyj prepares its Financial statements in accordance with the Finnish Accounting Act.

The Company’s head office is in Helsinki, Finland, and 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 responsible for managing the Company are the Board and the CEO, while the Group Leadership

Governance bodies



Shareholders’ meeting
Shareholders’ Nomination Board



Board of Directors
Financial and Audit Committee
Remuneration Committee
Sustainability and Ethics Committee



President and CEO
Ethics and Compliance
Management Committee –
Group Leadership Team (GLT)

Auditing

Internal Audit _____ External Audit _____

Team (GLT) supports the CEO in managing the Company.

The day-to-day operational responsibility rests with the GLT members and their operation teams are supported by various staff and service functions.

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 participating in shareholders’ meetings. Shareholders also have the right to ask the Company’s management and Board of Directors questions at shareholders’ meetings. Major decisions are taken by the shareholders at Annual or Extraordinary General Meetings. At a shareholders’ meeting, each A share and every ten R shares carry one vote.

During 2020–2021 and the Covid-19 pandemic, it has been possible to carry out a number of the above-mentioned rights by pre-voting as well as the right to present counterproposals and ask questions in advance of the meeting, the answers to which have been presented on the Company’s website.

The Board of Directors convenes a shareholders’ meeting by publishing a notice of the meeting at the Company’s website not more than three months before the last day for advance notice of attendance mentioned in the notice of 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 annually 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 Board of Directors report 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 the 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 of 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 of 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.

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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 2021

Stora Enso's AGM was held on 19 March 2021 in Helsinki, Finland. The AGM was held with exceptional procedures based on a temporary legislative act approved by the Finnish Parliament to limit the spread of the Covid-19 pandemic. This meant that shareholders were able to participate in the meeting only through voting in advance as well as through making counterproposals and presenting questions in advance. Of all issued and outstanding shares in the Company, a total of 65.2% of all shares (59.3% in 2020) and a total of 82.7% of all votes (80.7%) were represented at the meeting, with 91.4% of all A shares (91.4%) and 57.7% of all R shares (50.1%) represented. 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. A virtual shareholder event was held after the AGM, where the shareholders were able to follow presentations by the Chair of the Board as well as the President and CEO, followed by an online Q&A session. No Extraordinary General Meetings of Shareholders were convened in 2021.

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 are annually 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 2021

The Shareholders' Nomination Board comprised four members: Antti Mäkinen (Chair of the Board), Håkan Buskhe (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 2022 concerning Board members and their remuneration. During its working period 2021–2022, the Shareholders' Nomination Board convened five times. Each member of the Shareholders' Nomination Board attended all the meetings. Antti Mäkinen and Håkan Buskhe did not participate in the preparations or the decision-making regarding Board remuneration.

In its proposal for the AGM 2022, the Shareholders' Nomination Board proposes that of the current members of the Board of Directors Håkan Buskhe, Elisabeth Fleuriot, Hock Goh, Helena Hedblom, Christiane Kuehne, Antti Mäkinen, Richard Nilsson and Hans Sohlström be re-elected members of the Board of Directors until the end of the following AGM and that Kari Jordan be elected new member of the Board of Directors for the same term of office. It is proposed that Antti Mäkinen be elected Chair of the Board and Håkan Buskhe Vice Chair of the Board. Mikko Helander has informed the Shareholders' Nomination Board that he is not available for re-election. 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 2.5–4 percent.

For the purpose of carrying out its tasks, the Shareholders' Nomination Board has received the results of the self-evaluation of the Board of Directors as well as the assessment of each director's independence of the Company and of significant shareholders. 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 2021

Antti Mäkinen¹, member	Håkan Buskhe¹, 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. M.Sc. (Econ.). Chair of the Board of Directors of Solidium Oy.

¹ Curriculum vitae of Antti Mäkinen and Håkan Buskhe, see page 181.

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Board of Directors

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 annually 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. Likewise, it is responsible for overseeing the proper supervision of accounting and the control of financial matters.

The Board has defined a working order, the principles of which are published on page 174 of this report and on the Company's website.

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

In 2021

The Board had nine members at the end of 2021, 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), Antti Mäkinen (CEO of Solidium Oy) and Håkan Buskhe (CEO of FAM AB).

The Board members nominated at the AGM in 2021 were Antti Mäkinen (Chair), Håkan Buskhe (Vice Chair), Elisabeth Fleuriot, Hock Goh, Helena Hedblom, Mikko Helander, Christiane Kuehne, Richard Nilsson and Hans Sohlström. The Board convened 15 times during the year. The members' participation rate in meetings amounted to 100%.

In its meeting after the AGM on 19 March 2021, the Board discussed focus areas for its work. The Board agreed that these areas for the year to come should be (1) Strategy, including implementation and review of the next steps, and (2) Operational performance in the present market situation. Various matters have been discussed, reviewed and decided in the Board based on the agenda. Further, on a monthly basis the CEO has reported progress on the same to the Board.

An external evaluation relating to the Board's work and to the work of the Committees has been conducted during 2021, which together with the evaluation of the Board members' independence has been provided to

a new Chair or Vice Chair from among its members for the remaining term of office.

The Board annually 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

the Shareholders' Nomination Board for information. A comprehensive, qualitative questionnaire and individual interviews were carried out by an external party. Overall assessment of the Board's work and performance – even during Covid-19 pandemic – has been effective and positive. The Board has worked according to all applicable rules and regulations. For detailed information about the Board members and their share ownerships, see pages 181–182.

Remuneration

Board remuneration is decided by the AGM each year. The AGM 2021 decided on an annual remuneration of EUR 197,000 for the Board Chair, EUR 112,000 for the Vice Chair and EUR 76,000 for other members, which is paid partly in Company shares as set out in the resolution of the AGM. In addition, remuneration may be paid based on Board Committee memberships.

Board Diversity in 2021

During 2021, the Board has 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 such as engineering, technology, finance, and law. 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 181–182.

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

The Board members represent a good knowledge of the operational environment of the Company as well as particular experience of amongst others sustainability, ESG, financial competence, and the business environment relevant to the operations of the Company. The age of the Board members during 2021 varied from 48 years to 66 years and the Board was composed of three women and six men.

In 2021, the Shareholders' Nomination Board has considered its previous evaluation of competencies that may be further strengthened in the long-term Board succession planning. In its proposal for the AGM 2022, the Shareholders' Nomination Board has proposed a Board composition that includes three women and six men in the age range of 48 years to 66 years and representing a total of five different nationalities. The proposed new Board member Kari Jordan would bring strong industrial, financial and management 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 aim is to maintain or further strengthen a good and balanced gender distribution.

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

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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 Board Diversity Policy into account in its work. The Shareholders' Nomination Board finds that the composition of the Board as proposed to the AGM 2022 reflects diversity and a good variety of skills and experiences among the Board members following the principles set out in the Board Diversity Policy. 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 aim is to maintain or further strengthen a good and balanced gender distribution.

The Board Diversity Policy is presented at storaenso.com/investors/governance.

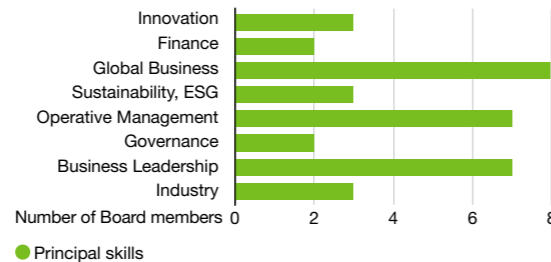
Board skills matrix

Name	Director since	Principal skills	Independent of		Committee memberships 2021			Other current listed boards*
			Company	Owners	FAC	SECo	RemCo	
Antti Mäkinen	2018	Finance, Operative Management, Governance	●	●			Chair	1
Håkan Buskhe	2020	Innovation, Global Business, Business Leadership, Industry	●	●			Member	2
Elisabeth Fleuriot	2013	Global Business, Operative Management, Business Leadership, Sustainability & ESG	●	●	Member			
Hock Goh	2012	Global Business, Operative Management, Business Leadership, Sustainability & ESG	●	●	Member			2
Helena Hedblom	2021	Innovation, Business Leadership, Global Business, Operative management	●	●		Member		
Mikko Helander	2019	Global Business, Business Leadership, Operative Management, Industry	●	●		Member		
Christiane Kuehne	2017	Global Business, Operative Management, Business Leadership, Sustainability & ESG	●	●		Chair		
Richard Nilsson	2014	Finance, Industry, Governance, Global Business	●	●	Chair			
Hans Sohlström	2021	Global Business, Business Leadership, Operative Management, Innovation	●	●			Member	

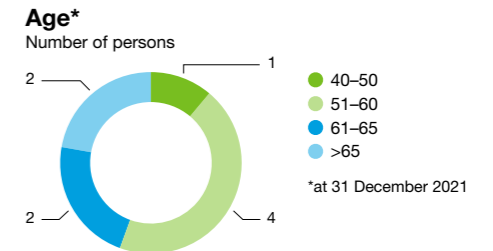
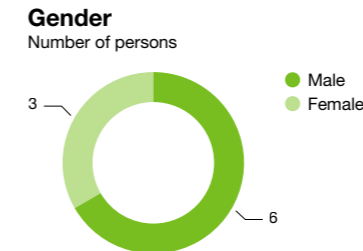
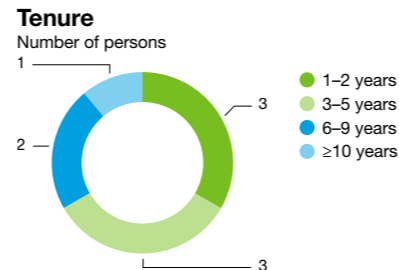
● yes ● no

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. *at 31 December 2021

Principal skills



Board diversity in figures



*at 31 December 2021

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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, are 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.

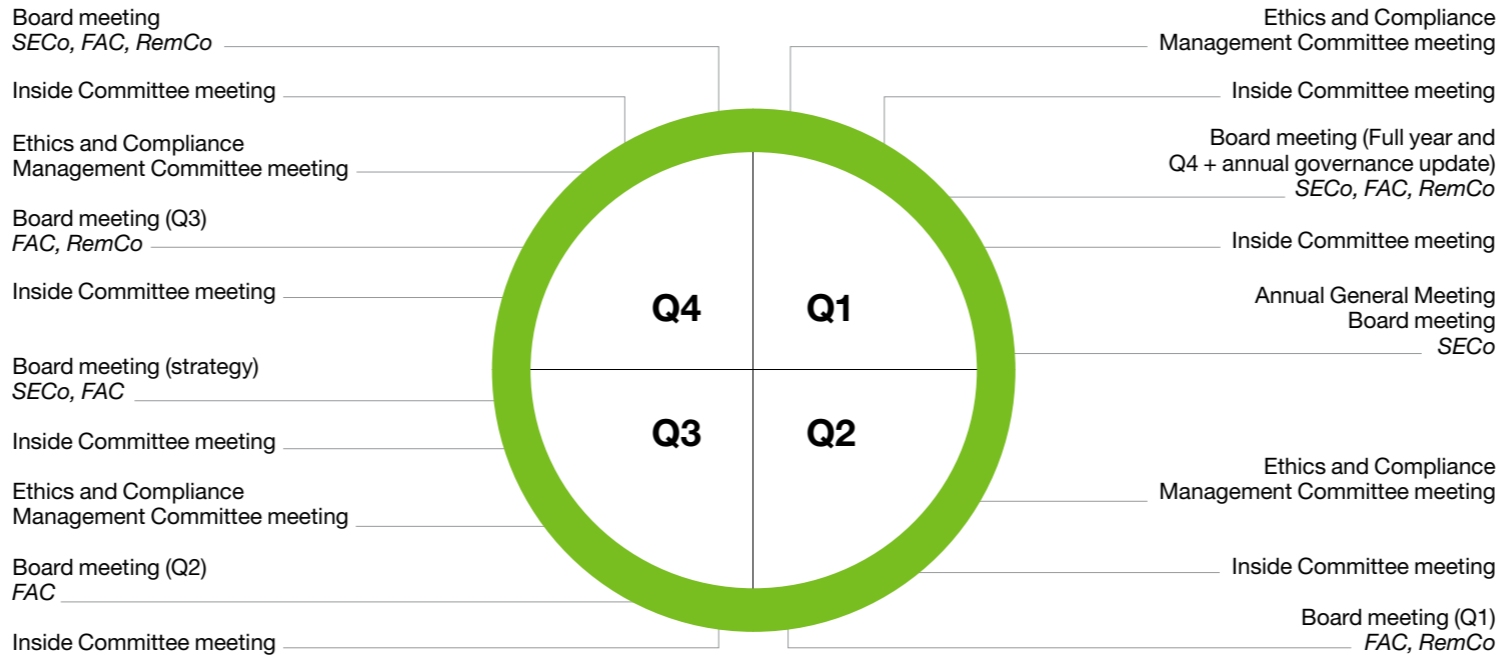
Matters to be handled at Board meetings

- 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 the CEO's proposal belonging to the GLT;
- appointment of Committee Chairs and members;
- remuneration of GLT members based on the CEO's proposal;
- review talent management and succession planning process (in particular the CEO);

- economic and financial matters:
 - approval and review of the annual budget;
 - approval of loans and guarantees, excluding intra-group loans and guarantees;
 - approval of share repurchases, if any, as well as the report of share repurchases;
 - approval of Group Risk Management Policy according to the Financial and Audit Committee's proposal;
- investment matters:
 - approval of the 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.

The Board of Directors' and management's annual working cycle



Quarterly - Meetings with auditors - Divisional Business & Innovation Review meetings	Monthly - GLT meetings - Investment Working Group meetings
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SECo = Sustainability and Ethics Committee
 FAC = Financial and Audit Committee
 RemCo = Remuneration Committee

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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 required. 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, the 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 the 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 2021

The Financial and Audit Committee comprised three members: Richard Nilsson (Chair), Elisabeth Fleuriot and Hock Goh.¹ The Committee convened six 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. During the year the Committee continued to follow-up the forest land valuation and put specific emphasis on follow-up on EU Taxonomy development and review of related reporting requirements. 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 21,200 per annum and member EUR 14,800 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 19 March 2021 comprised the following four members: Richard Nilsson (Chair), Jorma Eloranta, Elisabeth Fleuriot and Hock Goh.

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. The Remuneration Committee also reviews the Remuneration Report and the Remuneration Policy. There is a Remuneration Committee representative present at the AGM to answer questions relating to 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 2021

The Remuneration Committee comprised three members: Antti Mäkinen (Chair), Håkan Buskhe and Hans Sohlström.¹ The Committee convened seven times. The members' participation rate in meetings amounted to 100%.

The main task of the Committee is to recommend, evaluate, and propose executive nominations and remunerations, review the Company's remuneration reporting, and to make recommendations to the Board relating to management remuneration in general, including short- and long-term incentive programmes. The main focus during the year has been to renew the Performance Management model at Stora Enso.

Remuneration

Chair EUR 10,600 and member EUR 6,400 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 19 March 2021 comprised the following three members: Jorma Eloranta (Chair), Antti Mäkinen and Hans Stråberg.

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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 topics of the Committee meetings include safety, sustainability (climate change, circularity and biodiversity) and ethics.

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 sustainability and ethics matters.

The Committee meets regularly, at least twice 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 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.

In 2021

The Sustainability and Ethics Committee comprised three members: Christiane Kuehne (Chair), Helena Hedblom and Mikko Helander.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. In 2021 the main topics were forest sustainability (including biodiversity), sustainability strategy, and sustainability risks. In addition, an important part of the Committee's work consisted of overseeing reported compliance cases.

Remuneration

Chair EUR 10,600 and member EUR 6,400 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 19 March 2021 comprised the following three members: Christiane Kuehne (Chair), Håkan Buskhe and Mikko Helander.

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 2021 the CEO was directly in charge of the following functions, which also reported to her:

- Divisions (Packaging Materials, Packaging Solutions, Biomaterials, Wood Products, Forest and Paper)
- CFO (responsible for Accounting, Controlling, Efora*, Internal Audit, Investor Relations, Tax, Treasury)
- IT and Digitalisation
- Human Resources
- Legal, General Counsel
- Communications
- Sustainability
- Sourcing and Logistics
- Strategy and Innovation (responsible for Innovation and R&D, special strategic projects, Corporate Finance and M&A, Investment Process, Energy Services, Enterprise Risk Management)

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 2021 year end, the thirteen GLT members were the CEO, the CFO, the heads of the divisions, HR, IT and Digitalisation, Legal (who is also General Counsel), Strategy and Innovation, and Sustainability. New Head of Brand and Communications was appointed and he joined GLT on 1 February 2022. The search for a new Head of Sourcing and Logistics has been initiated.

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 two weeks, and as required.

* As of 1 January 2022 Efora maintenance functions under Stora Enso's divisions and productions sites.

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In 2021

The GLT had 13 members at the end of 2021. The GLT convened 24 times during the year. Important items on the agenda in 2021 were Covid-19 related scenarios and mitigation actions, 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 required in Business Performance Reviews as well as the GLT meetings.

Strategic investment projects are approved on the 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 (in addition, the allocation proposals are made by IWG).

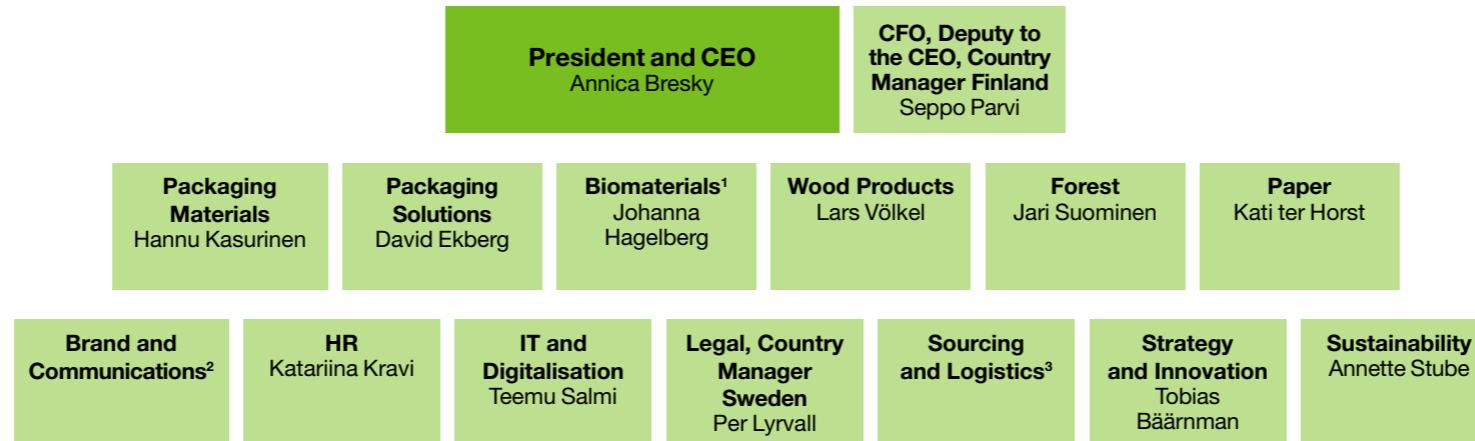
Innovation and R&D is organised in two structures. On the group level, the long-term research and company-wide collaborations with academia and external R&D providers are managed by a small team of experts. The innovation related to current and future offering of the businesses are executed within the divisions to drive market and customer focus. The progress of innovation efforts is evaluated in quarterly Business and Innovation Reviews with the CEO, CFO, the Head of Innovation and R&D, the division Head, and the division Innovation Head. The portfolio of potential transformational innovation projects is reviewed on a quarterly basis by the CEO, CFO, Chief Strategy and Innovation Officer, and the heads of divisions. Innovation funding is supported from the group level by both the innovation and the digitalisation fund, where divisions make proposals, which are then reviewed and decided by IWG.

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). The CEO holds the ultimate responsibility for the successful implementation of our sustainability strategy. Everyday sustainability topics are managed by the Group Sustainability team together with the Human Resources, Legal, Group OHS, and Sourcing and Logistics functions, and Stora Enso's six divisions. Each of the business divisions has its own Head of Sustainability. 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 during 2021 was steered by the Sustainability Council, which included Heads of sustainability from its divisions and Sourcing and Logistics function. Chaired by the EVP, Sustainability, its work involves identifying longer-term opportunities and challenges that may require a Group-wide response and sharing good practices. The Sustainability Council met 11 times during 2021. The GLT is regularly informed about specific sustainability developments, as is the Board of Directors when appropriate, through its Sustainability and Ethics Committee.

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 a process for quarterly and other ongoing reporting.

Group Leadership Team as at 31 December 2021



¹ Markus Mannström, EVP Biomaterials, was a member of GLT until 13 December 2021.

² Ulrika Lilja, EVP Communications and Marketing, was a member of GLT until 15 September 2021. Carl Norell, acting Head of Communications 16 September 2021–31 January 2022, was not a member of GLT. René Hansen was appointed EVP, Head of Brand and Communications and a member of GLT. He joined Stora Enso on 1 February 2022.

³ Johanna Hagelberg, Head of Sourcing and Logistics until 13 December 2021. Tuomas Mustonen, acting Head Sourcing and Logistics, not a member of GLT. The search for a new Head of Sourcing and Logistics has been initiated.

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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 the 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

EUR million	Year Ended 31 December	
	2021	2020
Audit fees	4	4
Audit-related	0	0
Tax fees	0	0
Other fees	0	0
Total	4	4

In 2021

On the recommendation of the Financial and Audit Committee, the Board proposed that PricewaterhouseCoopers Oy be re-elected auditor by the AGM 2021 for the fourth year as the Company's auditors. The AGM 2021 elected PricewaterhouseCoopers Oy as auditor for a term of office expiring at the end of the AGM 2022.

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. The 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 key audit findings to the Financial and Audit Committee, the Board of Directors. Administratively, the Internal Audit reports to the CFO. The Financial and Audit Committee approves the appointment of the Head of the Internal Audit following the recommendation by the CEO.

The Internal Audit plan is risk and assurance-based and focuses on the core-processes in the Stora Enso value chain, supporting processes at the Group and site levels, and key strategic investments and projects in different divisions. In approved audit areas the compliance of Stora Enso policies and guidelines is also covered. The Internal Audit co-operates with other assurance functions during the year in order to avoid overlapping with assurance activities, and to be able to identify gaps. During the year, the Internal Audit executes possible special engagements based on a separate request and agreed with management and the Financial and Audit Committee. The Financial and Audit Committee approves the Internal Audit Annual Plan, Budget 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, the 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 the 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.

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 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-Assessment 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. The results of the T.E.S.T. are covered in Compliance Forums and action plan are 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. Stora Enso uses an additional external service, The Speak Up Hotline, through which employees and any third party globally 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 the 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, the 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 and Marketing, 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,

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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.

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's 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 the 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 the 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 with regards to related party transactions. 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 be 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 the 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 Internal Control Policy which also outlines the responsibilities of the first and second line of defence. Group Internal Control function, under the CFO's supervision, is responsible for internal control governance, processes, tools, training, and internal control reporting over financial reporting, 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, guidelines, 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 segregation 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,

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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 the 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, including reviews of results which are compared against the set budgets and plans, analytical procedures, and key performance indicators. Stora Enso Group Internal Control function monitors internal control processes, control performance, continuous control monitoring, and prepares quarterly internal control reporting to management. In 2021, Stora Enso increased its control validation testing scope amplified with more transparent control performance reporting for both divisions and group

functions. Also, the Group/Company completed an employee role redesign program with improved governance model to reduce access and segregation of duty risks.

In addition to the Group Internal Control function, the Stora Enso Internal Audit has an independent oversight role on internal control governance. The Internal Audit regularly evaluates the implementation level of policies and guidelines as well as the effectiveness and efficiency of Stora Enso's governance, risk management and system of internal control over financial reporting according to the Internal Audit charter, approved by The Financial and Audit Committee.



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Members of the Board of Directors



Antti Mäkinen

Born 1961. LL.M.

Position

Chair of Stora Enso's Board of Directors since March 2021. Member since March 2018. Chair of the Remuneration Committee since March 2021 and member since March 2019.

Board memberships

Member of the Board of Rake Oy and Metso Outotec Oyj. Chair of the shareholders' nomination board of Outokumpu Oyj and Nokian Renkaat Oyj.

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 2021, EUR¹	207,600
Meeting attendance	15/15
FAC attendance	
RemCo attendance	7/7 ●
SECo attendance	
Shareholding in Stora Enso²	12,244 R shares
Independent member	Yes/no ³



Håkan Buskhe

Born 1963. M.Sc. (Eng.), Licentiate of Engineering.

Position

Vice Chair of Stora Enso's Board of Directors since March 2021. Member since June 2020. Member of the Remuneration Committee since March 2021.

Board memberships

Chair of the Board of Directors of IPCO AB. Member of the Board of AB SKF, Munters AB, Kopparfors Skogar AB and The Grand Group.

Principal work experience and other information

CEO of FAM AB. CEO and President of SAAB AB 2010–2019 and E.ON Nordic 2008–2010. Executive positions in E.ON Sweden 2006–2008, CEO of the logistics company Schenker North 2001–2006, as well as several positions in Storel AB 1998–2001, Carlsberg A/S 1994–1998 and Scansped AB 1988–1994.

Total remuneration 2021, EUR¹	118,400
Meeting attendance	15/15
FAC attendance	
RemCo attendance	5/5 ⁴ ●
SECo attendance	
Shareholding in Stora Enso²	5,479 R shares
Independent member	Yes/no ³



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

Chair of the Board of Ynsect and Foundation Caritas.

Principal work experience and other information

Senior advisor at Astanor Venture Capital. 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, Sodial Group 1998–2001. Several management positions in Danone Group 1979–1997.

Total remuneration 2021, EUR¹	90,800
Meeting attendance	15/15
FAC attendance	6/6 ●
RemCo attendance	
SECo attendance	
Shareholding in Stora Enso²	28,343 R shares
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 Financial and Audit Committee since June 2020.

Board memberships

Member of the Board of AB SKF and Santos Australia.

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 2021, EUR¹	90,800
Meeting attendance	15/15
FAC attendance	6/6 ●
RemCo attendance	
SECo attendance	
Shareholding in Stora Enso²	33,096 R shares
Independent member	Yes



Helena Hedblom

Born 1973. M.Sc. (Material Tech.).

Position

Member of Stora Enso's Board of Directors since March 2021. Member of the Sustainability and Ethics Committee since March 2021.

Board memberships

-

Principal work experience and other information

President and CEO of Epiroc since 2020. Prior to her current position she was Senior Executive Vice President Mining and Infrastructure at Epiroc. Various General Management and Research and development positions in Atlas Copco, since 2017 President for Atlas Copco's Mining and Rock Excavation Technique business area.

Total remuneration 2021, EUR¹	82,400
Meeting attendance	10/10 ⁶
FAC attendance	
RemCo attendance	
SECo attendance	2/2 ⁷ ●
Shareholding in Stora Enso²	1,831 R shares
Independent member	Yes

FAC = Financial and Audit Committee
RemCo = Remuneration Committee
SECo = Sustainability and Ethics Committee

● Chair ● Member

¹ Detailed description of remuneration for Board and Committee memberships as decided by the AGM in 2021 on page 191.

² Shares held by Board members and related parties.

³ Antti Mäkinen is independent of the company but not of its significant shareholders due to his position as the CEO of Solidium Oy.

⁴ Meetings attended out of the meetings held after election as RemCo member.

⁵ Håkan Buskhe is independent of the company but not of its significant shareholders due to his position as the CEO of FAM AB.

⁶ Meetings attended out of the meetings held after election as Board member.

⁷ Meetings attended out of the meetings held after election as SECo member.

The independence is evaluated in accordance with Recommendation 10 of the Finnish Corporate Governance Code 2020. 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.

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Mikko Helander

Born 1960. M.Sc. (Tech.).

Position

Member of Stora Enso's Board of Directors since March 2019. Member of the Sustainability and Ethics Committee since June 2020.

Board memberships

Vice Chair of the Board of the Confederation of Finnish Industries EK and Finnish Commerce Federation. Chair of the Board of Rajamme Vartijain Säätiö foundation. Member of the Board of Climate Leadership Coalition. 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 2021, EUR¹	82,400
Meeting attendance	15/15
FAC attendance	
RemCo attendance	
SECo attendance	4/4 ●
Shareholding in Stora Enso²	8,910 R shares
Independent member	Yes



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 2021, EUR¹	86,600
Meeting attendance	15/15
FAC attendance	
RemCo attendance	
SECo attendance	4/4 ●
Shareholding in Stora Enso²	12,904 R shares
Independent member	Yes



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, and Cinder Invest AB. Member of the supervisory Board of GROPYUS AG.

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 2021, EUR¹	97,200
Meeting attendance	15/15
FAC attendance	6/6 ●
RemCo attendance	
SECo attendance	
Shareholding in Stora Enso²	25,446 R shares
Independent member	Yes/no ³



Hans Sohlström

Born 1964. M.Sc. (Tech.), M.Sc. (Econ.).

Position

Member of Stora Enso's Board of Directors since March 2021. Member of the Remuneration Committee since March 2021.

Board memberships

Member of the Advisory Council in Nordea Bank Finland and a member of the Business Council of International Chamber of Commerce Finland.

Principal work experience and other information

President and CEO of Ahlstrom-Munksjö Oyj since 2018. Prior to his current position, he was President and CEO of Ahlström Capital 2016–2018 and of Rettig Group Oy 2012–2016. Before that, he was a member of UPM-Kymmene Corporation's Group Executive Team since 2004, responsible for Marketing 2004–2007, New Businesses and Biofuels 2007–2008, and Corporate Relations and Development 2008–2012. In 1990–2004 he held several managerial positions at UPM leading profit units, mills and sales.

Total remuneration 2021, EUR¹	82,400
Meeting attendance	10/10 ⁴
FAC attendance	
RemCo attendance	5/5 ⁵ ●
SECo attendance	
Shareholding in Stora Enso²	11,831 R shares directly, 179 R shares through related persons (spouse)
Independent member	Yes

FAC = Financial and Audit Committee
RemCo = Remuneration Committee
SECo = Sustainability and Ethics Committee

● Chair ● Member

¹ Detailed description of remuneration for Board and Committee memberships as decided by the AGM in 2021 on page 191.

² Shares held by Board members and related parties.

³ Richard Nilsson is independent of the company but not of its significant shareholders due to his employment at FAM AB.

⁴ Meetings attended out of the meetings held after election as Board member.

⁵ Meetings attended out of the meetings held after election as RemCo member.

The independence is evaluated in accordance with Recommendation 10 of the Finnish Corporate Governance Code 2020. 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.

Jorma Eloranta was Chair of Stora Enso's Board of Directors since April 2017 (and Vice Chair since April 2016) until his resignation on 19 March 2021. Eloranta has participated in all Board and relevant Committee meetings held during 2021 prior to his resignation. He was independent of the company and the significant shareholders.

Hans Stråberg was Vice Chair of Stora Enso's Board of Directors since April 2017 (and Member since April 2009) until his resignation on 19 March 2021. Stråberg has participated in all Board and relevant Committee meetings held during 2021 prior to his resignation. He was independent of the company and the significant shareholders.

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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 2019.

Board memberships, principal work experience and other information

EVP, 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 in Stora Enso

19,763 R 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 Huhtamäki, including responsibilities such as paper manufacturing within Rigid Packaging Europe and General Manager for Turkey. Chair of the Board of the Finnish Forest Industries Federation. Deputy Chair of the Board of Pohjolan Voima Oy. Member of the Board of Ilmarinen, East Office of Finnish Industries Oy and Teollisuuden Voima Oyj. Member of the Advisory Board of Coesia S.p.A.

Shareholding in Stora Enso

50,924 R shares



Tobias Bäärnman

Born 1977. M.Sc. (Econ.).

Position

Chief Strategy and Innovation Officer. Member of the GLT since 2020. Joined the company in 2017.

Board memberships, principal work experience and other information

SVP Controlling, Strategy and IT for Consumer Board division 2017–2019. Prior to that Finance Director at Iggesund Paperboard and various positions at Statoil and Procter and Gamble.

Shareholding in Stora Enso

1,207 R shares



David Ekberg

Born 1975. B.Sc. (Business Administration).

Position

Executive Vice President, Packaging Solutions Division. Member of the GLT since 2020. Joined the company in 2017.

Board memberships, principal work experience and other information

SVP and Head of Business Unit Nordic Packaging 2018–2019. SVP and Head of Finance and IT Packaging Solutions 2017–2018. EVP / CFO / COO at Climeon AB 2015–2017. Several management positions at Ericsson Group 1997–2015.

Shareholding in Stora Enso

625 R shares



Johanna Hagelberg

Born 1972. M.Sc. (Industrial Eng. & Mgmt) and M.Sc. (Eng. and Mgmt of Manufacturing Systems).

Position

Executive Vice President, Biomaterials Division. Member of the GLT since 2014. Joined the company in 2013.

Board memberships, principal work experience and other information

EVP, Sourcing and Logistics 2014–2021. SVP Sourcing, Stora Enso Printing and Living 2013–2014. Chief Procurement Officer at Vattenfall AB 2010–2013. Prior to that leading Sourcing positions at NCC, RSA Scandinavia and within the Automotive Industry for Scania, Saab and General Motors. Member of the Board of Bufab AB and Höegh Autoliners AS.

Shareholding in Stora Enso

28,146 R shares

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Kati ter Horst

Born 1968. MBA (International Business), M.Sc. (Econ.).

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

SVP, Paper Sales, Stora Enso Printing and Living until 2014. Prior to that several managerial positions in the paper business. Chairman of the Board of EURO-GRAPH asbl. Member of the Board of Outokumpu Oyj and Finnish Forest Industries Federation. Vice Member of the Board of Climate Leadership Coalition. Member of the Supervisory Board of Wienerberger AG.

Shareholding in Stora Enso

61,996 R shares



Hannu Kasurinen

Born 1963. M.Sc. (Econ.).

Position

Executive Vice President, Packaging Materials Division. Member of the GLT since 2019. Joined the company in 1993.

Board memberships, principal work experience and other information

Several leadership positions in Stora Enso, including EVP and SVP, Liquid Packaging and Carton Board in Consumer Board Division, Group Treasurer, SVP of Strategy and EVP of Wood Products Division.

Shareholding in Stora Enso

37,189 R shares



Katariina Kravi

Born 1967. LL.M., Trained on the Bench.

Position

Executive Vice President, HR. Member of the GLT since 2020. Joined the company in 2020.

Board memberships, principal work experience and other information

EVP, HR and Chief People and Culture Officer at Tieto Oyj 2012–2020. Prior to that several HR management positions at Nokia.

Shareholding in Stora Enso

0



Per Lyrvall

Born 1959. LL.M.

Position

Executive Vice President, Legal, General Counsel. Country Manager Sweden since 2013. Member of the GLT since 2012. General Counsel since 2008. Joined the company in 1994.

Board memberships, principal work experience and other information

Legal Counsel 1994–2008. Prior to joining Stora Enso legal positions at Swedish courts, law firms and Assi Domän. Member of the Board of Montes del Plata and Antidoping Sverige AB. Deputy Member of the Board of Skogsindustrierna.

Shareholding in Stora Enso

73,383 R shares directly, 1,257 R shares through related persons (spouse)



Teemu Salmi

Born 1973. B.Sc. (Computer Science).

Position

CIO, Head of IT & Digitalisation. Member of the GLT since 2020. Joined the company in 2017.

Board memberships, principal work experience and other information

Various executive positions at Ericsson, most recently as SVP and Head of business unit IT & Cloud in Middle East & Africa.

Shareholding in Stora Enso

9,034 R shares

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Annette Stube

Born 1967. Master's degree in psychology.

Position

Executive Vice President, Sustainability. Member of the GLT since 2020. Joined the company in 2020.

Board memberships, principal work experience and other information

Head of Sustainability in A.P. Moller-Maersk 2008–2020. Prior to that Director of Sustainability programmes in Novo Nordisk. Member of the Board of Fortum.

Shareholding in Stora Enso

0



Jari Suominen

Born 1969. M.Sc. (BA).

Position

Executive Vice President, Forest Division. Member of the GLT since 2014. Joined the company in 1995.

Board memberships, principal work experience and other information

EVP, Wood Products Division until 2019. SVP, Head of Building and Living Business Area until 2014. Prior to that several managerial positions in paper and wood products businesses. Member of the supervisory board of Varma Mutual Pension Insurance Company. Deputy Member of the Board of East Office of Finnish Industries Oy.

Shareholding in Stora Enso

53,168 R shares



Lars Völkel

Born 1975. M.Sc. (BA).

Position

Executive Vice President, Wood Products Division. Member of the GLT since 2020. Joined the company in 2020.

Board memberships, principal work experience and other information

CEO of Ambibox GmbH 2018–2020. CEO of Franke Kitchen Systems 2014–2017. EVP Luxury retail & CEO of Poggenpohl at Nobia 2011–2014. Has held various managerial positions at Electrolux incl. VP Western Europe.

Shareholding in Stora Enso

0

Ulrika Lilja, EVP Communications and Marketing, was a member of GLT until 15 September 2021. Carl Norell, acting Head of Communications 16 September 2021–31 January 2022, was not a member of GLT. René Hansen was appointed EVP, Head of Brand and Communications and a member of GLT. He joined Stora Enso on 1 February 2022.

Markus Mannström, EVP Biomaterials, was a member of GLT until 13 December 2021.

Johanna Hagelberg, Head of Sourcing and Logistics until 13 December 2021. Tuomas Mustonen, acting Head Sourcing and Logistics, not a member of GLT. The search for a new Head of Sourcing and Logistics has been initiated.



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Appendix 1

Due to differences between 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 shares 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 therefore does not include this note in its remuneration report.

Remuneration

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Letter from the Remuneration Committee Chair

Dear Shareholders,

On behalf of the Board, I present our 2021 Remuneration report. This report includes the main principles of our remuneration for the members of the Board of Directors, President and CEO and Deputy CEO, and our remuneration decision-making procedure; a description of our current policy and details of how our remuneration arrangements were implemented during year 2021. Information on remuneration for the Group Leadership Team is presented in [Financial Report 2021](#).

General remuneration principles

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 remuneration within Stora Enso, careful consideration is taken to ensure that the remuneration elements drive the business strategy of the company and its long-term financial interests. The Remuneration Committee is fully aware of its responsibility in ensuring that remuneration supports and drives our strategic priorities. In addition, a fundamental element in the remuneration principles at Stora Enso is the concept of pay-for-performance, and an important aspect of our approach to remuneration is to look at the total remuneration provided to employees.

Remuneration outcomes during 2021

During the year, all remuneration to members of the Board of Directors, President and CEO, and Deputy CEO in relation to 2021 was awarded in accordance with the Remuneration policy approved in 2020.

The outcome of the Short-term incentive plan for 2021 was approved in early 2022 in relation to performance against the financial metric Operating Cash Flow that had been set at the beginning of the year, and measurable individual key targets (including safety). Stora Enso achieved performance above applicable financial targets for the year, which resulted in STI earnings above target for the CEO and Deputy CEO. Details of the STI outcomes are provided in the section on Short Term Incentive (STI) programme for the CEO and Deputy CEO.

The 2019 Performance share plan outcome was approved in early 2022 based on pre-agreed measures. Performance was measured over three years beginning on 1 January, 2019, and ending on 31 December, 2021. Further details of the vesting outcome for the share programmes is provided in the section on Long Term Incentive (LTI) programmes for the CEO and Deputy CEO.

Remuneration Policy review

The Board of Directors proposes to the Annual General Meeting 2022 that Remuneration Policy is amended so that the Long Term Incentive (LTI) programme in addition to financial targets can include strategic and ESG (Environmental, Social and Governance) targets. The updated Remuneration Policy is available on the Company's website storaenso.com/agm. Including strategic and ESG targets as performance metrics is in line with the purpose of the LTI programme and aligned with our long-term strategy.

The Remuneration Committee will continue to monitor our Remuneration policy's effectiveness and appropriateness for our business. By the date of this report, no clawback provisions have been used. We will ensure that the policy continues to support the Group's strategy. In addition, we will carefully review the views of our shareholders and other stakeholders when setting the executive remuneration.

Antti Mäkinen

Chair of the Remuneration Committee

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Introduction

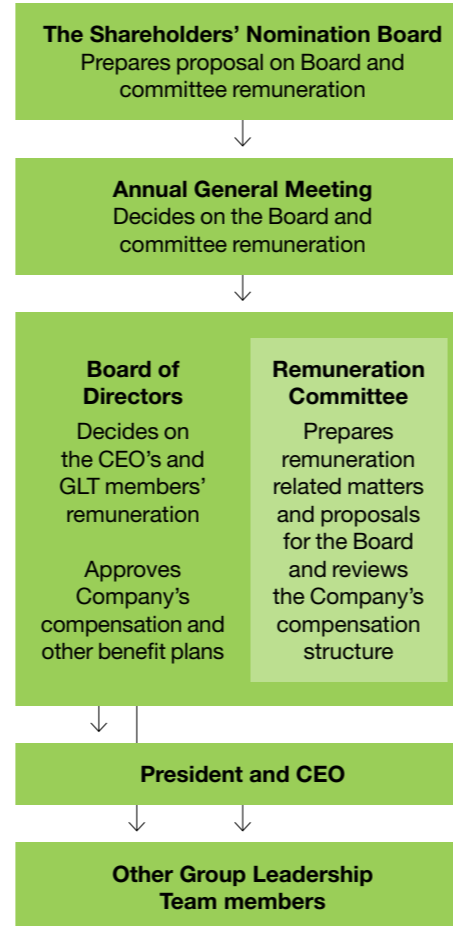
This report has been prepared in accordance with the Finnish Corporate Governance Code of 2020, which is available at cgfinland.fi, and the requirements set forth in the Finnish Decree of the Ministry of Finance of the remuneration policy and remuneration report (608/2019) as well as other applicable regulations. 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 Annual General Meeting 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 in the Corporate Governance Report. The Board representatives of the Shareholders’ Nomination Board do not participate in the decision-making relating to Board or Board Committee remuneration.

The Board appoints the CEO and approves his/her remuneration as well as the remuneration 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 remuneration principles are aligned with the Company’s objectives and shareholder interest.

Remuneration decision-making procedure



Remuneration Policy Summary

This Remuneration Policy summary describes Stora Enso’s main principles and the decision-making process of remuneration for the members of the Board, President and the Chief Executive Officer (CEO) and Deputy CEO, and the remuneration elements for them. For the full Remuneration Policy, see storaenso.com.

Board remuneration

The remuneration of the members of the Board may depend on their respective roles as Chair, Vice Chair, and Members of the Board or its committees. Board remuneration can be paid in cash or in cash and shares as further decided by the AGM.

Remuneration for the President and Chief Executive Officer (CEO) and Deputy CEO

The total remuneration to the CEO and Deputy CEO consists of:

- annual base salary (ABS)
- variable pay components as short-term incentives (cash when applicable) and long-term incentives (shares when applicable)
- long-term benefits (pension, medical and health benefits)

The purpose, operation, opportunity and link to performance of each remuneration element is described as following:

Annual Base Salary – ABS (Fixed pay)

The purpose of the base salary is to attract and retain talent of the calibre to deliver our strategic priorities. There is no maximum salary limit. The CEO and Deputy CEO salary increases take into consideration average salary increases for appropriate parts of the wider workforce. Increases may be larger, or applied more often, at the discretion of the Board under certain circumstances such as, but not limited to, the general development of business, financial performance, operational performance or when required considering market practice.

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Short Term Incentives – STI (Variable pay)

The purpose of the STI programme is to drive alignment against set objectives and to create engagement by setting clear measurable yearly targets that will have a direct impact on company performance. There is the opportunity of a maximum percentage of the annual fixed salary if targets are met. The STI maximum opportunity is reviewed yearly to ensure market competitiveness and link to strategy. The Board may decide on a maximum STI opportunity of 50%–100% of ABS for the CEO and Deputy CEO.

The STI programme is based partly on financial metrics and partly on measurable non-financial operational metrics that are set at the beginning of each year and measured for one year.

Operational metrics are based on the Stora Enso balanced scorecard, with targets in the strategic areas of Innovation, Customer Insight, Structured Processes, Motivated Employees and Special Projects. These may also be adjusted to reflect any changes in the balanced scorecard. Operational metrics will account for no more than 40% of the STI opportunity. Target levels of operational metrics for the CEO and the Deputy CEO are decided by the Board.

Long Term Incentives – LTI (Variable pay)

The purpose of the LTI is to incentivise and align management with shareholder interests and the long-term strategy of the company, including its sustainability. This is done through setting measurable financial long-term targets as well as through encouraging personal share ownership.

LTI consists of a Performance Share award in Stora Enso shares. LTI maximum opportunity is reviewed yearly to ensure market competitiveness and link to strategy. The Board may decide on a maximum LTI opportunity of 70%–120% of ABS for the CEO, and Deputy CEO.

Each LTI plan has a share price cap set in EUR. The number of shares transferred to the participant is reduced proportionally, should the share price at vesting date exceed this share price cap.

The shares will vest dependent on at least three-year financial performance criteria proposed by the Remuneration Committee and decided by the Board.

Long Term Benefits – LTB

The purpose is to stay competitive and aligned to market practice, giving the CEO and Deputy CEO the confidence of a solid insurance coverage during their term of office, and the opportunity to retire at the normal retirement age.

In Finland, the contributions on top of the statutory pension shall be limited to 23.5% of pensionable salary, while in Sweden, total pension contributions shall be limited to 30% of pensionable salary. Pensionable salary is a fixed salary and paid STI. The retirement age is 65 years.

The CEO and Deputy CEO may have accident, disability and death insurances in line with collectively agreed pension plans, to the extent that those include this coverage in Sweden and Finland. In addition, the CEO and Deputy CEO may be covered by a company sponsored health insurance. The cost of the above-mentioned insurances may be up to 4% of fixed salary.

Other Benefits

The purpose is to stay competitive and aligned to market practice. Some benefits will also help to attract and retain talent. Benefits are based on cost and will be provided in line with local market practice. The cost of the car benefit may be up to 4% of the fixed salary.

The level of Relocation Benefits will depend on individual circumstances and market practice. These will be provided for a limited period of time.



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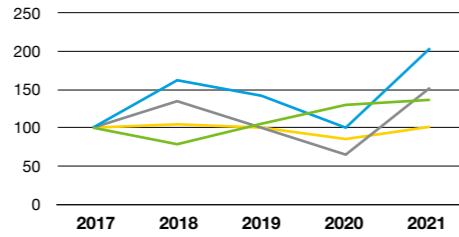
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Remuneration development

The graph below shows the development for selected financial measures since 2017 and up until 2021. Financial results for 2021 are unique in this time period in the sense that it is the only year in which all four selected measures are above 2017 levels.

Five-year financial performance

Index: 2017 = 100



- Total shareholder return¹
- Earnings per share
- Operational EBIT²
- Sales

¹ Based on FactSet data.

² Operational Earnings Before Interest and Tax (EBIT).

The graph “Five-year comparison of paid remuneration” shows the CEO, Deputy CEO, Board, and average employee remuneration development since 2017 and up until 2021. Amounts have been indexed to 100 at the 2017 year level in order to show the relative development in the years 2017–2021.

During the period 2017–2020, the employee average remuneration has remained relatively unchanged, while

the average increased in 2021 by 14.6% (114.6) since 2017. The board members remuneration increased by 8.4% (108.4), and the Deputy CEO remuneration increased by 12.5% (112.5) in the period 2017–2021.

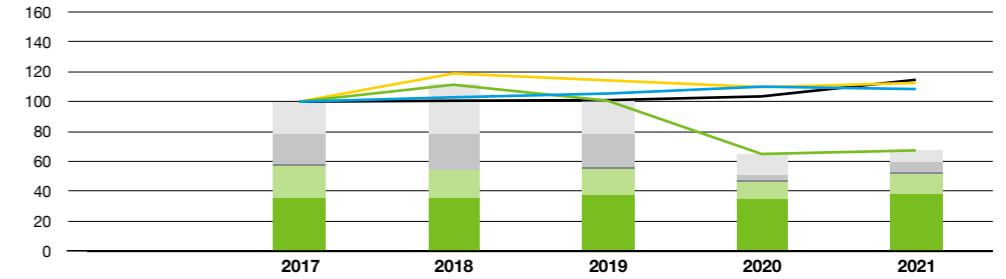
There was a high variance in CEO and Deputy CEO remuneration in the 2017–2021, since these are heavily dependent on variable pay parts (STI and LTI) that depend on financial company performance. Note that LTI is a significant part of CEO remuneration and LTI payouts are based on the financial performance of the three last years. Financial performance (EPS, Operating EBIT) decreased in 2019–2020 and, as a result, variable pay-outs were also lower. Therefore, CEO and deputy CEO remuneration were lower in 2020–2021 compared to 2018. The increased financial performance in 2021 is expected to increase remuneration paid in 2022. It should be noted that although we can show a correlation between financial performance and variable pay, variable pay outcomes depend on the performance towards set targets that may be higher or lower than actual outcomes.

To illustrate the impact of different components to CEO remuneration, we have broken down the remuneration into bars that illustrate the relative development of pay elements in 2017–2021. Due to variance in variable pay, CEO remuneration increased in 2018 but fell back in 2019, and resulted in a 32.6% (67.4) lower remuneration in 2021 compared to 2017.

At Stora Enso, company performance is linked to the remuneration for approximately 97% of our employees through various profit sharing and variable pay programmes.

Five-year comparison of paid remuneration

Index: 2017 = 100



	2017	2018	2019	2020	2021
Board member average ¹	100.0	102.9	105.4	110.0	108.4
President and CEO ^{2, 3}	100.0	111.3	100.6	65.0	67.4
Deputy CEO ³	100.0	118.8	114.2	109.7	112.5
Employee average ⁴	100.0	100.6	101.0	103.5	114.6

- President and CEO**
- Annual salary
 - Pension
 - Other benefits
 - Short Term Incentives
 - Long Term Incentives

¹ Total Board member fees divided by number of Board members. The index will vary depending on the total board fees paid as well as the Board composition.

² The current President and CEO started on 1 December 2019. Due to that, only 1 month of STI was paid in 2020 as time in the CEO position, whereas full year of STI is included in the 2021 figure. Amounts in the years 2019–2021 relate to payments made to the current President and CEO after that date, as well as amounts paid to the previous President and CEO that relate to the period before that date.

³ Remuneration depends on a fixed part, such as base salary, pension and other benefits, but also to a large extent on variable pay parts that may result in higher or lower total remuneration year-to-year.

⁴ The total wages and salaries paid to employees in Stora Enso divided by the average number of employees. The index will vary based on the total headcount and total wages and salaries paid.

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Annual report on remuneration 2021

Remuneration presented in the report is either earned and paid during 2021, or earned and due to be paid in 2022.

During 2021, there has been no recovery of paid or reduction of outstanding awards in respect of the President and CEO or Deputy CEO. There have been no deviations from the decision-making procedure as set out in the Stora Enso Remuneration Policy.

Board member remuneration in 2021

In 2021, the Stora Enso Board members were compensated as set out in the following chart.

Board remuneration

EUR	Year Ended 31 December	
	2021	2020
Chair	197,000	197,000
Vice Chair	112,000	112,000
Board Member	76,000	76,000

Pursuant to the decision by the Annual General Meeting 2021, the annual remuneration for the members of the Board has been paid in Company shares and cash so that 40% was paid in Stora Enso R shares purchased on the Board members' behalf on the market at a price determined in public trading, and the rest in cash. The shares were purchased within two weeks of the AGM 2021. The Company has paid all costs and transfer tax related to the purchase of Company shares. The Company has no formal policy requirements 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 21,200, and
- for the members of the Financial and Audit Committee EUR 14,800 each,
- for the Chair of the Remuneration Committee EUR 10,600, and
- for the members of the Remuneration Committee EUR 6,400 each,
- for the Chair of the Sustainability and Ethics Committee EUR 10,600, and
- for the members of the Sustainability and Ethics Committee EUR 6,400 each.

Board Remuneration and Committee Memberships

EUR thousand (before taxes)	Year Ended 31 December				Total	Total
	Board remuneration	Financial and Audit Committee	Remuneration Committee	Sustainability and Ethics Committee		
Board members at 31 December 2021						
Antti Mäkinen, Chair	197		11		208	82
Håkan Buskhe, Vice Chair	112		6		118	82
Elisabeth Fleuriot	76	15			91	91
Hock Goh	76	15			91	91
Helena Hedblom	76			6	82	
Mikko Helander	76			6	82	82
Christiane Kuehne	76			11	87	87
Richard Nilsson	76	21			97	97
Hans Sohlström	76		6		82	
Former Board members						
Jorma Eloranta (until 19 March 2021)	—	—	—	—	—	222
Hans Stråberg (until 19 March 2021)	—	—	—	—	—	118
Total remuneration as Directors^{1, 2, 3}	841	51	23	23	939	953

¹ 40% of the Board remuneration, excluding Committee remuneration, in 2021 was paid in Stora Enso R shares purchased from the market and distributed as follows: to Chair 4,746 R shares, Vice Chair 2,698 R shares, and members 1,831 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 Nomination Board.

³ 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.

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CEO and Deputy CEO remuneration

The total earned (paid) remuneration for the current President and CEO in the period 1 January to 31 December 2021 amounted to EUR 2,027,000 (1,731,000), including annual base salary, customary fringe benefits (such as car and mobile phone) STI and LTI programmes, and pension.

2021 Paid and earned CEO remuneration

Annual base salary	EUR 981,333 was earned and paid in fixed salary during 2021.
Short-term incentive	In 2020 the CEO was entitled to an STI programme with a maximum opportunity of 75% of annual fixed salary. Paid STI in 2021 related to the time as CEO in 2020 amounted to 17.8% of the annual salary with a corresponding value of EUR 175,000. In 2021, the CEO was entitled to an STI programme with a maximum opportunity of 75% of the annual fixed salary. Earned STI related to 2021, due to be paid in 2022, amounted to 68% of the annual salary, with a corresponding value of EUR 672,000.
Long-term incentive	Paid LTI in 2021 related to the 2018 LTI programme amounted to 12,066 shares corresponding to a value of EUR 201,000 before tax. ¹ The 2019 LTI programme (performance period 2019–2021) ended at year end and is due to be paid in 2022. The programme resulted in a 0% performance outcome and no shares will be transferred.
Other benefits	Benefits include holiday pay, mobile phone, car, and insurance amounting to EUR 33,000.
Pension	The 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. Pension contributions amounted to EUR 341,000 during the year.
Termination of assignment	There is 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.
Total earned remuneration (paid)	Total remuneration earned (paid) in 2021 amounted to EUR 2,027,000 (1,731,000). ^{2,3}
Earned proportion of fixed to variable remuneration (paid)	The proportion of fixed compensation earned was 67% (78%), while the proportion of variable compensation earned was 33% (22%).

¹ Vesting price EUR 16.65

² Earned amounts include STI and LTI earned during 2021 and are due to be paid in 2022. The paid amount includes STI and LTI paid during 2021.

³ EUR 1,720,000 was paid from Stora Enso AB and EUR 11,000 was paid from Stora Enso Oyj.

The total earned (paid) remuneration for the current Deputy CEO in the period 1 January to 31 December 2021 amounted to EUR 845,000 (873,000), including annual salary, customary fringe benefits (such as car and mobile phone) STI and LTI programmes, and a supplementary pension.

2021 Paid and earned Deputy CEO remuneration

Annual base salary	EUR 419,000 was earned and paid in fixed salary during 2021.
Short-term incentive	In 2020, the Deputy CEO was entitled to an STI programme with a maximum opportunity of 50% of the annual fixed salary. Paid STI in 2021 related to 2020 amounted to 12.9% of the annual salary with a corresponding value of EUR 54,000. In 2021, the Deputy CEO was entitled to an STI programme with a maximum opportunity of 50% of the annual fixed salary. Earned STI related to 2021, due to be paid in 2022, amounted to 46% of the annual salary, with a corresponding value of EUR 191,000.
Long-term incentive	Paid LTI in 2021 related to the 2018 LTI programme amounted to 9,936 shares corresponding to a value of EUR 165,000 before tax. ¹ The 2019 LTI programme (performance period 2019–2021) ended at year end and is due to be paid in 2022. The programme resulted in a 0% performance outcome and no shares will be transferred.
Other benefits	Benefits include holiday pay, mobile phone, car, and insurance amounting to EUR 35,000.
Pension	The retirement age is 65. The Deputy CEO's pension plan includes mandatory TyEI and a supplementary defined contribution pension plan with contributions of 23.5% of pensionable salary. Pension costs amounted to EUR 199,000 during the year.
Termination of assignment	There is 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.
Total remuneration (paid)	Total compensation earned (paid) in 2021 amounted to EUR 845,000 (873,000). ²
Proportion of fixed to variable remuneration (paid)	The proportion of fixed compensation earned was 77% (75%), while the proportion of variable compensation earned was 23% (25%).

¹ Vesting price EUR 16.65

² Earned amounts include STI and LTI earned during 2021 and are due to be paid in 2022. The paid amount includes STI and LTI paid during 2021.

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Short Term Incentive (STI) programme for the CEO and Deputy CEO

The CEO and Deputy CEO are entitled to an STI programme decided by the Board each year. The 2021 STI programme was based 70% on financial targets 10% on Safety, and 20% on individual metrics/targets. The outcome was as detailed below.

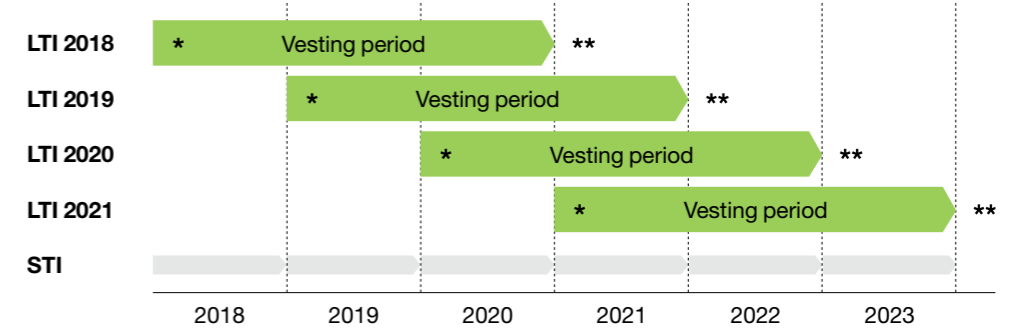
	Description of Criteria	Weighting	Performance (0–100%) ¹	STI outcome ²
CEO	Group Operating Cash Flow	70%	90%	EUR 672,000 (68% out of the Annual Base Salary)
	Group Safety	10%		
	Individual metrics/targets ³	20%		
Deputy CEO	Group Operating Cash Flow	70%	87%	EUR 191,000 (46% of the Annual Base Salary)
	Group Safety	10%		
	Individual metrics/targets ³	20%		

¹ Measured performance (out of 100%)
² Total earned STI outcome due to be paid in 2021.
³ Measurable strategic targets

Long Term Incentive (LTI) programmes for the CEO and Deputy CEO

The CEO and Deputy CEO participate in 2019, 2020 and 2021 share based LTI programmes. The 2019 and 2020 programmes have three-year performance periods. In the 2021 programme the target metrics are set for each one-year period and performance is measured based on accumulated target metrics and outcomes for the three-year period. All three programmes vest in only one portion after three years. The 2019 programme is related to the performance period 2019–2021, the 2020 programme is related to the performance period 2020–2022 and the 2021 programme is related to the performance period 2021–2023. The opportunity under the current outstanding LTI programmes are in Performance Shares.

Share-based compensation plan



* Date of grant 1 March ** Date of vest 1 March ● Yearly STI programme LTI Long term incentive STI Short term incentive

During the year the LTI 2018 programme was paid out, the performance period for the LTI 2019 programme ended, and the LTI 2021 programme was launched. The CEO was awarded 95% of annual base salary in the 2021 LTI programme, while the Deputy CEO was awarded shares corresponding to 70% of annual base salary. The LTI 2019 programme resulted in a 0% performance outcome due to be paid in 2022. Further to LTI 2019, the CEO and Deputy CEO held outstanding awards in the LTI 2020 and LTI 2021 programmes at year end.

	Plan type	Plan name	Performance period	Award date	Vesting date	Performance criteria ¹	Awarded shares	Performance outcome	Shares paid/earned ²
CEO	Performance share plan	LTI 2018	1 January 2018 to 31 December 2020	1 March 2018	1 March 2021	EVA, EPS	24,210	49.84%	12,066 ³
		LTI 2019	1 January 2019 to 31 December 2021	1 March 2019	1 March 2022	EVA, EPS	27,160	0%	0
		LTI 2020	1 January 2020 to 31 December 2022	1 March 2020	1 March 2023	EVA, EPS	75,080	–	–
		LTI 2021	1 January 2021 to 31 December 2023	2 March 2021	1 March 2024	EVA, EPS	57,387	–	–
Deputy CEO	Performance share plan	LTI 2018	1 January 2018 to 31 December 2020	1 March 2018	1 March 2021	EVA, EPS	19,936	49.84%	9,936 ³
		LTI 2019	1 January 2019 to 31 December 2021	1 March 2019	1 March 2022	EVA, EPS	23,850	0%	0
		LTI 2020	1 January 2020 to 31 December 2022	1 March 2020	1 March 2023	EVA, EPS	25,340	–	–
		LTI 2021	1 January 2021 to 31 December 2023	2 March 2021	1 March 2024	EVA, EPS	18,514	–	–

¹ Economic Value Added (EVA), Earnings per Share (EPS).
² 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.
³ Gross shares paid at vest date 2021.

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.

Capacities by production site in 2022

Packaging Materials

Consumer board	Location	Grade	Capacity 1,000 t
Beihai	CHN	LPB, CKB, FSB, FBB	525
Fors	SWE	FBB	455
Imatra	FIN	SBS, FSB, FBB, LPB, CUK	1,195
Ingerois	FIN	FBB	295
Skoghall	SWE	LPB, CUK	925
Total			3,395

Containerboards	Location	Grade	Capacity 1,000 t
Heinola	FIN	SC fluting	300
Ostrołęka	POL	Testliner, PfR fluting, sack paper, wrapping paper, RCF-based liner and fluting	780
Oulu	FIN	Kraftliner, white-top kraftliner	450
Varkaus	FIN	Kraftliner, white-top kraftliner	405
Total			1,935

Barrier coating	Location	Grade	Capacity 1,000 t
Beihai	CHN	Barrier coating	80
Skoghall (Forshaga)	SWE	Barrier coating	120
Imatra	FIN	Barrier coating	455
Total			655

Packaging Solutions

Corrugated packaging	Grade	Capacity million m ²
Baltic states	Corrugated packaging	155
Kaunas		
Riga		
Tallinn		
Finland	Corrugated packaging	160
Lahti		
Kristiinankaupunki		
Poland	Corrugated packaging	410
Łódź		
Mosina		
Ostrołęka		
Tychy		
Russia	Corrugated packaging	395
Arzamas		
Balabanovo		
Balabanovo offset		
Lukhovitsy		
Sweden	Corrugated packaging	225
Jönköping		
Skene		
Vikingstad		
Total	Corrugated packaging	1,345

China Packaging	Location	Grade	Capacity million pcs	Capacity million m ²
Gaobu, Dongguan	CHN	Consumer packaging	390	30
Jiashan, Zhejiang	CHN	Consumer packaging	145	20
Qian'an, Hebei	CHN	Consumer packaging	340	28
Wu Jin, Jiangshu	CHN	Consumer packaging	100	15
Total			975	93

Formed Fibre

Mill	Location	Product	Division	Capacity million pcs
Hylte	SWE	Formed Fiber	Packaging Solutions	60
Total Formed Fibre				60

Circular Solutions

Mill	Location	Product	Division	Capacity mt
Hylte	SWE	Granules	Packaging Solutions	15,000
Total Circular Solutions				15,000

Biomaterials

Mill	Location	Grade	Division	Capacity 1,000 t
Enocell	FIN	Short and long-fiber	Biomaterials	630
Skutskär	SWE	Short, long-fiber and fluff pulp	Biomaterials	545
Sunila	FIN	Long-fiber pulp	Biomaterials	375
Montes del Plata (50% share)	URU	Short-fiber pulp	Biomaterials	750
Veracel (50% share)	BRA	Short-fiber pulp	Biomaterials	575
Total				2,875

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	330
Ostrołęka	POL	Long-fiber	Packaging Materials	130
Oulu	FIN	Long-fiber	Packaging Materials	550
Skoghall	SWE	Long-fiber	Packaging Materials	375
Tainionkoski, Imatra	FIN	Long-fiber	Packaging Materials	195
Varkaus	FIN	Long-fiber	Packaging Materials	325
Chemical Pulp Total (incl. Biomaterials)				5,890*

* Estimated market pulp volumes 2,500,000 tonnes

Deinked Pulp (DIP)

Mill	Location	Grade	Division	Capacity 1,000 t
Langerbrugge	BEL	DIP	Paper	680
Maxau	GER	DIP	Paper	295
Ostrołęka	POL	Recycled fiber based pulp	Packaging Solutions	700
Total				1,675

CTMP

Mill	Location	Grade	Division	Capacity 1,000 t
Beihai	CHN	BCTMP	Packaging Materials	210
Fors	SWE	BCTMP	Packaging Materials	220
Kaukopää	FIN	BCTMP	Packaging Materials	220
Skoghall	SWE	CTMP	Packaging Materials	310
Total				960

Lignin

Mill	Location	Product	Division	Capacity 1,000 t
Sunila	FIN	Lignin	Biomaterials	50
Total Lignin				50

Wood Products

Mill	Location	Sawing Capacity 1,000 m ³	Further Processing Capacity 1,000 m ³	Pellet capacity 1,000 t	CLT capacity 1,000 m ³	LVL capacity 1,000 m ³
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	80	-
Honkalahti	FIN	310	70	-	-	-
Imavere	EST	350	160	100	-	-
Impilahti	RUS	170	10	25	-	-
Launkalne ²	LAT	270	70	50	-	-
Murow	POL	300	210	-	-	-
Nebolchi	RUS	180	45	40	-	-
Näpi	EST	50	180	25	-	-
Planá	CZE	390	220	-	-	-
Uimaharju ³	FIN	240	-	-	-	-
Varkaus	FIN	260	120	-	-	80
Veitsiluoto ⁴	FIN	200	-	-	-	-
Ybbs	AUT	700	450	-	110	-
Zdírec	CZE	580	220	80	-	-
Total		5,780	2,550	520	270	80

¹ Gruvön CLT ramping up

² Launkalne pellets ramping up

³ Uimaharju sawmill belongs to division Biomaterials

⁴ Veitsiluoto sawmill belongs to division Paper

Paper

Mill	Location	Grade	Capacity 1,000 t
Anjala	FIN	Impr. news, book, LWC, wallpaper base	435
Hylte	SWE	News	245
Langerbrugge	BEL	SC, news	555
Maxau	GER	SC	530
Nymölla	SWE	WFU	485
Total			2,250

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
FSB	food service board
LPB	liquid packaging board
LVL	laminated veneer lumber
LWC	light-weight coated paper
PfR	paper for recycling
SBS	solid bleached sulphate board
SC	supercalendered 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



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