



storaenso

Stora Enso

Annual Report 2022

THE RENEWABLE MATERIALS COMPANY

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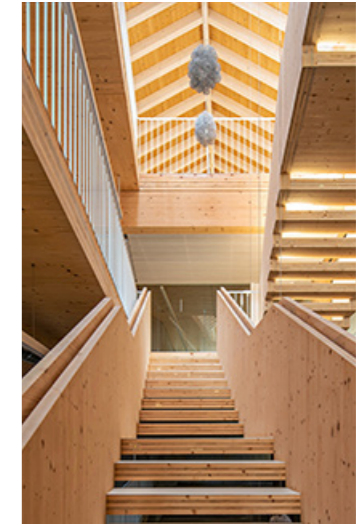
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● Audited

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.

About this report

For 2022, Stora Enso publishes one combined report, covering our strategy, financials, sustainability reporting, corporate governance and remuneration. Stora Enso acknowledges the concept of double materiality in its sustainability strategy and reporting. Stora Enso's impacts on the environment and people are reported in both the strategy and sustainability reporting section of the report. The most significant financial opportunities and risks related to sustainability topics are highlighted in the section Our strategy.

This Annual Report is not an XHTML document compliant with the ESEF (European Single Electronic Format) regulation.



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Outstanding performance underpinned by strategic direction and strong execution

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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, and wooden construction, 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 is integral in Stora Enso's business strategy – it is at the core of what we do.

Stora Enso contributes to the transformation towards a biobased circular economy in three areas where we have the biggest impact and opportunities: climate change, biodiversity, and circularity. With our low-carbon and recyclable fiber-based products, we support our customers in meeting the demand for renewable eco-friendly products. Our shares are listed on the Helsinki (STEAV, STERV) and Stockholm (STE A, STE R) stock exchanges. In addition, the shares are traded in the USA as ADRs.

Our purpose

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

Our values

Lead
Do What's Right

We are the renewable materials company

- Our raw material is renewable, recyclable and fossil-free
- Our products replace and substitute fossil-based materials
- Our renewable products contribute to a circular bioeconomy

Key figures 2022

Sales

11,680
EUR million

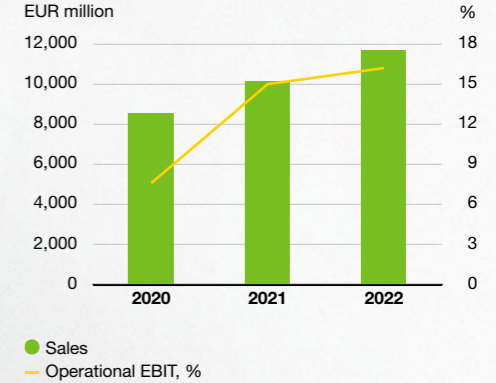
Operational EBIT margin

16.2%

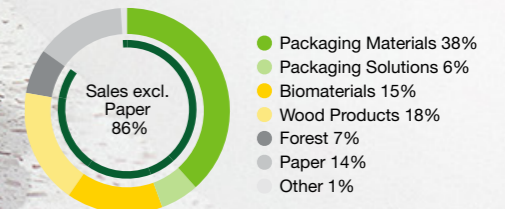
Personnel

21,000

Sales and operational EBIT



External sales by division





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Building a more resilient and less cyclical business by focusing on growth in our selected key areas

2022 was yet another exceptional year for Stora Enso and I am delighted with the organisation’s performance. We drove our financial performance to an all-time high, strengthened our balance sheet and delivered on strategic initiatives while experiencing very disruptive and challenging market conditions.

Group revenue increased by 14.9% YoY while operational EBIT increased by 23.7% YoY with an operational EBIT margin of 16.2%. In addition, we continued to reduce our net debt ratio to EBITDA to 0.7, below the target of <2. These strong results reaffirm our strategic choices and the execution of our initiatives towards a more focused business strategy, with accelerated profitable growth, supported by long term sustainability trends. We are very proud of these achievements as they represent a tremendous effort on behalf of the entire Stora Enso team.

Our purpose is ‘doing good for people and the planet by replacing fossil-based materials with renewable ones’. Sustainable business, from all perspectives: socially, ethically, environmentally and financially is our business agenda, affecting our short- and long-term ambitions and motivating our employees to innovate for the future and deliver value for today. We continue to launch circular, low-carbon and renewable products to the market, while also strengthening our forestry sustainability agenda by establishing science-based targets for our biodiversity

development. Underlying all of this is our commitment to the UN Global Compact’s ten principles and the UN’s Guiding Principles on Business and Human Rights.

Driving a cultural shift towards a more decentralised business model

During 2022, we continued to reinforce our new operating model to achieve a decentralised decision-making structure driven by an entrepreneurial spirit and empowered divisions. This cultural shift has resulted in a faster, more agile, and nimble business, better able to adapt to volatility and changing conditions. Today, our supporting functions are designed in each division according to best-fit and business needs. Decisions are taken and innovation is driven by those who are closest to the realities of our markets, customers, and consumers. In turn, our divisional and local leaders are more empowered to drive commercial and operational excellence.

Acting fast and staying true to our values, ‘to lead and do what’s right’, we announced our exit from Russia in early March. All export and import activities to and from Russia



Our strong results reaffirm our strategic choices.

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The exit from Paper enables us to focus resources on key growth areas

were halted and our Russian operations were divested to local management. Our own forests in Northern Europe combined with a strong sourcing network around the Baltic Sea area, provided the flexibility to ensure we could secure our wood supply needs and continue operating as usual. This period provided us with a key competitive advantage during a time of disruption.

Building shareholder value through focused capital allocation, M&A activities, and dividends

In the beginning of 2023, we took the last steps in our strategic exit from the graphical paper business. The divestment process was concluded with the sale of three out of our five

paper sites and the dissolving of the Paper division. The two remaining paper production sites will continue to serve their customers and be integrated into the Packaging Materials division. The Langerbrugge newsprint site has potential to be converted to a cost competitive recycled containerboard site. For Anjala we will leverage the integrated operations with Stora Enso's neighbouring Ingerois Packaging Materials site, utilising synergies in raw material and energy supply.

This strategic exit, and the dissolution of the Paper division, enables us to focus resources on growing in our three key areas: Renewable Packaging, Sustainable Building Solutions and Biomaterials Innovations.

The investment to convert the idle paper machine at our site in Oulu in Finland supports our growth strategy by providing new consumer board volume for growing packaging segments where we already have a leading market position. We see growth potential for high-quality packaging material both in Europe and North America from a site which is well placed both strategically and financially.

With the purchase of De Jong Packaging Group, we made our largest acquisition in many years with the aim of accelerating growth in renewable corrugated packaging, while building market share in packaging conversion of growing segments in Western Europe. This bolt-on acquisition has now been completed and we are focused on delivering on the synergies and successful integration of the business.

In December, Stora Enso also announced its intent to divest the packaging material site and local forestry operations in Beihai, China. Based on this strategic initiative, we will be able to allocate capital and resources to accelerate further growth on existing core packaging materials sites. And lastly, in 2022 we distributed our shareholders an all-time high dividend of 0.55 euro per share, in line with our policy to distribute 50% of earnings per share (EPS) excluding fair valuation over the cycle.

Supporting our resilience through our forest assets and energy self-sufficiency

Stora Enso has been able to remain relatively resilient during 2022 through our high energy self-sufficiency and forest asset value creation. High energy self-sufficiency continues to be important to counteract the "new European reality" with increased energy cost volatility. Our overall energy self-sufficiency has increased to 70%, and after the divestment of the paper sites and the start of the operation of the nuclear power plant in Finland, Olkiluoto 3, our electricity self-sufficiency is currently estimated to rise to 75%.

Furthermore, as one of the largest global private forest owners, we have a 30% self-sufficiency of wood supply from our own forest assets and long-term agreements with our supply network which ensures tactical wood sourcing flexibility with low sensitivity to changes in interest rates.

Replacing non-renewable materials with renewable products

We are currently witnessing a once-in-a-generation shift away from single-use plastic packaging to more sustainable options. The increasing demand for hygienic food packaging, on-the-go and related food deliveries and resource efficient industrial and e-commerce packaging has created a great opportunity for Stora Enso to continue to extend our leading position in different packaging solutions. 25% of all plastic packaging can already today be replaced by paper-based solutions and for the first time, these solutions are growing faster than plastic packaging globally. Comprising 40% of the world's CO₂ emissions, the building and construction industry represents a key area for sustainability improvement. This shift is happening concurrently within Europe and increasingly the world, away from excessive, energy intense steel and concrete use, towards more low-carbon timber-based construction solutions. Stora Enso's prefabricated building solutions offer not only safer and faster construction but also support a more environmentally friendly future with its long-lived, carbon storing wooden-based products.

We are working with innovating for greener batteries to support the electrification of our societies. Lignin, one of our renewable by-products, homegrown in our European forests, can be further processed to replace coal-mined graphite as anode material in batteries. This is an exciting opportunity and together with partnerships in the battery value chain we are targeting to move from pilot to industrial scale. Our innovations and solutions are part of the solution for



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fossil-free and less energy intense materials. Combined with our forest assets – which are a net carbon sink – we are part of the solution for the green transition.

Focusing on the CO₂ challenge is our business opportunity

Climate change and environmental degradation are existential threats to the world with the impact of CO₂ representing humanity's biggest challenge. At the same time, it serves as a key driver for all our opportunities to both grow our business and deliver products and actions that contribute towards building a regenerative future. It is no longer enough for companies to just reduce harm; we must restore and regenerate. Businesses across the world need to step up to these challenges to ensure they operate within planetary boundaries. We aim to be not only carbon net-zero, but carbon net positive, offer 100% circular products, and be biodiversity net positive by 2050. Both our short- and long-term roadmap have been firmly set on this path and we are continuing to take further actions to step up our efforts.

For us, it is not only the right thing to do, but it also represents the best opportunity to future-proof the relevance of our businesses in the future. The long-term winners will be the companies with the best innovations of sustainable products and solutions.

Many of our large customers and consumers share this feeling. When we listen to their business, innovation and collaboration requests, their direction is informed by the 'end-game' i.e. how can we take the necessary steps to build a sustainable society together – both in terms of people and the environment. Our business approach is to ensure that we maximise our products' value and the best use of our raw material for our Company and the whole society.

Our trees absorb CO₂ and we at Stora Enso always ensure that we plant more trees than we harvest, which leads to higher CO₂ absorption and storage in



Climate change serves as a key driver to grow our business and deliver products that can provide for a better environment.

our products. Our renewable products replace and/or substitute fossil-based products whose production and use release enormous amounts of CO₂ into the environment. Our products, wood in buildings, packaging materials and solutions and other wood-based biomaterials innovations, have comparably lower carbon footprints, store CO₂ during their whole lifetime and throughout recycling. They are a key part of the solution today and will be increasingly critical to meeting future sustainability goals.

Through collaborations in new business ecosystems we can achieve our ambitious targets. During this past year, Stora Enso

committed to several agreements to accelerate growth and innovations including a joint development agreement with Northvolt on developing the future "green" batteries and a business partnership with Bouygues related to low-carbon building projects.

Directing our strategy towards our 2030 ambitions

At our Capital Markets Day in September, we launched our 2030 ambitions. Through our growth initiatives, we plan to increase our sales by 30 percent (compared to 2021) while delivering a healthy 15% operational EBIT margin over the cycle and halving earnings cyclicality.

The balance of our divisions will also change over time, and by 2030, our packaging business will likely represent more than 60 percent of our sales. We will increase the share of building solutions to some 40% of Wood Products and increase the operational EBITDA of the business by 75% over the cycle. We also have great ambitions for our lignin-based materials business, which we aim to grow into a 1-billion-euro plus business by 2030. This is expected to mainly be driven by the impact of our product Lignode, a fossil-free hard carbon anode material aimed to serve the fast-growing green battery market with a secure and resilient European-based supply. To further strengthen our energy and resource efficiency, we aim to deliver between 5 and 10 TWh of wind power on our own forest land.

We do have high ambitions, but we have everything in place to realise our renewable future today.

Delivering sustainable and profitable growth requires the right ecosystem of customers, partners and committed people. Quarter by quarter, our decisions are guided by our purpose: 'to do what is right for people and the planet by replacing fossil-based materials with renewable ones.' We will continue our efforts to help our customers become 100% climate positive and circular, creating long-term value for all our stakeholders.

On the behalf of the Board and all employees of Stora Enso, I would like to thank you for your trust and support in 2022. We look forward to continuing our journey together with you towards building a stronger, more resilient company and a greener future.

The renewable future grows in the forest.

Annica Bresky
President and CEO



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Our year at a glance – building for growth

Earnings per share
EUR 1.97

Forest valuation
EUR 8.3 billion

Proposed dividend
EUR 0.60 per share

Climate change:

Our scope 1 and 2 CO₂e emissions were 27% lower than in 2019

Biodiversity:

99% of the land we own or manage was covered by forest certification schemes

Circularity:

94% of our products were recyclable

Reaching key targets

	2022	2021	2020	Target	Performance against target
Financials					
Sales growth (excl. Paper)	17%	29%	-9%	>5% per annum	●
Operational ROCE excl. Forest	20.9%	17.8%	7.0%	>13%	●
Net debt to operational EBITDA	0.7	1.1	2.3	<2.0	●
Net debt to equity	0.15	0.22	0.33	<0.6	●
Dividend per share (EUR)	0.60 ¹	0.55	0.30	See below ²	●
Non-financials					
Reduction of fossil CO ₂ e emissions ³ (scope 1 and 2) ⁴	-27%	-14%	-13%	-50%	●
Reduction of fossil CO ₂ e emissions ³ (scope 3) ⁴	-27%	-4%	-10%	-50%	●
Forest certification coverage	99%	99%	99%	96%	●
Circularity ⁴	94%	94%	n/a	100% recyclable products by 2030	●

¹ The Board of Director's proposed dividend

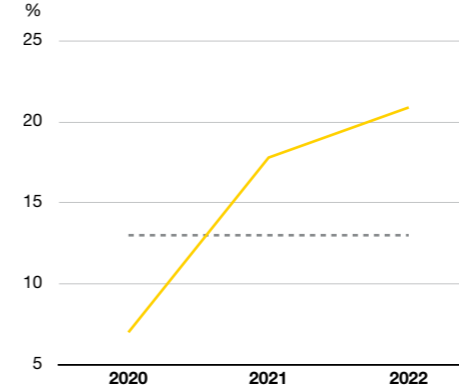
² To distribute 50% of EPS excluding fair valuation over the cycle

³ Compared to the baseline year 2019

⁴ Historical figures recalculated due to divestments or additional data after the previous annual report.

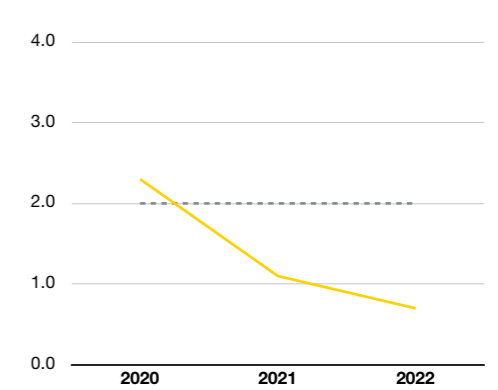
● Achieved
● On track

Operational ROCE excl. Forest



● Operational ROCE excl. Forest, %
— Target >13%

Net debt to operational EBITDA



● Net debt to operational EBITDA
— Target <2.0

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Key highlights

In 2022, Stora Enso took major steps in implementing its strategy by focusing on its key growth areas: renewable packaging, building solutions and biomaterials innovations.

Strengthened presence in European packaging markets

The acquisition of the Dutch De Jong Packaging Group is one of Stora Enso's largest acquisitions and an important investment for us. It will advance our strategic direction, accelerate revenue growth and build market share in renewable and circular packaging solutions in Western Europe. De Jong Packaging Group is one of the largest corrugated packaging producers in the Benelux countries. Its product portfolio and geographic presence will complement and enhance Stora Enso's offering, especially in fresh produce, e-commerce and industrial packaging.



Wooden building solutions for efficient, low-carbon construction

We inaugurated one of the world's most modern production sites for cross laminated timber (CLT) at the Ždírec site in the Czech Republic. Our capacity to serve markets in Europe, Japan, Australia, and North America will increase by approximately 40%, enabling us to meet the growing demand of sustainable, cost-effective and renewable building materials. At full production, the new site is estimated to generate 70 million euros in annual sales at full capacity.

Intention to divest operations in Beihai

In December, Stora Enso initiated a sales process for a divestment of its consumer board site in Beihai, China. The divestment would also include the forestry operations in the surrounding region, which supply raw material to the Beihai site. The divestment plan has no immediate effect on Stora Enso's financials or on the Beihai site's production. We will continue to serve the Chinese market from our the sites around the world.



Commercialising lignin-based innovations

To generate revenue from a novel, innovative and fossil-free material, Stora Enso and Northvolt have joined forces to develop the world's first industrialised battery, featuring anode sourced entirely from European raw materials. It will serve the sustainable battery needs for applications from mobility to stationary energy storage. The aim is to lower carbon footprint and create a positive impact on society. We also signed a Letter of Intent with Beyonder, a Norwegian energy storage technology company, for development of lignin-based anode material for batteries.



Growth in food and beverage packaging

Stora Enso is investing EUR 1 billion to convert the remaining idle paper machine at the Oulu site in Finland into a high-volume consumer board line. The line will be the most cost competitive folding box board machine in Europe. Targeted end-use segments are food and beverage packaging, mainly in Europe and North America. The renewable packaging market is, for the first time, growing faster than plastics-based alternatives. Through this conversion we can build on existing assets quickly and in a cost-effective way. Production is estimated to start in early 2025, and the line is expected to generate approximately EUR 800 million euros of annual sales at full capacity.



Introduction of biodiversity indicators

In 2022, Stora Enso started reporting on impact indicators to enhance biodiversity in the Group's own forests in Sweden and wood supply operations in Finland. The indicators are: high stumps, deadwood, soil and water, habitats, and tree retention. Our target is to reach 100% compliance with all the indicators. Stora Enso uses science-based indicators to monitor how well its operations follow the instructions on avoiding negative impacts on biodiversity.



Responsible exit from the paper business

Stora Enso is divesting three of its five paper sites, with completion expected in early 2023. Two sites, Anjala and Langerbrugge, are retained in the Group, under the Packaging Materials division. The Paper division was dissolved as of 1 January 2023, to allow us to build on the long-term growth potential for our products in renewable packaging, building solutions and biomaterials innovations.



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Key innovations


Innovation plays a key role in the success of our strategic growth ambition enabling us to respond to customer demand for products which reduce their CO₂ footprint, and helping them achieve their sustainability targets.





Lower carbon footprint for paper cups
 Paperboard used in paper cups requires a barrier – commonly made from plastic – offering protection against liquid. UltraThinPE Tec™ by Stora Enso improves the sustainability of paper cups by yielding the lowest plastic coating weight available and reducing the overall carbon footprint of the product. This allows for paper cup designs with less than 5% plastic – an important step in helping packaging converters, brand-owners, and retailers meet their plastics reduction targets.

Innovation focus areas:

-  New applications for fiber-based materials

-  Bio-based barriers for packaging

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

-  Sustainable building solutions

Several of our key initiatives are in the pilot and scale-up phases and we are working across the value chain with customers, partners, suppliers, research institutions, and start-ups to drive open innovation and accelerate our routes to market. 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. The Combient Foundry

is the selected interface towards the global start-up community through which we gather innovative solution proposals on selected challenges both regarding digitalisation and materials.

Packaging

In Packaging Materials, our innovation focus is on creating strong, yet light packaging boards for demanding end-uses allowing us to make more packaging from less raw materials, without compromising quality.

Barrier coatings enable paperboard to be used in far more end-uses compared with traditional paperboard. Barrier coatings provide critical characters such as humidity

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control, airtightness, aroma barrier, and grease-proofing. We are focusing on developing bio-based barriers to replace fossil materials, and enhance the recyclability of packaging.

Biomaterial innovations

In biomaterials innovations, we are focusing on bringing innovative and sustainable materials to the market. Through know-how, strategic collaborations and partnerships, we are working to accelerate breakthrough innovations in areas such as lignin-based carbon for energy storage and bio-binders.

Batteries from trees – enabling sustainable electrification

The commercialisation of lignin-based innovations is progressing. Today's lithium-ion batteries use graphite, which is a non-renewable carbon, either mined or made

from fossil-based materials. Lignode® by Stora Enso is a solution which replaces graphite with hard carbon from lignin, a by-product of pulp production. In 2022 alone, we partnered with Northvolt to create sustainable batteries using lignin-based hard carbon, and signed a letter of intent with Beyonder, a Norwegian energy storage technology company, covering optimisation of properties and commercial deliveries of lignin-based anode material for batteries after industrial-scale production has started.

A variety of applications for lignin

Stora Enso and Peab, the Nordic community builder, worked to replace bitumen in asphalt with renewable lignin. Wood-based lignin, Lineo® by Stora Enso is a more sustainable alternative to fossil-based binders such as bitumen, reducing the carbon footprint of roads and decreasing road friction which

extends the range of vehicles. This is important for municipalities to meet their climate agenda.

NeoLigno® by Stora Enso is a bio-based binder system, which provides healthier indoor and working environments. A collaboration between Stora Enso, IsoTimber and Moelven aims to develop 100% bio-based and circular building blocks and building elements using NeoLigno® in order to decrease the carbon footprint without having to compromise on the product's efficacy. Wood industry company Koskisen is using our bio-based binder, NeoLigno®, to replace fossil-based resins used in its particle boards for furniture. Both the furniture board raw material and the binder are made of wood and originate from the by-products of the production processes of both companies.

Partnerships to accelerate innovation and reach new customers

Northvolt

European supplier of sustainable, high-quality battery cells and systems



Developing wood-based batteries for applications from mobility to stationary energy storage.

Beyonder

Norwegian energy storage technology company



Optimising properties and commercial deliveries of lignin-based anode material for batteries

Modvion

Swedish wind turbine tower builder



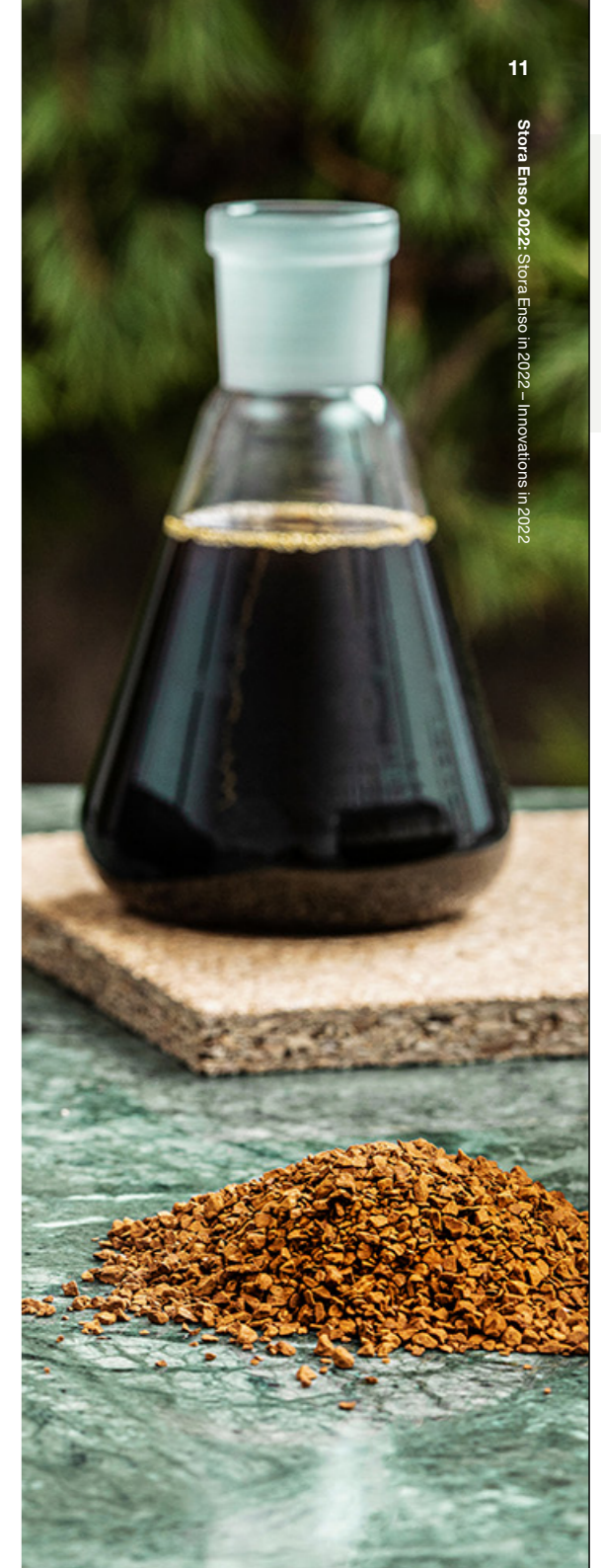
Creating 100+ meter tall wooden wind turbine towers

Voodin Blade Technology

German developer of rotor blades for wind turbines



Developing sustainable wind turbine blades from wood



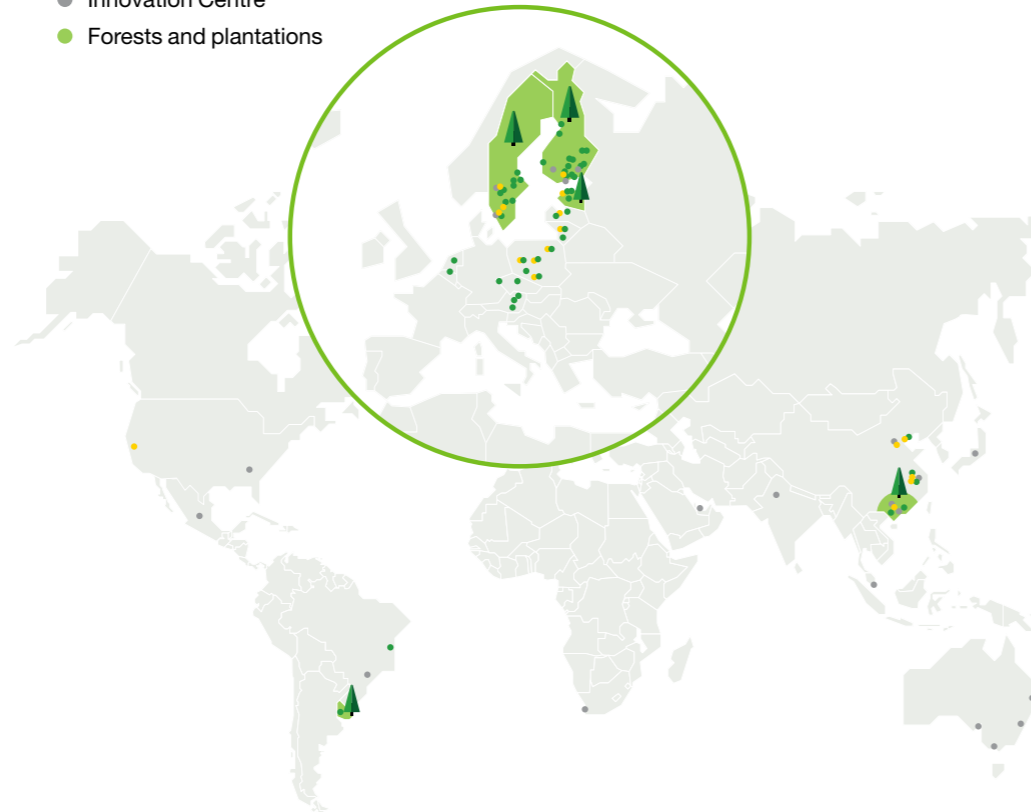
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Serving markets around the world

Stora Enso operates worldwide and focuses on utilising its expertise in renewable materials to create value in packaging, biomaterials, wooden construction. Our customers are mainly global business-to-business companies, such as packaging converters, brand owners, industrial component manufacturers, construction companies, and publishers.

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



We combine global resources with a local presence, service offerings and sustainability expertise. Stora Enso owns or manages land covering a total area of 2 million hectares worldwide.

Europe

Most of our sales and production take place in Europe, where we are one of the leading producers of packaging board, pulp and wooden products. We have production units in 11 European countries and five innovation and research centres in Northern and Central Europe.

In Northern Europe, we have tactical flexibility in wood sourcing through our own forests in Sweden, strategically located close to our production facilities, and forest associates. We also source wood from private forest owners. In Central Europe, the wood and recycled fiber for our production facilities is sourced through our own organisation.

Additionally, we have sales offices and design studios supporting the business, located across Europe.

South America

We obtain high-quality and cost-competitive eucalyptus pulp from tree plantations in South America. In Brazil, we have a 50/50% joint operation Veracel with Suzano. Our share of the eucalyptus pulp produced is partly used in our production sites and partly sold as market pulp. In Uruguay, we have a 50/50 joint operation Montes del Plata with Arauco. Our share of the production is sold entirely as market pulp, mainly in Europe and Asia.

Asia

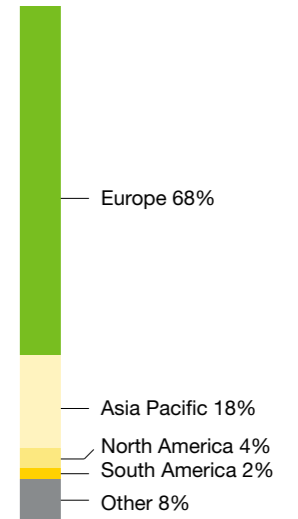
We supply our customers in Asia with renewable packaging products through our global operations, from production sites in Europe, South America, supplying pulp into the region, and from our four production sites in China.

In China, we have three corrugated packaging plants. Design studios and sales offices further support the business in the region. We have initiated a process to divest our consumer board site and related forestry operations in Beihai, China.

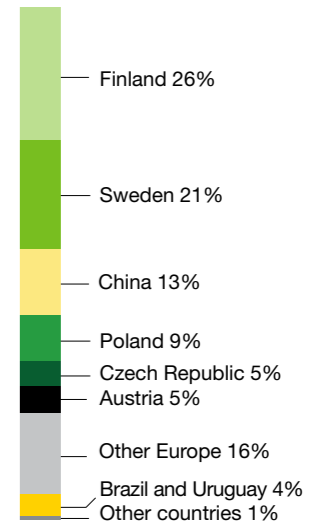
Rest of the World

Stora Enso also have sales offices and a design studio in North America, sales offices in Africa and the Middle East and Australia supporting the sales of our products globally.

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](#).



Investment case

Building value for our shareholders now and for the long term – 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.

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Resilience from a diversified business model underpinned by megatrends

Stora Enso is one of the world’s largest private forest owners and a world-leading packaging company, driving competitive advantage through integrating the value chain and innovation. Our diversified business model creates resilience to changing market dynamics and fluctuations in demand, while enabling flexibility for an evolving business. The revenue from our business portfolio is diversified, both geographically and by product, providing both a robust base and multiple growth opportunities. Global megatrends

such as urbanisation, digitalisation, changing lifestyles, global warming and eco-awareness, each influence our growth and innovation 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, excluding paper, over the cycle. By investing in innovation, we further enhance our competitive advantage, while at the same time helping our customers to become 100% circular. This puts us in an excellent position for long-term growth and value creation for all our stakeholders.

Sustainability is the opportunity driving our strategy

We develop products and solutions based on renewable materials made from sustainably sourced wood. Sustainability is deeply embedded in our overall business strategy and our responsible business practices. We foresee long-term, accelerated demand for renewable, recyclable, and regenerative products. Our renewable and circular solutions contribute positively to climate change, restore negative impacts on the environment, help our customers become climate friendly, and drive revenue growth to the Group. Our goal is to offer products which are 100% regenerative by 2050, meaning 100% circular and carbon net positive.

Our unique, differentiated products drive benefits for our customers and their end users

We grow our business by offering our customers a wide range of unique, differentiated and customer-led innovative products. Our products help our customers to reduce their CO₂ emissions by providing alternatives to fossil-based and other non-renewable materials. We create value through innovation and partnerships where new products, business models and recycling infrastructure support the development of a circular economy.

Our forest assets create a solid and valuable foundation for our business

Stora Enso is one of the largest global private forest owners. Our forests are strategically important to us. They are a real and precious asset that delivers growing value that provides Stora Enso with a solid balance sheet, and potential new ancillary revenue streams from e.g. wind and solar power as well as carbon credits. It is also an important raw material which provides us with competitive wood supply, giving us tactical flexibility, synergies, and value. We create value with best-in-class forestry and biodiversity management, which supports both increased yield and sustainable forestry.

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.

Focused and disciplined capital allocation drives shareholder value



Performance culture powers our business edge

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



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Our business model

– How we optimise shareholder value and carbon footprint reductions

Our business strategy is centered around achieving sustainable and profitable growth for our renewable products. Our diversified business model creates resilience, flexibility and synergies.

Forest ownership and management

Our ability to create value has its foundation in the forest. The forest is a valuable, growing asset that facilitates a steady, long-term fiber supply for our products.

Our suppliers

With over 20,000 suppliers, Stora Enso can help global supply chains become more sustainable by offering solutions that can substitute products made of fossil-based materials.

Innovation – substituting fossil-based materials with renewable alternatives




Together with our partners, we drive our innovation agenda towards replacing fossil-based materials, where we can create most value.

Efficient use of raw materials

Our substantial forest assets secure a renewable, cost-competitive fiber base. Our sawmills in the Wood Products division provide fiber to our pulp mills and serve as a base for growth in Building Solutions. When producing long-lived wood-based products, side streams are used to produce pulp, paper, and board products, which are recycled at high levels, ensuring that no element of the tree is wasted. Our highly competitive eucalyptus pulp production facilities in Latin America and speciality pulp mills in the Nordics support our board and paper manufacturing and provide a strong cash flow. 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 by-products, such as tall oil and turpentine.

Our products and solutions

Sustainability is the opportunity driving our growth strategy. It is within these three areas that we see the greatest potential for scalable innovation and commercialisation of new products:

-  Packaging Materials and Packaging Solutions, driven by high demand for plastic free and eco-friendly circular packaging. We hold leading market positions and see attractive investment options;
-  Building Solutions, within our Wood Products division, driven by a growing wooden buildings market. We offer alternatives to fossil-based construction material and are a leading global supplier;
-  Biomaterials Innovation, where our agenda is focused on lignin, and targets strong growth in new applications and markets to replace fossil-based materials.


CO₂





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Our products
replace and
substitute
materials from
finite, fossil-based
sources

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Stora Enso's strategy

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

Renewable Packaging

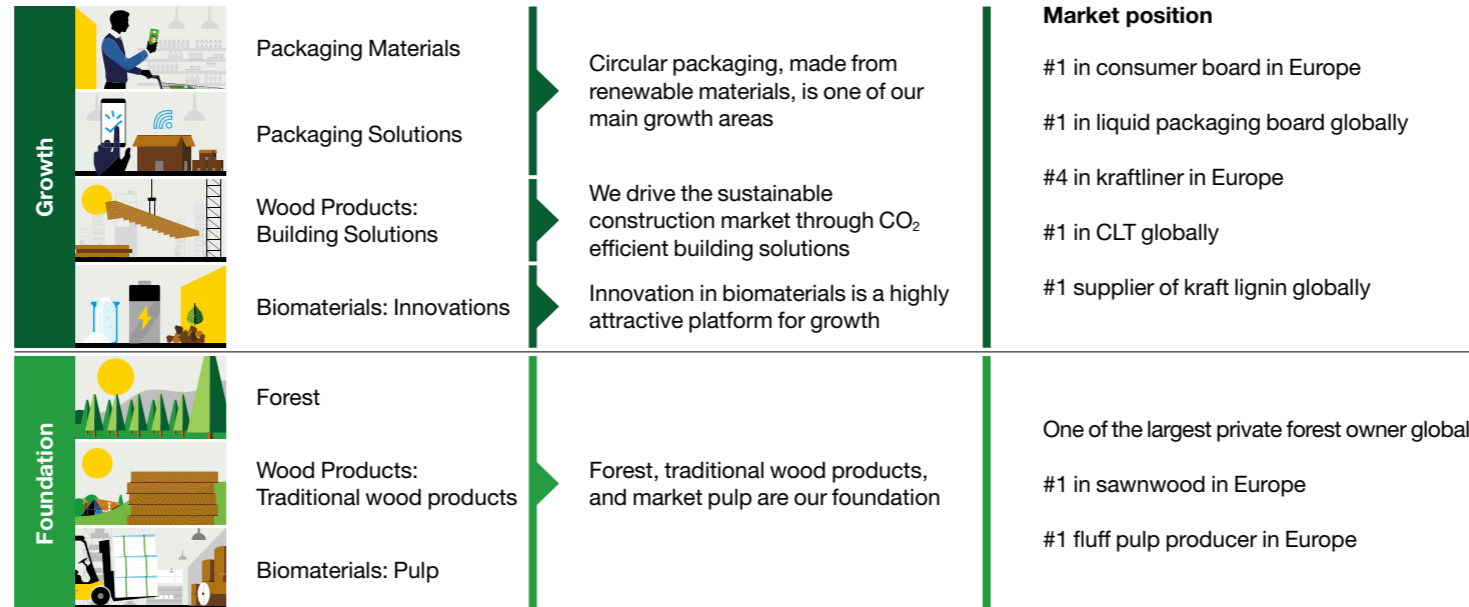
In Packaging, we continue to see high demand for plastic-free and circular solutions. Fiber-based packaging is the fastest growing packaging format globally, and now fibre based packaging has for the first time grown faster than plastic alternatives. We have leading market positions globally in high value segments and long-term customer partnerships.

alternatives to construction materials with a larger carbon footprint, such as concrete and steel. The global construction market is shifting more and more from labour intensive methods towards modular building approaches that are less energy intense and have a low carbon footprint. Today, mass timber products can be used to build high-rise buildings both sustainably and safe. Here, we are in a great position to capture a larger share of the value chain with our products and value-added services, such as pre-fabricated, bespoke wooden elements, new concepts and digital services.

Building Solutions

There are attractive growth opportunities in the building industry, offering wooden

Stora Enso's strategy



Biomaterials Innovation

In Biomaterials, we are focused on bringing innovative and sustainable materials to the market and target high growth, high margin markets with a portfolio of bio-based solutions, proprietary technologies, and a unique value proposition. Through our know-how, strategic collaborations and partnerships, we are working to accelerate breakthrough innovations in lignin-based applications, including anode material for batteries, Bio-binders for the construction industry and as a replacement for bitumen in asphalt, all of which are replacing fossil-based materials.

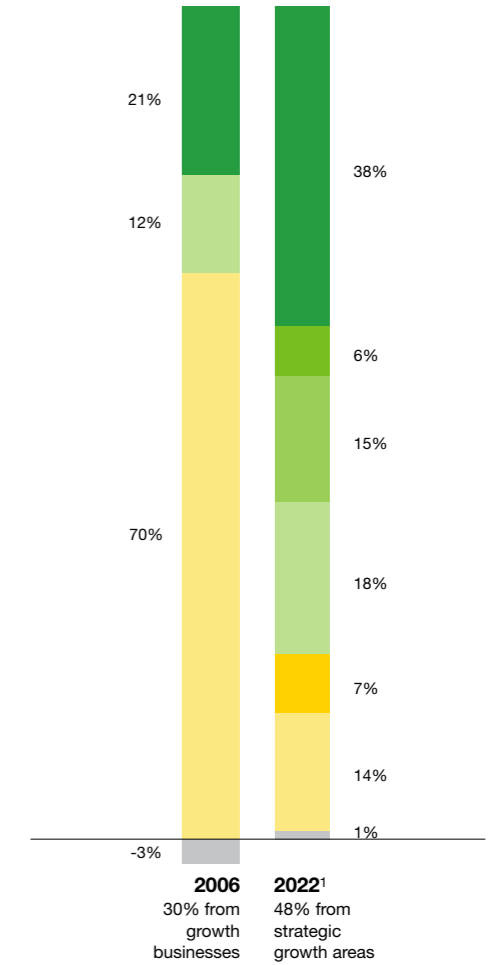
Exiting paper business

Paper demand in Europe has declined for over a decade, and paper is no longer a strategic growth area for the Group. Our exposure to Paper is now significantly reduced and represents only a small part of our total sales. We dissolved the Paper division at the beginning of 2023 to focus on strategic growth areas.

Market position

- #1 in consumer board in Europe
- #1 in liquid packaging board globally
- #4 in kraftliner in Europe
- #1 in CLT globally
- #1 supplier of kraft lignin globally
- One of the largest private forest owner globally
- #1 in sawnwood in Europe
- #1 fluff pulp producer in Europe

Sales split by division 2006 vs 2022



● Packaging Materials
 ● Packaging Solutions²
 ● Biomaterials
 ● Wood Products
 ● Forest
 ● Paper³
 ● Other and eliminations⁴

¹ External sales in 2022
² In 2006 included in Packaging Materials
³ In 2006 includes merchants
⁴ In 2006 includes Forest
 Strategic growth areas include Packaging Materials, Packaging Solutions, Biomaterials Innovations (part of Biomaterials), and Building Solutions (part of Wood Products).



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Long-term sustainable, profitable growth

Stora Enso has a long and rich history dating back to 1288. Our unique history has supported our survival, proactiveness and adaptability over the centuries. This has nurtured a deep-down business culture which can manage market fluctuations, build on modernisation and innovation, and provide solutions to current demands in the market. In recent years, we have been through a comprehensive transformation process, proactively repositioning our business from largely a pulp and paper company to a global renewable materials company, ensuring our future for many more years to come. Sustainability trends underpin our opportunity for long-term, sustainable, profitable growth, and today our products are mitigating the climate challenge, providing us with new opportunities.

Our strategy is to drive the green transition by accelerating our growth in renewable packaging, sustainable building solutions, and biomaterials innovations, while staying within the planetary boundaries. We do that through advancing our leading market positions in high-margin products, strong and competitive assets, best-in-class industry competence and control of the renewable resource wood. We are committed to ambitious science-based targets, on areas where we have the biggest environmental impact. These segments involve a higher degree of innovations and value added products which will further future proof our business and strengthen our competitiveness.

Climate change and resource scarcity affect the environment as well as economies and society as a whole. There is strong pressure to maximise the efficient use of raw

materials and to make the value chains circular. As a result of our new strategic direction, Stora Enso is and will be a more efficient and less cyclical company. Our focus, resources and investments are allocated where we have the best business opportunities for profitable growth, with leading market positions and strong competitiveness. Most of our products and solutions are renewable and circular, and the CO₂ they replace and store, helps to mitigate climate change. Our forest assets create a solid and valuable foundation for our business. They deliver growing value that provides Stora Enso with a solid balance sheet, and potential new ancillary revenue streams from wood-based solutions for sustainable wind and solar power as well as carbon credits. Our forests are also an important source of raw material which provides us with competitive wood supply, giving us tactical flexibility, synergies, and value.

Sustainability megatrends underpin our growth ambitions

Investing for growth

Following our first successful machine conversion at the Oulu site in Finland in 2021, the remaining idle paper line will be converted into a highly flexible consumer board line. The state-of-the-art technology enables us to produce a strong, material-efficient, high-quality product. This investment allows us to tap into premium packaging segments with strong growth potential, such as food contact and e-commerce packaging. We are building on existing assets for quick and cost-effective time-to-market compared to other investment alternatives. This puts us in a strong position to drive revenue growth and build market share.

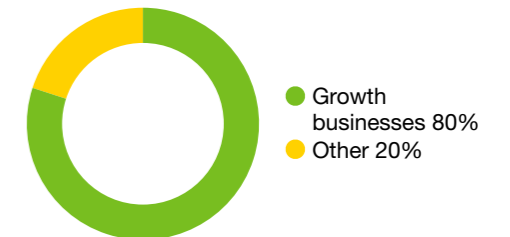
With the acquisition of the Dutch De Jong Packaging Group, we are investing in growing our market share in renewable and circular packaging solutions. The acquisition significantly strengthens our presence in the European packaging markets and provides an entry into the corrugated packaging market in the Netherlands, Belgium, Germany and the UK. De Jong's product portfolio and geographic presence complement and enhance our offering, especially in fresh produce, e-commerce and industrial packaging.

In 2022, we started a feasibility study at our paper production site in Langerbrugge, Belgium, for the conversion of one of the two paper lines into a high-volume recycled containerboard line. The feasibility study is expected to be finalised in the first half of 2023. In addition to sourcing materials for recycled containerboard, the study will also assess the handling of different incoming recycling streams, including laminated grades. Aligned with Stora Enso's strategic focus on renewable materials, the investment would support the growth opportunity created by the increasing demand for recycled packaging board. The conversion would also offer synergies with De Jong's De Lier site, which will be the largest and most modern corrugating site in Europe after the ongoing expansion project.

Ambition to significantly reduce earnings cyclicality

-  Responsible exit from the paper business
-  Growth in packaging with increased integration of captive pulp
-  Developing a more value added pulp product mix
-  Growing the share of building solutions
-  High self-sufficiency on energy reduces our exposure to external cost instability
-  30% self-sufficiency in wood supply

Sales in 2030





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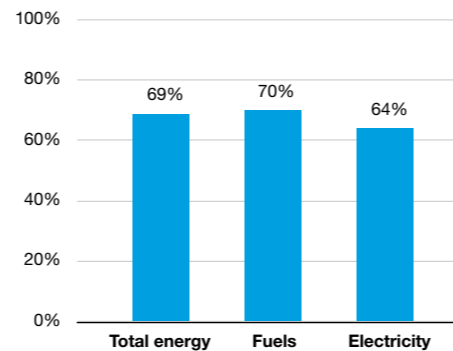
Self-sufficiency in energy and wood supply increase resilience



Increasing energy self-sufficiency

High self-sufficiency in energy reduces our exposure to external cost instability. We have about 70% self-sufficiency in energy, due to our own energy production and our ownership in the power company Pohjolan Voima in Finland. This enabled a strong performance in 2022 with resiliency towards energy price increases. For 2023, we estimate that our energy self-sufficiency will increase further to 75% after the start up of the new nuclear power station Olkiluoto 3 in Finland, expected in 2023, and the divestment of our selected paper assets.

Stora Enso's energy efficiency in 2022



Control over wood supply

Forest is a real asset that supports a strong balance sheet with an increasing value, it now represents almost half of Stora Enso's balance sheet. With that, it both lowers financial risk and acts as an inflation hedge and also lowers our strategic risks for access to wood supply. We are 30% self-sufficient in wood supply through our own forest assets and long-term procurement agreements. This secures tactical flexibility in wood sourcing – we can harvest more if the wood market is tight and less when wood availability is better. The direction of

wood flows to our production sites, and the mix and use of fiber can be optimised. For us, it is important to hold our forest assets close to our production sites. It ensures more efficient and sustainable operations, improves forest growth, harvesting and value, and lowers carbon emissions also for transportation. Our forests support our innovation and R&D work as we can use our own assets as development platforms. We ensure sustainable forest management and can control, track progress and plan for long-lasting, healthy forests.



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Sustainability is an integral part of our strategy

Planetary boundaries

Our common Earth is founded on physical, chemical, and biological processes comprising lands, oceans, atmosphere, and the poles. The Planetary Boundary concept refers to nine core environmental processes, within which humanity could continue to thrive for generations to come. They provide a foundation for informed, strategic decision-making based on science. Six out of nine boundaries have already been crossed¹. The planetary crisis is here and now, businesses are urgently requested to operationalise their transformational forces into strategic actions and science-based environmental targets.

¹ Stockholm Resilience Centre

The Planetary Boundaries concept: Indicating the limits of the global environment

- Climate change
- Ocean acidification
- Stratospheric ozone depletion
- Biogeochemical flows
- Freshwater use
- Land system change
- Biosphere integrity
- Chemical pollution
- Atmospheric aerosol loading

The Planetary boundaries guide our strategy

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. Our products substitute materials from finite, fossil-based sources with products and solutions that are renewable, recyclable and store carbon, helping our customers and the world at large to reduce their CO₂ emissions.

Sustainability is integral to Stora Enso's business strategy – it is at the core of conducting our everyday business in a responsible manner. We want to raise

the stakes and proactively help solve global challenges by accelerating positive sustainability impacts through our regenerative product and solution offerings. To stay within the planetary boundaries, it's essential to not only reduce negative environmental and social impacts, but also to shift the focus to becoming regenerative. Being regenerative means providing renewable and fully circular products and solutions that help reduce climate impact by removing more carbon than they emit and support biodiversity restoration.



Climate



Biodiversity



Circularity

By 2050, we aim to offer 100% regenerative solutions – products that remove more carbon than they emit.





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We contribute to the transformation of the materials system with ambitious, science-based goals for 2030 in three areas where we have the biggest impact and opportunities: climate change, biodiversity, and circularity. These targets stand on a foundation of conducting our business in a responsible manner and proactively managing the impacts from material to operations and value chain to product lifetime. Our aim is to provide fully circular products and solutions that help reduce climate impact and support biodiversity restoration, helping our customers to reach their ESG targets.

Climate change can be combatted with renewable materials, resource and energy-efficient production, and sustainable forest management. Our products help reduce CO₂ emissions as alternatives to non-renewable materials. Sustainably managed forests absorb CO₂ from the atmosphere and wood-based products act as carbon storage, even through recycling. Our Science-Based Targets are aligned with the 1.5-degree target. We aim to reduce 50% of our greenhouse gas (GHG) emissions from

the 2019 base-year, from own emissions to those in our value chains by 2030.

Our forests are the foundation of our business and our sustainability credentials. Biodiversity management is an integral part of our forest management practices, we want more than just to mitigate biodiversity loss. Our goal is to enhance biodiversity and create a net-positive impact in our own forests and plantations by 2050. To achieve this, we have launched a Biodiversity Leadership Programme which comprises selected projects including specific actions to enhance biodiversity in our own forests and wood supply operations. In addition, we are using science-based indicators to track progress, in combination with advanced precision forestry tools.

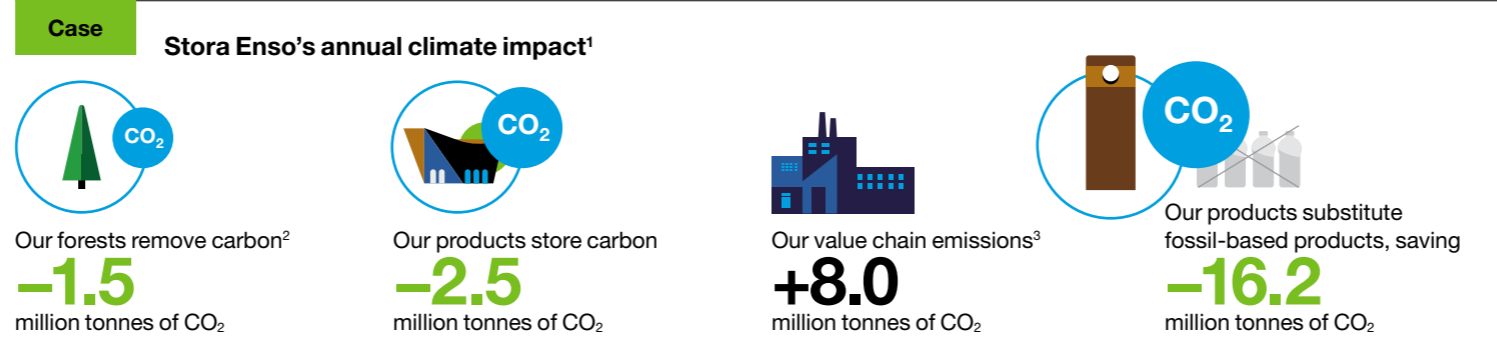
The world needs materials that are both renewable and recyclable – a circular bioeconomy – to combat climate change and to minimise waste. Stora Enso’s circular economy target outlines the commitment to circular material flows that help minimise waste and combat climate change. The goal is to retain the value of the circulating resources,

products, parts and materials. We regularly carry out Life Cycle Assessments (LCAs) to understand and develop the environmental impact of products, including their carbon footprints. Our goal for 2030 is to offer products that are 100% recyclable. To support this aim, we have introduced circular design guidelines for all our divisions, whether they are planning to create new processes and products or to update existing ones. These guidelines will also be fully adopted in our innovation and product development processes by 2025. We collaborate in our value chain, improving infrastructure to enhance recycling of our products.

Innovation plays a key role in the success of our strategic growth ambitions and sustainability targets – 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 and provide strong business opportunities.

With these commitments, Stora Enso aims to be a leading player in the transformation towards a biobased circular economy.

Our aim is to provide fully circular products and solutions that help reduce climate impact and support biodiversity restoration



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 Accounting principles for Sustainable forestry and biodiversity.
³ Stora Enso's fossil CO₂e emissions in 2022 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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Global megatrends underpin our strategy

Megatrends

Climate change
Eco-awareness
Digitalisation
Demographic changes and urbanisation
Resource scarcity

Drivers

Circularity
Carbon neutrality
Renewability
Biodiversity

Opportunities for replacement and substitution

Innovative materials
Transformed value chains
Novel end use customers
New product ecosystems

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.

Such global megatrends drive the demand for renewable materials and underpin the key drivers for a profitable growing business. 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, sustainability is becoming an important purchase criterion and 60% of consumers already consider it as such. Over a third of consumers are prepared to pay up to 25 percent more for a sustainable option and 85 percent of people indicate having shifted their purchase behaviour towards more sustainable options.



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 to enhance our biodiversity and complement our tree breeding programmes for future-fit forests.



Demographic changes and urbanisation

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 impacts building models. Close to 68% of the population are expected to live in urban areas by 2050, creating significant opportunities for construction of more sustainable living capacity. The packaged food market is still expected to grow and reach USD 3.86 trillion by 2026. Fulfilling these needs requires a more conscientious and circular approach to material use as well as sustainable, user-friendly and intelligent packaging solutions.



Resource scarcity

The growing population continues to demand more materials, and consumption of water, food, energy, land and minerals is rising substantially, making natural resources increasingly scarce and more expensive. The majority of resources used today are non-renewable and are set to become increasingly scarce given rising demand, partially driven by the growing middle class. Transition from non-renewable and fossil-based materials to renewable raw materials and circular economy is essential and urgent.

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



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A safe, diverse
and inclusive
working environment
for all employees is
our key priority

Our people



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Our people and culture

The success of our business strategy depends on our ability to attract, retain and grow the best talent in each and every area of our business – we want to be an employer of choice, offering leading development opportunities.

Our culture is based on our values, “Lead” and “Do what’s right”, which we expect our people to embrace and demonstrate through their actions and behaviour ensuring that, in everything we do, we drive customer value, perform our duties professionally, and allow space for innovation and creativity.

We provide opportunities for all people to expand their knowledge and gain skills to grow to their full potential. The megatrends creating our business opportunities continuously create new development opportunities for our employees. Meanwhile, skills relating to areas such as sustainability, digitalisation and innovation are crucial to our future success.

People Promise and Expectations

Stora Enso’s People Promise and Expectations were established in 2022 to support the business strategy. Our goal and key priority is to provide a safe, diverse and inclusive working environment for all employees across the business operations. We believe that the foundation for physical and mental health and well-being in the workplace represents optimal management of people, optimal organisation of work and an inclusive work environment.

Our people Promise and Expectations

Provide a safe, diverse, and inclusive environment



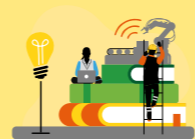
- We provide belonging and meaning for our people with our purpose to solve global sustainability challenges
- We ensure a safe working environment for our people, focusing on physical and mental well-being for everyone
- We recognise the importance of diversity and openly value the different experiences and perspectives our people bring with them

Drive customer value, performance, and innovation



- We define our direction and actions through customer value
- We believe different experiences and perspectives are a requirement for creating customer value
- We expect our people to strive for high performance in all parts of the organization
- We encourage internal and external collaboration as well as innovation for business success

Grow to your full potential



- We provide opportunities for all people to expand their knowledge and skills
- We identify, build and attract talent for the future
- We inspire and expect everyone to take responsibility for their growth and reach for their best potential

Grow leadership



- We lead at all levels, including the self, the team and the company as a whole
- We grow leaders who value inclusion, a diverse workforce and support individual growth
- We grow leaders who share our vision of a sustainable world and celebrate the innovation it requires
- We ensure our leaders and employees do what’s right



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Providing a safe, diverse, and inclusive environment

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. This is crucial for us when we implement our strategy: diversity and inclusion are strong enablers of improved performance, collaboration and innovation. Increased diversity of thought is needed to develop our products for the challenges of tomorrow. Focusing on creating diverse teams allows us to gain access to a larger pool of talent.

Stora Enso's global initiative, "We Belong Here", aims to build safer and more inclusive workplaces throughout the Company. Through the initiative, Stora Enso addresses any problems with discrimination and harassment, promotes discussion and reflection on the reasons for and consequences of such behaviour, ensuring everyone feels safe to speak out. The initiative was started in 2021 and includes workshops and other activities for all of Stora Enso's employees globally. Over 90% of Stora Enso's employees participated in the workshops to date. In addition, there have been several country and division specific initiatives relating to promoting diversity and inclusion.

To strengthen our leadership's commitment to our sustainability agenda, diversity and inclusion form part of the leadership team's long-term incentive plan. Read more about our employee diversity and our gender pay survey in the Sustainability reporting section in the chapter [Employees](#).



Stora Enso promotes inclusion and diversity and is committed to ensuring healthy and safe workplaces

Diversity enhances safety culture

The dispatch section at the Fors production site has worked without any accidents for almost six years. The team, of 24 people, has a diverse mix of men and women, ages and backgrounds, and level of experience. The mix of different backgrounds complement each other in working practice, and gender diversity has enhanced risk awareness and promoted a more balanced working environment. The team has a strong culture of talking about safety, and everyone is open to giving and receiving feedback. Employee turnover in the team is comparatively low, and a lot of attention is given to onboarding new people. When there is an inclusive culture, people are happy to speak up and safety topics are naturally on the agenda.

› For more information on our Health and Safety performance please see the chapter [Safety](#) under Sustainability reporting.

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. A company-wide safety culture means a shared ambition to have every working day be a safe one throughout the organisation – starting with the Board of Directors and the Group's top management and is carried throughout every facility and employee at the company. 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 our supply chain partners, and regular review of their ongoing performance. We do this based on Stora Enso's Supplier Code of Conduct, for contracted work performed at

the Group's locations. We actively engage with all our stakeholders for co-creation in safety, by sharing learnings, good practices, training and tools, etc and this cooperation extends to the joint ventures in Brazil and Uruguay. Everyone in Stora Enso, employees and contractors alike, is invited and empowered to be involved in delivering on our safety ambitions.



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Driving customer value, performance and innovation

We have taken the step towards more agile employee listening by implementing a fully digital global employee survey tool called Engage. During the year we ran two global surveys with good response rates. Employee engagement and feedback helps us to ensure that we provide a safe, diverse, and inclusive environment and provide opportunities for our people to grow to their full potential and develop their leadership skills – in other words, the feedback supports us living up to our People Promise. All managers are expected

to take actions based on the survey results and open comments provided by employees in the survey tool.

Grow leadership

At Stora Enso, we believe that leadership is the enabler needed to implement our business strategy and build a high performance culture. Our ambition is to have high performers in all leadership positions and depth of talent giving us the option to hire from within. Stora Enso continuously invests in the development of all its leaders, and participates in external leadership programmes, runs internal programmes with partners both at the Group

level and locally at our sites. To offer possibilities for growth to a wider audience, we run online seminars with our internal experts covering various topics, such as balancing performance and well-being, building a high performing team, linking diversity and inclusion to innovation, our strategy and managing and growing in the 2020's. Read more on how we develop our leaders and employees in the chapter 'Employees' in the Sustainability reporting section.

Grow to your full potential

We provide opportunities for all our people to expand their knowledge and to gain skills

to grow to their full potential. Our aim is to attract and develop the right talent to ensure smooth development for the future. Workforce planning is an important tool for this. It involves proactive workforce and skills analysis, resulting in a people activity plan that works toward closing potential skill or workforce gaps. Managing the performance of our people is an important part of engaging and motivating the Group's workforce. Our tools include performance appraisal meetings, an internal mentoring programme, and increasing access to digital tools to all employees.



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 2022, Stora Enso had over 1,100 summer employees located mainly in Finland and Sweden. Summer employees work typically in the production of renewable materials as process workers, or in customer service, sales, marketing, wood procurement, logistics, laboratory and maintenance. According to feedback, summer employees particularly value the variety of tasks, learning and development on the job, and professional colleagues.



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Communities

Stora Enso depends on thriving and resilient communities.

When Stora Enso sources its main raw material, wood, and manufactures its products, it depends on local communities for its workforce, local contractors, service providers and social licence to operate. Stora Enso supports and works with communities to help them thrive economically, socially and environmentally. While Stora Enso is a significant employer, taxpayer and business partner in many communities, the company's operations also generate environmental and social impacts. The company's actions must be managed

responsibly to minimise negative socio-environmental impacts, maximise positive influence, and maintain a constructive community dialogue that ensures a long-term licence to operate.

Communities are supported through projects, with cash and in-kind donations, as well as employee working hours for voluntary community work. Other engagements are long-term commitments such as the special agreement since 1992 with five Sámi communities in Central Sweden on land use, or the Veracel Station

– Private Atlantic Forest Natural Heritage Reserve, a part of our 50/50 joint venture in Brazil, where 128,000 hectares of land is set aside for restoration and conservation and promoted as an education and research opportunity for schools and universities in the region.

Veracel community liaison team engages and maintains good relationships with local Pataxó and Tupinambá communities, representing almost 25,000 indigenous people. In collaboration with indigenous communities, they plan activities that promote active dialogue and seek to preserve traditional culture. In early 2022 heavy rains and flooding had devastating impacts on these communities – the Veracel team joined the National India Foundation (FUNAI) in the emergency relief effort.

Helping refugees

In 2022 the focus of Stora Enso's community investment in Europe was directed towards the Ukraine crisis and affected refugees. Stora Enso has a presence in the Baltics and Poland, and employees in these locations were active in volunteering their time, collecting in-kind donations and providing shelter. Local management doubled the annual volunteering hours for employees who wanted to contribute to the emergency efforts locally.



Creating value in communities



Support for entrepreneurs

Building resilience and supporting rural entrepreneurs. In 2022 Stora Enso launched a partner harvesting concept in Sweden. The aim is to lower barriers for new suppliers to enter the market. The main target group for the concept is skilled machine operators with entrepreneurial skills but who cannot enter the market due to high barriers to entry. Stora Enso will support the new partners by setting up a network of internal and external experts to lower these barriers for new suppliers. The concept will benefit society by encouraging entrepreneurship, attracting new people to the forest sector and providing jobs in the rural areas.

› Read more about our community investments in the chapter Community in the Sustainability reporting section.



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Our diversified and vertically integrated business model creates resilience to changing market dynamics and demand fluctuations



Our business

The Paper division was discontinued as of 1 January 2023, and will not be reported as a separate segment going forward. From 1 January 2023, the Maxau and Hylte sites are reported in Segment Other until the completion of the divestments. The retained Langerbrugge and Anjala sites are reported as part of the Packaging Materials division.



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Packaging Materials

The Packaging Materials division is a global leader and expert in 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, beverage and transport packaging. A wide selection of base boards and barrier coatings enables design optimisation for various demanding packaging end-uses.

Business environment

Fiber-based packaging is the fastest growing packaging format globally with estimated growth rate of 5% during 2023-2027. Stora Enso is one of the top ten global suppliers of packaging board. In consumer board, we are a global market leader in LPB (Liquid Packaging Board), and a European market leader in FSB (Food Service Board), CUK (Coated Unbleached Kraft) and SBS (Solid Bleached Sulphate). The premium consumer board market volume is estimated to expand globally by 2.9% per annum until 2030.

The global containerboard market volume is forecast to grow 2.2% per annum until 2030 and is highly fragmented, with a large number of companies competing for share. Stora Enso is a specialist player in this market, with world-class assets that provide high-end differentiated products, manufactured from both virgin and recycled fiber.

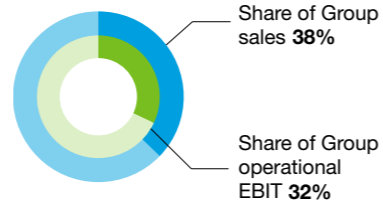
Our growth has outpaced the global packaging market in recent years, and we are well positioned to capture an additional EUR 1.5 billion in consumer board and containerboard sales from our ongoing investments.

Divestment of Beihai operations

We have initiated a sales process for the divestment of our consumer board production site and forestry operations in Beihai, China. The divestment would allow us to accelerate our strategy by focusing on cost-efficient sites serving the growing global packaging market, such as the ongoing consumer board investment in Oulu, Finland and the acquisition of De Jong Packaging Group.

Share of Group Capital Expenditure¹
49%

¹ Excluding bioasset capex



Strategic choices



Grow in core segments and build new end-uses for fiber based circular packaging



Drive growth agenda by building on existing platforms e.g. through conversions





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Growth through cost-efficient investment in renewable packaging

Our customers face strong consumption driven demand for everyday items, e-commerce growth and increasing consumers preferences for renewable packaging over other alternatives. 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. This allows us to drive innovation in sustainable packaging materials for demanding end-uses and barrier development to replace the use of fossil materials.

Hannu Kasurinen
Executive Vice President
Packaging Materials Division



Value chain collaboration driven by sustainability

We are focused on building on the synergies within our Group and working closely with converters, brand owners and retailers to develop new materials and ways of working to both add value and reduce our carbon footprint. Partnerships allow us to fully understand the needs of the consumer and to focus our innovation efforts accordingly. As a result, we are able to tailor our premium service offerings and speed up the commercialisation of new products. Not only are we developing new products, but we are also working towards our goal of offering 100% recyclable products, as evident by our partnership with Tetra Pak to build recycling capability for beverage cartons and with Huhtamaki on an industrial-scale recycling programme for paper cups in Europe.



Creating increased opportunities for circular packaging materials

Every year 20 million tonnes of plastic packaging are wasted in Europe and up to 25% could be substituted by recyclable and low CO₂ fiber-based solutions. We are at the forefront of this change – substitution is happening already and will increase. We are well positioned to capture additional sales in consumer and containerboard. Our Oulu site in Finland is growing with an ongoing investment in machine conversion, and there is a feasibility study going on at the Langerbrugge site in Belgium for conversion from paper to packaging materials.

Plastic-free packaging for demanding end-uses

The renewable packaging market is growing faster than plastics-based alternatives now for the first time. This accelerating shift is increasing the demand for high performing renewable packaging also in fresh foods and e-commerce. Our new 100% virgin fiber-based kraftliner, AvantForte WhiteTop targets demanding premium segments, such as fresh food, e-commerce, and shelf-ready packaging.



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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 carton board, and other new materials such as formed fiber and wood foams into standard and bespoke packaging solutions. The division also provides design and sustainability services for our customers, as we support a shift towards circular solutions.

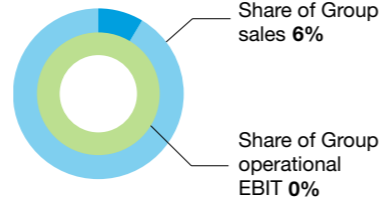
Business environment

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, and are among the top three in the Baltics and Poland. Following the acquisition of De Jong Packaging Group we will also assume a top three position in Benelux. Our combined product portfolio and geographic presence will complement and enhance Stora Enso's offering. The acquisition of De Jong Packaging will double the size of the division and expand our production capabilities further across Europe. In China, we hold a leading position in consumer packaging solutions for premium products such as consumer electronics and cosmetics. There are further growth opportunities for corrugated packaging, as retail and e-commerce are forecast to grow at healthy rates in Stora Enso's key market segments. During 2022, we divested our three corrugated packaging plants at Lkhovitsy, Arzamas and Balabanovo in Russia to local management.

Share of Group Capital Expenditure¹

7%

¹ Excluding bioasset capex



Strategic choices

- Be the number one choice for customers focusing on premium segments
- Rapidly develop new products and services
- Accelerate the shift towards eco-friendly packaging
- Enter the Western European market through the acquisition of De Jong Packaging Group

Operational ROOC
-0.7%
 (Target >15%)



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Growth through expansion in premium sustainable packaging

We create customer value with sustainable packaging solutions, helping to replace plastic alternatives and reducing emissions. Our product portfolio targets customers who focus on premium segments and benefit from innovative design services, new digital solutions and agile production. In 2023, we will be able to enhance our offering as we start to integrate the recently acquired De Jong Packaging Group into our portfolio. This acquisition will accelerate our revenue growth and build market share in renewable packaging in Western Europe, especially in fresh produce, e-commerce and industrial packaging. We continue to explore growth opportunities in new geographic markets and are active within the start-up ecosystem for sustainable packaging.

David Ekberg
Executive Vice President
Packaging Solutions Division



Packaging automation to fulfilling sustainability targets

The Swedish company Svenska Krämfabriken, a manufacturer of beauty and health products, set a challenging sustainability agenda when introducing their Green Pledge. Taking away all plastic used in production was one core initiative. Stora Enso developed a plastic-free packaging from corrugated board, designed to ship as little air as possible, and an automated packaging line to improve the work environment, making the packing process more efficient. The new packaging generates zero plastic waste and is easily opened and recycled. By switching to wood fiber based materials and packaging automation, 15 tonnes of plastic waste was saved, 22 truckloads spared and 10% less energy used per year.

State-of-the-art corrugated packaging capacity

The acquisition of De Jong Packaging Group increases our corrugated packaging capacity significantly. With the acquisition, we gain access to the important markets in Western Europe, creating a platform for growth in key markets and customer segments. Following the completion of the ongoing expansion at the De Lier site, De Lier will become the largest and most modern corrugating site in Europe.



Partnership for sustainable transport

In 2022, Packaging Solutions deployed their first electric truck at the Jönköping site in Sweden. The truck comes from Einride, a freight mobility technology company providing digital, electric and autonomous solutions. It will replace diesel trucks currently in use and will operate from the site to transport our products to a warehouse outside of Jönköping. The switch from diesel to an electric truck will reduce the CO₂ emissions by 96% while maximising transport capacity through Einride's freight mobility platform resulting in emission reduction and cost savings.



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Biomaterials

The Biomaterials division meets the growing demand for bio-based solutions which replace fossil-based and non-renewable materials. Stora Enso achieves this by using all fractions of biomass, like lignin, to develop new solutions including novel applications such as bio-based anode material for batteries and bio-based binders. Our pulp offering encompasses a wide variety of grades to meet the demands of packaging, paper, tissue, specialities, and hygiene product producers. We also serve the biochemicals market with tall oil and turpentine from biomass for further refining. Pulp continues to be our foundation while long-term growth is driven by new products and innovations.

Business environment

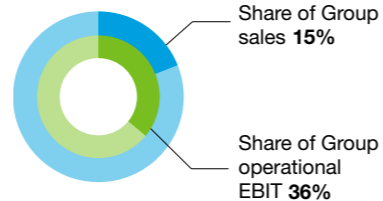
Our business opportunities are strongly driven by the need to replace fossil-based materials – such as phenol, graphite and bitumen – with renewable and sustainable materials. Today, we are world-class experts in fibers and the chemical transformation of wood into pulp and new biomaterials, that meet the increased demand for sustainable fibers in the packaging industry and for eco-friendly hygiene products made from fluff. Stora Enso has a portfolio of pulp grades and is the leading fluff producer in Europe. Pulp is our foundation business, with the total market growing by 2% or 1.5 million tonnes per year, and the fastest-growing segment, tissue products, growing by some 3%. Especially interesting for future growth are the less or non-bleached pulp grades. With our innovations, we are able to enter new markets and product segments with growth rates up to 30%.

However, the largest development area for our business comes from new technologies which allow us to extract lignin, from pulp, at scale. New lignin-based biomaterials are a highly attractive innovation platform and growth area. As a result of our research and development, we can now make anode material for batteries, and reduce the carbon footprint of building materials with bio-based binders, which serve as nature's glue. Innovating in this way, we aim to use the tree in a versatile way for new renewable products and solutions, adding value for our customers' businesses.

Share of Group Capital Expenditure¹

17%

¹ Excluding bioasset capex



Strategic choices



Lignin-based biomaterials provide a highly attractive innovation and growth platform



Creating value in pulp – with an optimised product mix, side streams becoming main streams, and increased internal integration



Continuous reduction of the carbon footprint of our products and operations





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New biomaterials offer significant growth opportunities

Within Biomaterials we are increasingly focusing our innovation efforts on using all parts of the tree for new renewable products. We are commercialising our lignin-based product portfolio, in end uses such as glues and binders for furniture, construction, and lately components in asphalt. With partners, we are fast progressing with our ambition to build the world's greenest battery. 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 our joint operations in Latin America. We aim to reduce our market pulp exposure through growth in packaging materials, further internal integration, and an optimised product mix while striving for an uncontested position in sustainability. Our aim is to grow in strategic markets while striving for an uncontested position in sustainability.

Johanna Hagelberg
Executive Vice President
Biomaterials Division



Making batteries from trees

Today's batteries rely heavily on non-renewable or fossil-based materials. This is where Lignode® by Stora Enso comes in: It can replace non-renewable materials in batteries, such as graphite mainly sourced in China, with lignin-based hard carbon for anode materials produced close to European customers. This enables sustainable electrification and mitigates the impact of climate change. In 2022, Stora Enso and Northvolt, battery cells and systems supplier, joined forces to create sustainable batteries for applications from mobility to stationary energy storage, using Lignode®.

Stora Enso's pilot plant for bio-based carbon materials is located at the Sunila site in Finland, where lignin has been produced since 2015. The annual production capacity is 50,000 tonnes of lignin, making Stora Enso the largest kraft lignin producer in the world. Stora Enso is evaluating its first industrial production facility of Lignode® at the Sunila site through a feasibility study.



Reduced carbon footprint for hygiene products

NaturaFluff Eco by Stora Enso is a non-bleached, naturally beige fluff pulp for the eco-aware consumers who value hygiene products produced with less chemicals. It offers a 30% lower carbon footprint compared to traditional fluff pulp, helping to transform the hygiene industry towards a more sustainable future.



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Wood Products

The Wood Products division is the largest sawn wood producer in Europe and a leading provider of sustainable wood-based solutions for the global construction industry. The growing Building Solutions business offers building concepts and a full range of products to support low-carbon construction. Stora Enso develops services and digital tools to simplify the design and construction of buildings with wood. Additionally, we offer applications for windows and doors, and pellets for sustainable heating solutions.

Business environment

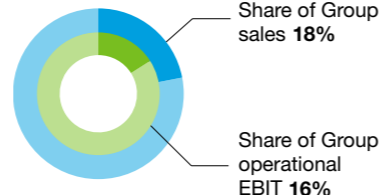
The potential for growth in mass timber construction in Europe, North America and globally is increasing, supported by the increase of government policies focused on a low-carbon economy, helping generate market growth of some 10% per annum. The growing population and an increase in urbanisation have resulted in greater demand for housing while eco-awareness has raised the need for sustainable construction methods. Building materials currently account for 11% of global CO₂ emissions but the substitution of renewable materials can significantly reduce these emissions – underpinning the demand for wooden building materials such as CLT (cross-laminated timber), in which we already hold a global market share of 13%, and LVL (laminated veneer lumber). In addition, we work closely with our partners to deliver accelerated profitable growth with solutions across the lifecycle of the building.

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. Our two strategic pillars of building solutions and sawn and planed wood products enable financial stability and resilience. We have global reach in the traditional wood products market, with over 40% of our sales overseas. The traditional wood products market has continued to grow at 3–4% annually in the long-term with a market size of over EUR 100 billion. For Building Solutions, the market is expected to grow at over 10% annually in the long-term, and the market size for wooden multi-storey buildings is over a billion euros.

Share of Group Capital Expenditure¹

12%

¹ Excluding bioasset capex



Strategic choices

- Seize growth opportunities in Building Solutions
- Capture a larger share of the value chain
- Continuous focus on operational excellence





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Material substitution underpins our growth opportunity

The megatrend and regulatory initiatives for wooden buildings continue driving demand growth for our products all over Europe. We can significantly cut emissions in the construction sector by using renewable materials. Our strategy relies on two pillars, traditional wood products and building solutions, offering financial stability and resilience. To drive profitable growth, we focus on two fronts: further industrialising the wood construction value chain via digitalisation to reduce design, planning and maintenance costs, and prefabrication of building elements to reduce construction costs through faster building erections, improved quality and reduced on-site truck transportation.

Lars Völkel
Executive Vice President
Wood Products Division



Enhancing low-carbon construction

Sylva is Stora Enso's range of engineered and prefabricated products in 'massive wood' comprising pre-manufactured, custom-made applications delivered just-in-time to the building site. This solution enables faster construction, reduced costs, more efficient use of raw materials and fewer emissions than concrete or steel. The prefabricated, easy-to-install components respond to the developers' need to reduce on-site labour, shorten construction timelines, and increase sustainable building practices.

Strengthened presence in the French wood products markets

We are constantly broadening our partnerships and collaborations in the value chain of wooden-based solutions for efficient and low-carbon construction. The French market is significant in terms of growth and opportunities, supported by ambitious governmental policies to promote wooden based construction. In 2022, Stora Enso became a 35% shareholder of the French wood processing company ACDF Industrie SAS enabling the value-added, bespoke CLT solutions to their long-term French partners. In addition, Stora Enso has advanced its strong partnership network in France by signing a business partnership with Bouygues S.A., securing a stable delivery of CLT to their building projects.



Growth opportunities through laminated wood in wind turbine towers

With the current energy crisis and ambitious decarbonisation goals, demand for wind energy is growing. We teamed up with the Swedish company Modvion to create 100+ meter tall wooden wind turbine towers to reduce the carbon footprint of steel and concrete based towers. We are also partnering with Voodin Blade Technology to develop wood-based sustainable wind turbine blades.



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Forest

The Forest division creates customer value through innovative solutions, competitive wood supply and sustainable forest management. 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 and Baltic 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 our forests: from planning and logistics to harvesting 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 our operations.

Stora Enso's forest assets support competitive and stable wood sourcing and create value for the business through increasing long-term yield, climate change mitigation and optimised land use. We strive to keep our forests healthy while promoting biodiversity and other aspects of sustainable forestry. This ensures that Stora Enso's portfolio of fiber-based products is supported by a truly renewable and traceable resource.

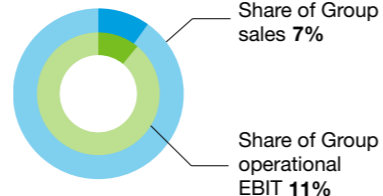
To capture the full value of our forest assets and provide the best possible value to our customers, we have intensified our focus on research and development as well as the use of technology and digitalisation in forest management – ensuring our forests are fit for the future.

Operational ROCE **3.7%** (Target >3.5%)

Share of Group Capital Expenditure¹

5%

¹ Excluding bioasset capex



Strategic choices



Continue to be a leader in sustainable forest management



Increase forest growth through research and innovation



Promote active biodiversity management in Stora Enso's forests and plantations to ensure a net-positive impact by 2050



A sustainable foundation for fiber-based products

Sustainable forest management forms the basis of Stora Enso's business by ensuring continuous regeneration of well-growing forests and long-term supply of renewable wood resources. Protecting and enhancing biodiversity is an integral part of our forest management practices which are proven also by forest certification.

Our work is supported by digitalisation as well as continuous research and innovation to develop our forestry operations and to provide the best value to our customers and other stakeholders.

Per Lyrvall
Executive Vice President
Forest Division



Precision forestry with digital technology

With the advent of modern technology, we are able to manage our forests in a more precise way. Satellite imagery, drones, LIDAR, and harvesters are all sources for more precise and granular information on the health and well-being of our forests. With greater/more precise data, we are able to more accurately track the volume, yield, and variety in forests, as well as identifying early any disease or causes for concern.



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The forest – our most valuable asset

Our forests are the foundation of our business. They are a critical asset for the global renewable materials market, the balance and protection of our biodiversity and the social, mental and physical wellbeing of our communities.

Stora Enso is one of the largest private forest owners in the world, with forest assets valued at EUR 8.3 billion in 2022. Globally, Stora Enso owns or leases land covering a total area of 2.01 million hectares. 30% of our wood raw material needs are covered from our own sources and long-term supply agreements.

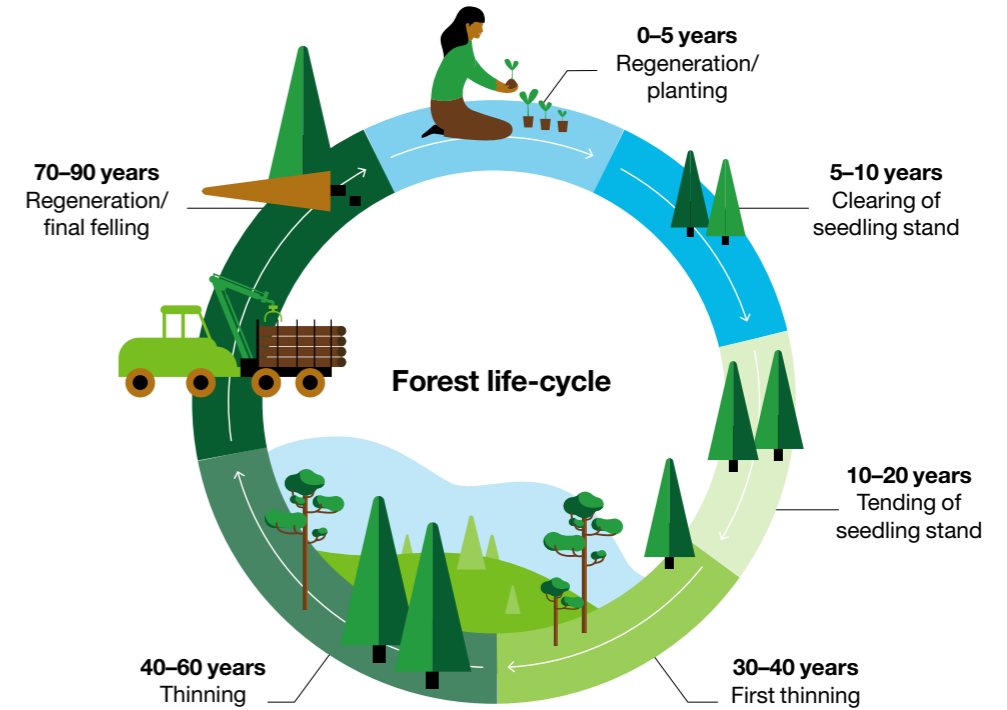
Our forests secure long-term, competitive wood supply close to our mills and they require careful and well-planned management to ensure their functioning for multiple outcomes. Biodiversity management has been an integral part of our forest management practices since the 1990s. However, our ambitions are much greater than what we have achieved historically and in 2022 we therefore established a Biodiversity Leadership Programme (BLP) to ensure full attention was directed at prioritising and further developing our biodiversity management as well as aligning our business to biodiversity policy development in Europe and globally. The BLP will ensure our Net Positive Impact biodiversity target – doing business in harmony with biodiversity that has real and measurable outcomes across all dimensions from species to habitats to landscapes, in alignment with society’s goal for nature positive action – will be delivered.

Benefits of owning forests

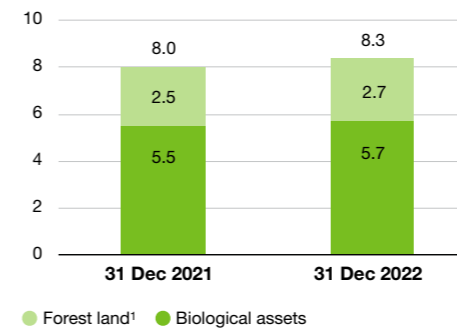
- Our forest assets create value by securing a 30% self-sufficient wood supply, which stabilises the impacts of wood market volatility, increases the long-term yield and secures financial flexibility.
- Our own forests also help us mitigate impacts of climate change, ensuring biodiversity enhancement and optimising land use.
- Direct forest ownership provides us with the opportunity to develop forest management practices to respond to changing market and climate conditions as well as to enhance biodiversity.
- A sustainably managed forest absorbs carbon, acting as a carbon sink.
- We invest in operational efficiency to increase sustainable wood production, to optimise land use and to mitigate risks, while gaining financial returns from external wood sales.
- Increasing focus on the bioeconomy will lead to a higher value of our forest land and biological assets, creating greater value for shareholders.

› See also [Note 12 Forest assets](#)

Silviculture is a nearly 100-year circular project in the Nordics

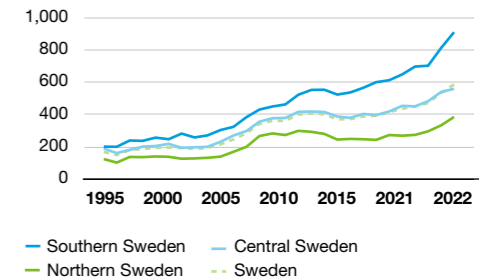


Group’s forest assets value
EUR billion



Figures cover productive area.
¹ Including leased land and Stora Enso’s share of Tornator.

Market transaction based forest prices in Sweden

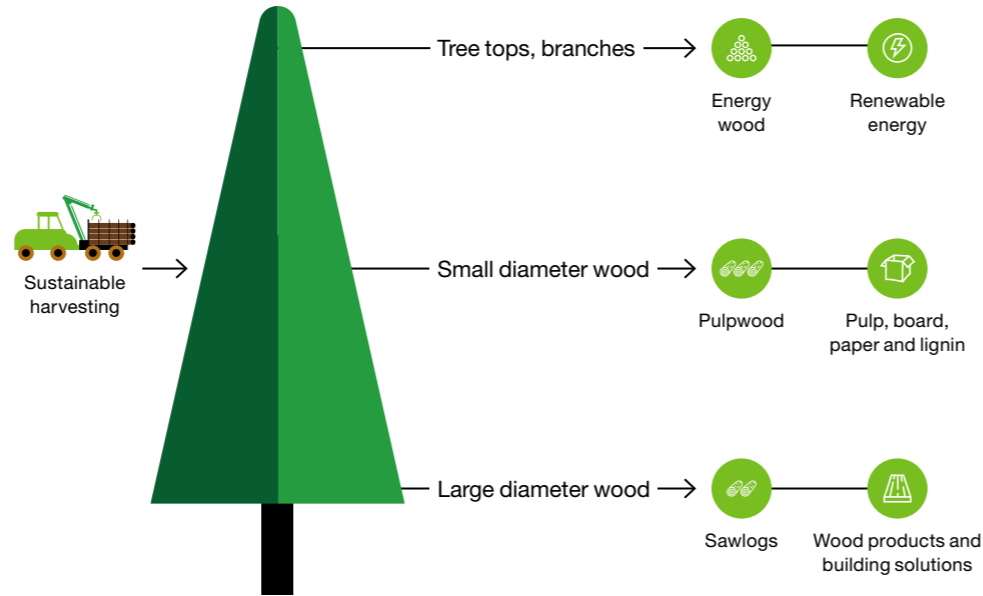


Figures cover productive area.
Source: Ludvig & Co report, based on nominal prices.
Stora Enso’s forest assets are located in Central and Northern Sweden.

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We use all parts of each harvested tree ensuring optimal use



In addition to the wood supply from own forests and tree plantations, Stora Enso purchased wood from over 20,00 private forest owners during the year. In 2022, approximately 80% of Stora Enso's wood came from forests in Europe, most of which are privately owned.

Our commercial plantations are 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.

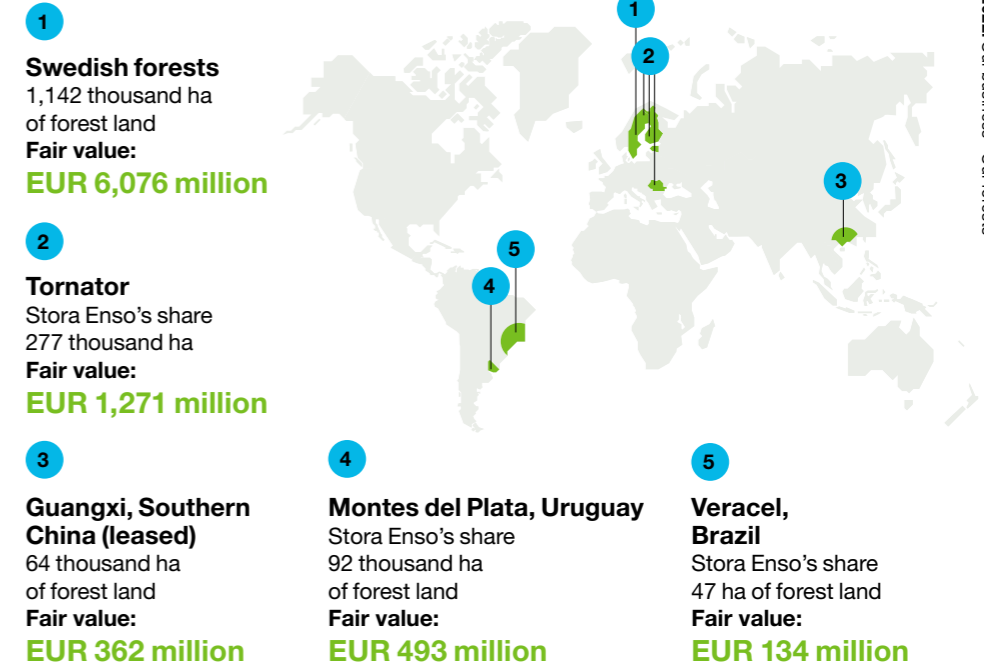
Sustainable forest management and biodiversity

Well-managed forests build a better future for biodiversity, climate, our customers, our shareholders and our people.

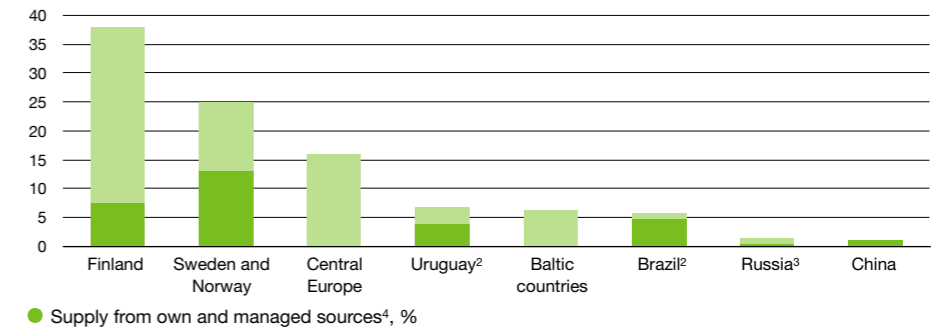
Our long-term target is to increase the total value of our forest assets (including its biodiversity) fully taking into account aspects of climate change adaptation and mitigation. Stora Enso is committed to achieving a net-positive impact on biodiversity in its own forests and plantations by 2050 through active biodiversity management.

Sustainable forest and plantation management secures the long-term availability of wood and pulp, while ensuring the preservation of ecosystems and biodiversity, which is key to the resilience of forests. Growing trees absorb CO₂ –

Stora Enso's productive forest land areas at the end of 2022



Wood procurement by region¹, %



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 Wood procurement from Russia ended in H1/2022.

⁴ Including wood delivered from Stora Enso's forests to third-parties. Managed sources consist of long-term harvesting rights and contracts.

In 2022, we harvested in own and leased forests and sourced from long-term agreements 10.6 million m³ in total. Our deliveries to our units were 35.1 million m³ in total.



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our forests and plantations absorb 1.5 Mt CO₂ annually. We ensure that our forests grow more than they are harvested. Furthermore, an increasing volume of wood-based products store more CO₂ during their lifetime, and substitute more fossil fuel-based products, and we ensure that each and every part of the harvested tree is used optimally. 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 mainly in our own operations.

In all our forests, wood harvesting is planned to suit the characteristics of each site, making use of appropriate methods and technologies. Harvesting volumes are aligned with the long-term carrying capacity of each forest or plantation. 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. In the Nordics, forestry is based on native tree species, while in the tree plantations Eucalyptus species is used due to their growth and wood properties. We test and apply modern scientific tools for tree improvement and adaptation to climate change, as well as for the management of genetic diversity.

Biodiversity action programme for our own forests in Sweden

In 2022, Stora Enso launched a comprehensive biodiversity programme for its land holdings in Sweden. The programme has five focus areas, each with specific actions and measurable targets for 2030. Targets include increasing the amount of deadwood by 40%, doubling the number of broadleaved trees in young forests, protecting selected umbrella species and active biodiversity management for example by increasing annual prescribed burning by 20%. Different structures, ages and

Returns through land development

- 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.

forest types are important parameters for biodiversity. The new biodiversity programme aims to increase variation and promote nature values throughout the forest land. Furthermore, selected forest areas are used to test and develop biodiversity management methods and capabilities. This work is done together with universities, e.g. The Swedish University of Agricultural Sciences (SLU) in Sweden and Natural Resources Institute LUKE in Finland, environmental organisations, NGOs and authorities.

Our practical approach is based on the principles of adaptive management, i.e. learning while doing, and encompass: 1) **a biodiversity action programme** for 2021–2030 covering our own forest in Sweden with science-based management measures to improve biodiversity on the species, habitat and landscape levels 2) **biodiversity indicators** that are monitored on the same levels for the outcomes of the actions and 3) **biodiversity modelling** to direct actions and foresee future outcomes. We have also begun to share data on our progress on our website and in our sustainability reporting.

› Read more about our biodiversity programme and the results of our annual assessments carried out in 2022 in the chapter [Sustainable forest management and biodiversity](#).



Innovations for future-fit forests

We are in a unique position – our own forest assets, forest professionals and international network give us the capability and capacity to focus on development and innovation, including optimising land utilisation for higher efficiency and developing new revenue streams. To capture the full value of the ecosystem services delivered by our forest assets, we are intensifying our research and development on how to apply new remote sensing technologies and digitalisation. These actions 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. With a forest's digital twin, we can analyse the shape, height and diameter of a single tree, various structures of a forest site, e.g. deadwood and the vertical layering of the trees, and the landscape view. Improved data also supports our ambition to implement more effective biodiversity and sustainability actions. 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 key areas for biodiversity in forest landscapes. We support and encourage our partners to move in the same direction and we also aim to contribute to biodiversity globally, even beyond the forest sector, through knowledge-sharing and active participation in formulating new policies and standards.

Wind Power

We are leasing out land to generate wind power – currently with annual energy production of above 900 Gwh in Sweden, but there is potential to expand this further. Starting 2023 we will also develop in-house projects for windpower on our own land. Work is also ongoing to explore other revenue streams such as solar power, carbon credits and fishing rights.



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Creating value from our forest assets

- Active forest asset management to increase forest growth, harvesting and yield
- Potential for new revenue streams directly connected to biodiversity conservation
- Potential for other ecosystem services from forests

Returns from wood sales

- Stable income with increasing long-term demand
- Raw material efficiency – optimisation of timber value for various end uses

Forest growth and asset value

- 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 our own forest through tree breeding, fertilisation, advanced forest management practices

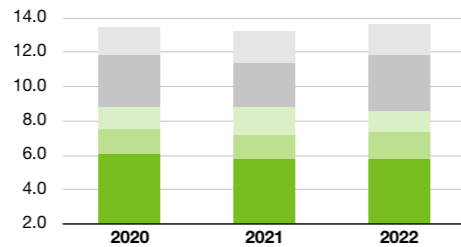
Cost-efficient and secured wood supply

- 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



Estimated annual forest growth

Million m³ fo¹

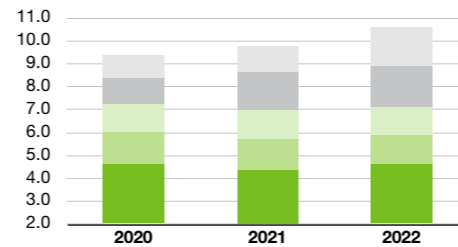


- Stora Enso's own Forests, Sweden
- Tornator (41%)
- Guangxi
- Montes del Plata (50%)
- Veracel (50%)

Figures cover productive area.

Annual harvesting

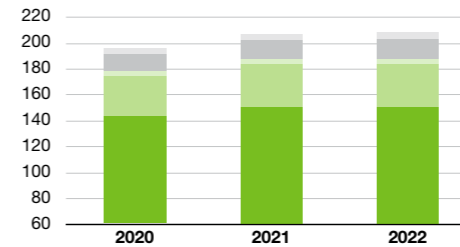
Million m³ fo¹



- Stora Enso's own Forests, Sweden
- Tornator (41%)
- Guangxi
- Montes del Plata (50%)
- Veracel (50%)

Total standing stock

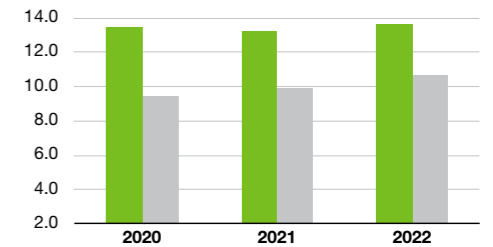
Million m³ fo



- Stora Enso's own Forests, Sweden
- Tornator (41%)
- Guangxi
- Montes del Plata (50%)
- Veracel (50%)

Total growth and harvesting

Million m³ fo



- Estimated growth
- Harvesting

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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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Shareholders

Information for shareholders

Annual General Meeting (AGM)

Stora Enso Oyj's Annual General Meeting (AGM) will be held on Thursday 16 March 2023 at 16:00 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 6 March 2023 and must be temporarily registered in the Stora Enso shareholders' register by 10 March 2023. For shares registered through Euroclear Sweden and for holders of ADRs, the timetable may vary and earlier dates may apply. Instructions for submitting notice of attendance is given in the invitation to the AGM which can be consulted on Stora Enso's website at storaenso.com/agm.

AGM and dividend in 2023

6 March	Record date for AGM
16 March	Annual General Meeting (AGM)
17 March	Ex-dividend date
20 March	Record date for dividend
27 March	Dividend payment

Dividend

The Board of Directors proposes to the AGM that a dividend of EUR 0.60 per share will be paid to the shareholders for the fiscal year ending 31 December 2022. 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 2023

31 January	Interim report for October–December and full-year report for 2022
14 February	Annual Report 2022
25 April	Interim report for January–March 2023
21 July	Interim report for April–June and half-year report for January–June 2023
24 October	Interim report for January–September 2023

Distribution of financial information

For 2022, Stora Enso has published one combined report 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 are available in English only. The official financial statements (in Finnish) and a list of principal subsidiaries (in English) can be found on the Company's website. The interim, half-year and full-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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Stora Enso in capital markets

Stora Enso ensures that all material information that has an impact on Stora Enso’s share price is simultaneously available to the general public and financial community in order to promote a fair valuation in relation to the Company’s financial performance, strategy, assets and future prospects. In its engagement with the capital markets, Stora Enso’s Investor Relations aims to deliver accurate, consistent and credible financial communications.

Shares and shareholders

Shares and voting rights

The shares of Stora Enso Oyj (hereafter the “Company” or “Stora Enso”) are divided into A and R shares, which entitle holders to the same dividend but different voting rights. Each A share and each ten R shares carry one vote at a shareholders’ meeting. However, each shareholder has at least one vote.

As at 31 December 2022, Stora Enso had 176,238,280 A shares and 612,381,707 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 at least 237,476,451.

Share listings

Stora Enso shares are listed on the Nasdaq Helsinki and the Nasdaq Stockholm. Stora Enso shares are quoted in Helsinki in euros (EUR) and in Stockholm in Swedish crowns (SEK).

American Depositary Receipts (ADRs)

Stora Enso has a sponsored Level I American Depositary Receipts (ADR) facility. Stora Enso ADRs are traded over-the-counter (OTC) in the USA. The ratio between Stora Enso ADRs and R shares is 1:1, i.e. one ADR represents one Stora Enso R share. Citibank, N.A. acts as the depositary bank for the Stora Enso ADR programme. The trading symbol is SEOAY and the CUSIP number is 86210M106.

Share registers

The Company’s shares are entered in the Book-Entry Securities System maintained by Euroclear Finland Oy, which also maintains the official share register of Stora Enso Oyj.

As at 31 December 2022, 713,882,295 of the Company’s shares including both A and R shares were registered in Euroclear Finland, 61,605,595 A and R shares in Euroclear Sweden AB and 13,132,097 shares in ADR form at Citibank, N.A.

Share capital

On 31 December 2022, 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 5,769 A shares into R shares were recorded in the Finnish Trade Register during the year 2022.

Stora Enso’s activities during 2022

Stora Enso’s Investor Relations activities cover equity markets to promote a fair valuation of the Company and continual access to funding sources. The Investor Relations (IR) team provides up-to-date information on the development of the Company’s business operations, strategy, performance, markets and financial position.

Distribution by book-entry system, 31 December 2022

Number of shares	Total	A shares	R shares
Euroclear Finland Oy	713,882,295	171,615,085	542,267,210
Euroclear Sweden AB ¹	61,605,595	4,623,195	56,982,400
Citi administered ADRs ¹	13,132,097	-	13,132,097
Total	788,619,987	176,238,280	612,381,707

¹ Shares registered in Euroclear Sweden and ADRs are both nominee registered in Euroclear Finland.

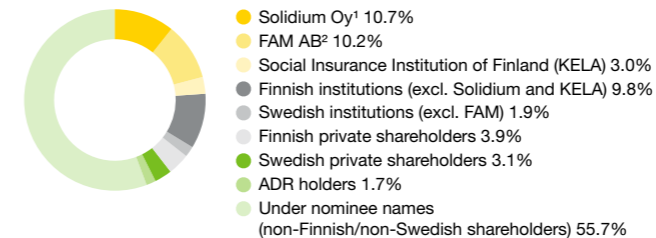
Ownership distribution, 31 December 2022

	% 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)	9.8%	7.7%	2.4%
Swedish institutions (excl. FAM)	1.9%	1.1%	1.0%
Finnish private shareholders	3.9%	2.4%	46.9%
Swedish private shareholders	3.1%	2.3%	47.9%
ADR holders	1.7%	0.6%	0.8%
Under nominee names (non-Finnish/non-Swedish shareholders)	55.7%	21.3%	0.8%

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 2014–2022

	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
Conversion of A shares into R shares, Dec 2021–Nov 2022	-5,769	5,769	-	-
Stora Enso Oyj, 31 Dec 2022	176,238,280	612,381,707	788,619,987	1,342

For more historical data about the share capital, please visit storaenso.com/investors/shares

In 2022, The IR team conducted a number of 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 the senior management team members plus other experts at Stora Enso. Two site visits were organised in Sweden. The senior management and the IR team members also gave presentations at virtual or live equity investor conferences in Scandinavia, Continental Europe, the United Kingdom and North America.

In May, the Company held a virtual briefing on its Nordic forests. The focus of the event was to show how the forest assets fit into the Company's overall strategy, how it initiates its value chain, and how the forest helps combatting climate change. In September, Stora Enso arranged a virtual Capital Markets Day (CMD) for investors and analysts. The

CMD provided an update on Stora Enso's strategy, performance, and long-term financial ambitions. In accordance with its strategy, the Company continues to drive and accelerate growth in three strategic focus areas: Renewable Packaging, Sustainable Building Solutions and Biomaterials Innovations.

Stora Enso's goals and ambitions by 2030:

- an increase in Group sales by 30% excluding inflation vs 2021
- a 15% operational EBIT margin over a cycle
- Packaging to represent more than 60% of Group sales
- >40% of Wood Products sales from Building Solutions, and to increase the operational EBITDA in Wood Products by 75% over a cycle
- new revenue streams of EUR 1 billion from Biomaterials Innovations
- 5–10 TWh of wind power from the Group's own forest land

- market pulp exposure significantly reduced, no paper exposure
- earnings cyclicality to be reduced by half compared to 2016–2021

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 topics that are considered to be financially material in the industry such as sustainable forest management and forest certification, Greenhouse Gas (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.

In 2022, Stora Enso continued its EU Taxonomy reporting for investors and analysts. The Company carried out assessments for Taxonomy-eligibility and Taxonomy-alignment during the year. Investor Relations participated in an internal working group developing the EU Taxonomy reporting. Read more in the chapter EU Taxonomy.

Guidance policy

In connection with its financial statement release for 2022, Stora Enso announced its guidance for 2023. Stora Enso's full year 2023 operational EBIT is expected to be lower than for the full year 2022 (EUR 1,891 million).

Closed period

Stora Enso's closed period start when the reporting period ends or 30 days prior to the announcement of the results, whichever is earlier, and lasts until the day of the announcement of the results.

Major shareholders as at 31 December 2022

By voting power	A shares	R shares	% of shares	% of votes
1 Solidium Oyj 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	14,900,000	2.4%	2.4%
5 Varma Mutual Pension Insurance Company	5,163,018	1,140,874	0.8%	2.2%
6 MP-Bolagen i Vetlanda AB1	4,885,000	1,000,000	0.7%	2.1%
7 Elo Mutual Pension Insurance Company	2,000,000	7,601,000	1.2%	1.2%
8 Bergslaget's Healthcare Foundation	626,269	1,609,483	0.3%	0.3%
9 SEB Investment Management	0	6,976,453	0.9%	0.3%
10 The State Pension Fund	0	5,000,000	0.6%	0.2%
11 The Society of Swedish Literature in Finland	0	3,000,000	0.4%	0.1%
12 Avanza Pension Insurance	146,285	1,268,398	0.2%	0.1%
13 Unionen (Swedish trade union)	0	2,612,750	0.3%	0.1%
14 Afa Insurance	0	2,381,676	0.3%	0.1%
15 SEB AB, Luxembourg Branch	2,177	1,785,231	0.2%	0.1%
Total	166,598,749	88,068,405	32.3%	73.9%
Nominee-registered shares ³	75,058,822	496,088,402	72.4%	52.5%

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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The dates are published in the financial calendar at storaenso.com/investors. During closed periods, Stora Enso PDMR's or persons entered into the Company's Closed Period List are not allowed to trade in the Company's securities. In addition, there are no communications in regards to the Group's financials and/or financially related topics with the capital markets or financial media during the closed period. This applies to meetings, telephone conversations or other means of communication.

Shareholdings of other Group-related bodies as at 31 December 2022

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 2022, the Company had approximately 116,268 registered shareholders, including about 57,575 Swedish and 57,705 Finnish shareholders and 988 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 600 million shares, corresponding to 76% of the total number of shares issued. The largest shareholder in the Company is Solidium Oy based in Finland.

Share price performance and volumes

Helsinki

The Stora Enso R (STERV) share price decreased by 19% during 2022 (3% increase in 2021). Over the same period, the OMX Helsinki Index decreased by 16% (18% increase in 2021) and the OMX Helsinki Basic Materials Index by 4% (10% increase in 2021).

Stockholm

The Stora Enso R (STE R) share price decreased by 16% during 2022 (5% increase in 2021). Over the same period, the OMX Stockholm Index decreased by 25% (35% increase in 2021) and the OMX Stockholm Basic Materials Index decreased by 12% (21% increase in 2021).

OTC

Stora Enso ADR (SEOAY) share price decreased by 23% during 2022 (4% decrease in 2021). Over the same period, the Standard & Poor's Global Timber and Forestry Index decreased by 21% (15% increase in 2021).

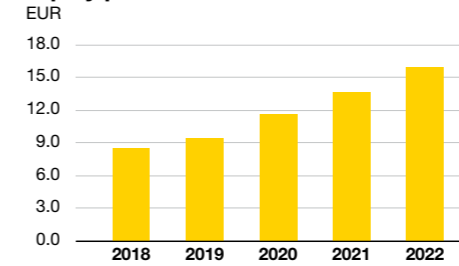
Share prices and volumes 2022

		Helsinki, EUR	Stockholm, SEK	OTC, USD
High	A share	20.60	212.50	
	R share	20.01	205.40	21.62
Low	A share	13.40	146.00	
	R share	12.66	138.80	12.49
Closing, 31 Dec 2022	A share	13.90	154.60	
	R share	13.15	146.50	14.03
Change from previous year	A share	-16%	-8%	
	R share	-19%	-11%	-23%
Cumulative trading volume, no. of shares	A share	1,174,431	2,622,993	
	R share	455,952,396	93,990,154	7,562,203

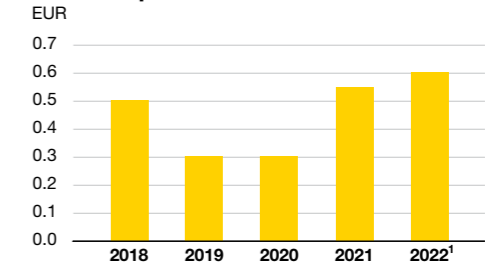
The volume-weighted average price of R shares over the year was EUR 16.12 in Helsinki (EUR 15.70 in 2021), SEK 173.10 in Stockholm (SEK 159.14 in 2021) and

USD 15.79 on the OTC in the USA (USD 18.43 in 2021). Total market capitalisation of the Company was EUR 11.3 billion (EUR 14.5 billion) at the end of 2022.

Equity per share

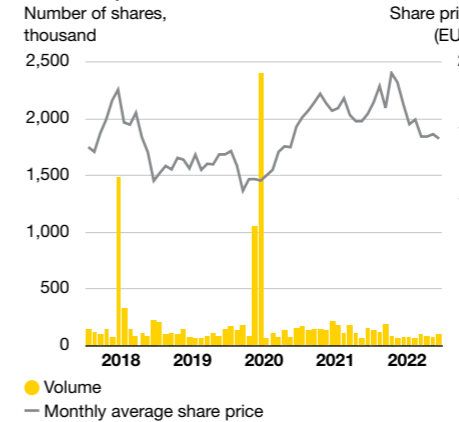


Dividend per share

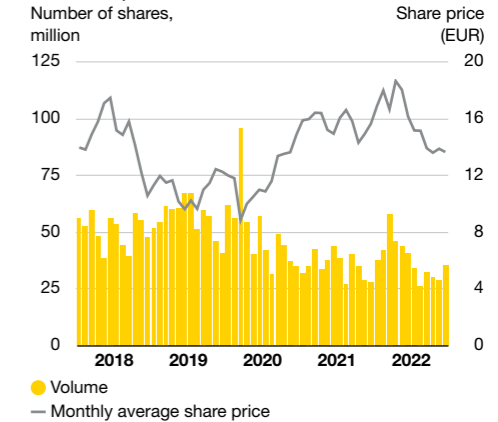


¹ Board of Directors' proposal to the AGM for distribution of dividend.

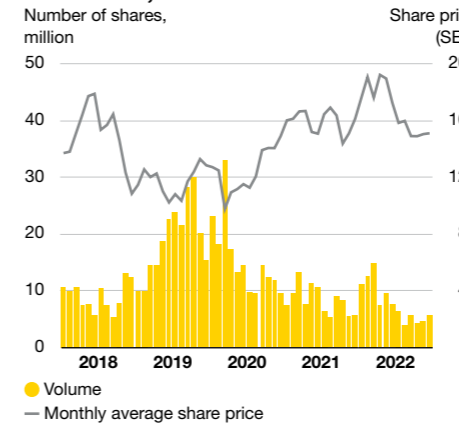
Helsinki, Stora Enso A



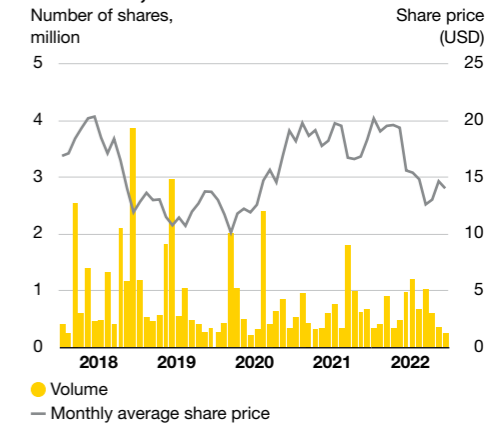
Helsinki, Stora Enso R



Stockholm, Stora Enso R



New York, Stora Enso ADR





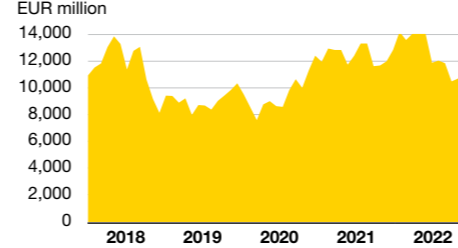
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Stora Enso R Share vs Nasdaq Helsinki indices



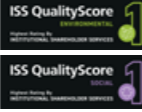




Market capitalisation on Nasdaq Helsinki



ESG indices and recognitions in 2022

Stora Enso actively participates in following ESG assessment schemes:

Rating agency	Stora Enso score	Change vs previous score	Rating against peers	Last update
 CDP	Climate A- Forest B Water B	Climate and Water unchanged, declined in Forest from A- to B	Clearly above the industry average level	Q4/2022
FTSE Russell	4.5 out of 5.0	Improved from 4.4 to 4.5	Among highest rank in the industry	Q4/2022
 ISS ESG	Corporate ESG Performance Prime	B- / A+	Among highest decile rank in the industry	Q2/2022
 ISS QualityScore	Governance 2 Social 1 Environment 1	Improved in Governance from 4 to 2*	Clearly above the industry average level	Q4/2022
 MSCI	ESG RATINGS AAA / AAA	Unchanged	Clearly above the industry average level	Q3/2022
 SUSTAINALYTICS	15.9/ 100**	Improved from 18.0 to 15.9	Clearly above the industry average level	Q1/2022
VigeoEiris***	73 / 100	Improved from 68 to 73	Highest ranked company in the industry	Q3/2021

* "1" indicating the lowest risk

** "0" indicating the lowest risk

*** 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 the ECPI EMU Ethical Equity, ECPI World ESG Equity and ECPI Euro ESG Equity 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 several MSCI ESG indices.

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.

Solactive

Solactive represents European securities which are screened in the field of Corporate Social Responsibility. Stora Enso is included in the Solactive Europe Corporate Social Responsibility 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	EURO STOXX	FTSE RAFI All-World 3000	MSCI Finland	Euronext Vigeo Euro 120 Index	EURO STOXX Climate Transition Benchmark	Euronext V E Eurozone Social Focus
OMX Helsinki 25	EURO STOXX Basic Materials	FTSE RAFI Developed 1000	MSCI Europe	Euronext Vigeo Europe 120 Index	EURO STOXX ESG Broad Market	Euronext Low Carbon 100 Eurozone PAB
OMX Helsinki Large Cap	EURO STOXX Basic Resources	FTSE RAFI Europe	MSCI World	Euronext Eurozone 300	EURO STOXX ESG Target	Euronext Eurozone ESG Large 80
OMX Helsinki Benchmark	EURO STOXX Mid	FTSE Finland 25 Index	MSCI World Investable Market	Euronext Europe 500	EURO STOXX ESG-X	EN Equileap Gender Equality EZ 100
OMX Helsinki Industrial Materials	EURO STOXX Total Market	FTSE4Good Global	MSCI ACWI	EN Eurozone Mid and Large 60 EW	EURO STOXX Low Carbon	EN Positive Impact Water Eurozone
OMX Helsinki Basic Materials	EURO STOXX Total Market Growth Mid		MSCI ACWI IMI	EN Eurozone Next 100 EW	EURO STOXX Paris-Aligned Benchmark	Euronext Low Carbon 300 World PAB
OMX Helsinki Basic Resources	STOXX All Europe 800			Euronext Eurozone 150 EW	EURO STOXX Reported Low Carbon	Euronext Positive Impact Water World
OMX Helsinki Forestry & Paper	STOXX Developed Europe			EN Vigeo World 120	EURO STOXX Sustainability	OMX Sustainability Finland
OMX Stockholm	STOXX Developed Europe Basic Materials			Euronext Developed Market	EURO STOXX Total Market Climate Transition Benchmark	MSCI Europe ESG Leaders
OMX Stockholm Benchmark	STOXX Developed Europe Large Cap			Euronext World	EURO STOXX Total Market Paris-Aligned Benchmark	MSCI World ESG Leaders
OMX Stockholm Large Cap	STOXX Developed Eurozone			Euronext Developed Market USD	EURO iSTOXX Ambition Climat PAB	MSCI World SRI
OMX Stockholm Industrial Materials	STOXX Developed Nordic				EURO iSTOXX ESG Performance 50	MSCI Acwi ESG Leaders
OMX Stockholm Basic Materials	STOXX Developed World				STOXX Europe Industry Neutral ESG	MSCI Low Carbon Leaders
OMX Stockholm Basic Resources	STOXX Europe 400				STOXX Europe Reported Low Carbon	MSCI World Ex fossil fuels
OMX Stockholm Forestry & Paper	STOXX Europe AC				STOXX Europe Sustainability	MSCI Europe Ex Coal
Nasdaq OMX Nordic Materials	STOXX Global 3000				STOXX Global 1800 Climate Transition Benchmark	MSCI Low Carbon Target
Nasdaq OMX Nordic 120	STOXX Nordic				STOXX Global ESG Environmental Leaders	MSCI Europe ESG Universal
Nasdaq OMX Nordic Materials					STOXX Global ESG Governance Leaders	MSCI Nordic region ESG Leaders
VINX Basic Materials					iSTOXX APG World Responsible	MSCI World Climate Change
VINX Basic Resources					Low Carbon 100 Europe PAB Index	ECPI EMU Ethical Equity index
					Euronext Eurozone 100 ESG	ECPI Euro ESG Equity Index
					EN Climate Objective 50 Euro EW	ECPI World ESG Equity Index
					EN Europe Sustainable 100 EW	Solactive Europe Corporate Social Responsibility Index
					Euronext Climate Objective 50 EW	FTSE4Good Index
					Euronext Climate Europe	

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 2012–2022, total operations (for calculations see Calculation of key figures)

According to Nasdaq Helsinki	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Earnings per share, EUR	1.97	1.61	0.79	1.12	1.28	0.79	0.59	1.02	0.13	-0.07	0.61	0.43
– diluted, EUR	1.97	1.61	0.79	1.12	1.28	0.79	0.59	1.02	0.13	-0.07	0.61	0.43
– excl. FV, EUR ¹	1.55	1.19	0.45	0.61	1.26	0.89	0.65	1.24	0.40	0.40	0.33	0.63
Equity/share, EUR	15.89	13.55	11.17	9.42	8.51	7.62	7.36	6.83	6.43	6.61	7.32	7.45
Dividend and distribution/share, EUR	0.6 ²	0.55	0.30	0.30	0.50	0.41	0.37	0.33	0.30	0.30	0.30	0.30
Payout ratio, excl. FV ³	38.6	46.3	66.7	49.2	39.7	46.1	56.9	26.6	75.0	75.0	90.9	47.6
Dividend and distribution yield, %												
A share	4.3	3.3	1.9	2.2	4.5	3.1	3.56	3.9	4.0	4.1	5.3	5.9
R share	4.6	3.4	1.9	2.3	5.0	3.1	3.62	3.9	4.0	4.1	5.7	6.5
Price/earnings ratio (P/E), excl. FV												
A share	9.0	14.0	35.3	22.2	8.8	14.8	16.0	6.8	18.7	18.3	17.3	8.0
R share	8.5	13.6	34.8	21.2	8.0	14.9	15.7	6.8	18.6	18.3	15.9	7.3
Share prices for the period, EUR												
A share												
– closing price	13.90	16.60	15.90	13.55	11.05	13.20	10.40	8.40	7.48	7.31	5.70	5.03
– average price	16.61	16.68	12.06	12.88	16.36	11.93	8.50	8.87	7.29	6.82	6.15	7.73
– high	20.60	18.70	16.20	14.45	18.45	13.79	10.45	11.01	8.35	7.49	7.15	9.80
– low	13.40	14.45	9.26	10.85	10.75	10.26	6.56	6.70	5.73	5.42	5.10	4.70
R share												
– closing price	13.15	16.14	15.65	12.97	10.09	13.22	10.21	8.39	7.44	7.30	5.25	4.63
– average price	16.12	15.70	11.52	11.05	14.61	11.54	7.88	8.70	7.16	5.79	5.08	6.28
– high	20.01	17.67	15.85	13.05	18.29	13.75	10.28	10.95	8.38	7.54	5.95	8.99
– low	12.66	13.67	7.25	9.10	9.92	9.70	6.50	6.58	5.71	4.76	4.14	3.73
Market capitalisation at year-end, EUR million												
A share	2,450	2,926	2,802	2,388	1,948	2,328	1,836	1,483	1,324	1,295	1,010	891
R share	8,053	9,884	9,580	7,939	6,175	8,094	6,250	5,135	4,547	4,464	3,212	2,835
Total	10,503	12,809	12,383	10,328	8,123	10,422	8,085	6,618	5,871	5,756	4,222	3,726
Number of shares at the end of period, (thousands)												
A share	176,238	176,244	176,254	176,257	176,313	176,392	176,507	176,532	177,056	177,096	177,148	177,149
R share	612,382	612,376	612,366	612,363	612,307	612,228	612,113	612,088	611,564	611,524	612,391	612,389
Total	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620	788,620	789,538	789,538
Trading volume, (thousands)												
A share	1,174	1,750	4,662	1,299	3,068	6,768	1,254	1,641	1,553	1,656	831	1,402
% of total number of A shares	0.7	1.0	2.6	0.7	1.7	3.8	0.7	0.9	0.9	0.9	0.5	0.8
R share	455,952	422,493	605,233	679,475	610,300	571,717	765,122	798,507	731,067	828,401	977,746	1,237,898
% of total number of R shares	74.5	69.0	98.8	111.0	99.7	93.4	125	130.5	119.5	135.5	159.7	202.1
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	788,620	788,620
diluted	789,391	789,126	789,182	789,533	789,883	790,024	789,888	789,809	789,210	788,620	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 2011-2017 table includes EPS excl. IAC figures.

² Board of Directors' proposal to the AGM for distribution of dividend.

³ Excluding IAC in 2011–2017

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 capital markets and commercial banks. Stora Enso maintains consistent dialogue with 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 2022, Stora Enso liquidity and funding position continued to be strong. Stora Enso has approximately EUR 1.9 billion cash and cash equivalents at 31 December 2022. The company has EUR 700 million Committed Revolving Credit Facility fully undrawn. There were additional EUR 400 million undrawn committed loans by the end of 2022. Additionally, the company has access to EUR 1.05 billion statutory pension premium loans in Finland. Stora Enso has a good access to various funding sources.

Stora Enso has integrated sustainability agenda to its funding and financial services. The Group has the long-term aim to secure funding partners that have sustainability as a fundamental part of their agenda. We aim to influence and develop the financial markets to ensure that sustainability becomes an integral part of decisions and credit evaluation. For more information, visit our website storaenso.com/investors.

Green Bonds

In 2022, Stora Enso did not issue any bonds.

The bonds are listed on the Luxembourg Stock Exchange. 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.

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 impact report](#).

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 are: Baa3 with stable outlook from Moody's and BBB- with stable outlook from Fitch Ratings. Both ratings correspond to an Investment Grade rating, and there were no changes in the ratings during 2022.

Stora Enso's goal is to ensure that rating agencies continue to be comfortable with Stora Enso's strategy and performance. The Company's strategy is to achieve liquidity well in line with the comfort level of the agencies. Review meetings are arranged with the Stora Enso management annually, and regular contact is maintained with the rating analysts.

Read more about debt and loans in [Note 26](#).

Public debt structure as at 31 December 2022

	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 2022

	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 20271	
	EUR 200 million Bilateral Committed Credit Facility 2023 undrawn	

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.

Ratings as at 31 December 2022

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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Becoming regenerative

Sustainability reporting

Strategy, governance and stakeholders

Sustainability is integral in Stora Enso's strategy as well as corporate governance.

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Approach to sustainability

In 2022, Stora Enso continued to develop its sustainability agenda based on the framework launched in 2021. The framework recognises the need to stay within planetary boundaries and that a significant mindset change is required: companies need to move from doing less harm to contributing positively to the reversal of negative trends, particularly in nature loss and climate change. Building on this new mindset, Stora Enso's goal is that all of its products and solutions will be 100% regenerative by 2050. The sustainability framework and 2050 ambition provide a long-term direction that will help shape markets and steer innovation.

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, Stora Enso is shifting its sustainability goals from minimising negative environmental impacts to becoming a net positive contributor within the defined focus areas. These ambitions stand on a foundation of conducting everyday business in a responsible manner and proactively managing the impacts from the Group's operations and value chain. In Stora Enso, sustainability is embedded in key business processes such as:

- Strategy and business reviews with the divisions
- Product management and innovation
- Investments, and mergers and acquisitions

Stora Enso has set targets and defined key performance indicators (KPIs) for its sustainability work, see Sustainability targets for more details. Progress is regularly monitored at group level and via divisional

level business reviews. Consolidated results on the Group's performance are reported annually and 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) and supports all seventeen SDGs. Goals 12, 13 and 15 have been identified as most relevant where the Group has the largest impact through its operations and products.

Sustainability governance

At Stora Enso, sustainability is owned by the Board of Directors, the President and Chief Executive Officer (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 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 2022 and has also reviewed the sustainability disclosures in this 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 Stora Enso's short-term and long-term incentive programmes (STI and LTI). In the STI programme, the non-financial sustainability targets represent a 20% weight, divided into occupational safety measured by the total recordable incident rate (10%) and the reduction of production units' direct scope 1 and indirect scope 2

GHG emissions (10%). In the LTI programme, the non-financial sustainability targets also represent a 20% weight. In addition to the GHG scope 1 and 2 target (10%), the LTI includes a target on diversity and inclusion, measured by the share of female managers among all managers (10%). For more information, see Remuneration.

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. The Sustainability and Communications Support Groups at both joint operations convene regularly with representation from both joint venture partners. In addition, Stora Enso is represented on the Board of its equity-

accounted investments, such as forest company Tornator in Finland.

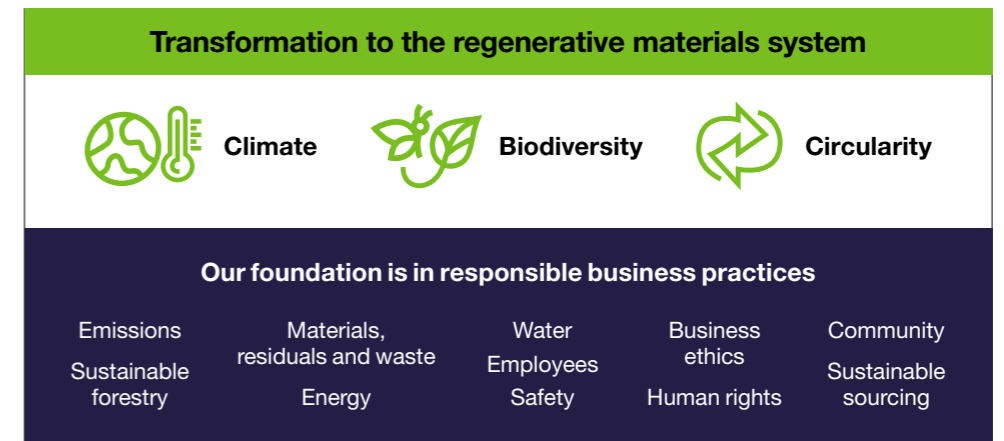
Sustainability policies

Stora Enso's Sustainability Policy describes the Group's overall approach to sustainability. At the same time, the code of conduct – the Stora Enso Code – and other policies and guidelines on specific sustainability topics further elaborate the company's approach while also guiding its employees in their everyday work. Policies and guidelines on specific sustainability topics are listed in the respective sections of this report and are available at storaenso.com. The policies and guidelines are reviewed bi-annually.

Stakeholder engagement

Open dialogue with key stakeholders is crucial to identify concerns, global trends and market expectations successfully and proactively. Stora Enso's stakeholder

Stora Enso sustainability framework



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United Nation's Sustainable Development Goals



12 Responsible consumption and production: Stora Enso's aim is to offer low-carbon, renewable and circular products to customers, replacing products made of fossil-based materials. In addition to its products, Stora Enso contributes to SDG 12 through its operations and supply chains. Stora Enso works constantly to reuse and recycle materials, to minimise waste and to maximise the value of material streams by creating circular material flows in value chains while reducing its own process waste to landfill.



13 Climate action: The Group's operations are based on renewable raw materials and sustainable forest management, which contribute to climate action. Stora Enso's products help to reduce CO₂ emissions by providing low carbon, renewable, and recyclable alternatives to fossil fuels and other non-renewable materials. The Group has science-based targets to reduce the CO₂e emissions from its own operations by 50% by 2030 from the baseline year 2019.



15 Life on land: Stora Enso's work with forests, plantations and land-use directly contributes to SDG 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 Stora Enso closely monitors the management of the forests and plantations from which it sources wood.

engagement work is based on both structured and informal 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. Engagement with stakeholders on social media helps the Group to understand their opinions and concerns locally around Stora Enso's units, as well as on a divisional and group level. Examples of key sustainability topics discussed with stakeholders are reported in the respective sections in this report.

Materiality

Stora Enso acknowledges the concept of double materiality in its sustainability strategy and reporting. Climate change, biodiversity, and circularity are considered to present the most significant financial risks and opportunities for Stora Enso, and these topics are highlighted in the Strategy section. Stora Enso's other material impacts on environment, people and communities are reported in the Strategy and Sustainability reporting sections.

During 2022, Stora Enso continued to reassess and revalidate the materiality of sustainability topics through direct engagement with stakeholders and incorporation of studies and science, such as the planetary boundaries. As part of this work, two reports on sustainability trends were provided to the Group Leadership Team and the Board of Directors' Sustainability and Ethics Committee.

The key conclusions from the trend analysis that contributed to the Group's sustainability assessments during 2022 included:

- Science, notably the United Nations' Intergovernmental Panel on Climate Change (IPCC) and Convention on Biological Diversity, and The Planetary Boundaries Framework are increasingly used as the basis for companies' sustainability targets.
- To stay within the planetary boundaries, companies need to transform from only

minimising their negative environmental impacts to maximising their positive impact, and thereby contributing to the reversal of negative trends, especially 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, construction and mobility systems.

Considering the above, as well as current international processes and policy developments and their timeline, Stora Enso has defined its goal to develop 100% regenerative solutions by 2050 and topic-specific interim targets.

Stora Enso's sustainability framework and performance are regularly discussed with the CEO and Group Leadership Team prior to discussion by the Board of Directors and communication to stakeholders. These discussions did not affect the topic-level materiality this year, which remains unchanged. The insights gained from updating the sustainability framework and the continuous stakeholder discussions contribute to the materiality assessment guiding the selection of material topics for sustainability reporting.

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 Information 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 engagement

The roll-out of policies and legislation from the European Green Deal, EU's strategic growth strategy, has continued

at an increasingly rapid rate in order to turn the EU's green ambitions into reality. Stora Enso welcomes this ambition and believes that bioeconomy, in particular, has a major role to play in the green transition. 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.

The EU has a wide set of legislation and regulations that are now bundled within the European Green Deal. In 2022, there were numerous EU-level policy developments relevant to Stora Enso. Stora Enso has continued to engage with decision-makers and relevant stakeholders in three priority policy areas; climate change, biodiversity, and circularity. In particular, Stora Enso has engaged on the numerous legislative proposals relating to forestry and biodiversity as well as on legislative and policy developments in relation to its products such as the proposed batteries regulation, construction product regulation, and the packaging, and packaging waste regulation.

Existing wood-based solutions on the EU market create an instant climate benefit, mainly by replacing greenhouse gas-intensive alternatives, storing carbon during the product life cycle and sequestering carbon from the atmosphere as trees grow. By accelerating the use of existing solutions, a substantial contribution to the green transition can be achieved. To ensure a supportive policy framework to contribute to this transition, Stora Enso actively engages on all of these policy areas, providing constructive and detailed evidence to show, for example, how sustainable forest management can enhance biodiversity in the forest while maintaining forest carbon sinks, as well as using 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.

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Stora Enso also sees 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 innovative applications to replace non-renewable 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 for the EU institutions. Read more about Stora Enso's public policy [here](#).

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, 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 2022 can be found in the relevant sections of this report. In 2022, Stora Enso actively collaborated with organisations including:

- Forest certification organisations (FSC and PEFC)
- Climate Leadership Coalition
- Finnish Business & Society (FIBS)
- Global Business Initiative on Human Rights (GBI)
- Science Based Targets initiative
- The Ellen MacArthur Foundation
- Accounting for Sustainability (A4S)
- 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
- World Wide Fund for Nature (WWF)
- The Digital Watermarks Initiative HolyGrail 2.0

The Group's sustainability reporting consists of the following content:

- [CEO message](#)
- [Our strategy](#) – material sustainability topics are described in the context of business strategy
- Sustainability reporting – reporting on sustainability impacts
- [GRI Content Index](#)
- [SASB Content Index](#)

External assurance:

Stora Enso's sustainability reporting has been assured by an independent third-party provider with a level of Limited Assurance with GRI Standards as criteria. Given the Group's commitment to climate change mitigation and related emission data reliability, a level of Reasonable Assurance with GHG Protocol as criteria has been provided for direct and indirect fossil CO₂e emissions (scope 1 and 2).

Key memberships in industry and trade associations

Stora Enso is a member of, or represented in, several trade organisation in its fields of businesses. The main organisations are listed below.

- The Confederation of European Paper Industries (CEPI), represented through national industry associations
- National memberships in forest industry associations such as Finnish and Swedish forest industry federations
- Business Europe
- The International Chamber of Commerce (ICC)
- National memberships in the development of international standardization (ISO)
- The European Federation of Corrugated Board Manufacturers (FEFCO)
- 4evergreen
- European Organisation for Packaging and the Environment (EUROPEN)
- The European Confederation of Woodworking Industries (CEI-Bois)
- The Alliance for Beverage Cartons and the Environment (ACE)
- European platform to improve and increase the recycling of beverage cartons EXTR:ACT
- European Carton Makers Association (ECMA)

Significant stakeholder groups:

- Consumers
- Customers
- Employees
- Forest owners
- Policy makers
- Investors
- Local communities
- Media
- NGOs
- Partners and suppliers
- Trade unions

External recognitions in 2022



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 2021 was one of the top ten sustainability reports globally according to the 2022 Reporting Matters publication by the World Business Council for Sustainable Development (WBCSD).



Best sustainability report in Finland

Stora Enso's Sustainability Report 2021 was awarded as best in Finland in an established competition organised by Aalto and Hanken universities, business and finance associations, Nasdaq Helsinki, and Ministry of the Environment among others.

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.

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Stora Enso's sustainability targets and key performance indicators

Sustainability topic	Key performance indicator (KPI)	2022	2021	2020	Targets	Progress comment
Transformation						
Climate	Reduction of production units' fossil CO ₂ e emissions (scope 1 and 2)	-27%	-14%	-13%	-50% by the end of 2030 from a 2019 base-year	On track – emissions decreased mainly due to less use of fossil fuels in multiple production sites as well as the ceasing operations at the Veitsiluoto mill in Finland.
	Reduction of fossil CO ₂ e emissions in supply chain, transportation and customer operations (scope 3)	-27%	-4%	-10%	-50% by the end of 2030 from a 2019 base-year	On track – emissions decreased year-on-year due to mill closures and the end of dissolving pulp production.
Biodiversity	% of the owned and leased lands in wood production and harvesting covered by forest certification schemes	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 2022. The reporting on biodiversity is complemented with specific biodiversity indicators.
Circularity	% of technically recyclable products	94%	94%	n/a	100% by the end of 2030	On track – coverage remained high in 2022. Reporting started in 2021 covering Stora Enso's packaging, pulp, paper and solid wood products as well as biochemical by-products.
Responsible business practices						
Materials, residuals, and waste	Process residuals utilisation rate (%)	99%	98%	98%	Maintain at least the utilisation level of 98%	Achieved – stable performance with a high utilisation rate of process residuals.
Energy	Projected energy savings, % (MWh saved/MWh total energy used, electricity and heat)	-1.1%	-0.6%	-0.9%	-0.8% annual energy saving until 2030	Achieved – projected energy savings above the target. As of 2023 the annual target increases to -1.1%.
Water	Process water discharge per saleable tonne of pulp, paper and board (m ³ /t)	31	31	31	Decreasing trend from 2016 baseline (27m ³)	Not achieved – water performance normalised by tonne was partly affected by lower production levels compared to the baseline year. During 2022 Stora Enso committed to a new water target to reduce specific process water discharges per saleable tonne (m ³ /tonne) by 17% by 2030 from the 2019 baseline year.
	Total water withdrawal per saleable tonne of pulp, paper and board (m ³ /t)	61	60	66	Decreasing trend from 2016 baseline (59m ³)	Not achieved – see above
Environmental incidents	Number of significant non-compliance events	15	8	8	Zero non-compliance events	Not achieved – significant non-compliance events occurred despite prevention measures. For detailed incident descriptions, see Environmental incidents.
Employees	Diversity and inclusion: % of female managers among all managers ¹	23%	23%	23%	25% by the end of 2024	On track - the share of female managers slightly increased during the year.
Safety	Total Recordable Incident (TRI) rate	5.9	6.2	6.1	Milestone of 5.3 by the end of 2022	Not achieved – Stora Enso's safety performance remained stable, but the milestone for 2022 was not achieved.
Business ethics	Ethics and Compliance Index	8.7	n/a	n/a	Positive trend	In progress – measurement of Ethics and Compliance Index with new questions in Stora Enso's employee survey was reinitiated during 2022.
Human rights	Implementation of Human rights due diligence programme	3 pilots targeting key risk areas	Remaining two development actions finalised	22 out of 24 development actions finalised in Group function processes	Ensure efficient implementation of Human rights due diligence programme	On track – continued focus on human rights due diligence.
Community	Community Investment (CI): % of working hours and in-kind in the total CI	41%	42%	41%	Increase to 70% by 2023 while also increasing the total CI	Behind – cash donations to emergency relief in Ukraine and Pakistan increased total community investment but decreased the percentage of working hours and in-kind.
Sustainable sourcing	% of supplier spend covered by the Supplier Code of Conduct	96%	96%	96%	Maintain at least the coverage level of 95%	Achieved – stable performance with high coverage.

¹ Employee target updated in 2022 to cover share of females among managers (previously Leadership Index)
For accounting principles and possible restatements of historical figures, see respective chapters in the report.

Consolidation of sustainability statements

Stora Enso regularly reviews the priorities on 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, Stora Enso also considers the expectations of major stakeholders. For more information on Stora Enso’s approach to materiality, see [Strategy, governance and stakeholders](#).



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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 includes also 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 or the addition of acquired units to 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 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 topic-specific accounting principles in the following sections, as well as 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 [Climate change: emissions](#) and [Energy](#).

Significant changes during 2022

During the year, Stora Enso divested its operations in Russia, including packaging converting units at Arzamas, Balabanovo and Lukhovitsy, wood products sawmills at Impilahti and Nebolchi, and forestry operations. The Group’s sustainability statements for 2022 exclude these divestments which were completed by the year end.

The divestment of Nymölla paper unit in Sweden was completed in January 2023. In addition, Stora Enso announced a divestment

of the paper units in Hylte, Sweden and Maxau, Germany with completion expected at the beginning of 2023.

Stora Enso also announced the acquisition of De Jong Packaging, which was completed beginning of January 2023. De Jong Packaging will be added to the Group’s consolidation as of 2023.

For more information on the employee impacts of the Group’s restructuring during the year, see [Employees](#), [Support in restructuring situations](#).

For more information on acquisitions and disposals, see [Financials](#), [Note 4](#). For information on the Group’s investments in strategic growth business, see [Financials](#), [Investments and capital expenditure](#).

In accordance with the GRI Standards

Stora Enso’s sustainability reporting is prepared in accordance with the GRI Sustainability Reporting Standards. The reporting covers all the General Disclosures as well as the Material Topics 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 clarifications and reasons for omission as necessary.

Impacts that make sustainability topics relevant to us may occur outside operations owned by Stora Enso, or they may only be material for some of the Group’s operations or locations. If the reporting is prepared with specific data boundaries, this is specified in the accounting principles for the respective disclosure.

Application of SASB Standards

Stora Enso also reports in accordance with the standards of the Sustainability Accounting Standards Board (SASB). The reporting is based on Forest Management and Containers & Packaging sector standards. For more information, see [Financials](#), [Capital Markets](#) and the [SASB Content Index](#).

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 can be found at the end of the Sustainability reporting section, [Assurance Statement](#). PricewaterhouseCoopers has provided a level of Limited Assurance with GRI Standards as criteria covering the sustainability reporting as defined in chapter [Strategy, governance and stakeholders](#) based on an assessment of materiality and risk. Since 2015, a level of Reasonable Assurance with GHG Protocol as criteria has been provided for Stora Enso’s reporting on direct and indirect Greenhouse Gas (GHG) emissions (scope 1 and 2).

The UN Global Compact

Stora Enso supports the ten principles of the United Nations Global Compact, an initiative set up in year 2000 to encourage businesses worldwide to embed responsibility into their operations. The Group respects and promotes these principles throughout its operations. The Group addresses its [Communication on Progress](#) on the UN Global Compact [website](#) as a public record of its commitment.

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Climate change: emissions

Stora Enso combats climate change with renewable materials, resource efficient production and sustainable forest management. The Group'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.



Targets and performance



Reduction of absolute scope 1 and 2 CO₂e emissions from operations by 50% by 2030 from the 2019 base-year



Reduction of scope 3 CO₂e emissions in supply chain, transportation and customer operations by 50% by 2030 from the 2019 base-year

Key Performance Indicator (KPI)	2022	2021	2020
Reduction of production units' fossil CO ₂ e emissions (scope 1 and 2) ¹	-27%	-14%	-13%
Reduction of fossil CO ₂ e emissions in supply chain, transportation and customer operations (scope 3) ¹	-27%	-4%	-10%

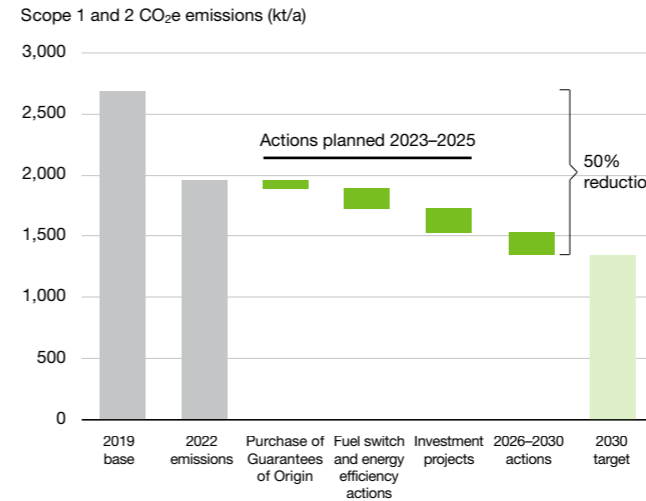
¹ Historical figures recalculated due to divestments or additional data after the previous annual report.

Scope 1 and 2: **On track** – during the year, the emissions decreased mainly due to less use of fossil fuels in multiple production sites as well as the ceasing operations at the Veitsiluoto mill in Finland.
 Scope 3: **On track** – the emissions decreased year-on-year due to mill closures and the end of dissolving pulp production.

Actions to drive performance

- Using Stora Enso Carbon Neutrality Roadmap as a key tool in greenhouse gas (GHG) scenario assessment guiding long- and short-term fossil CO₂e reduction actions on group and divisional level
- Further reducing scope 1 and 2 CO₂e emissions by reducing the use of fossil fuels and increasing the share of clean energy sources, including biomass fuels from sustainable sources
- Linking the target to reduce scope 1 and 2 emissions to remuneration as a component of the short- and long-term incentive programme
- Further improving scope 3 performance by increasing efficiency and lowering carbon intensity together with supply chain, transportation and customer operations
- Promoting the Stora Enso Supplier Code of Conduct as a tool to implement and enforce emission reductions and to set out common requirements for all suppliers

Summary of Stora Enso's roadmap for reaching the 2030 target for scope 1 and 2



During 2023–2024, Stora Enso will continue to invest in projects that, in addition to business targets, aim at reaching the CO₂e targets. Examples include investments in changing fuel types and energy efficiency improvements. The CO₂e targets are always part of Stora Enso's capital expenditure assessment.

By the end of the year, the scope 1 and 2 CO₂e emissions were 1.96 million tonnes or 27% less than in the base-year. During 2022, the emissions decreased mainly due to less use of fossil fuels in multiple production sites as well as the ceasing operations at the Veitsiluoto mill in Finland.

Stora Enso's target to reduce scope 1 & 2 CO₂e emissions is linked to management remuneration.



Accounting principles

In its greenhouse gas (GHG) accounting, Stora Enso follows the standards provided by the Greenhouse Gas Protocol of the World Resource Institute (WRI) and the World Business Council for Sustainable Development (WBCSD): GHG Corporate Accounting and Reporting Standard, the GHG Protocol Scope 2 Guidance and the Corporate Value Chain (scope 3) Accounting and Reporting Standard. Stora Enso uses the operational control in the consolidation approach. The science-based targets to reduce GHG emissions are reported as a percentage change from the baseline, which is annually updated to reflect the current company structure.

Scope 1 and 2 emissions include direct and indirect GHG emissions, accounted for as fossil CO₂ equivalents (CO₂e), from all production units, excluding joint operations. In addition to CO₂, other relevant GHG emissions for Stora Enso are CH₄ and N₂O, which are generated when using fossil and biomass fuels in the units' power boilers. These gases are converted to CO₂e using respective global warming potential based on the fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC), or fuel-specific CO₂ emission factors based on analysis at the site.

Scope 2 GHG emissions are calculated based on purchased electricity and heat. The CO₂ emission factors used for purchased energy largely follow the market-based methodology, which means that almost all units apply CO₂ factors provided by their energy suppliers. When these are not available, the most recent location-based factors provided by the International Energy Agency (IEA) are used. Scope 2 includes the trading of Guarantees of Origin for electricity.

Scope 3 emissions include fossil CO₂ equivalent emissions from other sources along the value chain of all production units. Stora Enso applies activity-based methodology for scope 3 accounting which means that the emissions are estimated based on the volumes of sourced inputs and delivered products. Material emission categories included in scope 3 emissions are reviewed annually.

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Other performance indicators	Fossil CO ₂ equivalent (million tonnes)		
	2022	2021	2020
Scope 1: Direct emissions from operations ¹	1.77	2.09	2.02
Scope 2: Emissions from purchased energy consumed in operations ^{1,2}	0.19	0.22	0.31
Scope 3: Emissions from other sources along the value chain			
Harvesting and wood transportation	0.38		
Fuels and energy (production and transportation)	0.44		
Purchased materials (production and transportation)	1.93		
Transportation and distribution of products to customers globally	0.85		
Processing of products by customers	2.41		
Scope 3 total	6.01	7.83	7.38
Total emissions	7.97	10.14	9.71

¹ Historical figures recalculated due to divestments or additional data after the previous annual report.
² The CO₂ factors used for purchased energy (scope 2) largely follow the market-based methodology, which means that almost all Stora Enso units apply CO₂ factors provided by their energy suppliers. When applying currently available location-based factors, scope 2 emissions for 2022 are 0.69 million tonnes of CO₂ equivalents (0.73 million tonnes in 2021).

The company's operations utilise renewable biomass fuels from forest and process residuals to a large extent which means that the proportion of carbon-neutral CO₂ emissions of total emissions is high. In 2022, 87% of the total direct CO₂ emissions from the Group's own operations were carbon neutral, originating from biomass fuels.

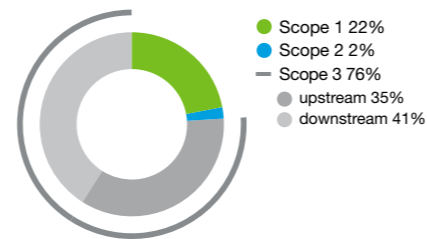
In 2022, Stora Enso's estimated scope 3 CO₂e emissions along the value chain were 6.01 million tonnes or 27% less than in the baseline year. The emissions decreased year-on-year due to mill closures and the end of dissolving pulp production.

During 2022, Stora Enso continued to identify areas where scope 3 CO₂e emissions could be reduced and take appropriate action. The focus was on supplier engagement and internal work to further improve the accounting for scope 3 CO₂e emissions which plays a key role in the reduction plans as accurate primary data is crucial to follow up on improvement actions.

In 2022 sustainability targets were included in Stora Enso's STI and LTI programmes. In both programmes, the reduction of production units' direct scope 1 and indirect scope 2 CO₂e emissions weights 10%. For more information, see [Remuneration](#).

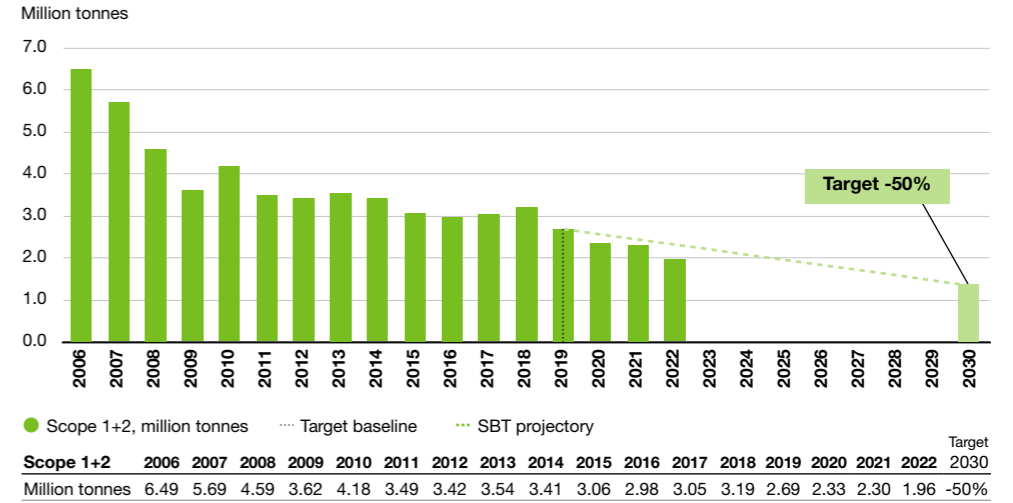
Distribution of CO₂e emissions 2022

% of total CO₂e emissions



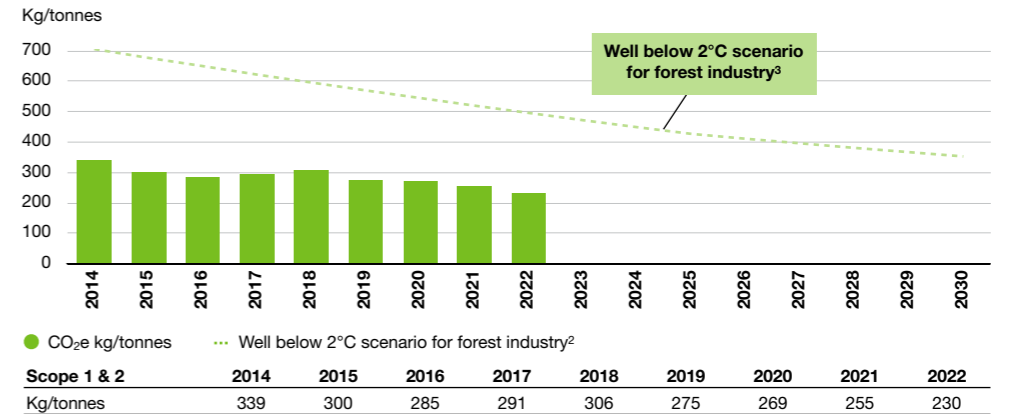
87% of the total direct CO₂ emissions from our own operations were carbon neutral.

Stora Enso's scope 1 & 2 CO₂e emissions^{1, 2, 3}



¹ Covering direct and indirect Greenhouse Gas (GHG) emissions as fossil CO₂ equivalents (scope 1 & 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 scope 1 & 2 CO₂e emissions in relation to production^{1, 2}



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 GHG reduction pathway for well below 2 °C scenario as CO₂e kg/tonne, based on information from the Transition Pathway Initiative (TPI)* including scenarios data from the Energy Technology Perspectives report by the International Energy Agency.
³ Historical figures recalculated due to additional data or organisational changes after the previous annual report.
 * Asset owner-led initiative supported by Grantham Research Institute and London School of Economics.

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Ways of working

The Stora Enso Carbon Neutrality Roadmap is a key tool in the Group’s scenario assessments and guiding long- and short-term CO₂e reductions. Divisional level Carbon Neutrality Roadmaps guide the divisions’ work towards reaching the reduction targets. Stora Enso evaluates the financial risks and opportunities related to climate change through its annual Enterprise Risk Management (ERM) process, integrating also the recommendations of the Task Force for Climate-related Financial Disclosures (TCFD). Read more in Financials, [Climate-related financial disclosures](#).

To reach the scope 1 and 2 CO₂e reduction targets, Stora Enso will reduce fossil carbon emissions by investing in further improving the energy efficiency of production processes, and by continuing to reduce the use of fossil fuels. Instead, Stora Enso will use more clean energy sources, including wood-based biofuels from sustainable sources. For more information on energy efficiency, see chapter [Energy](#).

Combatting global challenges such as climate change does not happen in isolation. Value chain emissions often represent the largest portion of companies’ carbon footprint. To reach its scope 3 CO₂e reduction target, Stora Enso works with suppliers and logistics to further improve efficiency and lower carbon intensity. One tool in implementing and enforcing emission reductions is the Stora Enso Supplier Code of Conduct, which is the common set of requirements for all suppliers. Read more in chapter [Sustainable sourcing](#).

Policies and guidelines

- Policy for Energy and Carbon
- Environmental Guidelines
- Supplier Code of Conduct and Practical Guidance for Stora Enso’s Suppliers

EU Policy Whole Life Carbon Roadmap

Stora Enso is a Europe Regional Partner of the World Green Building Council (WorldGBC). Stora Enso contributed to WorldGBC’s report, “EU Policy Whole Life Carbon Roadmap,” which was launched in 2022 at a Brussels event for EU policymakers. The roadmap provides an essential guide for why and how ambitious policy reform must catalyse the decarbonisation of the built environment.

Supplier Day focusing on scope 3 CO₂e reduction

The 2022 Stora Enso Supplier Day was attended by almost 200 people representing over 80 suppliers in the sourcing categories with the largest impact on the Stora Enso scope 3 emissions. The day included sharing best practices on actions to reduce CO₂e emissions and promoting the move towards science-based targets. The Stora Enso Supplier Sustainability Award was given to a shipping company for their efforts to reduce emissions per tonne kilometer by almost 75% by investing in new multi-fuel vessels. Read more on efforts to reduce scope 3 CO₂e emissions in chapter [Sustainable sourcing](#).

Combatting global challenges such as climate change does not happen in isolation.

Why it matters

Stora Enso has a proactive and holistic approach to decreasing the use of fossil fuels and reducing direct and indirect fossil CO₂ and other emissions. This creates new business opportunities and helps manage 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.

The IPCC report 2022 warns that the world is set to reach the 1.5 degree scenario within the next two decades. The agenda can be expected to shift from mostly mitigation towards a more balanced mitigation with adaptation. This acceptance of looking increasingly into what it will take for business and society to adapt to temperature increases beyond 1.5 and 2 degrees may signal a new phase of the global climate change dialogue.

Read more about Stora Enso’s work on climate change in [Our strategy](#). For opportunities and challenges related to changing energy markets, see chapter [Energy](#).

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Sustainable forestry and biodiversity



Sustainable forest management safeguards forest health and productivity, and protects and enhances biodiversity – whilst securing the long-term availability of renewable resources. The Biodiversity Leadership Programme, launched in 2022, aims to ensure that Stora Enso reaches its net-positive impact on biodiversity target: doing business with positive outcomes for biodiversity that are real and measurable across all key dimensions from species to habitats to landscapes, in alignment with society’s goal for positive action on nature.

Targets and performance



Maintain at least 96% forest certification coverage



Achieve a net-positive impact on biodiversity in Stora Enso’s own forests and plantations by 2050 through active biodiversity management

Key Performance Indicator (KPI)	2022	2021	2020
% of the owned and leased lands in wood production and harvesting covered by forest certification schemes	99%	99%	99%

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 2022. The reporting on biodiversity is complemented with specific biodiversity indicators.

Biodiversity impact indicators to improve biodiversity

Biodiversity impact indicators measure the quality of forestry operations and their impact on high stumps, deadwood, soil, water, habitats, tree retention and buffer zones. The percentages refer to the number of harvesting sites that fulfil Stora Enso’s instructions on avoiding negative impacts on biodiversity. In 2022, target was 90% compliance for each indicator. Target is to reach 100% compliance in 2030.

Compliance rate of biodiversity impact indicators	2022	2021
High stumps	65%	63%
Ground deadwood	82%	94%
Soil and water	96%	88%
Habitats	87%	88%
Tree retention	83%	89%
Buffer zones	93%	n/a
Total	84%	84%

Weighted average of compliance rates in Finland, Sweden and the Baltics. For more information on the instructions for each indicator and for separate business unit level performance, see Stora Enso’s specific biodiversity [website](#).

Stora Enso is one of the largest private forest owners in the world.

Actions to drive performance

- Using science-based indicators to monitor the state of biodiversity and impacts of Stora Enso’s operations on biodiversity
- Increasing nature’s values and strengthening biodiversity by implementing biodiversity actions in Stora Enso’s own forests in Sweden and wood supply in Finland. A similar programme is planned for wood supply operations in Sweden and the Baltics
- Applying biodiversity modelling to evaluate potential outcomes of the company’s actions and to ensure the journey towards a real and measurable net-positive impact on biodiversity
- Testing of new forest management practices in the company’s own forests in Sweden and adapting the current ones based on findings from biodiversity monitoring results

Other performance indicators	2022	2021	2020
Owned or leased lands, million hectares	2.01	2.01	2.02
Annual CO ₂ sequestration in owned or leased productive forest lands, million tonnes, 3-years average	5.3	5.0	n/a
Total CO ₂ stored in Stora Enso’s productive forests as of 31.12.2022, million tonnes	285	283	268
Total amount of wood delivered to Stora Enso’s sites, million m ³	35.1	37.6	35.0
% of third-party certified wood of total wood supply	80%	77%	78%
% of wood from own sources or long-term supply agreements	30%	28%	29%
% of wood from managed semi-natural forests in Europe	87%	88%	87%
% of wood from tree plantations	13%	12%	13%



Accounting principles

Calculations for land areas, their forest certification coverage, carbon sink and storage include Stora Enso’s own forest assets. For more information, see Note 12. Joint operations Veracel and Montes del Plata and equity accounted investment Tornator are consolidated based on Stora Enso’s ownership in these companies.

Wood procurement and its forest certification coverage include total amounts of wood (roundwood and chips) procured within regions for delivery to Stora Enso’s units (million m³, solid under bark). Figures include 50% of the wood procurement of the joint operations Veracel and Montes del Plata.

Calculation of forest carbon 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 productive forests using two methods: 1) historical data as an annual average over the past three years and 2) forward-looking simulation of 100-year management cycle conducted by the Swedish University of Agricultural Sciences (SLU). The calculation includes above and below-ground biomass of trees, but currently excludes soil carbon. In the forward-looking simulation of 100-year management cycle by the SLU, Stora Enso productive forests and plantations sequester annually an average of 1.5 million tonnes of CO₂ (SLU). In sustainably managed forests, carbon sink and storage levels are maintained or increased over the forests’ management cycle. During this cycle, harvesting and natural disturbances, growth rates related to forest ages and types, and potential other events result in short-term variations in the carbon sink and storage.

Biodiversity indicators include the compliance ratios of harvesting sites against Stora Enso’s specific biodiversity indicators in Sweden, Finland and the Baltics. The consolidated ratios are weighted averages using number of harvesting sites in these regions as a weight.

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Stora Enso Biodiversity Leadership Programme

Biodiversity management is an integral part of Stora Enso’s 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, Stora Enso made a commitment to achieving a net-positive impact on biodiversity in its own forests and plantations by 2050. During 2022, Stora Enso launched a Biodiversity Leadership Programme that includes selected projects that drive the delivery of this target. These projects include various operational interventions, improving data and modelling, developing and testing new value innovation, and actively engaging in advocacy and alignment locally and globally. The programme covers Stora Enso’s own forests, suppliers’ forests, and global forests, as well as improving biodiversity beyond the forest sector. Stora Enso also launched biodiversity action programmes for its land holdings in Sweden and wood supply operations in Finland to enhance biodiversity in their operations. A similar programme is being planned for Stora Enso’s wood supply in the Baltics.

Read more about Stora Enso’s approach to forest assets and biodiversity in [Our forests](#).

Protecting biodiversity in Brazil

Stora Enso’s 50%-owned joint operation Veracel protects and restores biodiversity in the areas of natural Atlantic rainforest. When Veracel’s plantations were established in 1991, only a fraction of the original Atlantic rainforest was left in the region following extensive logging and clearing for cattle ranching. Since the plantations were established, Veracel has worked systematically to protect and restore local biodiversity. 128,000 hectares of land is now dedicated to rainforest preservation and restoration, and Veracel aims to restore approximately 400 hectares of rainforest habitat every year by planting native species.

Between 1994 and 2022, a total of 7,900 hectares of forest have been restored.



Ways of working

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 in Stora Enso’s [Environmental Guidelines](#).

To cover all aspects of sustainability in Stora Enso’s forest and plantation management, the Group applies the same comprehensive policy and guidelines for wood procurement process in all its operating regions. The Group’s forests and long-term supply agreements secure a sustainable and transparent wood supply.

Forest certification for sustainable forest management

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 (FSC¹) 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 complements these tools by imposing strict contractual requirements on suppliers. With strict policies and various tools in place to ensure sustainable forest management and wood sourcing, Stora Enso is not engaged in deforestation or depletion of the world’s forests.

Similar to Stora Enso’s managed semi-natural forests, commercial plantations are also certified to ensure that all aspects of sustainability are taken into consideration. Stora Enso never establishes plantations in natural forests, protected areas or water-sensitive locations, and only land with low biodiversity value, such as former pastureland, is used. In fast-growing tree plantations, the landscape typically consists of a mosaic of areas for both intensive wood production and biodiversity conservation. Stora Enso recognises that its plantations are an integral part of local land use and therefore evaluates and defines sustainable land use practices specifically for each location.

Tree breeding for healthy forests

Stora Enso has long-term strategic tree breeding programmes to ensure future fit forests. In short, tree breeding is the crossing of selected elite parent trees to create a new generation with improved growth and resilience. Trees can be bred for any heritable trait including growth, stress resilience and wood properties. In all breeding programmes, genetic diversity is maintained by having several breeding populations of sufficient size and avoiding the crossing of closely related parents. In Sweden, where Stora Enso owns approximately 1.4 million hectares of land, three company-owned nurseries supply superior seedlings for regeneration sites.

Stora Enso has ongoing research and development work in advanced breeding technologies, and technologies to enhance output from the breeding programmes. In Brazil, the company continues field trials with genetically modified trees, now totalling approximately five hectares. These trials fully comply with relevant national regulations. However, Stora Enso has no current plans beyond field trials and research at present.

Stakeholder concerns and dialogue

Sustainable forestry is a stakeholder interest as environmental NGOs are

calling, among others, for increased forest protection and changes in forest management practices. 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 2022, FSG published the Forest Sector Nature Positive Roadmap which offers a shared definition of nature-positive for the forest sector as a bedrock for subsequent guidance and tools to support forest companies in the implementation of nature-positive strategies.

Stora Enso continued to support and participate in The Forests Dialogue (TFD) and expanded its cooperation with the World Wide Fund for Nature (WWF) in Finland with a new [project](#) to conserve freshwater and migratory fish by restoring small waterbodies. Stora Enso also continued the long-term project with WWF Finland to promote conservation and sustainable use of forests among private forest owners and the long-term cooperation with the Swedish University of Agricultural Sciences (SLU) on biodiversity, forest growth and yield, and remote sensing.

In 2022, Stora Enso participated in the development and pilot test for guidance on accounting for land sector activities and CO₂ removals in corporate greenhouse gas inventories – an initiative led by Greenhouse Gas Protocol and WBCSD. Stora Enso recognises that the areas where it operates are of value to different stakeholders and has therefore adopted an integrated approach to land use around its plantations. With the integrated approach, Stora Enso aims to protect ecosystems and safeguard natural resources while improving the livelihood of local communities in close collaboration with various stakeholders.

¹ Stora Enso Communications’ FSC® trademark license number is FSC-N001919.

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Policies and guidelines

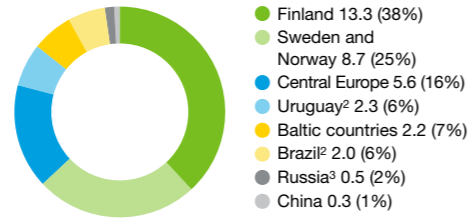
Stora Enso's policies on Wood and Fiber Sourcing and Land Management cover the entire cycle of forest and tree plantation management. The policies require sustainable forest management through responsible sourcing and land use – to safeguard the health and ecological functions of ecosystems and to help 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:

- Environmental Guidelines
- The Stora Enso Code
- Supplier Code of Conduct

Wood procurement by region¹

35.1 million m³

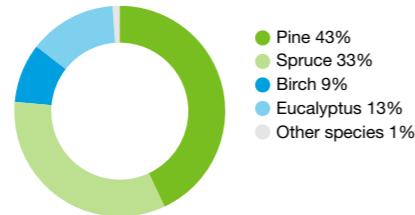


¹ Total amounts of wood (roundwood and chips) procured within these regions for delivery to our mills (million m³, solid under bark).

² Figures for Brazil and Uruguay include 50% of the wood procurement of our joint operations Veracel and Montes del Plata.

³ Wood procurement from Russia ended in H1/2022.

Wood procurement by species



Why it matters



Biodiversity has been decreasing globally for decades, and we are now at a stage where the United Nations has declared a biodiversity crisis, and significantly more action is needed to reverse the trend. Stora Enso's ambition is to meet the needs of ecosystems, and the company has therefore committed to delivering a net-positive impact on biodiversity.

As a renewable natural resource, wood represents a favourable alternative to fossil-based and other non-renewable materials. Growing trees absorb 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 also key to the resilience of forests. Stora Enso continuously analyses the future impacts of climate change and works to increase the resilience of forests to diseases, storms and other physical risks related to the changing climate.

The key role of forests in combatting climate change and supporting biodiversity has been widely recognised. The role of sustainable management of forests is also enshrined 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.

Forests, plantations and lands as of 31 December 2022¹

Unit	Area	Certification coverage	Details of local landscapes and protected areas
Owned lands			
Swedish forest holdings	1,389,000 ha, of which 1,142,000 productive forest land	PEFC and FSC for 1,389,000 ha	Protected areas total to 437,000 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 110,000 ha planted for pulp production	PEFC and FSC for 190,000 ha	Protected areas total to 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)	210,000 ha, of which 82,000 ha planted for pulp production	CERFLOR (PEFC) for 188,000 ha; FSC for 188,000 ha	Protected areas total to 128,000 ha, including a 6,000 ha Private Reserve recognised as UNESCO Natural World Heritage site, 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	661,000 ha, of which 586,000 productive forest land	PEFC for 661,000 ha and FSC for 661,000 ha	Protected areas total to 61,000 ha and consist of productive or non-productive land which has been set-aside from harvesting either voluntarily or by legal requirements.
Estonia	65,000 ha, of which 57,000 productive forest land	PEFC for 65,000 ha and FSC for 65,000 ha	Protected areas total to 2,300 ha.
Romania	12,000 ha, of which 12,000 productive forest land	PEFC for 12,000 ha and FSC for 12,000 ha	Protected areas total to 160 ha.
Leased lands			
Plantations and lands, Guangxi, China	73,000 ha, of which 64,000 ha planted	Chinese Forest Certification Council certificate (PEFC) for 73,000 ha; FSC for 73,000 ha	Protected areas total to 3,800 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	86,000 ha, of which 74,000 ha planted	PEFC and FSC for 79,000 ha	No protected areas managed by Stora Enso as they are excluded from lease agreements.
Veracel	15,000 ha, of which 8,000 ha planted	CERFLOR (PEFC) for 10,000 ha; FSC for 10,000 ha	Protected areas total to 8,000 ha and consist of native forest remnants at different stages of regeneration.

¹ Reported as total areas of the companies. Stora Enso's share corresponds to the ownership share. Includes operations where Stora Enso's shareholding is significant and the size of the area exceeds 1,000 hectares.

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Circularity

The world needs materials that are both renewable and recyclable – a circular bioeconomy – to combat climate change, save natural resources, and minimise waste. At Stora Enso, we believe that a circular economy is only truly possible when raw materials are also circular – materials that can be renewed over and over again.



Targets and performance



Achieve 100% technically recyclable products by 2030

Key Performance Indicator (KPI)	2022	2021	2020
% of technically recyclable products ¹	94%	94%	n/a

¹ Historical figures recalculated due to additional data after the previous annual report.

On track – coverage remained high in 2022. Reporting started in 2021 covering Stora Enso’s packaging, pulp, paper and solid wood products as well as biochemical by-products.

Actions to drive performance

- Increased focus on circularity in the innovation processes to ensure recyclability of products
- Application of Stora Enso Circular Design Guidelines across the Group

Other performance indicators	2022	2021	2020
Usage of Paper for Recycling (PfR), million tonnes	1.6	1.7	1.7
PfR utilisation rate in paper and board production	23%	22%	23%

Stora Enso’s 2030 goals include a commitment to engage in value chain collaborations that help to increase actual recycling of the company’s products. For packaging products this means that Stora Enso engages in collaborations that help to achieve an 85% actual recycling target for fiber-based packaging in Europe by 2030. During 2022, Stora Enso and Tetra Pak started jointly examining a shared beverage carton recycling solution to meet the growing recycling need in Benelux, responding to the demand for circular paper-based packaging solutions. The joint feasibility study includes a plan for

a comprehensive beverage carton recycling facility at Stora Enso’s Langerbrugge site in Belgium. The feasibility study is expected to conclude in the first half of 2023.

In addition, Stora Enso and Huhtamaki formed a partnership during 2022 on an industrial-scale recycling programme for paper cups in Europe. The Cup Collective aims to recycle half a billion paper cups in the first two years and, due to scalability, has the capacity to significantly increase recycling volumes in Europe.

Stora Enso is one of the largest Paper for Recycling (PfR) consumers in Europe. Through cooperation with local authorities

Accelerating paper cup recycling across Europe

Huhtamaki and Stora Enso have launched a new paper cup recycling initiative, The Cup Collective.

The programme, which is the first of its kind in Europe, aims to recycle and capture the value of used paper cups on an industrial scale. Initially the programme will be implemented across the Benelux. With the aim of setting new standards for paper cup collection and recycling in Europe, The Cup Collective has issued an open invitation for partners from across the supply chain to get involved in working towards a systemic European solution.

and waste management companies, and by managing its own collection facilities, Stora Enso secures a sufficient supply of PfR from industrial, commercial, and domestic sources. Recycled newspapers and magazines are used to produce certain paper grades at Langerbrugge and Maxau sites. Recovered board is used to make specific containerboard grades at Ostroleka site in Poland (80% of fiber used for containerboard production) and at Varkaus site in Finland. In Poland, Stora Enso owns and manages a network of 17 depots where Paper for Recycling (PfR) is collected and baled for transportation to the Ostroleka site.



Accounting principles

Product circularity is calculated 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 tests that prove recyclability. The reporting scope includes Stora Enso’s packaging, pulp, paper and solid wood products as well as biochemical by-products.

Utilisation rate for PfR is accounted by dividing the total deliveries of PfR to Group’s units by the total production of board and paper, following the definition of Confederation of European Paper Industries (CEPI).

Historical figures are recalculated due to organisational changes or reporting corrections after the previous report.

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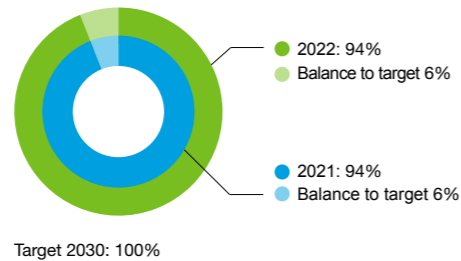
Ways of working

Circularity of materials is a key success factor measuring the company's capability to navigate sustainable profitable growth within the planetary boundaries. Stora Enso addresses this in three dimensions: internal materials circularity and beneficial use of process residuals, innovative product design for recyclable products, and collaborations in the wider value chain to improve infrastructure and to make sure that the market is shaped for recycling of the Group's materials.

To ensure achieving circularity and technical recycling of its products, Stora Enso has developed the Circular Design Guidelines, containing principles which serve as guidance for all divisions, whether planning to create new processes and solutions or to update existing ones. These guidelines will be fully adopted in the innovation and product management processes by 2025.

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

Share of technically recyclable products



packaging. Stora Enso also participates 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 within the beverage carton industry through regional and global platforms. These platforms include the Alliance for Beverage Cartons and the Environment (ACE), and the EXTR:ACT platform to improve and increase the recycling of beverage cartons and similar fibre-based multi-material packaging in Europe.

Stora Enso is also a signatory to the New Plastics Economy Global Commitment led by the Ellen MacArthur Foundation, in collaboration with the United Nations Environment Programme.

Policies and guidelines

- Stora Enso Code
- Stora Enso Circular Design Guidelines
- Stora Enso Environmental Guidelines
- Supplier Code of Conduct, Practical Guidance for Stora Enso's Suppliers, Purchasers' Instructions, Sourcing Policy, and Sourcing Guidelines

Stora Enso's 2030 goals include a commitment to engage in value chain collaborations that help to increase actual recycling of the company's products.

Why it matters

Improved circularity plays a critical role in mitigating climate change and halting biodiversity loss. Circularity of a product is both dependent on the actual recyclability of the product itself, and on local recycling possibilities. Studies have shown that across the world only 8.6% of materials are being recycled¹. There is a need for strong collaboration to advance circularity and strengthen the recycling infrastructure.

In addition to striving to improve the circularity of its own production and recyclability of products, Stora Enso engages across the value chain for partnership collaboration and recycling investments.

Stora Enso also cooperates with local authorities and waste management companies to increase the facilities available and to further promote recycling in society. Read more in Our strategy.

¹ Circle Economy: The circularity GAP report 2022



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Product stewardship

Stora Enso actively works with its customers to improve material efficiency in order to reduce the environmental impact of its products and related processes through, for example, innovation and circular programmes. In addition to material efficiency, securing product safety is a cornerstone of product stewardship.

Product safety

Ensuring the safety of all Stora Enso's products is essential in order to safeguard the health and safety of employees, customers and end users as well as the environment. Stora Enso requires all its suppliers to comply with the Group's product safety requirements. Products covered by specific safety regulations include food contact materials, materials for toys, packaging for pharmaceuticals, and materials for personal care and hygiene products. Units producing these sensitive materials follow Good Manufacturing Practices, which are a set of widely recognised guidelines incorporated into EU regulations.

Stora Enso follows legislation designed to protect human health and the environment, including 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 Stora Enso's units further ensure that a systematic approach to food safety issues is applied. ISO 9001, ISO 14001, ISO 50001, and ISO 45001 certified systems help the units to identify and meet customer requirements as well as to systematically improve product quality and environmental, energy and occupational safety management. All Stora Enso's construction products are CE marked to guarantee that they comply with the relevant EU legislation. More than 90% of the Groups's paper product brands

are covered by one or more recognised ecolabel, such as the Nordic Swan Ecolabel, EU Ecolabel or Blue Angel, and many of the 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 Stora Enso's products are FSC or PEFC certified or have other verification for responsible chain-of-custody and due diligence. Stora Enso has received FSC and PEFC chain-of-custody certification also for lignin in 2021. The proportion of third-party certified wood in Stora Enso's total wood supply was 80% in 2022.

Life cycle assessments

Stora Enso collects and regularly updates product-specific life cycle inventory data, which is typically used in Life Cycle Assessments (LCAs) conducted by Stora Enso's experts and customers, often in collaboration with academia, expert organisations, or industry associations.

Assessing the climate impact of pharmaceutical packaging

A third party-verified life cycle assessment shows that Stora Enso's fresh fiber-based pharmaceutical packaging yielded better climate performance compared to average European white-lined chipboard made of partially recycled fibers with an 18% smaller carbon footprint. Read more about sustainability in our pharmaceutical packaging [here](#).

The LCAs help to articulate the benefits of renewable products to be used as substitutes for fossil-based alternatives and reducing CO₂ emissions.

Assessing life cycle impacts of buildings

Environmental Product Declarations (EPD) offered for all Stora Enso's 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. EPDs provide important information to 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.

In 2022, Stora Enso joined the [ECO Platform](#) association to promote and contribute to the sustainable development of the construction sector by provision of credible and scientifically correct product data in EPDs.

Comparing containerboard to plastic alternatives in food packaging

Life cycle assessment carried out in 2022 shows corrugated packaging to have a lower climate or other environmental impact compared to plastic alternatives, both reusable and single-use. The impacts were analysed based on different scenarios for fresh fruit packaging. More information will be published later during the year [here](#).

Life cycle assessments help to articulate the benefits of renewable products to be used as substitutes for fossil-based alternatives.

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Materials, residuals and waste

Stora Enso addresses material efficiency and beneficial use of process residuals by active waste and residuals management. Through collaborations in the wider value chain, Stora Enso aims to increase the value from the company's material streams to be beneficially used on the market.

Targets and performance



Maintain process residuals utilisation rate level of at least 98%

Key Performance Indicator (KPI)	2022	2021	2020
Process residuals utilisation rate (%)	99%	98%	98%

Achieved – stable performance with a high utilisation rate of process residuals.

Actions to drive performance

- Reuse and recycling of materials to minimise waste and to ensure efficient use of resources
- Maximising the value of material streams through circular material flows
- Converting existing material side-streams to new products, for example, lignin, to generate circular revenue
- Beneficial use of process residuals in the value chain

Other performance indicators	2022	2021	2020
Total process material use, million tonnes (fresh tonnes)	40.9	41.1	n/a
Share of renewable materials in total process material use, %	96%	95%	n/a
Process waste and residuals generated, million tonnes (dry tonnes) ¹	4.2	3.6	3.2
– of which recycled and used internally or externally	99%	98%	98%
– of which landfilled	1%	2%	2%
Hazardous waste ² , tonnes	7,630	8,220	5,500
Sludge, classified as hazardous waste, tonnes ³	6,890	10,140	8,720
Process waste sent to on-site storage facilities, tonnes	61,410	70,410	91,310
Non-process related waste, tonnes	33,500	29,110	41,910

¹ Historical figures recalculated due to divestments or additional data after the previous annual report.

² Including oils, solvents, paints, laboratory chemicals and batteries that are transported and processed by authorised contractors.

³ Generated at the disused Falun copper mine in Sweden and handled by an authorised contractor.

During 2022, Stora Enso continued to develop lignin-based products.

The Group's process raw materials are largely renewable: wood, starch, recycled board and paper, and purchased pulp and paper.

Stora Enso works to reuse and recycle materials, to minimise waste and to maximise the value of material streams through creating circular material flows in its value chain. At the same time, Stora Enso aims to reduce its own process waste to landfill to as close to zero as legally, technically and commercially possible. In 2022, Stora Enso continued to deliver value from waste for soil improvement and water protection.

During 2022, Stora Enso carried on with driving the development of lignin-based products, focusing on binders for construction and anode-materials for batteries. Lignin is an example where a short-lived energy product's lifecycle is extended to medium-to long-term, with a higher value to society.

Stora Enso continued to explore the potential to use refined wastewater residues in new products to strengthen circularity. For example, Skoghall site in Sweden and Heinola site in Finland cooperate with the Swedish University of Karlstad and other companies in the materials value chain to create bio-based products such as bioplastics and hydrogen gas from biosludge.

At Anjalankoski site in Finland, the wastewater treatment plant's sludge is



Accounting principles

Residuals and waste in the Group's production processes are measured by the process residuals utilisation rate covering process waste and residuals, for example, ash, sludge, chips and wood waste from production units. Utilisation includes energy generation, landscaping, landfill construction, road construction, pulp manufacturing, brick and cement manufacturing, agricultural use as well as new approaches and products. The scope excludes saw dust and wood cutting savings for pellets, tall oil, turpentine, lignin, sodium bisulphite, biocomposite, and soap which are considered products, not waste or residuals. The figures cover process-related residuals and waste from all production units, excluding joint operations. Residuals and waste that do not relate to production processes are reported separately. The figures are consolidated as dry tonnes.

Material use by type covers renewable and non-renewable process raw materials used for products and their packaging as delivered to Stora Enso's production units, including joint operations. For recycled board and paper, and purchased paper, 90% of the weight is accounted for as an estimation for renewable content. Other process raw materials are largely or entirely non-renewable: pigments and fillers, chemicals and plastics. Wood is converted from delivered cubic meters to fresh tonnes (including water content) by using an average conversion factor for tree species processed by Stora Enso. Plastics include fossil-based virgin plastics 56,170 tonnes, bio-based virgin plastics 5,500 tonnes and recycled plastics 425 tonnes.

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utilised as a soil improver instead of using it for energy production. This renewable source of nutrients replaces industrially manufactured, energy-intensive nitrogen fertilizers of fossil origin and phosphorus fertilizers that consume scarce natural resources. In parallel, it helps to control agricultural nutrient emissions into waters and enhances carbon sequestration in fields.

To further improve operational circularity and efficient use of resources, Stora Enso's Nymölla site in Sweden and Enocell site in Finland deliver ash to be spread on forest land in Sweden and Finland. By recycling the ash back to forest, the Group compensates for the removal of nutrients occurring from biomass removal. This secures the company's long-term production capacity and prevents acidification.

Skoghall site and Stora Enso's own forest nursery in Sjögränd, Sweden collaborate to explore how the growth of pine and spruce plants can be improved using pellets based on nutrients and ash which could potentially substitute peat with sludge to grow plants.

Ways of working

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. Local environmental stewardship at the mills, including water and energy management and resource efficiency, is supported by third-party ISO 14001-certified environmental management systems. This ensures continuous improvements in the most prioritised environmental issues, including remediation when necessary.

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 Stora Enso's [Environmental Guidelines](#). For Stora Enso's environmental investments and liabilities, see [Financials](#).

Policies and guidelines

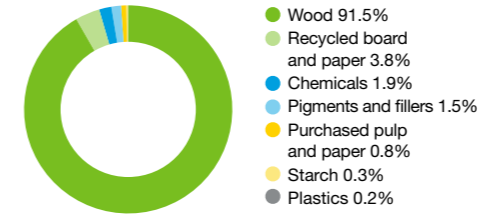
- Stora Enso Code
- Environmental Guidelines
- Wood and Fiber Sourcing and Land Management Policy
- Supplier Code of Conduct
- Practical Guidance for Stora Enso's Suppliers
- Purchasers' Instructions
- Sourcing Policy and Sourcing Guidelines

Why it matters

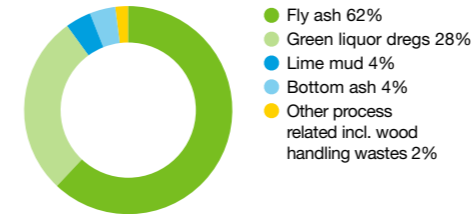
Circularity of materials is a key success factor measuring the company's capability to navigate sustainable profitable growth within the planetary boundaries. Consumers, legislators, companies and financial institution have an increasing focus on raw materials, CO₂ emissions, circularity and waste reduction. 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.

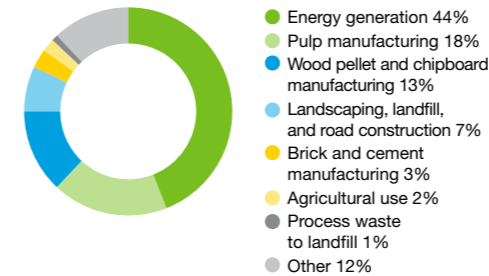
Material use by type, % 40.9 million tonnes



Process waste to landfill 61 thousand tonnes



Utilisation of process waste and residual materials 4.3 million tonnes



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Energy

Stora Enso continuously improves energy efficiency and strives towards energy self-sufficiency and low carbon solutions at its mills.

Targets and performance



Annual energy saving of -0.8% until 2030

Key Performance Indicator (KPI)	2022	2021	2020
Projected energy savings, % (MWh saved/MWh total energy used, electricity and heat)	-1.1%	-0.6%	-0.9%

Achieved – projected energy savings above the target. As of 2023 the annual target increases to -1.1%.

Actions to drive performance

- Using long-term energy supply contracts to ensure reliable and sustainable energy supply at a reasonable cost
- Energy management supported by certified ISO 50001 energy management systems
- Dedicated investment fund for energy and water efficiency investment projects

Other performance indicators	2022	2021	2020
Total energy consumption, TWh ¹	30.20	33.78	33.85
Heat consumption, TWh ¹	21.1	23.2	23.4
Electricity consumption, TWh ¹	9.1	10.6	10.5
Total energy consumption, MWh/tonne of saleable production ¹	3.71	3.83	3.91
Total fuel consumption, TWh	37.5	41.2	39.1
Sold heat, external, TWh	0.6	0.8	0.7
Sold electricity, external, TWh	0.2	0.3	0.3
Share of own electricity generation in total electricity consumption, %	63%	58%	61%

¹Including only board, pulp and paper units due to the metric for normalisation (tonne).

Local air emissions	2022	2021	2020
SO ₂ emissions, tonnes ¹	2,040	2,200	2,400
NO _x emissions, tonnes ¹	8,330	9,160	8,770
Emissions of fine particles, tonnes ¹	1,410	1,070	1,410
VOC emissions, tonnes	2,210	2,160	n/a

¹Historical figures recalculated due to additional data after the previous annual report.

Stora Enso's production units systematically work to improve their energy efficiency, supported by a third-party certified ISO 50001 energy management system. By the end of 2022, 97% of the Group's energy consumption was certified to the ISO 50001 energy management system standard (94% in 2021). For unit-specific information on certificates, see [Sustainability data by unit](#).

Stora Enso's sites generate and distribute energy to local district heating systems and industrial partners largely based on residuals from harvesting operations and production processes. At the end of the year, 14 sites sold heat to external energy use, mainly to local district heating systems.

Stora Enso's atmospheric emissions result primarily from the combustion of fuels for energy generation and from transportation. Emissions include CO₂, sulphur dioxide (SO₂), nitrogen oxides (NO_x) and fine particles. CO₂ contributes to climate change while SO₂ and NO_x emissions affect air quality and can cause acid rain and soil acidification. Volatile organic substances (VOC), primarily resulting from preparation of wood, are pollutants that in the presence of sunlight and together with nitrogen oxides form ground-level ozone cause health effects for humans and damages to ecosystems. Atmospheric air pollution and aerosol loading are both related to one of the nine planetary boundaries adopted by international science and that guide the Group's environmental agenda. Stora Enso works to reduce air emissions from point sources using advanced technologies such as scrubbers and boiler process control systems.

The central energy and water efficiency investment fund is another important tool to implement energy savings effectively. In 2022, the fund was earmarked for energy and water efficiency investment projects at Stora Enso's units.

Energy and water efficiency fund	2022	2021	2020
Energy and water efficiency fund, total size EUR million	10	11	7
Number of projects financed	29	37	37
Projected annual energy savings, GWh	84	163	123
Projected annual water savings, million m ³	2.7	1.9	n/a
Equivalent of Stora Enso's energy consumption	0.3%	0.4%	0.3%



Accounting principles

Unless otherwise stated, energy figures cover all Stora Enso's production units, excluding joint operations. Energy consumption figures exclude real estate facilities due their low materiality, heat used for electricity generation, sold energy, and on-site transportation. Local factors are used at the units when calculating the energy content of the used fuels. Majority of Stora Enso's heat consumption is consumed in the form of steam.

Electricity purchased from Pohjolan Voima Oyj (PVO), where Stora Enso is a minority shareholder with a 15.61% ownership stake, is counted in own electricity generation. Projected energy savings include savings from the investments for which the reporting year is the first year with a full year impact. The energy saving is reported as % reduction compared to the total energy consumption during the year without the efficiency investments. In general, a full year impact of an energy saving investment takes place in the following year after implementation. The projected energy savings exclude packaging converting units and joint operations.

For other air emissions, reporting is based on unit-specific direct measurement of emissions.

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Ways of working

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 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, combined heat and power production, and shareholdings in power generation companies such as Pohjolan Voima Oyj and Teollisuuden Voima Oyj in Finland. In 2022, emphasis was given to ensuring the availability of fuels due to changes in the global business environment. Read more about Stora Enso's energy self-sufficiency in [Our strategy](#).

Policies and guidelines

- Policy for Energy and Carbon
- Environmental Guidelines
- Supplier Code of Conduct and Practical Guidance for Stora Enso's Suppliers

With access to renewable biomass and fossil free electricity, the Group is well positioned to contribute to green transition.

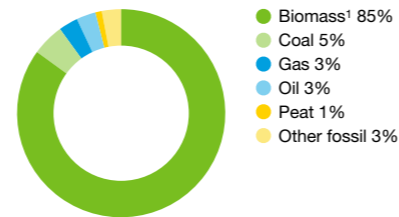
Investment into renewable energy at Enocell pulp mill

Stora Enso invests EUR 10 million at its Enocell pulp mill in Finland to replace fossil-based heavy fuel oil with renewable pitch oil. This will reduce the environmental impact of the operations and help in reaching the Group's target for reducing greenhouse gas emissions. Enocell aims at becoming a site running 100% on bio-energy. Read more [here](#).

Improvement of energy efficiency and reduction of carbon footprint at Imatra Mills

Stora Enso invests EUR 10 million in the chemical recovery line at its pulp mill in Imatra, Finland to increase the capacity of the unit's recovery line by upgrading the black liquor evaporation technology. The higher dry matter content of black liquor will improve energy efficiency and increase the share of biofuel, further reducing the share of fossil fuels used by the mill. The project is part of the Imatra Mills' CO₂ roadmap, which aims to reduce the mill's carbon footprint. The improvement will be completed by end of 2023.

Fuels



¹ Biomass corresponds to renewable energy.

Why it matters

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. With access to renewable biomass and fossil free electricity, the Group is well positioned to contribute to the green transition.

During 2022, energy markets were heavily affected by the invasion of Russia to Ukraine. As a consequence, Stora Enso decided to stop importing from Russia, including also natural gas and oil. The majority of the Group's fuel use is biomass residues from forestry and industrial operations, and along with other development actions, the related changes were managed without material group level impacts on emissions.

The latest energy market changes are expected to further accelerate the Group's work to reduce fossil CO₂ emissions.

Stora Enso's energy objectives

- Continuous improvement of energy efficiency and strive towards energy self-sufficiency at the mills.
- Increasing the share of biomass and low fossil carbon fuels whenever technically and commercially feasible.
- Aspiration to develop supply chains for non-fossil fuels for the Group's operations where they do not exist.
- Minimising cost and risk when sourcing supplementary energy, with a preference for low fossil carbon energy sources.
- Suppling low fossil carbon energy that helps decarbonise local and national energy systems when technically and commercially feasible.

› For further information, see [Stora Enso's Policy for Energy and Climate Change](#).

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Water

Water has a fundamental role in the biosphere regulating the amount of biomass and impacting the amount of carbon in the entire Earth system. Freshwater plays a central role in Stora Enso's production processes and is a key component in forest growth. Stora Enso strives to reduce its impact on the sites' water sources and aims to navigate within the science-based planetary boundary for freshwater change.

Targets and performance



Decreasing trend for process water discharge per saleable tonne (m³/tonne) from 2016 baseline (27 m³)



Decreasing trend for total water withdrawal per saleable tonne (m³/tonne) from 2016 baseline (59 m³)

Key Performance Indicator (KPI)	2022	2021	2020
Process water discharge per saleable tonne of pulp, paper and board (m ³ /t)	31	31	31
Total water withdrawal per saleable tonne of pulp, paper and board (m ³ /t)	61	60	66

Not achieved – water performance normalised by tonne was partly affected by lower production levels compared to the baseline year. During 2022 Stora Enso committed to a new water target to reduce specific process water discharges per saleable tonne (m³/tonne) by 17% by 2030 from the 2019 baseline year.

Actions to drive performance

- All industrial units required to comply with new Water Management Requirements in order to standardise water improvements across industrial divisions
- Recycling of water within the sites, when possible, to reduce the need for water intake
- Minimising the use of process water, and cleaning using the best available technologies

Other performance indicators	2022	2021	2020
Total water withdrawal, million m ³	503	529	554
Process water withdrawal	271	296	281
Cooling water (net) withdrawal	232	233	273
Water consumption, million m ³	19	20	19
Water consumption, million m ³ /tonne ¹	2.4	2.5	2.3
Process water discharges, million m ³	252	272	263

¹ Historical figures recalculated due to divestments after the previous annual report.

Stora Enso's board, pulp and paper sites contribute to over 99% of the Group's total water withdrawal. In 2022, Stora Enso committed to a new water performance target to reduce specific process water discharges per saleable tonne by 17% by 2030 from the 2019 baseline year. The target for decreasing trend for the total water withdrawal remains, and extensive work involving workshops in the mills were executed during 2022 to identify water reduction actions.

Stora Enso's industrial units are required to comply with the new Water Management Requirements, which have been established to standardise water improvement work across all divisions and to achieve integrated water, energy, and cost savings.

Stora Enso invested a total of EUR 14 million in water-related improvements across all operations in 2022. The central energy and water efficiency fund specifically supported water-related investments of EUR 1.4 million at the Imatra, Ingerois and Skoghall sites. The investments are estimated to reduce the Group's water discharges annually by 2.7 million m³ and total costs by EUR 1.4 million.

Compliance with legislation and environmental permit limits are monitored by the sites and reported to the environmental authorities. Non-compliances and incidents are reported by sites continuously as they occur, and consolidated to Stora Enso's management and the Board of Directors on a quarterly basis. Significant incidents are reported immediately. For details of significant environmental incidents and violations of environmental permits in 2022, see chapter [Environmental incidents](#).



Accounting principles

Total water withdrawal includes process water and cooling and non-contact water intakes by board, pulp and paper mills as cubic metres (m³). Process water discharges include the discharges of board, pulp and paper mills as cubic metres (m³). The water withdrawal and discharges are normalised by dividing water m³ with the total production of board, pulp and paper as saleable tonnes (t) during the same period.

The reported water consumption includes estimated water in products, residuals and waste, as well as volumes of evaporated water to air from process water cooling towers, from waste water treatment plants and from cooling towers for non-contact water at our mills. Sawmills, corrugated production and joint operations are excluded from the figures. Historical figures recalculated due to organisational changes or reporting corrections after the previous report. The calculation of water consumption builds on the Confederation of European Paper Industries' (CEPI) method of describing water use and consumption, and Swedish Environmental Research Institute's (IVL) report on Water Profile for the Swedish forest industry.

Board, pulp and paper sites monitor process water discharges, amounts of suspended solids, chemical oxygen demand, total organic carbon, phosphorous, nitrogen and absorbable organic halogen compounds, and water temperature and pH. Monitoring and reporting are conducted daily, monthly or annually depending on the sites' operations and environmental permits.

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Water effluents and water stress

Stora Enso applies the WRI Water Aqueduct Tool to assess water-related risks at its production units. According to the tool, four of Stora Enso’s units with minor local impact operate in regions with High Baseline Water Stress: corrugated units Łódź in Poland, Tallinn in Estonia, and Jiashan in China (operations closed in October 2022), as well as Näpi sawmill in Estonia. During 2022, 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 21,000 m³, which is also well below 0.1% of the Group’s total water discharges.

Production at Stora Enso’s board, pulp and paper units requires large amounts of water. The units withdraw process and cooling water almost entirely from surface waters. In 2022, 99.9% of total water withdrawal was from surface water, less than 0.1% from municipal or groundwater sources. After use, the process water is cleaned in treatment plants before discharging it back into the local environment. Only around 4% of water 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 released without treatment in most cases.

In 2019, there was an outbreak of legionella-related infections in the Ghent harbour area in Belgium. A formal investigation was initiated and samples were taken from cooling towers in the area, among them the Stora Enso 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 Belgian Council Chamber decided in February 2022 to refer Langerbrugge

and three individuals to the competent criminal court. Stora Enso also informed all stakeholders of its intention to conclude a settlement agreement with all aggrieved persons.

Modernised wood handling reduces use of process water

Imatra Mills’ wood handling upgrade project, which commenced in 2021, has reached completion – decreasing the use of water by 85% or 500 million litres of water per year. Stora Enso invested EUR 80 million to centralise and modernise wood handling at Imatra Mills in order to enhance its production capabilities for premium packaging board.

Ways of working



Stora Enso’s approach to water stewardship is built upon assessment of local conditions at sites and in the nearby water basins, mapping water use to identify the potential for savings, setting goals according to group KPIs and local priorities, investments in technology, measuring performance, and communicating and engaging with stakeholders. Stora Enso’s sites set quantified water targets based on local context and commit to the Group process water discharge target. Performance development is managed within the respective sites’ management system.

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 sustainability assessment for innovation projects. Read more in the [Environmental Guidelines](#).

Policies and guidelines

- Stora Enso Code
- Environmental Guidelines
- Policy on Wood and Fiber Sourcing, and Land Management

Why it matters



Water stewardship is an area of increasing strategic importance and provides opportunities to reduce costs by using water and energy more efficiently. Optimising water 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 aims to improve water performance through targeted investments combined with continuous improvements in day-to-day activities. This helps to prepare for stricter compliance requirements following the introduction of the EU Industrial Emissions Directive and future permit requirements. Stora Enso follows the development of Science-Based Targets for Nature and its applicability on water and nutrients to influence the company’s future water agenda.

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. Stora Enso identifies water related risk in operations through assessment of water scarcity, failures of water related equipment, flooding, run-off and rising water levels, and raw water temperature implications.

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. Water available to trees and plants in terms of soil moisture, precipitation and evaporation is also critical for supporting and regulating biosphere processes related to carbon and biogeochemical cycles.

Increased recycling and reduced fresh water needs

A new wire cleaning concept at Ingerois site in Finland will replace the traditional high pressure showers and reduce raw water use by increasing recycled water in cleaning. Total expected annual water savings will be 1.6 million m³ (23% of total water use at Ingerois) and electricity savings 495 MWh. This will result in reduced natural gas consumption for heating of the water due to better water circulation amounting to 6,000 MWh (2.2 % of total annual heat consumption). The reduced natural gas use also reduces CO₂ emissions. The work will be completed by end of 2023.

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Environmental incidents in 2022

Stora Enso has Group-wide reporting and management processes in place for environmental incidents occurring at its production units. The Group's objective is to have no environmental incidents, but unexpected process events can occasionally result in temporary breaches.

Targets and performance



Zero non-compliance events

Key Performance Indicator (KPI)

	2022	2021	2020
Number of significant non-compliance events ¹	15	8	8

¹ Historical figures recalculated due to additional data after the previous annual report.

Not achieved – significant non-compliance events occurred despite prevention measures. This was mainly due to an increase of reported cases occurring in Forest (Wood Supply Sweden including Sydved) and Wood Products divisions.



Accounting principles

Reporting includes environmental incidents involving non-compliance with environmental legislation or permits, or a significant stakeholder concern related to environmental performance. Reporting covers production units and forestry operations, excluding Stora Enso's joint operations.

Unit	Incident	Corrective action
Imavere	The permit limits for Biochemical Oxygen Demand (BOD), suspended solids and phenols in water from the log yard wastewater were exceeded during internal control monitoring due to insufficient water treatment practices relying on oil separator capacity to treat the increasing amounts of pollutants in the circulated water.	Cleaning of the water discharge prior to the ditch. Investigation ongoing of new technical solution for wastewater treatment to be brought into use in 2023.
Launkalne	The permit limit values for Volatile Organic Compounds (VOC) and formaldehyde were exceeded in the beam production unit due to deficiencies in current beam mill air conditioning and ventilation to match the production capacity.	Evaluation of air conditioning and ventilation effectiveness in beam mill and preparation of actions. Environmental permit renewal in 2023.
Gruvön	The permit limit for Chemical Oxygen Demand (COD) was exceeded due to failures in cleaning and maintenance procedures for the rainwater collection system.	Cleaning of the rainwater system and additional monitoring. Investment in separator for oil and solid particles being planned.
Enocell	The truck workshop water collection system failed due to oil separator problems. Water from the separator outlet flowed to the site collecting pond with only natural infiltration.	Investigation of alternative place for washing trucks and ensuring no oil ending up to the lake after the collection pond. Planning of oil separation system renewal started.
Enocell	The monthly permit limit for COD was exceeded in April due to runnability problems caused by the switch away from birch and limited availability of urea following the start of the Ukraine/Russian war in combination with high water flows during snow melting.	Process modifications and increased dosing of urea to the wastewater treatment plant. Investment investigations ongoing to improve pulp washing capacity and thereby reduce the COD load on the effluent treatment.
Sunila	The monthly permit limits for COD, phosphorus and suspended solids were exceeded in October. A combination of high pulp production, shortage of nitrogen and low levels of active bacteria in the wastewater treatment plant led to insufficient purification.	Pulp production was reduced, a mill-wide COD mapping was carried out, followed by an additional maintenance stop to correct detected leakages and reduce COD load in the effluent. Optimised airflow in wastewater treatment in combination with increased dosing of urea and addition of flocculation chemicals to capture phosphorous.
Jönköping	Contaminated soil caused by old leaking underground tanks discovered during excavation and constructions work.	Contaminated soil, masses and polluted water removed and transported for treatment, and further replaced with new sand and soil.
Hylite	The air emission limits for dioxins and furans exceeded due to lack of sulphur dosing equipment to control the air emissions.	Sulphur dosing equipment installed. Investment in bag filters pending investigation.
Sydved	Soil preparation done in restricted area with ancient remains due to conditions in the permission did not reaching the soil preparation team. The incident occurred in 2019, but the police report was filed by the County Administrative Board in 2022. Sydved harvested 153 spruces within a stand with high nature value. The trees were cut due to infection by spruce bark beetle outside the original harvest plan and the Forestry Board filed a police report.	Company fine was paid. Employees were informed and workshops held with contractors and buyers emphasising the company instructions and the County Administrative Board. The analysis is that this is not a reoccurring problem and measures were taken to ensure that the involved personnel and entrepreneur are aware of applicable instructions.
Wood Supply Sweden	Damage to soil in area with ancient remains where harvest residues were left on the ground. The conditions in the permission accepted driving in the restricted area if damage was avoided and residues were removed. Measures to prevent damage taken but due to wet weather the soil was damaged, and the residues were not removed. The incident occurred 2020 and was reported to the police by the County Administrative Board in 2021 and case was closed in 2022. 70 trees were harvested in a protected area due to failure in communication between the planner and the machine operator.	Company fine was paid. Change in work structure to avoid similar cases in the future. Training with the machine operator and the harvesting team performed.
Ostroleka	Damage to soil in restricted area close to an ancient remain due to insufficient marking of the area in the harvesting instruction and communication with the harvesting team. The County Administrative Board has filed a police report. The annual permit limit value for Total Reduced Sulphur (TRS) exceeded in the boiler due to technical problems in the black liquor oxidation system. The annual permit limit value for SO2 exceeded in the recovery boiler due to technical problems in the gas collection and scrubber system.	Training and improvements made in the communication procedures. Repairs of oxidation system piping will be finished in January 2023 and further preventive actions will be implemented during Q1 2023. Investments made in the concentrated non-condensable gas (CNCG) collection system and scrubber. Completed and working since August 2022.


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Employees

Stora Enso promotes inclusion and diversity and is committed to ensuring an equitable workplace for all. Professional and personal development of employees is key to success.

Targets and performance

 Increase the share of female managers to 25% by the end of 2024

Key Performance Indicator (KPI)	2022	2021	2020
% of female managers among all managers	23%	23%	23%

On track – the share of female managers slightly increased during the year.

Actions to drive performance

- Linking the target to increase the share of female managers to remuneration as a component of the long-term incentive programme
- Promoting culture of inclusion through global ‘We Belong Here’ workshops for all employees
- Results and recommendations from the pilot initiative to improve gender diversity in operations in Sweden to be shared within the organisation. Other similar initiatives taking place across the Group
- Global recruitment principles for diversity to be implemented across the organisation to enhance inclusive recruitment

Other performance indicators	2022	2021	2020
Average number of employees	21,790	23,071	24,455
% of female employees among all employees	25%	24%	24%
Women in the Group Leadership Team	4 out of 11	5 out of 13	6 out of 15
Women in the Board of Directors	3 out of 9	3 out of 9	2 out of 9
Age groups, all employees %			
Up to 30	16%	16%	16%
31–50	53%	54%	53%
51 and over	31%	30%	31%

For employee distribution by country, see Note 3 in Financials.

Female employees’ compensation compared to male employees’ compensation¹

	2022	2021	2020
China	92%	92%	90%
Finland	93%	92%	92%
Poland	91%	91%	90%
Sweden	100%	99%	99%

¹ Ratios are weighted averages based on gender salary comparisons within each country’s employee categories (career levels)

Starting in 2022, Stora Enso now tracks how satisfied its employees are on the efforts to support diversity and inclusion as part of the global employee engagement survey. In 2022, the score was in the middle range compared to external benchmark.

Gender pay equity survey

In 2022, a pay equity study was carried out by an independent third party covering all office workers at Stora Enso. The purpose of the study was to identify any unexplained gender pay gaps, for example, by employee’s work experience, performance, job grade or location. The results were at an average level compared to other industrial companies and showed that, for most part, the pay was concluded to be equal, however, some unexplained pay gaps were found. Both the annual merit-based pay increases and the short term incentive payments are equitable between genders. Actions to close the unexplained pay gaps will take place in 2023. Later on, Stora Enso will expand the study to include production workers. Pay equity development will be monitored on annual basis and corrections made if necessary.

Living wages

Since 2015, Stora Enso has conducted a bi-annual living wage analysis using the comparison data and methodology provided by BSR, a global non-profit organisation. In 2021, more countries and locations were added to the analysis and the study was carried out in 13 countries, representing as many as 95% of the Group’s employees. 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.

Accounting principles

In 2022, Stora Enso launched a new target for share of females among all managers. This target replaced the previous employee-related target on Leadership Index. The share of female managers at Stora Enso is accounted for as the headcount of all permanent managers with at least one direct report. The manager must be permanent, but the subordinates can be temporary or permanent. This measure excludes joint operations.

The average number of employees is calculated as on average of full-time equivalent (FTE) numbers per month. The figures include 50% of the employees at Veracel in Brazil and Montes del Plata in Uruguay. In addition to own employees, Stora Enso’s units typically have contractor employees working at the sites. Annual maintenance also typically creates a peak in the number of contractor workers at the company’s board, pulp, and paper mills for a short period. Many of the production units, particularly in Finland and Sweden, also have a systematic approach to employ students as interns for shorter periods during the summer holiday season. Stora Enso also relies on contractors in its forestry operations and Packaging units in China. The number of contractor employees is not consolidated at group-level.

Female employees’ compensation compared to male employees’ compensation is calculated as a weighted average within each country’s employee categories, as applicable. Figures are for the four largest countries in terms of the total number of employees.

Stora Enso’s lowest wages compared to local minimum wages are presented for the most relevant locations based on an internal assessment including any 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 the Group’s lowest wage is, compared to the local minimum wage. The figures for Brazil and Uruguay include the employees of the 50%-owned joint operations in Veracel and Montes del Plata.

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Stora Enso complies with minimum wage regulations and pay above the legal requirements in most high risk countries. For more information, see the [Consolidated sustainability figures](#).

Leadership development

Stora Enso continuously invests in the development of its leaders and managers. The global Stora Enso Manager programme for first-line managers continued in 2022. The programme is standardised globally and delivered in seven different languages. The Lead Through People programme supports experienced managers new to the company and non-line managers in developing their leadership skills to drive the Group's [People Promise and Expectations](#). The Leading Leaders programme equips leaders with skills and tools on how to lead other leaders. In 2022, Stora Enso also launched a new Leading Without Being a Manager programme to support leaders without a formal line management role.

To embed the Group's sustainability agenda into the organisation with an even stronger purpose and pace, the Group Leadership Team hosted a two-day conference for 200 leaders. External speakers covered topics such as the planetary boundaries, fast-changing world of geopolitics and how supportive culture and leadership can drive solutions for sustainable business.

Stora Enso also ran and participated in several external leadership programmes around sustainability, agile ways of working, customer value, performance and innovation.

During 2022, Stora Enso continued to run an internal mentoring programme available to all employees to enhance learning culture and to promote professional and personal development. Approximately 360 mentor-mentee pairs have been matched since the launch of the programme.

Digital Access for All

The need for digitalisation has increased dramatically, and in 2021 it was decided that

everyone at Stora Enso should have digital access. As a result, 'Digital Access for All' initiative was launched during 2022, involving the creation of thousands of new user accounts and the procurement of sufficient hardware. Every employee now has online tools, information and training easily available via a simple virtual desktop login.

Ways of working



Stora Enso sets and communicates clear targets for everyone and helps employees understand how they contribute to the company's success, agrees development needs and desires, and offers opportunities to receive and give feedback regularly. The aim is that all employees are involved in at least one formal performance appraisal discussion with their manager each year.

Fair labour

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 the European Works Council in order to establish and develop an open and confidential information and consultation procedure between the company and its employees on the EU/EEA level.

At the end of 2022, approximately 85% of Stora Enso's employees were covered by collective bargaining agreements (80% in 2021). The figure is an estimate due to differences in national legislation. In China, the right to freedom of association and collective bargaining is stipulated by law. Stora Enso's Packaging units in China, which

account for the majority of the Group's employees in the country, have established unions that form part of the state-authorized China Labour Union. In addition, Stora Enso operates a board mill and forestry operations in China. These units have formed worker councils, which serve as channels for direct feedback and dialogue between employees and management.

Stora Enso's bi-annual self-assessment regarding compliance with the Group's Minimum HR Requirements was last carried out in 2021. The assessment includes areas such as working hours, basic employee rights, working conditions and non-discrimination.

Support in responsible exits and restructuring situations

In organisational restructuring situations, it is important that the impacted employees understand the reasons for the change and are supported in finding work elsewhere. Every employee should be treated with respect and be given access to support throughout the restructuring process. Initiatives are often developed on country or local level to suit the local circumstances and requirements.

During 2022, the Group took the decision to responsibly exit four paper production sites and to dispose of its operations in Russia to local management. At the end of the year, the Paper division was dissolved, resulting in a maximum of 210 people being affected. Many of these people have already been transferred to other divisions and functions, and the Group continues to look for new opportunities within Stora Enso for the remainder of those affected. Furthermore, at the end of 2022, Stora Enso's packaging site in Jiashan, China was closed and production moved to two other sites. Affected employees were offered relocation opportunities or a severance payment. For more information about significant changes during the year, see [Consolidation of sustainability statements](#).

In December 2021, a court ruling in France sentenced Stora Enso to pay damages to former employees following the closing down of the Corbehem, France, site in 2014. At the end of 2022, the case was still being processed in the Supreme Court.

Policies and guidelines

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. 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 and Human Rights Guidelines
- Stora Enso's Health and Safety Policy

Why it matters



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. Read more in the Strategy section, [Our people](#).

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Safety

Stora Enso is committed to ensuring healthy and safe workplaces for all employees across its business operations. The company's aim is to get everybody home safe, every day.

Targets and performance



Total Recordable Incident (TRI) rate of 5.3 by the end of 2022

Key Performance Indicator (KPI)	2022	2021	2020
TRI rate	5.9	6.2	6.1

Not achieved – Stora Enso's safety performance remained stable, but the milestone for 2022 was not achieved. The areas of improvement are being addressed within the divisions.

Actions to drive performance

- Updated Supplier Safety Trail training in 2022 to promote supplier and contractor safety
- Continuous extension of coverage and use of the Stora Enso safety notification and observation system (SMART) available to both employees and contractors
- Encouraging employees and contractors to identify and report unsafe situations or actions and providing a hotline to allow them to speak up in confidence
- Linking the TRI rate target to remuneration as a component of the short-term incentive programme

Other performance indicators	2022	2021	2020
Lost-time accident (LTA) rate	4.9	5.0	5.1
Illness-related absence, %	4.1	3.8	3.6
Number of safety observations reported per employee	12.7	11.6	12.2
Number of employees covered by external safety management system	17,846	16,316	18,841
% of all employees	93%	90%	85%

Following official recommendations and careful planning, the Group's maintenance turnarounds were successfully executed in 2022 without any serious Covid-19 escalations. In running the daily operations, Stora Enso continued to adhere to the national and local authorities' recommendations. A hybrid working model is in use whenever possible.

In 2022, three fatal accidents occurred at Stora Enso's sites, including one Stora Enso employee. In January, a contractor's employee was caught under a falling load from his forklift at Varkaus saw mill in Finland. In July, an operator was caught by moving machinery while troubleshooting at Ostroleka site in Poland. In September, a contractor's employee passed away because of injuries sustained at Veracel's eucalyptus plantation in Brazil. All these incidents have

been analysed in cooperation with local authorities and the learnings from these tragedies will be acted upon and shared within the Group to prevent such accidents from reoccurring.

Stora Enso recognises that more can be done to improve performance in this area and to ensure that everyone is safe, every day.

Ways of working



Stora Enso has a 'Fair and Just' approach to all aspects related to safety. The approach provides a transparent way of managing outcomes of safety investigations. It also serves as a tool to facilitate reviews and discussion of safety incidents and other unsafe behaviour.

Stora Enso's units have safety training programmes to ensure all employees have needed health and safety related competencies and skills, and that employees can keep their knowledge up-to-date by receiving regular safety training. Safety trainings are mandatory for our employees

Supplier Safety Trail training promotes supplier and contractor safety.



Accounting principles

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 enables future benchmarking with peers and companies in other sectors. The reported TRI and LTA rates show the number of incidents and lost-time accidents as per one million hours worked for own employees. Joint operations Veracel and Montes del Plata are fully consolidated due to the inherent nature of occupational safety.

Stora Enso also monitors contractor accidents in separate categories for on-site accidents and logistics incidents. Certain administrative functions and sales offices are currently excluded from the Group's safety figures due to data availability related to a relatively small headcount and lower occupational safety risk compared to production units. 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.

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where applicable and are provided during paid working hours.

The annual Stora Enso Safety Week, organised since 2019, is one important way to bring everyone together to focus on safety. In 2022, the week highlighted the theme “Working Safely is our Choice”. During the week, the Stora Enso Good Safety Practice Awards – a celebration of good safety practices – were delivered for the first time in three categories: Controlling Safety Risks, Developing Safety Culture and Safety Innovation.

Providing a safe working environment and operational integrity is under constant review and improvement at Stora Enso and is based on international standards, but with an ambition that reaches far beyond mere compliance. Currently 51 out of 53 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.

During 2022, Stora Enso restructured its Occupational Health and Safety function to align with the new decentralised operating model and improve safety performance, and as a result, safety responsibility is now fully within divisions and functions. The Safety organisation in each division and function maintains a strong focus on all safety-related issues within the respective division, at the production units, and with contractors. Sourcing and Logistics will also continue to stress safety through the Stora Enso Supplier Code of Conduct. Safety remains a key focus at every level of the organisation, from the Board of Directors to the local units, with active collaboration between divisional and functional representatives.

Read more about our approach to safety in chapter [Our people](#).

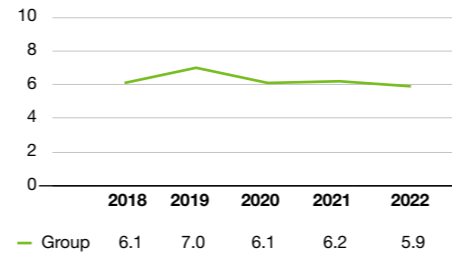
Policies and guidelines

Stora Enso’s Health and Safety Policy 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

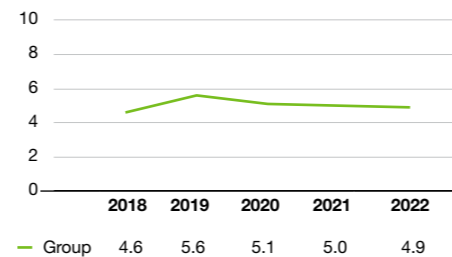
Total recordable incident rates (TRI)¹

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



Lost-time accident rates (LTA)¹

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



¹ For Stora Enso employees, including joint operations.

Why it matters



The health and safety of Stora Enso’s employees remains a key priority. The Group’s goal is to provide an accident-free workplace. The work for health and safety must be at the core of everything we do, every day. The continuous improvement in the area is a marathon where everyone’s commitment is essential.

Stora Enso Good Safety Practice Awards

Stora Enso’s global Safety Week is a yearly event supporting safety awareness and the development of a safer working environment. In 2022, the Good Safety Practice Awards in three categories were distributed for the first time as a part of the Week’s activities. The Controlling Safety Risk award went to Mosina Mill for practices significantly improving safety in working at heights and following the requirements of the Stora Enso life-saving rules.

The Safety Culture was awarded to Langerbrugge Mill for their innovative safety video creation that supports sharing the Stora Enso safety values and creates a joint understanding of safety requirements in a multi-national working environment including contractors.

The Safety Innovation award went to Varkaus Mill for the “Jussi Cargo Strap”, an innovation that offers a safe and simple way to mitigate risks when tying up cargo onto trucks. The development of the tool shows strong commitment to Stora Enso’s safety culture.

In all categories, the focus was on the ability of other units to implement or benefit from the Good Safety Practice. The ideas were shared throughout the organisation in joint online events during spring 2022.

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Business ethics

A value-driven culture promoting honesty, transparency and ethical behaviour is key to Stora Enso's long-term success.

Targets and performance



Maintain a positive trend in the Ethics and Compliance Index

Key Performance Indicator (KPI)	2022	2021	2020
Ethics and Compliance Index ¹	8.7	n/a	n/a

¹The previous Code Index has been updated to Ethics and Compliance Index, an average of five Ethics and Compliance-related questions in the annual employee survey. The previous equivalent Code Index was 86 out of 100.

In progress – measurement of Ethics and Compliance index with new questions in Stora Enso's employee survey was reinitiated during 2022.

Actions to drive performance

- New Ethics and Compliance Strategy launched to align with the company's growth strategy focusing on innovation and value creation in the bioeconomy
- Increased instructions on competition law launched with roll-out to be completed during Q1 2023
- Further development of the Speak-Up Hotline to improve accessibility and to comply with the EU Whistleblowing Directive
- Increased focus on trade sanctions and export control following geopolitical developments
- Business Ethics added as a standard item on the regular Stora Enso All Employee Call

Other performance indicators	2022	2021	2020
Compliance control: no. of critical business partners reviewed through a third-party tool	90	119	149
Compliance control: no. of teams using Compliance Self-Assessment Tool	135	149	170
Code of conduct training completed, all employees	92%	n/a	n/a
Code of conduct training completed, office workers	97%	95%	n/a
Code of conduct training completed, production workers	89%	n/a	n/a
% of target group employees to complete the COMPLY compliance training	97%	99%	n/a
% of office workers to complete training on data privacy	98%	96%	92%

Non-compliance cases	2022	2021	2020
Potential non-compliance cases reported	153	117	86
Investigations of potential non-compliance cases closed by ECOMC ¹	140	98	84
Of which, identified proven cases leading to disciplinary action, legal action and/or process improvements	44	26	34
No. of cases resulting in termination of business relationships ²	17	11	6
No. of proven cases related to discrimination, harassment and/or bullying	12	11	10
No. of proven cases related to fraud and/or corruption	13	9	7

¹Including cases from reported previous years

²Including cases involving more than one employee being dismissed

Breakdown of potential non-compliance cases

Category	2022	2021	2020
Anti-trust	3	1	0
Conflict of interest	8	10	9
Corruption	27	18	6
Fraud	9	10	14
Discrimination, harassment and/or bullying	46	46	26
Working conditions	10	11	4
Health and safety	10	5	6
Other	40	16	21
Total	153	117	86

New Ethics & Compliance Strategy

The Stora Enso Ethics and Compliance Strategy explains how the Ethics and Compliance function supports Stora Enso's purpose and values, and contributes to the fulfilment of the Group's business strategy.

The Ethics and Compliance Strategy was revised during 2022 to better support the updated Stora Enso strategy, focusing on innovation, growth, and value creation in bioeconomy. A new overall purpose for Ethics and Compliance was adopted: "Building Trust through Integrity". The new purpose explains how Stora Enso's long-term success depends on trust and approval from all Group's stakeholders. Key areas for the culture of integrity are:

- Risk assessment and compliance
- Value-based leadership
- Ethical dialogue
- Speak Up – Listen Up



Accounting principles

Stora Enso's Ethics and Compliance Index is calculated as an average of five Ethics and Compliance-related questions in Engage, the annual employee survey. These questions are related to the [Stora Enso Code](#), the Group's code of conduct. The maximum rating is 10.

The compliance control of the critical business partner review monitors due diligence and any review processes that have been initiated in the third-party tool between January 1 to December 31 each year. The compliance control of the Ethics and Compliance Self-assessment Tool monitors the number of units that have been covered by this tool each year. The compliance control of the code of conduct training, COMPLY training and data privacy training all monitor the percentage of active employees who have completed the e-learning at the end of each year.

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Employee involvement

Ethical dialogue is facilitated through several communication activities to keep ethics and compliance high on the agenda. Awareness about compliance cases is increased through leadership training, Ethical Spotlights and Case Book – a compilation of cases of compliance and ethics violations reported globally. Ethics Ambassadors continued their work by running training sessions and providing support in their respective units. As examples of new communication activities, ethics and compliance is now a standard item on All Employee Calls, and Ethical Dilemma voting has been adopted to increase engagement.

The Stora Enso Code online training roll-out to office workers (nearly 9,000 employees) took place in 2021 which was shortly followed in 2022 by a tailor-made mandatory training programme to the broader 13,000 production worker base. This training is condensed, mobile-friendly and includes more tangible and practical topics for operating environments. At the end of the year, 89% of targeted employees had completed the training, and all new employees are invited to take the training within their first month of employment.

Stora Enso employees who face elevated ethics and compliance risks due to the nature of their work are required to complete mandatory, in-depth compliance training, COMPLY, and to annually sign off on updates. All office workers at Stora Enso are also required to complete training on data privacy. 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.

Recent improvements

Compliance with competition laws is a top priority for Stora Enso, and a number of improvements in this area were made during the year. Significant parts of the competition law section in the Business Practice Policy were updated. In particular, the number of memberships in trade associations was reduced and further internal control mechanisms and approval processes to mitigate competition law risks were implemented. Furthermore, Stora Enso -targeted training on competition law and the implementation of new practices in all business divisions and group functions continues.

Trade sanction and export control compliance was a key focus area for Stora Enso in 2022 in connection with the geopolitical crisis in Europe and globally. Stora Enso is committed to ensuring that it complies with all applicable sanction laws and regulations globally. In 2022, existing routine controls were reinforced and new controls added to ensure the Group avoided any engagement with sanctioned companies or individuals, and that import or export restrictions were not breached. Stora Enso also worked closely with its customers, suppliers, banks and other stakeholders to mitigate sanction-related risks that exist in both direct and indirect business transactions.

In order to comply with the EU Whistleblowing Directive, which came into force in 2021, Ethics and Compliance function re-built the ‘Speak Up’ whistleblowing channel and provided additional information in 15 languages. Also, the case register, documentation, and Compliance Investigation Guidelines have been adjusted and updated to reflect the requirements in the Directive.

Ways of working



Stora Enso’s Ethics and Compliance function is part of Group Legal, headed by the General Counsel reporting directly to the CEO. The Ethics and Compliance Management Committee, a governance body chaired by the General Counsel, monitors legal compliance and ethical business conduct continuously and meets quarterly.

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 function, 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. A screening process is also used when recruiting for top management positions.

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.

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. All cases are upon completion 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. 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. All cases are investigated and followed up on. In cases where a remediation plan is required, it is implemented together with relevant management representatives.

Policies and guidelines

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 policies include:

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

Why it matters



Stora Enso operates globally, including 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 license 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 behaviour.

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Human rights

When growing and harvesting trees, producing products or transporting materials, Stora Enso has an impact on people. As a global company, Stora Enso directly impacts over 20,000 forest owners, 21,000 employees, over 20,000 suppliers and thousands of customers.

Targets and performance



Ensure efficient implementation of the Human Rights due diligence programme

Key Performance Indicator (KPI)	2022	2021	2020
Implementation of the Human Rights due diligence programme	3 pilots targeting key risk areas	Remaining two development actions finalised	22 out of 24 development actions finalised in Group function processes

On track – continued focus on human rights due diligence.

Actions to drive performance

- Continuous alignment with EU proposal on Corporate Sustainability Due Diligence (CSDD)
- Long- and short-term remuneration incentives linked to improved performance on safety and diversity
- Continued focus on Sedex Member Ethical Data Audits (SMETA) and new labour requirements in the Forest Stewardship Council (FSC) chain-of-custody certification audits

Other performance indicators	2022	2021	2020
Number of production units registered in Sedex	26	29	30
Ratio of production units registered in Sedex	49%	48%	49%
Ratio of units audited by SMETA at least once since 2011	62%	59%	53%
Ratio of joint operations registered in Sedex	100%	100%	100%
Ratio of joint operations audited by SMETA at least once since 2016	100%	50%	50%

Continued focus on due diligence

Improving value chain transparency is a key component of due diligence. Stora Enso has been a member of the Supplier Ethical Data Exchange (Sedex) since 2011, a platform where companies share sustainability information with customers on unit level and Sedex Member Ethical Data Audits (SMETA) are carried out on a regular basis. Furthermore, Stora Enso is a member of EcoVadis where group level information is shared with customers to enhance transparency.

Stora Enso shares its journey towards better due diligence and learns from peers and experts by engaging through membership organisations such as the Global Business Initiative for Human Rights (GBI) and the World Business Council for Sustainable Development (WBCSD).

Training is another integral part of due diligence to enable integration of human rights into key business processes. Human rights is a core element in several training modules for Stora Enso employees, for example in Stora Enso's Code training for all employees. In 2022, a mobile friendly Code e-learning was rolled out to reach production workers, now covering all employees, and at the end of the year 92% of all employees had completed the training. This year's COMPLY training also addressed the close relationship between corruption and human rights. The annual mandatory Human Rights training for security guards at the 50/50 joint venture Veracel operations was carried out according to plan.



Accounting principles

Respecting human rights is integrated into the company's sustainability approach. This section represents how human rights impacts are connected to the environmental and social foundation of the approach.

Supplier Ethical Data Exchange (Sedex) is an ethical trade membership organisation. Audits are counted in based on the audit date. Stora Enso's audit cycle is three years.

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Stora Enso's key tools for human rights due diligence

Due diligence helps us understand and address the company's impacts on people.

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

Actions related to the Group's highest priority human rights issues

While Stora Enso considers all human rights to be important and respects them, the human rights identified as having highest priority remain its primary focus. 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

- Three fatal accidents occurred in Stora Enso's sites. Read more in chapter [Safety](#).

- The Stora Enso Supplier Day 2022 focused on safety and climate change. Read more in chapter [Sustainable sourcing](#).
- Short-term incentives linked to improved performance on safety. Read more in [Remuneration](#).

Fair labour

- FSC chain-of-custody audits started in all divisions in 2022, covering new requirements on core labour rights.
- Contracts terminated with several labour agencies in China following breaches of SCoC related to, e.g., working hours and social insurance payments. Read more in chapter [Sustainable sourcing](#).
- Stora Enso remains committed to freedom of association. A testament to that is the Global Framework Agreement. Read more in chapter [Employees](#).
- 'We belong here' workshops promoting inclusion and combating discrimination and harassment reached over 90% of all employees at the end of 2022. Read more in [Our people](#).
- Long-term incentives linked to improved performance on diversity. Read more in [Remuneration](#).

Acquisition and management of land and natural resource rights

- Sustainable resettlement in Brazil, Bahia: At the end of 2022, 182 hectares or 0.2% of productive land owned by Veracel remained occupied by social landless movements not involved in the agreements. Read more [here](#).
- Monitoring state land recovery in China, Guangxi: Recovery of occupied land continued in 2022 with 6,124 (2021: 6,650) hectares of land under occupation at the end of 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 73,133 (2021: 77,000) hectares of land in Guangxi, of which 53,437 (2021: 53,600) hectares is leased from state-owned forest farms. The remaining 19,696 (2021: 23,400) hectares, or 27% of the total area, is leased from village collectives, individual households and local forest farms, so-called social land. Stora Enso has returned some social land throughout the years in order to improve the operability of its land base.

- Community consultations, including Free, Prior and Informed Consent (FPIC), are a key element in Stora Enso's human rights due diligence and forestry operations, especially concerning land leasing and indigenous peoples' rights. 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 2022, 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 about how we work with indigenous people [here](#).

Grievance mechanisms

- Speak-Up Hotline is accessible for internal and external stakeholders and all cases are investigated. Read more in chapter [Business ethics](#).
- The Stora Enso Code training rolled out to reach production workers promoted grievance mechanisms. Read more in chapter [Business ethics](#).

- Local grievance channels for communities and other external stakeholders associated with Stora Enso's plantations and site in Guangxi, China, as well as the joint operations Veracel in Brazil and Montes del Plata in Uruguay.

Children's rights

- The child labour remediation programme¹ in Pakistan continued to focus on providing vocational training to students to improve their future employability as the programme reaches its completion early in 2023. Read more [here](#).

¹As part of our responsible exit from Pakistan following the 2017 divestment of the 35% minority holding in the equity accounted investment.

Ways of working

The commitment to respect human rights covers all operations, including the Group's employees, contractors, suppliers and neighbouring communities. Stora Enso takes human rights into account across its operations starting from the investment decisions, paying special attention to vulnerable groups, and encouraging the Group's partners to do the same. Stora Enso is committed to remedy situations where its activities have caused or contributed to adverse human rights impacts. Stora Enso reports on its human rights work annually and strives to align its reporting with the United Nation's Guiding Principles (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. Read more about how human rights are integrated into the business activities in [Stora Enso's Human Rights Guidelines](#).

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Policies and guidelines

Stora Enso is committed to the UNGP, which require companies to conduct due diligence to identify, assess, and remedy the impacts that their activities may have on people.

Relevant Stora Enso policies on human rights include:

- Stora Enso Code
- Human Rights Policy
- Supplier Code of Conduct
- Human Rights Guidelines
- Environmental Guidelines

Why it matters



Stora Enso supports human rights regulations that put all companies on an equal standing and help to ensure that people are treated with decency and respect. During 2022 two proposals for regulation embedding human rights were presented to the EU Parliament and Council: the Corporate Sustainability Reporting Directive (approved in November 2022) and the Directive on Corporate Sustainability Due Diligence. Guidance for alignment with the Taxonomy Minimum Safeguards were published in the interim until the aforementioned regulations are in effect. Read more about the EU Taxonomy alignment in the [Report of the Board of Directors](#).

Three pilots

In preparation for the upcoming EU Corporate Sustainability Due Diligence (CSDD) directive, Stora Enso, together with an external business and human rights consultancy, carried out three pilot projects focused on improving our internal controls for two high risk supply chains, as well as the due diligence processes in our own operations.

Expanding the SMETA process to include human rights risk assessment, Biomaterials Nordics

During a series of the SMETA audits at the Biomaterials Nordic mills, Stora Enso piloted an approach to integrate a human rights assessment into the SMETA audit framework and expanded the scope to include all employees as well as on-site contractors and other affected rights-holders where applicable. With the support of an external business and human rights organisation, Stora Enso tested a pragmatic approach that incorporates the CSDD requirements on human rights due diligence and emerging best practices. The pilot delivered a set of supporting materials including a handbook for implementation to be shared across divisions.

Improving internal controls for vulnerable groups, Forest division, Sweden

In Stora Enso's Swedish forest operations, activities such as clearing and planting are carried out by silviculture contractors, who predominantly employ migrant workers, often from Romania, Thailand, and the Baltics. Following media reports of unfair labour conditions and criticism voiced by the union targeting silviculture contractors and the forest owners, Stora Enso enlisted the help of an external business and human rights organisation. They carried out an impact assessment to help improve controls, and to provide practical advice on how to avoid or mitigate risks to migrant workers. The aim is to implement the learnings in the Group's Swedish operations and scale to other countries where relevant.

Deep-dive assessment of Paper for Recycling supply chain, Packaging Materials division, Poland

Paper for Recycling is an important supply category for Stora Enso. The project carried out a deep dive assessment of the potential risks to people in the lower tiers of the supply chain. An external assessment of internal control processes in relation to international best practices was also carried out. Paper for Recycling supply chain has potential for heightened risk due to the nature of the lower tier supply chain where paper is gathered through various means from retailers through municipal collection points, private waste management companies and by companies co-owned by municipalities.

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Community

With a global presence, Stora Enso engages with local communities around the world. By sharing time and materials, the Group aims for increased involvement in the communities and thereby strengthening its impact.

Targets and performance



Increase the percentage of working hours and in-kind donations in the total Community Investment (CI) to 70% by 2023, while also increasing the total CI

Key Performance Indicator (KPI)	2022	2021	2020
Community Investment (CI): % of working hours and in-kind in the total CI	41%	42%	41%

Behind – cash donations to emergency relief in Ukraine and Pakistan increased total community investment, but decreased the percentage of working hours and in-kind.

Actions to drive performance

- Employee volunteering promoted to increase employee engagement and support to local communities
- Continued focus on building community resilience to impacts of climate change and natural or man-made disasters

Other performance indicators	2022	2021	2020
Total voluntary Community Investment EUR million	2.0	2.0	2.7
Total amount of working hours spent by Stora Enso's employees in volunteer work equivalent of no. of weeks of working time	3,396	1,432	2,684
	85	36	67

During 2022, Stora Enso initiated a number of large cash donations towards humanitarian emergency relief. Three donations were directed towards the Ukraine crisis and one towards the emergency relief following the severe flooding in Pakistan. These relief donations were channelled through UNHCR. The large cash contributions resulted in the share of volunteer work and in-kind contributions decreasing to 41% (42% in 2021). When including joint operations in Brazil and Uruguay, the share was 22% (18%).

Stora Enso has a large presence in the Baltics and Poland, and employees in these locations have been actively volunteering their time, collecting in-kind donations and providing shelter to refugees. To support this, local management raised the number of annual volunteering hours from 8 to 16 per employee. The total monetary value of the community contribution towards Ukraine across the Group was EUR 0.25 million. Several operating units donated in-kind materials in response to the Ukraine crisis, such as boxes to help transport the food, clothes for the refugees and also cash donations to local charity organisations to help refugees arriving in neighbouring countries.

During 2022, the team at Stora Enso forestry operations in Guangxi, China, continued the installation of solar powered lights in local communities. A total of 390 lamps, 128 in 2022 alone, have been installed so far improving road safety as well as general feeling of safety at night. The lights utilise 40,000 kwh green power annually and benefit more than 68,000 local villagers in 32 communities.



Accounting principles

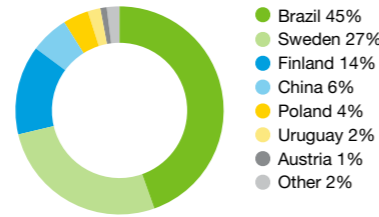
Unless otherwise stated, Stora Enso's community investment includes cash, and time- and in-kind donations converted to euros from all operations. Employee work time for community projects is converted to euros based on country-specific salary averages. 50%-owned joint operations in Brazil and Uruguay are consolidated following Stora Enso's ownership share. The Group's target is to increase the share of volunteer work and in-kind contributions, with continued growth in the total community investment. The target excludes 50%-owned joint operations due to the nature of community investment projects in these countries, where programmes cover wider societal issues with long-term investment needs.

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Voluntary community investment by region¹

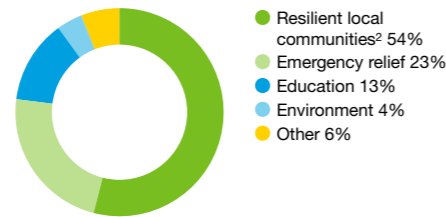
EUR 2.0 million



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.

Stora Enso initiated humanitarian relief donations towards the Ukraine crisis and flooding in Pakistan.

Ways of working



The form and frequency of the Group's engagement with local communities is shaped by the local context. In some areas, the interaction is through community representatives while other communities prefer direct and inclusive contact.

Many of Stora Enso's employees live in the communities and have a deeper understanding of the local context. The company involves local stakeholders in the planning process of its community investments to ensure the right benefits for the communities. Community projects are managed and funded locally to ensure that the communities close to the Group's operations are the main beneficiaries. The community projects are categorised under strategic focus areas: Education, Environment, and Resilient 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 impact that the 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 on Stora Enso's key tools for human right due diligence, see chapter [Human rights](#).
- Third-party certified management systems in place at production units that apply international standards such as ISO 14001, ISO 45001 and ISO 50001.
- Third-party forest management certification for the Group's own forestry operations and suppliers, such as FSC and 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 to the Group's operations, read more in chapter [Business ethics](#).

Policies and guidelines

Policies that guide Stora Enso's community relations include:

- Human Rights Policy and Guidelines
- Sponsorship and Donations Policy
- Community Investment Guidelines
- Volunteering Guidelines

Why it matters



When Stora Enso sources its main raw material wood and manufactures its products, it depends on local communities for its workforce and for 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.

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

Support to local communities in Bahía, Brazil

Stora Enso's 50/50% joint operation [Veracel](#) runs a pulp mill in Bahía, Brazil with associated eucalyptus plantations. Supporting communities' income generation and employment are top priorities on Veracel's sustainability agenda. Veracel supports local livelihoods by, for example, making some of its land available to family farmers, 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 2022, more than 1,600 families benefited from Veracel's family farming programmes. Also, to help support biodiversity and additional income for local families, Veracel allows honey producers to keep hives on company land and provides training and other support.

Managing the impacts of extensive forest fires in Uruguay

At the end of 2021, several forest fires affected almost 4,000 hectares of eucalyptus plantations of [Montes del Plata](#), Stora Enso's 50/50% joint operation in Uruguay, following a period of extreme temperatures and low humidity. Montes del Plata's employees and contractors worked together with various other local stakeholders to manage the fires and support the affected communities with supplies and help to the local agricultural businesses. Community meetings were held together with ministry representatives and other forest companies to learn from the events and to prevent similar situations in the future.

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Sustainable sourcing

Stora Enso adopts sustainable sourcing practices and works closely with all its suppliers to support them in doing the same.

Targets and performance



Proportion of total supplier spend covered by the Supplier Code of Conduct, including all categories and regions, at least 95%

Key Performance Indicator (KPI)	2022	2021	2020
% of supplier spend covered by the Supplier Code of Conduct (SCoC)	96%	96%	96%

Achieved – stable performance with high coverage.

Actions to drive performance

- Continuous work to ensure high coverage for Supplier Code of Conduct
- Improving scope 3 reporting and building better tools for monitoring and reporting
- Assessing and managing impacts on biodiversity in the supply chain
- Incentivise supplier performance on sustainability through mandatory supplier data on safety and CO₂ emissions

Other performance indicators	2022	2021	2020
Contracted suppliers' spend covered by sustainability criteria ¹	95%	96%	77%
No. of suppliers audited through third-party sustainability audits	42	70	22
% of identified high-risk suppliers, by spend, covered by third-party sustainability audits	53%	54%	51%
No. of supplier contract terminated due to occupational safety issues	0	1	0
No. of supplier contract not renewed due to misconduct related to business ethics	5	1	1

¹ Suppliers who provided their safety and/or CO₂ emission information. 2022 is not fully comparable with 2021 and 2020 when providing either safety or CO₂ emission information was sufficient to meet the criteria.

As part of its tendering process, Stora Enso requires suppliers to provide data on their safety and CO₂ performance.

Stora Enso's SCoC includes Stora Enso's requirements for suppliers on topics such as responsible business, safety, data privacy, climate change, biodiversity, ethical recruitment and reasonable remuneration for employees. Together with the SCoC, Stora Enso launched a practical guidance for suppliers to support suppliers in implementation and interpretation of the SCoC requirements and to share best practices. All suppliers are required to comply with the SCoC.

As part of its tendering process, Stora Enso requires its suppliers to provide sustainability information. From 2022 onwards, both safety and CO₂ emission data is required, whilst in previous years only one of the two has been sufficient. These sustainability criteria are used to help make more balanced sourcing decisions and create incentives for suppliers to invest in sustainability performance.

Due to the global pandemic, many of the audits were moved online, where the supplier site tours, interviews and document reviews were conducted with digital communication tools. This method continued throughout most of 2022. During 2022, 42 SCoC audits were conducted, mainly in China, with the majority relating to contracted manufacturing, labour agencies and fiber based packaging material suppliers.



Accounting principles

Stora Enso measures the proportion of total supplier spend covered by its Supplier Code of Conduct (SCoC) for all categories and divisions. The total supplier spend excludes joint operations, intellectual property rights, leasing fees, financial trading, government fees such as customs charges, and wood purchases from private individual forest owners.

Contracted suppliers' spend as a percentage covered by the sustainability criteria is accounted for as spend towards suppliers that provided their safety and/or CO₂ emission information, divided by total spend. As of 2022, suppliers are required to provide both safety and CO₂ emission information. High-risk supplier spend and respective audit coverage include the spend towards suppliers with heightened sustainability risks as identified by the company's country and category risk assessment.

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The audits continued to focus on suppliers with heightened sustainability risks as identified by Stora Enso’s country and category risk assessment. 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 up on them.

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. If a supplier does not take the necessary corrective actions, new discussions are held to examine the reasons, and are held at a higher management level if necessary. In cases where the criticality level is high or a supplier is not willing to improve their performance, the relationship is terminated. An example of this is the investigation that followed after the working hour recording errors in China Packaging were reported in 2021. The investigation resulted in several contracts with labour agencies being discontinued due to breaches of the SCoC, working hours reporting, social insurance payment and corruption, among others.

Ways of working



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), provide data

on their safety and CO₂ performance and complete a safety management online training called Safety Trail. In 2022, the training was updated to cover several areas in more detail. At the end of 2021, Stora Enso also launched a climate change and emissions-related e-learning training package for suppliers. It covers 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. The 2022 Stora Enso Supplier Day provided another opportunity to promote better safety practices and CO₂ reductions and to collaborate with suppliers on these important topics. Internal measures to improve the scope 3 CO₂ emission data collection and calculations include requesting suppliers to provide product specific emission data. Read more about the work to reduce CO₂ emissions in chapter [Climate change: emissions](#).

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. If such behaviour is identified, Stora Enso takes action to mitigate it. Stora Enso has also continued to develop its safety reporting tool, SMART4Safety to include all contractor incidents and any necessary follow up. The divisions have also implemented their own initiatives to develop safe workplaces and make sure that the suppliers are included, for example with the development of training programmes and safety standards.

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 smaller suppliers within shorter payment timeframe to help them remain financially stable.

In addition, the company has launched the Stora Enso Supply Chain financing

programme to support suppliers to get payment even earlier, where needed. The purpose of the programme is to help extend the payment terms for suppliers, improve Stora Enso’s payment days, and create closer partnerships with suppliers and strengthen their cash flow.

Policies and guidelines

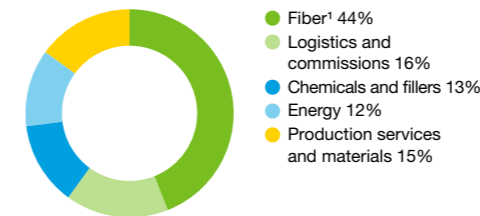
The Stora Enso SCoC is the cornerstone of the company’s approach to responsible sourcing. It is a legally binding document that imposes sustainability requirements on its suppliers concerning human and labour rights, occupational health and safety, the environment and responsible business practices. 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 Guidelines, 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.

Why it matters



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 and Russia’s invasion of Ukraine have brought uncertainty for businesses and supply chains globally. In March 2022, Stora Enso halted all export and import activities to and from Russia and divested Russian operations to local management. Stora Enso will continue to proactively monitor and respond to the effects of the global geopolitical situation to ensure minimal impact on the Group’s ability to purchase materials and services, serve customers and run operations.

EU-level regulation on sustainability due diligence and increasing demands on supply chain transparency drive how Stora Enso works with direct suppliers to pass on these requirements. For instance, in 2022, a pilot to assess the impact on biodiversity in the Biomaterials division supply chain was carried out, focusing on increasing transparency in selected sub-categories within chemicals, logistics and energy aligned with emerging international initiatives such as the Science Based Targets Network and the Taskforce for Nature-related Financial Disclosure. The aim is to apply the piloted process to other supply chains. Furthermore, a gap-analysis of existing sustainable sourcing processes and tools was carried out to identify improvement areas for alignment with the upcoming Corporate Sustainability Due Diligence Directive. Other deep-dive supply chain assessments in 2022 included Paper for Recycling (PFR) in Poland and migrant workers at silviculture contractors in Forest division Sweden. Read more in chapter [Human Rights](#).

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Unit	Capacities						Certificates							Fossil CO ₂ emissions							
	Number of employees ^{a)}	Sawn products 1,000 m ³	Further processed 1,000 m ³	CLT 1,000 m ³	Wood pellets 1,000 t	LVL 1,000 m ³	ISO 9001	ISO 14001	ISO 45001	ISO 50001	FSC [®] CoC	PEFC CoC	SBP	Process waste to landfill t	Hazardous waste ^{b)} t	SO ₂ t	NO _x as NO ₂ t	Direct CO ₂ ^{c)} t	Indirect CO ₂ ^{c)} t	CO ₂ , on-site transportation ^{c)} t	Carbon neutral CO ₂ from biomass ^{d)} t
Wood Products units																					
Austria																					
Bad St. Leonhard	278	360	105	80			x	x	x	x	x	x		0	95		3			1,072	
Brand	225	440	295				x	x	x	x	x	x		0	59	0.0	5			1,743	
Ybbs	428	700	450	110			x	x	x	x	x	x		0	112		8			2,788	
Czech Republic																					
Planá	242	390	220				x	x	x	x	x	x		372	22	0.6	27			1,782	27,722
Ždírec	421	580	220		80		x	x	x	x	x	x		2,920	33	2.1	138			2,245	111,362
Estonia																					
Imavere	311	350	160		100		x	x	x	x	x	x	x	0	82	4.4	43			1,782	54,677
Näpi ^{e)}	101	50	180		25		x	x	x	x	x	x		0	43	0.6	6	14		362	6,296
Finland																					
Honkalahti	134	310	70				x	x	x	x	x	x		0	29	0.8	22	208	123	991	39,016
Uimaharju ^{e)}	84	240					x	x	x	x	x	x		0	22		2	299	1,299	578	1078
Varkaus	156	260	120			85	x	x	x	x	x	x		0	69				3,115	916	
Veitsiluoto	59	200					x	x	x	x	x	x		0	0	4.4	5	262	4,581	547	
Latvia																					
Launkalne	216	270	70		50		x	x	x	x	x	x		0	17	1.8	31	1106		1,620	40,977
Lithuania																					
Alytus	282	210	115				x	x	x	x	x	x		0	41	2.0	16			1,151	27,305
The Netherlands																					
Amsterdam	58		80				x	x	x	x	x	x		0	0			12		3	
Poland																					
Murow	286	300	210				x	x	x	x	x	x		0	925	2.6	21			1,296	27,819
Sweden																					
Ala	161	400	50		100		x	x	x	x	x	x		0	31	2.2	74		11	1,689	85,887
Gruvön	246	370	150	80	100		x	x	x	x	x	x		0	12	0.9	5	2,821	3,668	1,395	
Wood Products units total		5,430	2,495	270	455	85								3,292	1,592	22	406	4,722	12,797	21,960	422,139

a) Yearly average as full-time equivalents.
 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.

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Consolidated sustainability figures

Carbon

Stora Enso's carbon footprint	Unit	2022	2021	2020
Scope 1: Direct emissions from operations ¹	CO ₂ -eq, million tonnes	1.77	2.09	2.02
Scope 2: Emissions from purchased energy consumed in operations ^{1,2}	CO ₂ -eq, million tonnes	0.19	0.22	0.31
Scope 3: Emissions from other sources along the value chain	CO ₂ -eq, million tonnes			
Harvesting and wood transportation	CO ₂ -eq, million tonnes	0.38		
Fuels and energy (production and transportation)	CO ₂ -eq, million tonnes	0.44		
Purchased materials (production and transportation)	CO ₂ -eq, million tonnes	1.93		
Transportation and distribution of products to customers globally	CO ₂ -eq, million tonnes	0.85		
Processing of products by customers	CO ₂ -eq, million tonnes	2.41		
Scope 3 total ¹	CO ₂ -eq, million tonnes	6.01	7.83	7.38
Total emissions	CO₂-eq, million tonnes	7.97	10.14	9.71

¹ Historical figures recalculated due to divestments or additional data after the previous annual report. Total emissions changed from 9.44 to 9.71 in 2020, and from 10.17 to 10.12 in 2021. Baseline 2019, which is not presented in this table, changed from 10.70 to 10.87. ² The CO₂ factors used for purchased energy (scope 2) largely follow the market-based methodology, which means that almost all Stora Enso units apply CO₂ factors provided by their energy suppliers. When applying currently available location-based factors, scope 2 emissions for 2022 are 0.69 million tonnes of CO₂ equivalents (0.73 million tonnes in 2021).

Energy

Key figures for energy	Unit	2022	2021	2020
Total energy consumption ¹	TWh	30.20	33.78	33.85
Heat consumption ¹	TWh	21.1	23.2	23.4
Electricity consumption ¹	TWh	9.1	10.6	10.5
Total energy consumption, MWh/tonne of saleable production ¹	MWh/tonne	3.71	3.83	3.91
Total fuel consumption	TWh	37.5	41.2	39.1
Sold heat, external	TWh	0.6	0.8	0.7
Sold electricity, external	TWh	0.2	0.3	0.3
Share of own electricity generation in total electricity consumption	%	63%	58%	61%

¹ Including only board, pulp and paper units due to the metric for normalisation (tonne)

District heating to local communities

	Unit	2022	2021	2020
Number of sites generating energy to:		14	14	14
- local district heating systems	%	87%	91%	90%
- industrial partners	%	13%	9%	10%
TWh of heat sold	TWh	0.6	1.0	0.9

Local air emissions

	Unit	2022	2021	2020
SO ₂ emissions ¹	tonnes	2,040	2,200	2,400
NO _x emission ¹	tonnes	8,330	9,160	8,770
Emissions of fine particles ¹	tonnes	1,410	1,070	1,410
VOC emissions	tonnes	2,210	2,160	n/a

¹ Historical figures recalculated due to additional data after the previous annual report. Changes were not material.

Energy and water efficiency fund

	Unit	2022	2021	2020
Energy and water efficiency fund, total size	EUR million	10	11	7
Number of projects financed		29	37	37
Projected annual energy savings	GWh	84	163	123
Projected annual water savings	million m ³	2.7	1.9	n/a
Equivalent of Stora Enso's energy consumption	%	0.3%	0.4%	0.3%

Biodiversity

Compliance rate of biodiversity impact indicators

	Unit	2022	2021
High stumps	%	65%	63%
Ground deadwood	%	82%	94%
Soil and water	%	96%	88%
Habitats	%	87%	88%
Tree retention	%	83%	89%
Buffer zones	%	93%	n/a
Total	%	84%	84%

Key forest related figures

	Unit	2022	2021	2020
Owned or leased lands	million ha	2.01	2.01	2.02
Annual CO ₂ sequestration in owned or leased productive forest lands, 3-years annual average	million tonnes	5.3	5.0	n/a
Total CO ₂ stored in Stora Enso's productive forests as of 31.12.2022	million tonnes	285	283	268
Total amount of wood delivered to Stora Enso's sites	million m ³	35.1	37.6	35.0
% of third-party certified wood of total wood supply	%	80%	77%	78%
% of wood from own sources or long-term supply agreements	%	30%	28%	29%
% of wood from managed semi-natural forests in Europe	%	87%	88%	87%
% of wood from tree plantations	%	13%	12%	13%

Circularity

Key figures for waste, residuals and Paper for Recycling

	Unit	2022	2021	2020
% of technically recyclable products ¹	million tonnes	94%	94%	n/a
Total process material use, (fresh tonnes)	million tonnes	40.9	41.1	n/a
Share of renewable materials in total process material use	%	96%	95%	n/a
Process waste and residuals generated, (dry tonnes) ¹	million tonnes	4.2	3.6	3.2
- of which recycled and used internally or externally	%	99%	98%	98%
- of which landfilled	%	1%	2%	2%
Hazardous waste ^{1,2}	tonnes	7,630	8,220	5,500
Sludge, classified as hazardous waste ³	tonnes	6,890	10,140	8,720
Process waste sent to on-site storage facilities	tonnes	61,410	70,410	91,310
Non-process related waste	tonnes	33,500	29,110	41,910
Usage of Paper for Recycling (PfR)	million tonnes	1.6	1.7	1.7
PfR utilisation rate in paper and board production	%	23%	22%	23%

¹ Historical figures recalculated due to divestments or additional data after the previous annual report. The figure for technically recyclable products in 2021 changed from 93% to 94%.

² Including oils, solvents, paints, laboratory chemicals and batteries that are transported and processed by authorised contractors.

³ Generated at the disused Falun copper mine in Sweden and handled by an authorised contractor.



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Water

Water withdrawal, consumption and discharges	Unit	2022	2021	2020
Total water withdrawal	million m ³	503	529	554
Process water withdrawal	million m ³	271	296	281
Cooling water (net) withdrawal	million m ³	232	233	273
Total water withdrawal per saleable tonne of pulp, paper and board	m ³ /tonne	61	60	66
Water consumption	million m ³	19	20	19
Water consumption ¹	million m ³ /tonne	2.4	2.5	2.3
Process water discharges	million m ³	252	272	263
Process water discharge per saleable tonne of pulp, paper and board	m ³ /tonne	31	31	31

¹ Historical figures recalculated due to divestments after the previous annual report. The figure for water consumption per tonne for 2020 changed from 2.2 to 2.3, and the figure for 2021 changed from 2.3 to 2.5.

Water effluents	Unit	2022	2021	2020
Nitrogen	tonnes	850	1,040	940
Phosphorus	tonnes	93	88	97
Chemical oxygen demand	tonnes	72,900	80,150	82,870

Environmental incidents

Unit	2022	2021	2020
Number of significant non-compliance events ¹	15	8	8

¹ Historical figures recalculated due to additional data after the previous annual report. The figure for non-compliance events for 2021 changed from 6 to 8.

Employees

Key employee related figures	Unit	2022	2021	2020
Average number of employees		21,790	23,071	24,455
% of female employees among all employees		25%	24%	24%
% of female managers among all managers		23%	23%	23%
Women in the Group Leadership Team		4 out of 11	5 out of 13	6 out of 15
Women in the Board of Directors		3 out of 9	3 out of 9	2 out of 9
Age groups, all employees %				
Up to 30	%	16%	16%	16%
31–50	%	53%	54%	53%
51 and over	%	31%	30%	31%
Average number of training hours per employee per year		21	26	23
Average number of training hours per production worker per year		26	27	25
Employee turnover	%	14%	13%	13%

Employee distribution and turnover¹

	China		Finland		Poland		Sweden		Group total
	Female	Male	Female	Male	Female	Male	Female	Male	
Number of employees	1,150 (41%)	1,630 (59%)	1,170 (22%)	4,270 (78%)	430 (21%)	1,570 (79%)	1,050 (23%)	3,590 (77%)	20,110
Up to 30	200	380	140	510	60	210	190	570	16%
31–50	930	1,180	610	2,120	270	890	500	1,450	53%
51 and over	20	60	420	1,650	100	470	390	1,570	31%
Number of hires²	180 (35%)	340 (65%)	110 (27%)	310 (79%)	30 (40%)	40 (60%)	180 (29%)	450 (71%)	2,350
Up to 30	100	210	30	100	10	10	60	160	41%
31–50	80	130	60	160	20	20	80	220	49%
51 and over	0	0	20	40	10	0	30	70	10%
Number of leavings³	240 (39%)	370 (61%)	130 (19%)	550 (81%)	40 (26%)	110 (74%)	160 (21%)	600 (79%)	2,800
Up to 30	80	170	10	30	10	30	20	60	21%
31–50	150	180	50	190	20	50	80	180	41%
51 and over	10	20	70	330	20	30	60	350	37%
Employee turnover	21%	23%	11%	13%	9%	7%	15%	17%	14%

¹ Figures for the four largest countries in terms of the total number of employees and year-end headcount. Rounded to the nearest 10.

² Hires: numbers of permanent employees joining the company. Excludes hires due to acquisitions.

³ Leavings: numbers of permanent employees leaving voluntarily or due to restructuring, retirement or death. Excludes leavings due to divestments.

Female employees' compensation compared to male employees' compensation¹

	Unit	2022	2021	2020
China	%	92%	92%	90%
Finland	%	93%	92%	92%
Poland	%	91%	91%	90%
Sweden	%	100%	99%	99%

¹ Ratios are weighted averages based on gender salary comparisons within each country's employee categories (career levels)

Stora Enso's lowest wages compared to local minimum wages¹

	Unit	2022	2021	2020
Brazil		1.1	1.1	1.2
China		1.0	1.0	1.0
Estonia		1.5	1.6	1.2
Latvia		1.7	1.6	1.7
Lithuania		1.2	1.3	1.4
Poland		1.1	1.0	1.1
Uruguay		1.6	1.5	1.6

¹ Stora Enso's lowest wages compared to local minimum wages are presented for the most relevant locations based on an internal assessment including any 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 the Group's lowest wage is, compared to the local minimum wage. The figures for Brazil and Uruguay include the employees of the 50%-owned joint operations in Veracel and Montes del Plata.

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Safety

Key safety related figures	Unit	2022	2021	2020
Total recordable incident (TRI) rate		5.9	6.2	6.1
Lost-time accident (LTA) rate		4.9	5.0	5.1
Illness-related absence	%	4.1%	3.8%	3.6%
Average number of safety observations reported per employee		12.7	11.6	12.2
Number of employees covered by external safety management system		17,846	16,316	18,841
% of all employees		93%	90%	85%

Human rights

Key figures for human rights	Unit	2022	2021	2020
Number of production units registered in Sedex ¹		26	29	30
Ratio of production units registered in Sedex	%	49%	48%	49%
Ratio of units audited by SMETA at least once since 2011 ²	%	62%	59%	53%
Ratio of joint operations registered in Sedex	%	100%	100%	100%
Ratio of joint operations audited by SMETA at least once since 2016	%	100%	50%	50%

¹ Supplier Ethical Data Exchange (Sedex) is a platform where companies share sustainability information with customers on unit level.
² Sedex Member Ethical Data Audits (SMETA)

Community

Key figures for community	Unit	2022	2021	2020
Community Investment (CI): % of working hours and in-kind in the total CI	%	41%	42%	41%
Total amount of voluntary Community Investment converted to EUR	EUR million	2.0	2.0	2.7
Total amount of working hours spent by Stora Enso's employees in volunteer work		3,396	1,432	2,684
Equivalent of no. of weeks of working time		85	36	67

Sustainable sourcing

Key figures for sustainable sourcing	Unit	2022	2021	2020
% of supplier spend covered by the Supplier Code of Conduct (SCoC)	%	96%	96%	96%
Contracted suppliers' spend covered by sustainability criteria ¹	%	95%	96%	77%
No. of suppliers audited through third-party sustainability audits		42	70	22
% of identified high-risk suppliers, by spend, covered by third-party sustainability audits	%	53%	54%	51%
No. of supplier contract terminated due to occupational safety issues		0	1	0
No. of supplier contract not renewed due to misconduct related to business ethics		5	1	1

¹ Suppliers who provided their safety and/or CO₂ emission information. 2022 is not fully comparable with 2021 and 2020 when providing either safety or CO₂ emission information was sufficient to meet the criteria.

Business ethics

Key figures for business ethics	Unit	2022	2021	2020
Compliance control: no. of critical business partners reviewed through a third-party tool		90	119	149
Compliance control: no. of teams using Compliance Self-Assessment Tool		135	149	170
Code of conduct training completed (31 Dec), all employees	%	92%	n/a	n/a
Code of conduct training completed (31 Dec), office workers	%	97%	95%	n/a
Code of conduct training completed (31 Dec), production workers	%	89%	n/a	n/a
% of target group employees to complete the COMPLY compliance training	%	97%	99%	n/a
% of office workers to complete training on data privacy	%	98%	96%	92%

Non-compliance cases

Non-compliance cases	Unit	2022	2021	2020
Potential non-compliance cases reported		153	117	86
Investigations of potential non-compliance cases closed by ECMC ¹		140	98	84
of which, identified proven cases leading to disciplinary action, legal action and/or process improvements		44	26	34
No. of cases resulting in termination of business relationships ²		17	11	6
No. of proven cases related to discrimination, harassment and/or bullying		12	11	10
No. of proven cases related to fraud and/or corruption		13	9	7

¹ Including cases from reported previous years

² Including cases involving more than one employee being dismissed

Breakdown of potential non-compliance cases

Breakdown of potential non-compliance cases	Unit	2022	2021	2020
Anti-trust		3	1	0
Conflict of interest		8	10	9
Corruption		27	18	6
Fraud		9	10	14
Discrimination, harassment and/or bullying		46	46	26
Working conditions		10	11	4
Health and safety		10	5	6
Other		40	16	21
Total		153	117	86

Economic value for Stora Enso's stakeholders (EUR million)

Stakeholders	Economic value	2022	2021	2020
Customers	Sales	11,680	10,164	8,553
Suppliers	Payments to suppliers	8,127	6,875	5,849
	Capital expenditure	778	666	687
Employees	Wages and benefits	1,315	1,351	1,270
Creditors	Interest	125	127	139
Public sector	Taxes borne and collected ¹	1,248	1,184	980
Shareholders	Dividends ²	434	237	237

¹ For more information see Tax footprint.

² As disclosed in the Statement of changes in equity.

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Stora Enso's tax footprint

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.

Tax policy

The Stora Enso Tax Policy addresses Stora Enso's tax strategy, including approach to tax, tax governance, compliance, tax risk management and tax authority co-operation. The Tax Policy has been approved by the CEO of Stora Enso and is reviewed annually. This report summarises the principles of the Tax Policy.

Tax approach

As a responsible and prudent taxpayer, Stora Enso is committed to ensuring that the Group observes all applicable tax laws, rules and regulations, including international transfer pricing guidelines and local legislation in all jurisdictions where it conducts business activities or has otherwise any tax obligation. In addition to legal and regulatory requirements, the tax principles comply with Stora Enso's values to 'Do what's right' and 'Lead'.

The strategic priorities of Stora Enso's tax function are confirmed annually by the Group CFO. Integrated business partnering and inspired people with the right skills are at the core of Stora Enso's tax strategy. This is the basis for ensuring tax compliance with streamlined processes and advanced technology, and facilitating an early detection of tax risks, regulation changes and improvement opportunities.

Stora Enso seeks to ensure that the tax strategy is aligned with the Group's business and commercial strategy. Stora Enso only undertakes 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 one of many other factors that are taken into account when making business decisions. As with any other

business expense, however, Stora Enso has an obligation to manage tax costs as part of the company's financial responsibility to societies and shareholders. Stora Enso is therefore willing to respond to tax incentives and exemptions granted by governments on reasonable grounds, and currently has operations in countries that offer favourable tax treatments where their location is also justified by sound commercial considerations.

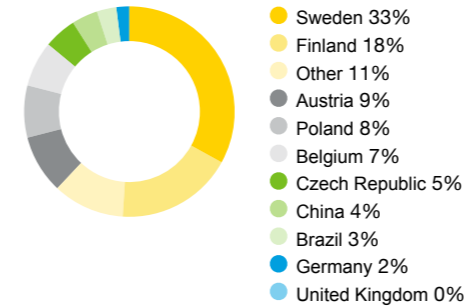
Stora Enso has operations in the following locations that offer favourable tax treatments:

- 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 Stora Enso's related industrial company is entitled to reduced corporate income tax rate until 2025. Stora Enso has in December 2022 initiated a sales process for a possible divestment of these forestry and consumer board production operations.
- Stora Enso conducts business, mainly consisting of sales services, in the United Arab Emirates, Singapore and Hong Kong.
- AS Stora Enso Latvija has been granted a corporate income tax credit relating to an investment project. The credit is available for utilisation against tax arising on profit distribution in future years.

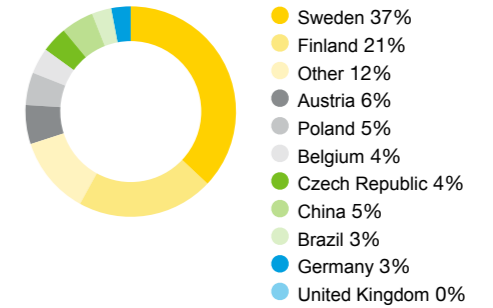
Tax governance, control and risk management

As part of protecting shareholder value, Stora Enso acts with integrity in all tax matters. The Group's Tax team, reporting to the Group CFO, works closely with

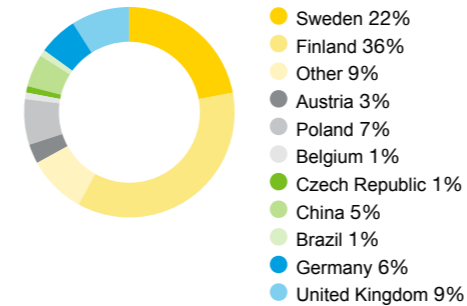
Total taxes borne 2022



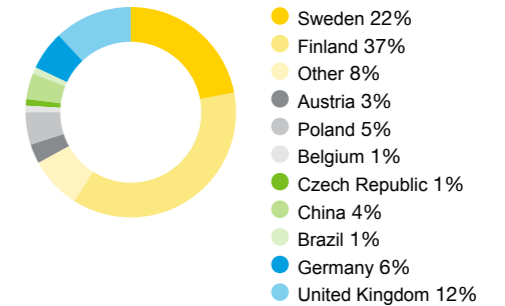
Total taxes borne 2021



Total taxes collected 2022



Total taxes collected 2021



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. In addition to performing the mandatory group-level tax disclosure processes, the Tax team consolidates annual and quarterly tax reporting describing the Group's tax position to shareholders and other stakeholders. The Group's Tax team regularly reports key tax matters to the Group Leadership Team and the Finance and Audit Committee of the Board of Directors.

Tax affairs are managed under an extensive set of Group policies, like Stora Enso Code, Business Practice Policy, Supplier Code of Conduct, and Tax Policy. Stora Enso's internal

allocation of responsibilities of tax matters and the engagement of external resources are described in the internal Tax Responsibility Guidelines. Internal stakeholders are continuously trained on tax-related matters in order to enhance capabilities and improve overall tax compliance and quality of tax reporting. Compliance processes are subject to internal controls, and tax risks are annually reviewed as part of the Group's Enterprise Risk Management process. 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 risks with stakeholders to ensure that

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Stora Enso can sufficiently identify, assess and mitigate tax risk.

In case employees have any concerns about unethical or unlawful behaviour or the company's integrity, the Speak Up Hotline can be used to report any suspected cases also regarding tax matters. All reported cases will be subject to an established investigation and reporting process, with proven cases leading to actions.

The Group's tax disclosures are included in the assurance process of the Annual Statements. The tax footprint report is subject to limited assurance.

Stakeholder engagement and concerns related to tax

Stora Enso's commitment to tax transparency is also reflected in the Group's relationships with tax authorities and governments. To build confidence whenever possible, Stora Enso seeks to work positively, proactively and openly with tax authorities on a global basis, utilising transparent advance processes in order to minimise disputes. Stora Enso also works with government representatives, mainly through associations, by providing corporate views and impacts at request to aid law-making and implementation. Stora Enso readily responds to investor enquiries, and constantly follows the development of tax sustainability and transparency expectations.

Stora Enso's tax footprint in 2022

In 2022, Stora Enso paid EUR 1,251 million (1,184 million) in taxes to governments in countries where the Group has operations. A total of EUR 479 million (435 million) was paid directly by the Group (taxes borne) while EUR 772 million (749 million) was collected on behalf of governments (taxes collected).

At the end of 2021, Stora Enso had EUR 274 million tax losses in Finland. At the end of 2022, there were no material tax losses related to Finland, and the Group will be in a tax paying position in Finland in 2023.

All companies within the scope of Stora Enso's tax footprint are consolidated

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		2022	2021
		2022	2021	2022	2021	2022	2021		
Finland	Production and sales	0	0	71	83	16	7	88	90
Sweden	Production and sales	65	64	87	90	8	6	160	161
Poland	Production and sales	25	10	7	7	5	5	36	22
United Kingdom	Sales	0	0	1	1	0	0	1	1
Austria	Production and sales	28	10	16	14	0	0	44	25
China	Production and sales	3	2	12	12	7	6	21	20
Germany	Production and sales	0	2	6	8	3	4	9	14
Belgium	Production and sales	18	3	11	11	5	5	34	19
Czech Republic	Production and sales	13	12	11	8	0	0	23	19
Brazil	Production and sales	4	8	4	2	6	3	14	14
Other		23	25	15	16	11	12	50	51
Total		178	136	240	252	61	48	479	435

		Year ended 31 December									
		Taxes collected						Total taxes paid			
EUR million	Primary activity	VAT & similar ¹		Payroll taxes		Other taxes		Total			
		2022	2021	2022	2021	2022	2021	2022	2021		
Finland	Production and sales	18	33	143	146	115	100	276	278	364	369
Sweden	Production and sales	80	74	87	89	0	0	166	164	327	325
Poland	Production and sales	40	26	12	11	0	0	52	37	88	59
United Kingdom	Sales	69	88	2	2	0	0	71	90	72	90
Austria	Production and sales	3	3	19	17	0	0	22	20	66	46
China	Production and sales	29	19	11	10	0	0	40	29	61	49
Germany	Production and sales	34	30	14	17	0	0	48	47	57	61
Belgium	Production and sales	1	1	9	9	1	0	10	9	44	28
Czech Republic	Production and sales	0	1	6	5	0	0	6	5	29	25
Brazil	Production and sales	4	2	2	1	5	4	11	7	25	21
Other		48	40	20	22	1	1	69	62	118	113
Total		325	316	325	329	122	104	772	749	1,251	1,184

¹VAT, goods and services taxes and similar turnover related taxes

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, for example, 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 the tax footprint calculations.



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 and Stora Enso as a taxpayer reporting 2022 and reasonable assurance on Stora Enso's direct and indirect (scope 1 + 2) fossil CO₂ emissions as disclosed in the sustainability reporting (hereafter sustainability reporting). Stora Enso has defined the scope of its sustainability reporting on pages 54 and 92 in this report. A limited assurance was also provided on EU taxonomy qualitative and quantitative disclosures for climate change mitigation and climate change adaptation as disclosed in Stora Enso's Board of Directors' report 2022.

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 pages 56 and 92 in this report, and consists of the Global Reporting Initiative (GRI) Sustainability Reporting Standards which are applicable to the Stora Enso's sustainability reporting, and the Greenhouse Gas Protocol for CO₂ emissions, Regulation (EU) 2020/852 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 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 Engagements (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.

The objective of an audit is to obtain reasonable assurance that the information is free of material misstatements. 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 judgment. In addition, we have performed site visit to Oulu (Finland), and remote site visits to Beihai (China) and Forest Sweden (Sweden), 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 behavior.

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 as well as EU taxonomy 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, 14 February 2023
PricewaterhouseCoopers

Samuli Perälä
Authorized Public Accountant

Karin Juslin
Sustainability Reporting Specialist



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Governance

Corporate Governance in Stora Enso 2022

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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 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.

Governance bodies



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 2020–2022 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

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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.

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 2022

Stora Enso's AGM was held on 15 March 2022 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 68.6% of all shares (65.2% in 2021) and a total of 83.8% of all votes (82.7%) were represented at the meeting, with 91.4% of all A shares (91.4%) and 62.1% of all R shares (57.7%) 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 2022.

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.

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In 2022

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 Reima Rytsölä (Solidium Oy) and Marcus Wallenberg (FAM AB). Until 3 November 2022 Solidium was represented by Harri Sailas. 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 2023 concerning Board members and their remuneration. During its working period 2022–2023, the Shareholders' Nomination Board convened five (5) 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 2023, the Shareholders' Nomination Board proposes that of the current members of the Board of Directors Håkan Buskhe, Elisabeth Fleuriot, Helena Hedblom, Kari Jordan, 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 Astrid Hermann be elected new member of the Board of Directors for the same term of office. It is proposed that Kari Jordan be elected Chair of the Board and Håkan Buskhe Vice Chair of the Board. Hock Goh 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 2.5–3 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 2022

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	Reima Rytsölä, member²
Chair of Stora Enso's Shareholders' Nomination Board. Born 1956. B.Sc. (Foreign Service).	Member of Stora Enso's Shareholders' Nomination Board. Born 1969. M.Soc. Sc., CEFA, AMP. CEO of Solidium Oy.

¹ Curriculum vitae of Antti Mäkinen and Håkan Buskhe, see page 107.

² Until 3 November 2022 Solidium was represented by Harri Sailas.

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 100 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 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 GLT members. The Board approves the main organisational structure of the Company.

The Board reviews and determines the remuneration of the CEO, which is described in the Annual Report and on the Company's website. The Board and each of its Committees evaluates its performance annually. The results of the Board's evaluation are reviewed by the Board and shall be communicated to the Shareholders' Nomination Board, which shall take the results of the Board evaluation into account in its work. The Board also reviews the corporate governance policy annually and amends it when required.

The Board's work is supported through its committees – the Financial and Audit Committee, the People and Culture 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.

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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 2023 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 maintain a good and balanced gender distribution.

The Board Diversity Policy is presented at storaenso.com/investors/governance.

In 2022

The Board had nine members at the end of 2022, all of them independent of the Company. The Board members are also independent of significant shareholders of the Company with the exception of Håkan Buskhe (CEO of FAM AB) and Richard Nilsson (Investment Director at FAM AB).

The Board members nominated at the AGM in 2022 were Antti Mäkinen (Chair), Håkan Buskhe (Vice Chair), Elisabeth Fleuriot, Hock Goh, Helena Hedblom, Kari Jordan, Christiane Kuehne, Richard Nilsson and Hans Sohlström. The Board convened 11 times during the year. The members' participation rate in meetings amounted to 100%.

In its meeting after the AGM on 15 March 2022, the Board discussed focus areas for its work. The Board agreed that these areas for the year to come should be (1) Strategy, 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.

The Board has conducted an internal self-evaluation relating to the Board's work, which together with the evaluation of the Board members' independence has been provided to the Shareholders' Nomination Board for information. 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 107–108.

Remuneration

Board remuneration is decided by the AGM each year. The AGM 2022 decided on an annual remuneration of EUR 203,000 for the Board Chair, EUR 115,000 for the Vice Chair and EUR 79,000 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 2022

During 2022, 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 107–108.

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 at the end of 2022 varied from 49 years to 67 years and the Board was composed of three women and six men.

In 2022, 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 2023, the Shareholders' Nomination Board has proposed a Board composition that includes four (4) women and five (5) men in the age range of 49 years to 67 years and representing a total of five different nationalities. The proposed new Board member Astrid Hermann would bring strong finance and industry 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 maintain a good and balanced gender distribution.

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.

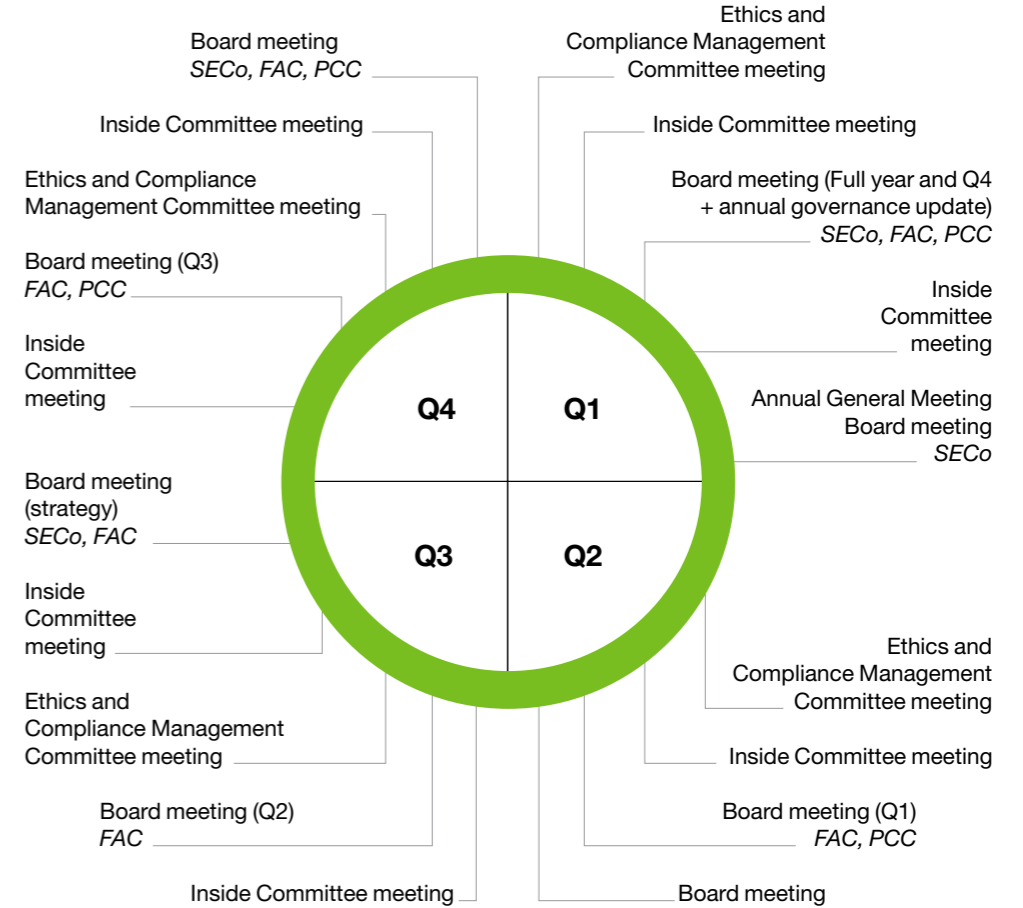
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Matters to be handled at Board meetings

- 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 Financial and Audit Committee, People and Culture 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



SECo = Sustainability and Ethics Committee
FAC = Financial and Audit Committee
PCC = People and Culture Committee

Quarterly

- Meetings with auditors
- Divisional Business & Innovation Review meetings

Monthly

- GLT meetings
- Investment Working Group meetings

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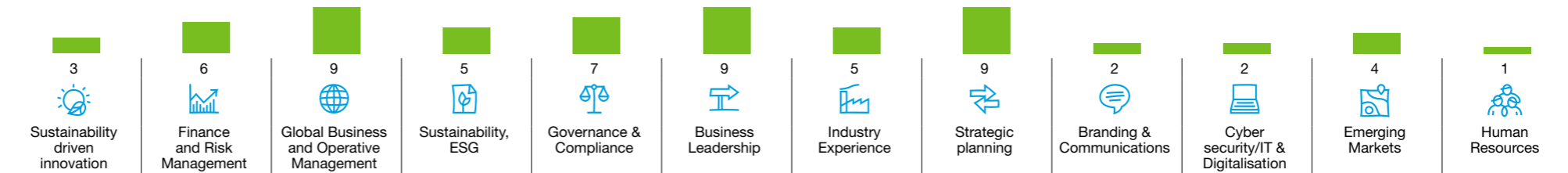
Board skills matrix

	Antti Mäkinen	Håkan Buskhe	Elisabeth Fleuriot	Hock Goh	Helena Hedblom	Kari Jordan	Christiane Kuehne	Richard Nilsson	Hans Sohlström
Qualifications and Experience									
Sustainability driven innovation			●		●				●
Finance and Risk Management	●	●		●		●		●	●
Global Business and Operative Management	●	●	●	●	●	●	●	●	●
Sustainability, ESG			●	●	●		●		●
Governance & Compliance	●		●	●		●	●	●	●
Business Leadership	●	●	●	●	●	●	●	●	●
Industry Experience		●		●		●		●	●
Strategic planning	●	●	●	●	●	●	●	●	●
Branding & Communications			●				●		
Cyber security/IT & Digitalisation		●		●					
Emerging Markets			●	●	●		●		
Human Resources									●

Additional Qualifications and Information

Director since	2018	2020	2013	2012	2021	2022	2017	2014	2021
Independent of Company	●	●	●	●	●	●	●	●	●
Independent of Owners	●	●	●	●	●	●	●	●	●
FAC membership 2022			Member	Member				Chair	
SECo membership 2022					Member		Chair		Member
PCC membership 2022	Chair	Member				Member			
Other current listed Boards*	1	2	0	2	0	1	0	0	0

Principal Skills (out of 9 Directors)



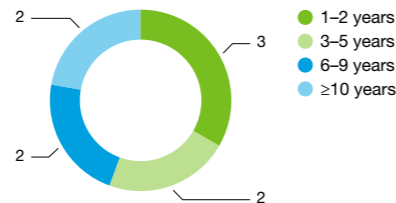
● yes ● no *at 31 December 2022

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.

Board diversity in figures

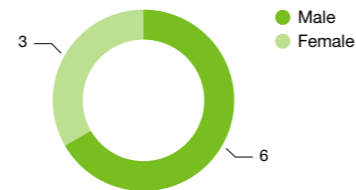
Tenure

Number of persons



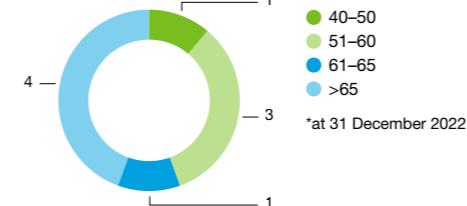
Gender

Number of persons



Age*

Number of persons



*at 31 December 2022

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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 report. 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 of 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 2022

The Financial and Audit Committee comprised three members: Richard Nilsson (Chair), Elisabeth Fleuriot and Hock Goh. 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 Finnish forest asset valuation as well as review of Finnish power asset valuation methodology. The benchmark of peer valuation methods was also made. Further effects of paper divestment to segment reporting were considered. In addition, 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 22,000 per annum and member EUR 15,400 per annum as decided by the AGM.

The Financial and Audit Committee Charter is presented at storaenso.com/investors/governance.

People and Culture Committee

The Board has a People and Culture 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 People and Culture Committee also reviews the Remuneration Report and the Remuneration Policy. There is a People and Culture 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 of and not affiliated with the Company. The People and Culture Committee meets regularly, at least once a year. The Chair of the People and Culture Committee presents a report on each People and Culture Committee meeting to the Board. The tasks and responsibilities of the People and Culture Committee are defined in its charter, which is approved by the Board. People and Culture Committee members may receive remuneration solely based on their role as directors. The compensation is decided by the shareholders at the AGM.

In 2022

The People and Culture Committee comprised three members: Antti Mäkinen (Chair), Håkan Buskhe and Kari Jordan.¹ The Committee convened five 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 areas during the year have been review of competitiveness of variable pay elements, impact on target setting following the war in Ukraine, as well as inclusion and focus on ESG measures as part of long term incentive plans.

Remuneration

Chair EUR 11,000 and member EUR 6,600 per annum as decided by the AGM.

The People and Culture Committee Charter is presented at storaenso.com/investors/governance.

¹ The Committee prior to the AGM on 15 March 2022 comprised the following three members: Antti Mäkinen (Chair), Håkan Buskhe and Hans Sohlström.

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 (in particular, climate change, circularity and biodiversity) and ethics.

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The Committee comprises two to four Board members who are nominated annually by the Board. The members are independent of and not affiliated with the Company. 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 2022

The Sustainability and Ethics Committee comprised three members: Christiane Kuehne (Chair), Helena Hedblom and Hans Sohlström.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 2022 the main topics were Biodiversity, Climate Change, and Circular Economy. In addition, an important part of the Committee's work consisted of overseeing reported compliance cases.

Remuneration

Chair EUR 11,000 and member EUR 6,600 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 15 March 2022 comprised the following three members: Christiane Kuehne (Chair), Helena Hedblom 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 2022 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 Office (responsible for Accounting, Controlling, Internal Audit, Investor Relations, IT and Digitalisation, Tax, Treasury)
- Brand and Communications
- Human Resources
- Legal, General Counsel
- 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)
- Sustainability

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 as at 31 December 2022

President and CEO Annica Bresky			CFO, Deputy to the CEO, Country Manager Finland Seppo Parvi		
Packaging Materials Hannu Kasurinen	Packaging Solutions David Ekberg	Biomaterials Johanna Hagelberg	Wood Products Lars Völkel	Forest¹, Country Manager Sweden Per Lyrvall	Paper²
Brand and Communications³ René Hansen	HR⁴ Katariina Kravi	Legal⁵	Sourcing and Logistics⁶	Strategy and Innovation Tobias Bäärnman	Sustainability Annette Stube

¹ Jari Suominen, EVP Forest, was a member of GLT until 30 November 2022.

² Kati ter Horst, EVP Paper, was a member of GLT until 30 June 2022. Seppo Parvi, acting Head of Paper division as of 1 July 2022. The Paper division was dissolved as of 1 January 2023, and the remaining entities were transferred to the Packaging Materials division and the segment Other.

³ Carl Norell, acting Head of Communications until 31 January 2022, was not a member of GLT.

⁴ People and Culture as of 11 January 2023.

⁵ Per Lyrvall, General Counsel until 30 November 2022. Christian Swartling, acting General Counsel, not a member of GLT. The search for a new General Counsel is ongoing.

⁶ Tuomas Mustonen, acting Head Sourcing and Logistics, not a member of GLT. Minna Björkman was appointed as EVP Sourcing and Logistics and a member of GLT as of 1 January 2023.

Teemu Salmi, CIO, Head of IT & Digitalisation, was a member of GLT until 31 May 2022. IT & Digitalisation was moved to be part of the CFO organisation and reports to CFO Seppo Parvi.

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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 2022 year end, the eleven GLT members were the CEO, the CFO, the heads of the divisions, Brand and Communications, HR, Strategy and Innovation, and Sustainability. New Head of Sourcing was appointed and she joined GLT on 1 January 2023. The search for a new General Counsel is ongoing.

The GLT assists the CEO in supervising the Group and divisional performance against agreed targets, portfolio strategy, ensuring the availability and value-creating allocation of Group funds and capital, and statutory, governance, compliance, and listing issues and policies.

The GLT meets regularly every month, and as required.

In 2022

The GLT had 11 members at the end of 2022. The GLT convened 19 times during the year. Important items on the agenda in 2022 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.

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, 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 2022 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 five times during 2022.

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.

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	
	2022	2021
Audit fees	4	4
Audit-related	0	0
Tax fees	0	0
Other fees	0	0
Total	4	4

In 2022

On the recommendation of the Financial and Audit Committee, the Board proposed that PricewaterhouseCoopers Oy be re-elected auditor by the AGM 2022 for the fifth year as the Company's auditors. The AGM 2022 elected PricewaterhouseCoopers Oy as auditor for a term of office expiring at the end of the AGM 2023.

Internal Audit

Group 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. Internal Audit reports also on annual basis key findings related to sustainability, ethics, compliance and safety to Stora Enso Sustainability and Ethics Committee. Administratively, the Head of Internal Audit reports to the Stora Enso CFO. The Financial and Audit Committee approves the appointment of the Head of the Internal Audit following the recommendation by the CEO. Head of Internal Audit is a member of the Ethics and Compliance Management Committee.

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The Internal Audit annual plan is created on risk- and assurance-based method and focuses on the key risks and core-processes in the Stora Enso value chain. In approved audit areas the compliance of Stora Enso key policies and guidelines is also covered. The Internal Audit co-operates with other assurance functions during the year in order to avoid overlapping with other assurance activities, and to be able to identify possible 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 SVP, Ethics and Compliance 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. The Business Practice Policy complements the Code, and sets further out Stora Enso's approach to ethical business practices and describes the processes for reporting on violations thereof. 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 Brand and Communications, IR and Legal for the purpose of continuously reviewing pending projects and the existence of inside information in the Company.

The Company expects the management and all its employees to act in the way required of an insider. All unpublished information relating to the Company's present and future business operations shall be kept strictly confidential.

Persons discharging managerial responsibilities (PDMR's) in Stora Enso are the members of the Board, the CEO and the CFO, as well as other members of the Group Leadership Team (GLT). PDMR's, as well as their closely related persons, are subject to a duty to notify the Company and the Finnish Financial Supervisory Authority of all transactions with the securities of the Company.

The Company also keeps a list of persons that are involved in the preparation of interim reports and financial results, which is approved by the General Counsel (Closed Period List). Persons included in the list are, e.g., members of the Division management teams, members of Financial Communications and Investor Relations, as well as the heads and certain team members of Treasury, Group Accounting and Controlling and Legal.

Persons who participate in the development and preparation of a project that constitutes inside information, are considered project specific insiders. A separate project-specific insider register is established when required by the decision of the General Counsel.

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.

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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. 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 legal, sustainability, human resources, finance as well as for sourcing and logistics. Internal control responsibilities have been described in Stora Enso's Internal Control Policy which also outlines the responsibilities of the first and second line of defence. Group Internal Control function, under the supervision of CFO and Group Controller, 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 a 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 group functions. The assessment of risks includes, as one part of the assessment, 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, 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 control design and control operating effectiveness and prepares quarterly internal control reporting to management.

In addition to the Group Internal Control function, the Stora Enso Group Internal Audit has an independent oversight role on internal control over financial reporting governance. The Internal Audit regularly evaluates the effectiveness and efficiency of Stora Enso's governance, risk management and system of internal control over financial reporting.

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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 People and Culture Committee since March 2021 and member since March 2019.

Board memberships

Member of the Board of Rake Oy and Metso Outotec Oyj.

Principal work experience and other information

CEO of Solidium Oy 2017–2022. 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 2022, EUR ¹	214,000
Meeting attendance	11/11
FAC attendance	
PCC attendance	5/5 ●
SECo attendance	
Shareholding in Stora Enso ²	16,576 R shares
Independent member	Yes 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 People and Culture 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 Skogor 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 2022, EUR ¹	121,600
Meeting attendance	11/11
FAC attendance	
PCC attendance	5/5 ▲
SECo attendance	
Shareholding in Stora Enso ²	7,933 R shares
Independent member	Yes/no ⁴



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, Sodiaal Group 1998–2001. Several management positions in Danone Group 1979–1997.

Total remuneration 2022, EUR ¹	94,400
Meeting attendance	11/11
FAC attendance	6/6 ▲
PCC attendance	
SECo attendance	
Shareholding in Stora Enso ²	30,029 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 2022, EUR ¹	94,400
Meeting attendance	11/11
FAC attendance	6/6 ▲
PCC attendance	
SECo attendance	
Shareholding in Stora Enso ²	34,782 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 2022, EUR ¹	85,600
Meeting attendance	11/11
FAC attendance	
PCC attendance	
SECo attendance	4/4 ▲
Shareholding in Stora Enso ²	3,517 R shares
Independent member	Yes

FAC = Financial and Audit Committee
PCC = People and Culture Committee
SECo = Sustainability and Ethics Committee

● Chair ▲ Member

¹ Detailed description of remuneration for Board and Committee memberships as decided by the AGM in 2022 on page 117.
² Shares held by Board members and related parties.

³ Antti Mäkinen is independent of the company and of its significant shareholders, but was not independent of its significant shareholders due to his position as the CEO of Solidium Oy until 31 May 2022.

⁴ Håkan Buskhe is independent of the company but not of its significant shareholders due to his position as the CEO of FAM AB.

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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Kari Jordan

Born 1956. M.Sc. (Econ.).

Position

Member of Stora Enso's Board of Directors since March 2022. Member of the People and Culture Committee since March 2022.

Board memberships

Chair of the Board of Outokumpu Oyj.

Principal work experience and other information

President and CEO of Metsä Group 2006–2018. CEO of Metsäliitto Cooperative 2004–2017. Various board positions and senior executive management positions in Nordea Group 1998–2004, Merita Bank 1995–2000 and OKOBANK 1987–1994 as well as other key positions in the financial sector.

Total remuneration 2022, EUR¹	85,600
Meeting attendance	8/8 ³
FAC attendance	
PCC attendance	4/4 ⁴ ▲
SECo attendance	
Shareholding in Stora Enso²	1,686 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 Senior Vice President Strategic Business Unit Food with strategic responsibility for the food business of Nestlé at global level.

Total remuneration 2022, EUR¹	90,000
Meeting attendance	11/11
FAC attendance	
PCC attendance	
SECo attendance	4/4 ●
Shareholding in Stora Enso²	14,590 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 Director at FAM AB since 2022. Investment Manager at FAM AB 2008–2022. Pulp & paper research analyst at SEB Enskilda 2000–2008, Alfred Berg 1995–2000 and Handelsbanken 1994–1995.

Total remuneration 2022, EUR¹	101,000
Meeting attendance	11/11
FAC attendance	6/6 ●
PCC attendance	
SECo attendance	
Shareholding in Stora Enso²	27,132 R shares directly, 127 A shares and 236 R shares through related persons (spouse)
Independent member	Yes/no ⁵



Hans Sohlström

Born 1964. M.Sc. (Tech.), M.Sc.

Position

Member of Stora Enso's Board of Directors since March 2021. Member of the Sustainability and Ethics Committee since March 2022.

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 Oyj 2018–2022. President and CEO of Ahlström Capital 2016–2018 and of Rettig Group Oy 2012–2016. 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 several managerial positions at UPM leading profit units, mills and sales.

Total remuneration 2022, EUR¹	85,600
Meeting attendance	11/11
FAC attendance	
PCC attendance	
SECo attendance	2/2 ⁶ ▲
Shareholding in Stora Enso²	13,517 R shares directly, 179 R shares through related persons (spouse)
Independent member	Yes

FAC = Financial and Audit Committee
PCC = People and Culture Committee
SECo = Sustainability and Ethics Committee

● Chair ▲ Member

¹ Detailed description of remuneration for Board and Committee memberships as decided by the AGM in 2022 on page 117.

² Shares held by Board members and related parties.

³ Meetings attended out of the meetings held after election as Board member.

⁴ Meetings attended out of the meetings held after election as PCC member.

⁵ Richard Nilsson is independent of the company but not of its significant shareholders due to his employment at FAM AB.

⁶ 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.

Mikko Helander was Member of Stora Enso's Board of Directors since March 2019 until his resignation on 15 March 2022. Helander has participated in all Board and relevant Committee meetings held during 2022 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. Acting Head of Paper Division as of 1 July 2022. 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 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

1,960 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

1,245 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, Höegh Autoliners AS, Montes del Plata and Veracel.

Shareholding in Stora Enso

28,146 R shares



René Hansen

Born 1971. B.Sc. (Communication and Marketing).

Position

Executive Vice President, Head of Brand and Communications. Member of the GLT since 1 February 2022. Joined the company 1 February 2022.

Board memberships, principal work experience and other information

VP, Head of Brand Management at Yara International 2019–2022. Prior to that several global marketing and brand executive roles at TOMRA Systems, Zound Industries and Burton Snowboards.

Shareholding in Stora Enso

0

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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

38,421 R shares



Katariina Kravi

Born 1967. LL.M., Trained on the Bench.

Position

Executive Vice President, People and Culture. 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. Member of the Board of Elisa Oyj.

Shareholding in Stora Enso

0



Per Lyrvall

Born 1959. LL.M.

Position

Executive Vice President Division, Forest since 1 December 2022. Country Manager Sweden since 2013. Member of the GLT since 2012. Joined the company in 1994.

Board memberships, principal work experience and other information

EVP, Legal, General Counsel 2008–2022. 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)



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



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

Kati ter Horst, EVP Paper, was a member of GLT until 30 June 2022. The Paper division was dissolved as of 1 January 2023, and the remaining entities were transferred to the Packaging Materials division and the segment Other.

Carl Norell, acting Head of Communications until 31 January 2022, was not a member of GLT.

Tuomas Mustonen, acting Head Sourcing and Logistics, not a member of GLT. Minna Björkman was appointed as EVP Sourcing and Logistics and a member of GLT as of 1 January 2023.

Teemu Salmi, CIO, Head of IT & Digitalisation, was a member of GLT until 31 May 2022. IT & Digitalisation was moved to be part of the CFO organisation and reports to CFO Seppo Parvi.

Jari Suominen, EVP Forest, was a member of GLT until 30 November 2022.

Christian Swartling, acting General Counsel, not a member of GLT. The search for a new General Counsel is ongoing.

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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.



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Remuneration

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Remuneration

Letter from the People and Culture Committee Chair

Dear Shareholders,

On behalf of the Board, I present our 2022 Remuneration report. This report outlines 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 2022. Information on remuneration for the Group Leadership Team is presented in [Financial Report 2022](#).

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 People and Culture 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 2022

During the year, all remuneration to members of the Board of Directors, President and CEO, and Deputy CEO in relation to 2022 was awarded in accordance with the Remuneration policy approved in 2020.

The outcome of the short-term incentive plan for 2022 was approved in early 2023 in relation to performance against the financial metrics sales growth and EBITDA and measurable operational- or individual key targets (including fixed costs, CO₂ emission reduction and 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 2020 Performance share plan outcome was approved in early 2023 based on pre-agreed measures. Performance was measured over three years beginning on 1 January, 2020, and ending on 31 December, 2022. 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 Remuneration Policy was amended in 2022 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 People and Culture 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.

Pay Equity

In 2022 a pay equity study was carried out by an independent third party covering all white collar employees at Stora Enso. The purpose of the study was to identify any gender pay gaps that cannot be explained for example by employee's work experience, performance, job grade or location. The results of the study showed that for the most part we can conclude that the pay praxis is equal, but some unexplained pay gaps were found. Actions to close the unexplained pay gaps will take place in 2023. Pay equity development will be monitored on annual basis and corrections made if necessary.

Antti Mäkinen

Chair of the People and Culture 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.

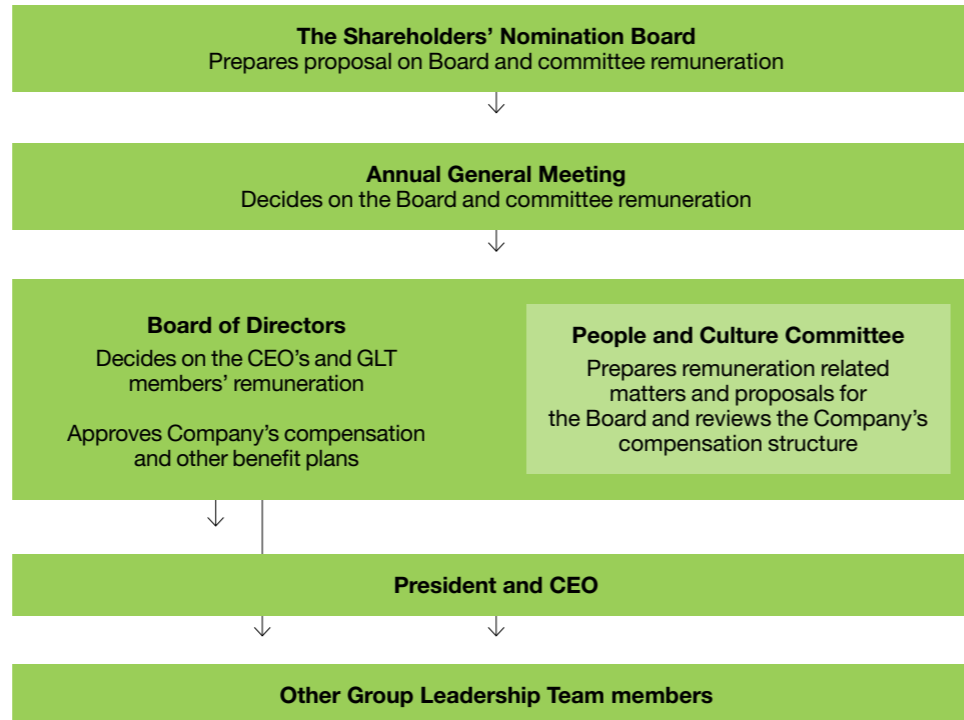
Decision-making procedure

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 People and Culture 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 in the next page.

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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.

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- and strategic- or ESG 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 People and Culture 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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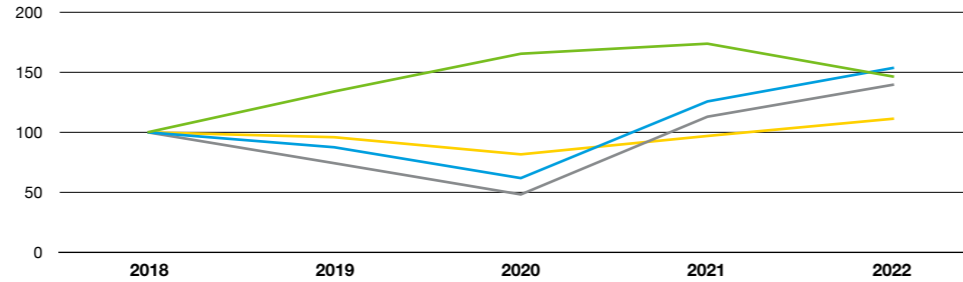
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Remuneration development

The graph below shows the development for selected financial measures since 2018 and up until 2022.

Five-year financial performance

Index: 2018 = 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 2018 and up until 2022. Amounts have been indexed to 100 at the 2018 level in order to show the relative development in the years 2018–2022.

During the period 2018–2020, the employee average remuneration has remained relatively unchanged, while showing a relatively higher increase of the average in 2021 and 2022. The board members remuneration increased by 9.1% (109.1), and the Deputy CEO remuneration increased by 2.5% (102.5) in the period 2018–2022.

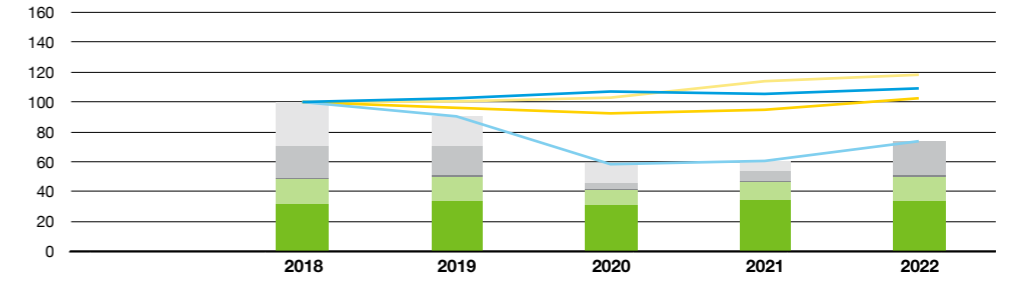
There is a high variance in CEO and Deputy CEO remuneration since these are heavily dependent on variable pay parts (STI and LTI) that depend on financial company performance. Note that LTI is a significant part of CEO remuneration and LTI payouts are based on the financial performance of the three last 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 increased remuneration paid in 2022 although the zero-payment from the LTI plan that lapsed at year-end 2021 had a big impact on 2022 remuneration levels. 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 2018–2022.

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: 2018 = 100



	2018	2019	2020	2021	2022
Board member average ¹	100	102.5	107.0	105.4	109.1
President and CEO ^{2, 3}	100	90.4	58.4	60.6	73.8
Deputy CEO ³	100	96.1	92.4	94.8	102.5
Employee average ⁴	100	100.4	102.9	113.9	118.2

- 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 years thereafter. 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 2022

Remuneration presented in the report is either earned and paid during 2022, or earned in 2022 and due to be paid in 2023.

During 2022, 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 2022

In 2022, the Stora Enso Board members were compensated as set out in the following chart.

Board remuneration

EUR	Year Ended 31 December	
	2022	2021
Chair	203,000	197,000
Vice Chair	115,000	112,000
Board Member	79,000	76,000

Pursuant to the decision by the Annual General Meeting 2022, 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 2022. 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 22,000, and
- for the members of the Financial and Audit Committee EUR 15,400 each,
- for the Chair of the People and Culture Committee EUR 11,000, and
- for the members of the People and Culture Committee EUR 6,600 each,
- for the Chair of the Sustainability and Ethics Committee EUR 11,000, and
- for the members of the Sustainability and Ethics Committee EUR 6,600 each.

Board Remuneration and Committee Memberships

EUR thousand (before taxes)	Year Ended 31 December				Total	Total
	Board remuneration	Financial and Audit Committee	People and Culture Committee	Sustainability and Ethics Committee		
Board members at 31 December 2022						
Antti Mäkinen, Chair	203		11		214	208
Håkan Buskhe, Vice Chair	115		7		122	118
Elisabeth Fleuriot	79	15			94	91
Hock Goh	79	15			94	91
Helena Hedblom	79			7	86	82
Kari Jordan	79		7		86	
Christiane Kuehne	79			11	90	87
Richard Nilsson	79	22			101	97
Hans Sohlström	79			7	86	82
Former Board members						
Mikko Helander (until 15 March 2022)	—	—	—	—	—	82
Total remuneration as Directors^{1, 2, 3}	871	53	24	24	972	939

¹ 40% of the Board remuneration, excluding Committee remuneration, in 2022 was paid in Stora Enso R shares purchased from the market and distributed as follows: to Chair 4,332 R shares, Vice Chair 2,454 R shares, and members 1,686 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 2022 amounted to EUR 3,294,000 (2,110,000), including annual base salary, customary fringe benefits (such as car and mobile phone) STI and LTI programmes, and pension.

2022 Paid and earned CEO remuneration

Annual base salary	EUR 953,127 was earned and paid in fixed salary during 2022.
Short-term incentive	In 2021 the CEO was entitled to an STI programme with a maximum opportunity of 75% of annual fixed salary. Paid STI in 2022 related to the time as CEO in 2021 amounted to 68% of the annual salary with a corresponding value of EUR 648,000. In 2022, the CEO was entitled to an STI programme with a maximum opportunity of 100% of the annual fixed salary. Earned STI related to 2022, due to be paid in 2023, amounted to 88.1% of the annual salary, with a corresponding value of EUR 845,000.
Long-term incentive	Paid LTI in 2022 related to the 2019 LTI programme amounted to 0 shares due to a 0% performance outcome of the LTI programme. The 2020 LTI programme (performance period 2020–2022) ended at year end and is due to be paid in 2023. The programme resulted in a 100% performance outcome with a corresponding value of EUR 987,000. ¹
Other benefits	Benefits include holiday pay, mobile phone, car, and insurance amounting to EUR 32,000.
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 477,000 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 2022 amounted to EUR 3,294,000 (2,110,000). ^{2,3}
Earned proportion of fixed to variable remuneration (paid)	The proportion of fixed compensation earned was 44% (69%), while the proportion of variable compensation earned was 56% (31%).

¹ Value is calculated using the 30 December 2022 closing price of EUR 13.15. The final value of the vested shares will depend on the share price on vesting date 1 March 2023.

² Earned amounts include STI and LTI earned during 2022 and are due to be paid in 2023. The paid amount includes STI and LTI paid during 2022.

³ EUR 1,966,000 was paid from Stora Enso AB and EUR 144,000 was paid from Stora Enso Oyj.

The total earned (paid) remuneration for the current Deputy CEO in the period 1 January to 31 December 2022 amounted to EUR 1,387,000 (946,000), including annual salary, customary fringe benefits (such as car and mobile phone) STI and LTI programmes, and a supplementary pension.

2022 Paid and earned Deputy CEO remuneration

Annual base salary	EUR 447,474 was earned and paid in fixed salary during 2022.
Short-term incentive	In 2021, the Deputy CEO was entitled to an STI programme with a maximum opportunity of 50% of the annual fixed salary. Paid STI in 2022 related to 2021 amounted to 42.8% of the annual salary with a corresponding value of EUR 191,000. In 2022, the Deputy CEO was entitled to an STI programme with a maximum opportunity of 80% of the annual fixed salary. Earned STI related to 2022, due to be paid in 2023, amounted to 68% of the annual salary, with a corresponding value of EUR 300,000.
Long-term incentive	Paid LTI in 2022 related to the 2019 LTI programme amounted to 0 shares due to a 0% performance outcome of the LTI programme. The 2020 LTI programme (performance period 2020–2022) ended at year end and is due to be paid in 2023. The programme resulted in a 100% performance outcome with a corresponding value of EUR 333,000 ¹ .
Other benefits	Benefits include holiday pay, mobile phone, car, and insurance amounting to EUR 36,000.
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 270,000 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 2022 amounted to EUR 1,387,000 (946,000) ² .
Proportion of fixed to variable remuneration (paid)	The proportion of fixed compensation earned was 54% (80%), while the proportion of variable compensation earned was 46% (20%).

¹ Value is calculated using the 30 December 2022 closing price of EUR 13.15. The final value of the vested shares will depend on the share price on vesting date 1 March 2023.

² Earned amounts include STI and LTI earned during 2022 and are due to be paid in 2023. The paid amount includes STI and LTI paid during 2022.

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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 2022 STI programme is detailed below.

	Description of Criteria	Weighting	Performance (0–100%) ¹	STI outcome ²
CEO	Sales growth, EBITDA	70%	88.1%	EUR 845,000 (88.1% of the annual base salary)
	Fixed costs, CO ₂ reduction, safety	20%		
	Individual metrics/targets ³	10%		
Deputy CEO	Sales growth, EBITDA	50%	85.0%	EUR 300,000 (68% of the annual base salary)
	Fixed costs, CO ₂ reduction, safety	30%		
	Individual metrics/targets ³	20%		

¹ Measured performance (out of 100%)

² Total earned STI outcome due to be paid in 2023.

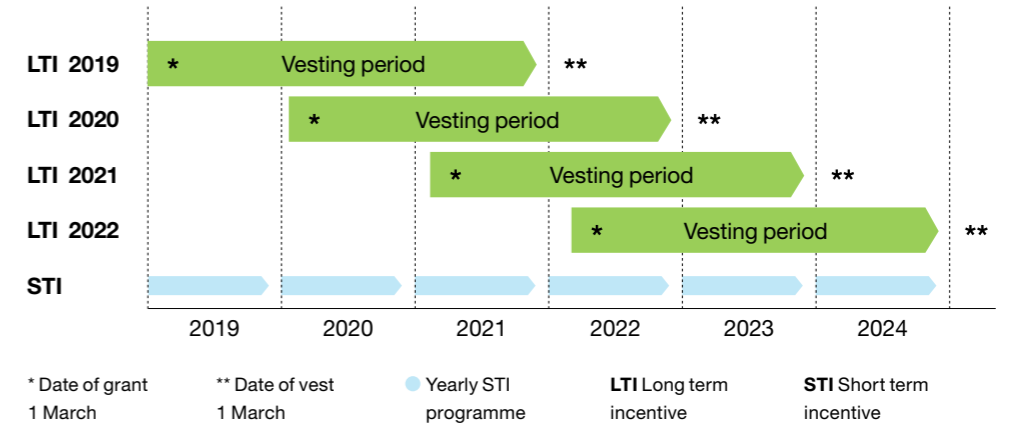
³ Measurable strategic targets

Long Term Incentive (LTI) programmes for the CEO and Deputy CEO

The CEO and Deputy CEO participate in 2020, 2021 and 2022 share based LTI programmes. The 2020 programme has a three-year performance period. The 2021 programme 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. The 2022 programme target metric EPS is set for each one-year period and performance is measured based on accumulated target metrics

and outcomes for the three-year period. Other target metrics in the 2022 programme are set at the beginning of the three-year period. All three programmes vest in only one portion after three years. The 2020 programme is related to the performance period 2020–2022, the 2021 programme is related to the performance period 2021–2023 and the 2022 programme is related to the performance periods 2022–2024. The opportunity under the current outstanding LTI programmes is in Performance Shares.

Variable compensation plan



During the year the LTI 2019 programme was paid out, the performance period for the LTI 2020 programme ended, and the LTI 2022 programme was launched. The CEO was awarded 120% of annual base salary in the 2022 LTI programme, while the Deputy CEO was awarded shares corresponding to 100% of annual base salary. The LTI 2020 programme resulted in a 100% performance outcome due to be paid in 2023. Further to LTI 2020, the CEO and Deputy CEO held outstanding awards in the LTI 2021 and LTI 2022 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 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	100%	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 2022	1 January 2022 to 31 December 2024	1 March 2022	1 March 2025	EPS, Rel. TSR, CO ₂ , Diversity	65,430		
		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	100%	25,340
		LTI 2021	1 January 2021 to 31 December 2023	2 March 2021	1 March 2024	EVA, EPS	18,514		
		LTI 2022	1 January 2022 to 31 December 2024	1 March 2022	1 March 2025	EPS, Rel. TSR, CO ₂ , Diversity	24,970		

¹ Economic Value Added (EVA), Earnings per Share (EPS), Relative Total Shareholder Return (Rel. TSR).

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.

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.



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In 2022, we drove our financial performance to an all-time high and strengthened our balance sheet

Financials

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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, and wooden construction, 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. Stora Enso contributes to the transformation towards a biobased circular economy in three areas where we have the biggest impact and opportunities: climate change, biodiversity, and circularity.

With our low-carbon and recyclable fiber-based products, we support our customers in meeting the demand for renewable eco-friendly products.

Stora Enso had 21,790 employees on average during 2022. Our sales in 2022 were EUR 11.7 billion, with an operational EBIT of EUR 1,891 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 ADRs.

Markets and deliveries

Demand for cartonboard remained elevated in 2022, with some dampening towards the end of the year. Even though the pandemic still presented challenges for certain end-use segments, it boosted others. Demand in the Asian region is stronger than the more mature European and North American markets but was negatively affected by the zero-tolerance policy of China.

Containerboard demand started to weaken towards the end of 2022 as the result of normalisation in consumption patterns, inflation pressuring household budgets and large inventory draw downs in the box and finished goods markets, especially in North America and Europe. In China, pandemic-related disruptions continued to cut containerboard demand.

The growth of European corrugated packaging demand in Stora Enso's main markets slowed down to 1% in 2022 mainly driven by the current economic difficulties and normalisation of e-commerce sales to pre-pandemic levels. The ongoing war in Ukraine has made consumers to reconsider their purchasing habits which slows down the growth of corrugated packaging demand even more. Largest sales for Stora Enso corrugated markets are in home and garden and in grocery and retail sectors.

Global demand for chemical market pulp rebounded to 3% in 2022. Softwood pulp deliveries decreased by 1% reflecting the weakness in Chinese softwood pulp demand. Hardwood and unbleached kraft pulp (UKP) deliveries increased by 5% and by 13%, respectively. Demand for fluff pulp continued strong.

The global chemical market pulp capacity increased by 2% in 2022, the softwood capacity declined by 1% while hardwood capacity increased by 4% and UKP capacity by 6%. The overall shipment-to-capacity balance stood at 90%, 1 percent-point up from 2021.

Higher than expected demand and several supply side and logistics disruptions kept the pulp market tight in Europe and North America. Chinese paper and board demand continued subdued due to weak macro economy and strict zero-covid policy. Slowing economy, inflation and energy availability weakened pulp demand especially in Europe towards the end of year.

Global pulp inventories were generally balanced despite disparity between grades. Softwood pulp inventories remained elevated whereas the hardwood pulp inventories were below the 5-year average level.

Pulp prices reached the all-time high records in summer 2022. Hardwood pulp prices have remained resilient throughout 2022 while softwood pulp prices started to soften towards the year end.

Global sawn wood consumption decreased by some 3% in 2022 according to EOS (European Organization of the Sawmill Industry) estimate. The market situation continued strong in the first part of 2022. Market supply was limited and was not able to meet the high demand, which kept the price levels high in 2022. From early summer 2022 in the USA the market situation started to cool down and prices reduced significantly. Prices started to go down in other markets as well during the second half of 2022. The war in Ukraine and extremely high inflation reduced the amount of housing starts and customer confidence which led into uncertainty in the market. During the second half and especially in Q4 the market was focusing to run inventory levels down which led into low demand and declining price levels. According to EOS North American demand reduced by 2% from 2021 levels and in Europe 5%. In Australia market remained strong longer than in USA or in Europe, but also Australian market cooled down during Q4.

Year 2022 was eventful for the paper markets. European paper demand remained healthy during the first half of year, but started to decline sharply during the second half as result of macroeconomic slow down. Prices increased during the whole year and reached an all-time high level. Price increases were driven by heavily increased costs (especially energy and paper for recycling) and balanced supply and demand. The healthy supply-demand balance was driven by capacity closures and machine conversions. European paper demand was 10% weaker in 2022 compared to the previous year. In North America, demand increased by 2% and in Asia declined by 2% compared to 2021. Global paper consumption was 2% lower in 2022 than in 2021.

Estimated consumption of board, pulp, sawn softwood, and paper in 2022

Tonnes, million	Europe	North America	Asia and Oceania
Consumer board	11.2	9.6	29.4
Containerboard	35.1	33.1	89.1
Corrugated board (billion m ²) ¹	11.0	n/a	n/a
Chemical market pulp	17.4	8.0	36.0
Sawn softwood (million m ³)	78.9	99.9	n/a
Newsprint	3.6	1.4	5.8
Uncoated magazine paper	2.1	0.9	0.1
Coated magazine paper	2.7	1.2	2.2
Coated fine paper	3.2	2.7	9.2
Uncoated fine paper	5.9	6.1	28.3

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

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

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Production and external deliveries

	2022	2021	Change % 2022-2021
Board deliveries, 1,000 tonnes	4,294	4,258	0.9%
Board production, 1,000 tonnes	4,682	4,685	-0.1%
Corrugated packaging European deliveries, million m ²	741	949	-21.9%
Corrugated packaging European production, million m ²	771	1,049	-26.5%
Market pulp deliveries, 1,000 tonnes	2,374	2,495	-4.9%
Wood product deliveries, 1,000 m ³	4,397	4,803	-8.5%
Wood deliveries, 1,000 m ³	13,304	12,091	10.0%
Paper deliveries, 1,000 tonnes	1,924	2,872	-33.0%
Paper production, 1,000 tonnes	1,926	2,776	-30.6%

The Group's board deliveries totalled 4,294,000 tonnes, which was 36,000 tonnes, or 0.9% higher compared to a year ago. Corrugated packaging European deliveries decreased by 208 million m² or 21.9% to 741 million m² mainly due to exit from Russian operations. Market pulp deliveries decreased by 121,000 tonnes, or 4.9%, to 2,374,000 tonnes, mainly due to higher share of internal deliveries. Wood product deliveries decreased by 406,000 m³ or 8.5% to 4,397,000 m³, mainly due to exit from Russian operations. Wood deliveries increased by 1,213,000 m³ or 10.0% to 13,304,000 m³ supported by higher deliveries in Sweden. Paper deliveries totalled 1,924,000 tonnes, down 948,000 tonnes, or 33.0%, from 2021, driven by the 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

Group sales increased by 15% year-on-year to EUR 11,680 (10,164) million. Operational EBIT was EUR 1,891 (1,528) million, and the operational EBIT margin was 16.2%. Earnings per share increased by 22% to EUR 1.97 (1.61) and earnings per share excluding fair valuations increased by 31% to EUR 1.55 (1.19).

The IFRS operating profit includes a positive net effect of EUR 195 (positive 328) million from biological asset 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 higher market prices. There is also a positive net effect of EUR 168 (positive 84) million from Stora Enso's share of net financial items, taxes and biological asset valuation of equity accounted investments. The positive impact comes mainly from the change in the valuation method and increase in fair valuation in Finnish forests, through Stora Enso's 41% investment in Tornator.

Tangible and intangible asset (including goodwill) impairments amounted to EUR 114 (149) million. Impairment reversals amounted to EUR 7 (0) million.

The Group recorded items affecting comparability (IAC) with a negative impact of EUR 245 (negative 354) million on its IFRS operating profit and a positive impact of EUR 9 (positive 58) million on income taxes. The IAC relate mainly to the disposal of Russian operations.

The IFRS operating profit was EUR 2,009 (1,568) 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	
	2022	2021	2022	2021	2022	2021
Packaging Materials	596	556	-1	-4	595	552
Packaging Solutions	-2	26	-100	-4	-101	23
Biomaterials	687	495	-19	11	668	506
Wood Products	309	364	-56	-1	253	363
Forest	204	267	319	355	523	622
Paper	185	-124	-14	-298	172	-423
Other	-47	-48	-12	-19	-59	-67
Total	1,891	1,528	118	40	2,009	1,568
Net financial items					-151	-149
Profit before Tax					1,858	1,419
Income tax expense					-322	-151
Net Profit					1,536	1,268

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. Non-operational fair value changes of biological assets reflect changes made to valuation assumptions and parameters. Operational fair value changes of biological assets contain all other fair value changes, mainly due to inflation and differences in actual harvesting levels compared to the harvesting plan. 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.



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Items affecting comparability, fair valuations and non-operational items

EUR million	Year Ended 31 December	
	2022	2021
Impairments and impairment reversals	-124	-141
Restructuring costs excluding impairments	-3	-227
Acquisitions and disposals	-104	11
Other	-15	4
Items affecting comparability	-245	-354
Fair valuations and non-operational items	363	394
Total	118	40

Segment share of operative assets, operative liabilities and operating capital

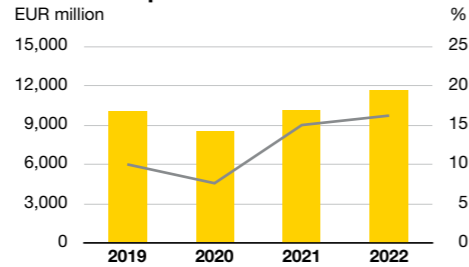
EUR million	Year Ended 31 December					
	Operative Assets		Operative Liabilities		Operating Capital	
	2022	2021	2022	2021	2022	2021
Packaging Materials	4,441	4,120	1,097	914	3,344	3,206
Packaging Solutions	381	422	146	176	235	245
Biomaterials	3,095	2,755	299	236	2,796	2,520
Wood Products	998	955	280	277	718	678
Forest	7,481	7,131	518	435	6,963	6,696
Paper	887	884	554	761	333	123
Other and eliminations	1,432	970	16	131	1,416	839
Total	18,715	17,237	2,909	2,930	15,806	14,307

Key figures

	2022	2021	2020
Sales, EUR million	11,680	10,164	8,553
Operational EBIT, EUR million	1,891	1,528	650
Operational EBIT margin	16.2%	15.0%	7.6%
Operating profit (IFRS), EUR million	2,009	1,568	922
Operating profit margin (IFRS)	17.2%	15.4%	10.8%
Return on equity (ROE)	13.3%	13.0%	7.6%
Operational ROCE	13.8%	12.4%	5.8%
Operational ROCE excl. Forest division	20.9%	17.8%	7.0%
Net debt/equity ratio	0.15	0.22	0.33
EPS (basic), EUR	1.97	1.61	0.79
EPS excluding FV, EUR	1.55	1.19	0.45
Dividend and distribution per share ¹ , EUR	0.60	0.55	0.30
Payout ratio, excluding FV	38.6%	46.3%	66.7%
Payout ratio (IFRS)	30.5%	34.3%	38.0%
Dividend and distribution yield, (R share)	4.6%	3.4%	1.9%
Price/earnings (R share), excluding FV	8.46	13.60	34.78
Equity per share, EUR	15.89	13.55	11.17
Market capitalisation 31 Dec, EUR million	10,503	12,809	12,383
Closing price 31 Dec, A/R share, EUR	13.90/13.15	16.60/16.14	15.90/15.65
Average price, A/R share, EUR	16.58/16.12	16.68/15.70	12.06/11.52
Number of shares 31 Dec (thousands)	788,620	788,620	788,620
Trading volume A shares (thousands)	1,174	1,750	4,662
% of total number of A shares	0.7%	1.0%	2.6%
Trading volume R shares (thousands)	455,952	422,493	605,233
% of total number of R shares	74.5%	69.0%	98.8%
Average number of shares, basic (thousands)	788,620	788,620	788,620
Average number of shares, diluted (thousands)	789,391	789,126	789,182

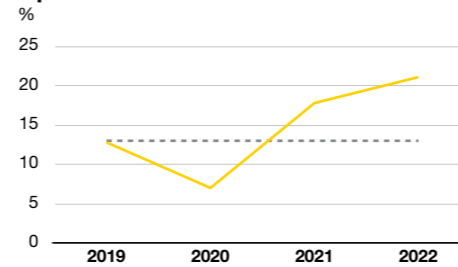
¹ See the Board of Directors' proposal for dividend distribution.

Sales and operational EBIT



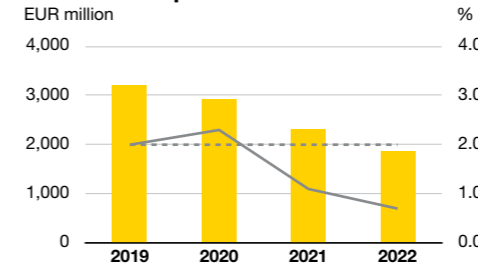
● Sales, EUR million
— Operational EBIT, %

Operational ROCE excl. Forest



● Operational ROCE, %
-- Target >13%

Net debt to operational EBITDA



● Net debt, EUR million
— Net debt to operational EBITDA
-- Target <2.0

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Net financial expenses at EUR 151 (149) million were EUR 2 million higher than a year ago. Net interest expenses, at EUR 105 million, decreased by EUR 20 million, mainly as a result of higher interest income on interest-bearing receivables and deposits. Other net financial expenses, at EUR 44 million, were EUR 22 million higher, mainly due to write-down of Russia related loan receivables and loss allowance. 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 1 (loss of EUR 2) 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 322 (151) million, equivalent to an effective tax rate of 17.3% (10.7%), as described in more detail in the [Note 9](#) (Income taxes).

The loss attributable to non-controlling interests was EUR 13 (gain EUR 3) million, leaving a profit of EUR 1,550 (1,266) million attributable to Company shareholders.

Earnings per share excluding fair valuations were EUR 1.55 (1.19). Operational return on capital employed was 13.8% (12.4%).

The Group capital employed was EUR 14,356 million on 31 December 2022, an increase of EUR 1,380 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 2021	12,976
Capital expenditure excluding investments in biological assets less depreciation	168
Investments in biological assets less depletion of capitalised silviculture costs	7
Impairments and reversal of impairments	-107
Fair valuation of forest assets	529
Unlisted securities (mainly PVO)	533
Equity accounted investments	254
Net liabilities in defined benefit plans	152
Operative working capital and other interest-free items, net	399
Emission rights	13
Net tax liabilities	-236
Translation difference	-314
Other changes	-18
31 December 2022	14,356

Financing

Cash flow from operations was EUR 1,873 (1,752) million and cash flow after investing activities was EUR 1,162 (1,101) million. Working capital increased by EUR 461 (increased 25) million, inventories increased by EUR 454 million and trade receivables by EUR 184 million. Trade payables increased by EUR 267 million and thus had a positive impact on working capital. Payments related to the previously recognised provisions were EUR 126 million.

Operative cash flow

EUR million	2022	2021
Operational EBITDA	2,529	2,184
IAC on operational EBITDA	-133	-213
Other adjustments	-62	-194
Change in working capital	-461	-25
Cash Flow from Operations	1,873	1,752
Cash spent on fixed and biological assets	-705	-645
Acquisitions of equity accounted investments	-7	-6
Cash Flow after Investing Activities	1,162	1,101

At the end of the year, Group net interest-bearing liabilities were EUR 1,853 (2,309) million. The decrease in net interest-bearing liabilities was mainly driven by a strong cash flow from operations after investments and dividend payments. Cash and cash equivalents net of bank overdrafts increased to EUR 1,917 (1,480) million. The net debt/equity ratio at 31 December 2022 decreased to 0.15 (0.22). The ratio of net debt to the last 12 months' operational EBITDA decreased to 0.7 (1.1) due to lower net debt and higher operational EBITDA. The average interest rate on borrowings for the full year 2022 increased to 3.3% (3.0%) with a run-rate of 3.3% as per the end of the fourth quarter.

During 2022, altogether EUR 550 million of bilateral bank loans were arranged. Maturities of these loans vary from 18 months to 3 years with extension options. Proceeds from these loans are used for general corporate purposes and EUR 200 million of these loans were undrawn at reporting date. In May 2022, Stora Enso signed a new EUR 200 million committed credit facility with a maturity of one year and one six month extension option which was exercised in October 2022.

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. In October 2022, the first extension option of this facility was used together with all 12 banks and therefore maturity is now in 2027. Simultaneously, the existing EUR 600 million RCF with original maturity in 2023 was cancelled. Additionally, Stora Enso has access to statutory pension premium loans in Finland up to EUR 1,050 (1,000) million.

The forest land fair valuation increased the Group's other comprehensive income in equity by EUR 264 (195) million. The fair valuation of cash flow hedges and equity investments fair valued through other comprehensive income increased equity by EUR 563 (decreased by EUR 474) 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 and also by net fair valuation gains 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

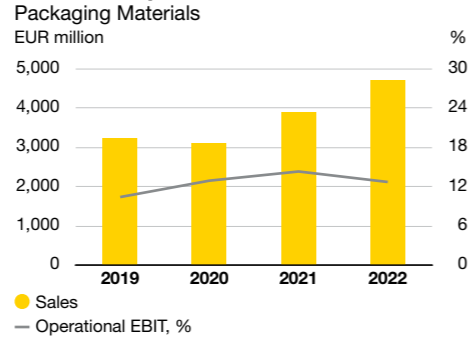
The Packaging Materials division is a global leader and expert in circular packaging providing premium packaging materials based on virgin and recycled fiber. Addressing the needs of today's eco-conscious consumers, Stora Enso helps customers replace fossil-based materials with low-carbon, renewable and recyclable alternatives for their food, beverage and transport packaging. A wide selection of base boards and barrier coatings enables design optimisation for various demanding packaging end-uses.

EUR million	2022	2021
Sales	4,690	3,898
Operational EBITDA	900	846
Operational EBITDA margin	19.2%	21.7%
Operational EBIT	596	556
Operational EBIT margin	12.7%	14.3%
Operational ROOC	18.2%	18.0%
Cash flow from operations	756	807
Cash flow after investing activities	440	459
Board deliveries, 1,000 tonnes	4,599	4,616
Board production, 1,000 tonnes	4,682	4,685

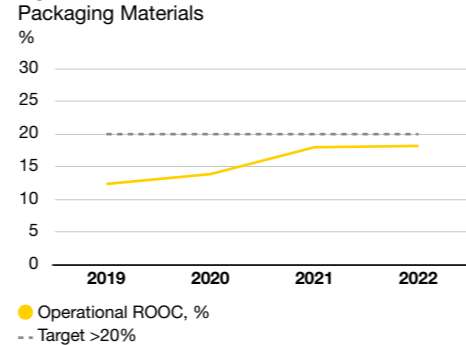
Packaging Materials division sales were at an all-time high level of EUR 4,690 (3,898) million, an increase of 20%, driven by higher sales prices in all business segments. Consumer board market remained strong throughout the year, while the containerboard market turned soft during the second half of the year, impacting the volume growth year-on-year.

An all-time high operational EBIT at EUR 596 (556) million increased by EUR 40 million despite of heavy cost increases on all variable cost components. Record high result was driven by extraordinarily strong Containerboard performance during first half year, partly offsetting the variable cost escalation.

Sales and operational EBIT



Operational ROOC



Packaging Solutions division

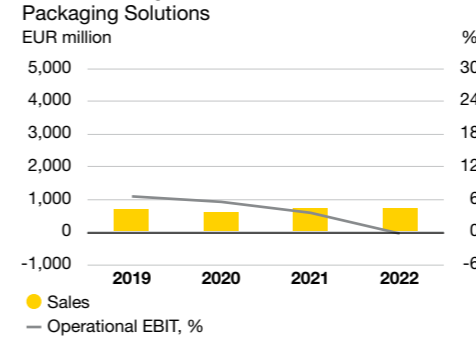
The Packaging Solutions division develops and sells premium fiber-based packaging products and services. Stora Enso's high-end eco-friendly packaging products are used by leading brands across multiple market sectors, including the retail, e-commerce and industrial sectors. The portfolio includes converting corrugated board and carton board, and other new materials such as formed fiber and wood foams into standard and bespoke packaging solutions. The division also provides design and sustainability services for our customers, as we support a shift towards circular solutions.

EUR million	2022	2021
Sales	737	723
Operational EBITDA	27	56
Operational EBITDA margin	3.6%	7.8%
Operational EBIT	-2	26
Operational EBIT margin	-0.2%	3.6%
Operational ROOC	-0.7%	10.8%
Cash flow from operations	-5	56
Cash flow after investing activities	-40	26
Corrugated packaging European deliveries, million m ²	772	1,046
Corrugated packaging European production, million m ²	771	1,049

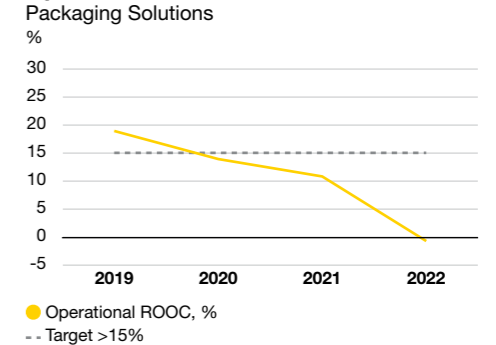
Packaging Solutions division sales were at an all-time high of EUR 737 (723) million, up 2%, driven by higher sales prices following the higher cost levels as well as higher sales for innovation and service led businesses. The revenue from innovation and service led businesses increased by almost 50%. Examples of these businesses are formed fiber, circular solutions, reusable solutions and packaging automation.

Operational EBIT was EUR -2 (26) million, impacted mainly by the divestment of the Russian units and investments in innovation and service led businesses. Operational EBIT for traditional businesses, excluding Russia, increased.

Sales and operational EBIT



Operational ROOC



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Biomaterials division

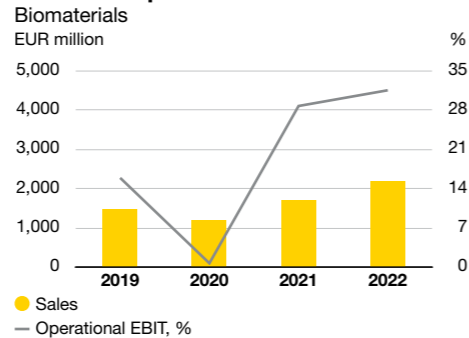
The Biomaterials division meets the growing demand for bio-based solutions which replace fossil-based and non-renewable materials. Stora Enso achieves this by using all fractions of biomass, like lignin, to develop new solutions including novel applications such as bio-based anode material for batteries and bio-based binders. Our pulp offering encompasses a wide variety of grades to meet the demands of packaging, paper, tissue, specialities, and hygiene product producers. We also serve the biochemicals market with tall oil and turpentine from biomass for further refining. Pulp continues to be our foundation while long-term growth is driven by new products and innovations.

EUR million	2022	2021
Sales	2,180	1,728
Operational EBITDA	822	618
Operational EBITDA margin	37.7%	35.7%
Operational EBIT	687	495
Operational EBIT margin	31.5%	28.7%
Operational ROOC	25.8%	20.8%
Cash flow from operations	682	490
Cash flow after investing activities	536	391
Pulp deliveries, 1,000 tonnes	2,554	2,576

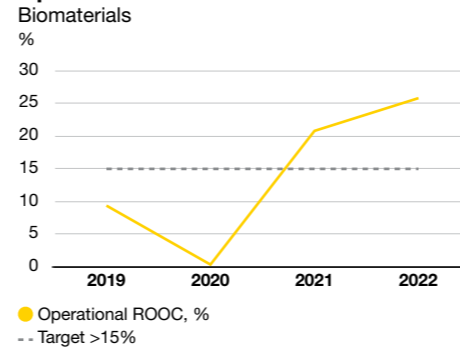
Biomaterials division sales were at an all time high at EUR 2,180 (1,728) million, up 26% due to significantly higher pulp sales prices in all grades and favourable currency exchange rates. The market was strong, supported by a good operational efficiency.

Operational EBIT, at EUR 687 (495) million increased by EUR 192 million, mainly due to significantly higher sales prices in all grades, supported by good delivery volumes. Operational EBIT was negatively impacted by higher costs. Foreign exchange rates had a positive impact on operational EBIT. Side streams contributed more than in previous year.

Sales and operational EBIT



Operational ROOC



Wood Products division

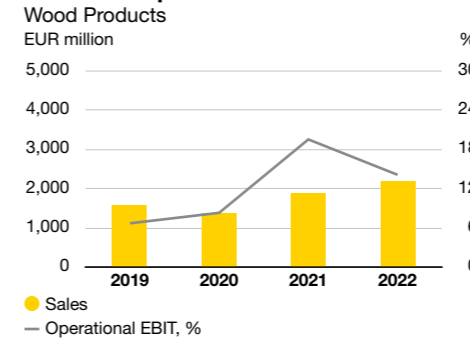
The Wood Products division is the largest sawn wood producer in Europe and a leading provider of sustainable wood-based solutions for the global construction industry. The growing Building Solutions business offers building concepts and a full range of products to support low-carbon construction. Stora Enso develops services and digital tools to simplify the design and construction of buildings with wood. Additionally, we offer applications for windows and doors, and pellets for sustainable heating solutions.

EUR million	2022	2021
Sales	2,195	1,872
Operational EBITDA	356	410
Operational EBITDA margin	16.2%	21.9%
Operational EBIT	309	364
Operational EBIT margin	14.1%	19.5%
Operational ROOC	44.2%	59.4%
Cash flow from operations	346	313
Cash flow after investing activities	264	252
Wood products deliveries, 1,000 m ³	4,235	4,508

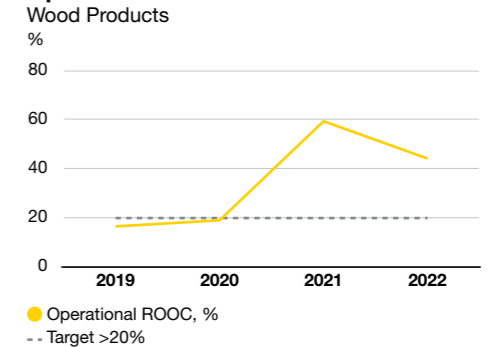
Wood Products division sales were at an all-time-high level of EUR 2,195 (1,872) million, up 17% due to favourable market, record high sales prices, and improved productivity. After a period of strong sawn wood market, there was a rapid decline in demand after the summer. The building solutions business continued to benefit from the favourable trend of building with wood.

Operational EBIT was the second highest result, after the all-time high in 2021, at EUR 309 (364) million. It decreased by EUR 55 million, or 15%. The positive impact of sales prices was offset by higher costs for logs, logistics, energy, and increased fixed costs.

Sales and operational EBIT



Operational ROOC



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Forest division

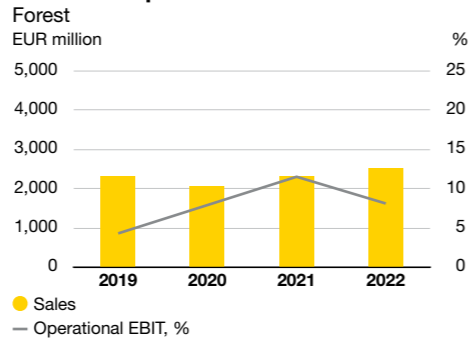
The Forest division creates customer value through innovative solutions, competitive wood supply and sustainable forest management. Forests are the foundation for Stora Enso's renewable offerings. The division manages Stora Enso's forest assets in Sweden and a 41% share of Tornator, whose forest assets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

EUR million	2022	2021
Sales	2,519	2,311
Operational EBITDA	256	318
Operational EBITDA margin	10.2%	13.7%
Operational EBIT	204	267
Operational EBIT margin	8.1%	11.5%
Operational ROCE	3.7%	5.1%
Cash flow from operations	146	158
Cash flow after investing activities	91	112
Wood deliveries, 1,000 m ³	38,217	39,652
Operational fair value change of biological assets	87	82

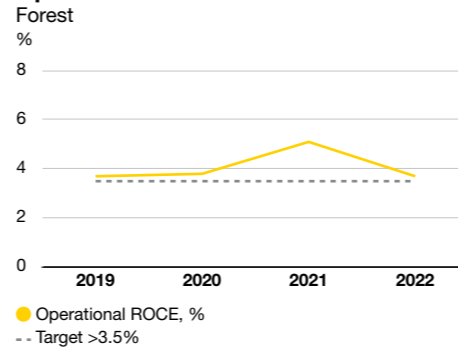
Forest division sales were EUR 2,519 (2,311) million, up 9% due to higher sales prices.

Operational EBIT at EUR 204 (267) million decreased by 24%. Excluding the large forest area sale in Hylte in Sweden in 2021, operational EBIT improved by 6% from last year.

Sales and operational EBIT



Operational ROCE



Paper division

At the end of 2022, Stora Enso had an established customer base and its product portfolio had offerings 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.

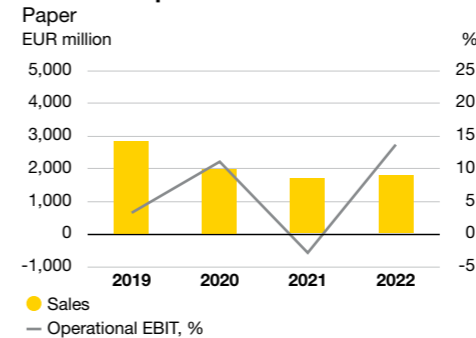
EUR million	2022	2021
Sales	1,772	1,703
Operational EBITDA	242	-48
Operational EBITDA margin	13.7%	-2.8%
Operational EBIT	185	-124
Operational EBIT margin	10.5%	-7.3%
Operational ROOC	81.3%	-40.3%
Cash flow from operations	77	-25
Cash flow after investing activities	16	-77
Cash flow after investing activities to sales	0.9%	-4.5%
Paper deliveries, 1,000 tonnes	1,924	2,872
Paper production, 1,000 tonnes	1,926	2,776

Paper division sales increased by 4% to EUR 1,772 (1,703) million, despite lower deliveries due to the closures of the Veitsiluoto and Kvarnsveden sites in Q3/2021. Paper prices increased significantly throughout the year, resulting in successful turnaround of the paper business supported by good supply-demand balance. Sales from retained business, after the closures of Veitsiluoto and Kvarnsveden, increased by 50%.

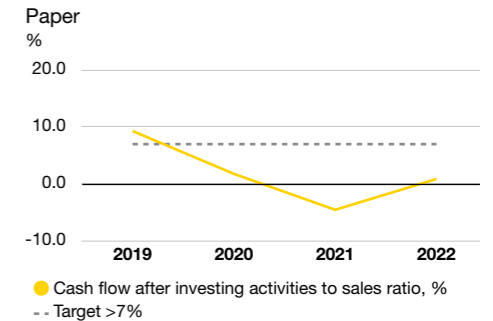
Operational EBIT at EUR 185 (-124) million increased by EUR 310 million, due to the significantly higher sales prices more than offsetting the increase in variable costs, especially energy.

Cash flow after investing activities was EUR 16 (-77) million driven by improved profitability, however impacted by the higher restructuring provision payouts during the year. Cash flow from the retained business was EUR 94 (-8) million.

Sales and operational EBIT



Cash flow after investing activities to sales ratio



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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	2022	2021
Sales	1,097	1,092
Operational EBITDA	-33	-9
Operational EBITDA margin	-3.0%	-0.8%
Operational EBIT	-47	-48
Operational EBIT margin	-4.3%	-4.4%
Cash flow from operations	-130	-48
Cash flow after investing activities	-146	-62

Sales for Segment Other at EUR 1,097 (1,092) million and operational EBIT at negative EUR 47 (48) million remained flat compared to previous year.

Investments and capital expenditure

Additions to fixed and biological assets including internal costs capitalised in 2022 totalled EUR 778 (666) million. The total amount includes additions in biological assets of EUR 77 (58) million.

In January, an investment of EUR 40 million was announced to enhance operational and carbon footprint performance for fluff pulp production at the Skutskär site in Sweden.

In February, Stora Enso announced an investment of EUR 9 million in an automated CLT (cross-laminated timber) coating line at the Ybbs sawmill in Austria. The solution will shorten construction times and improve wood protection.

In April, Stora Enso decided to invest EUR 10 million to reduce annual operational CO₂ emissions by 70,000 tonnes at its Enocell site, Finland, replacing fossil-based fuel oil with renewable pitch oil made from trees. This complements the main energy source, sawdust powder, utilising 100% bio energy.

Following the feasibility study announced in February 2022 Stora Enso announced in October, that it will invest approximately EUR 1 billion to convert the remaining idle paper machine at the Oulu site in Finland into a high-volume consumer board line. The investment supports the Group's growth strategy in renewable packaging by providing new volume for growing packaging segments. The targeted end-use segments are food and beverage packaging, especially frozen and chilled, and dry and fast food, mainly in Europe and North America. Production on the converted machine is estimated to start in early 2025.

Stora Enso's new production site for cross-laminated timber (CLT) in Ždírec, the Czech Republic, was inaugurated in October. Following the EUR 79 million investment, the new CLT site is one of the most modern in the world, supporting Stora Enso's strategy of growth within wooden building solutions. The estimated annual production capacity will be approximately 120,000 m³ after ramp-up.

The investment in centralising and modernising the wood handling capacity at the Imatra site in Finland was completed in November. The investment of EUR 80 million, started in the first quarter of 2021, reduces water usage at the site by 85% and enhances Stora Enso's production capabilities for premium packaging board. The project included installation of a new, third debarking line, improvements to chip handling systems, and modifications to the existing wood yard infrastructure.

In December, Stora Enso announced a EUR 38 million investment in unbleached kraft pulp (UKP) production at its Enocell site in Finland and a EUR 42 million investment in fluff pulp production improvement at its Skutskär site in Sweden to strengthen its focus on specialised

pulp grades. These investments will support the growing consumer demand for non-bleached renewable packaging materials and hygiene products respectively.

Stora Enso is conducting a feasibility study regarding the conversion of the one of the two paper line at its Langerbrugge site in Belgium into a high-volume recycled containerboard line. The feasibility study is expected to be finalised in the first half of 2023. Depending on an investment decision, the converted line is expected to be in production during 2025. The annual capacity would be 700,000 tonnes of testliner and recycled fluting grades and would generate annual sales of approximately EUR 350 million when run at full capacity. The total investment for the conversion is estimated to be approximately EUR 400 million.

The Group is also evaluating its first industrial production line of lignin at the Sunila site in Finland through a feasibility study.

The other main projects ongoing at the end of 2022 were an investment in increasing capacity at the Skoghall board production site in Sweden, and Skutskär bleach plant upgrade in Sweden.

Changes in the Group structure

During 2022, Stora Enso divested its three corrugated packaging plants in Lukhovitsy, Arzamas and Balabanovo in Russia to local management. Stora Enso also divested its two sawmills in Nebolchi and Impilahti in Russia to local management. The divestment included Stora Enso's Russian forest operations which supplied wood to the sawmills. Minor formalities remain to complete the transaction for certain Russian legal entities.

In March, Stora Enso announced that it would divest four of its five paper mills. In September, Stora Enso signed agreements to divest the Maxau paper production site in Germany to Schwarz Produktion, part of Schwarz Group, one of the top retailers in the world, and the Nymölla site in Sweden to Sylvamo, a US-based global producer of uncoated paper. The divestment of the Nymölla site to Sylvamo was concluded in early January, and the divestment of the Maxau site is expected to be finalised during the first half of 2023. The divestment of the Hylte site in Sweden to Sweden Timber was announced in January 2023. The Group also announced that the Anjala paper will be retained in the Group.

In September, Stora Enso announced the acquisition of De Jong Packaging Group, based in the Netherlands, for an enterprise value of EUR 1,020 million. The acquisition advances Stora Enso's strategic direction, accelerates revenue growth and builds market share in renewable packaging in Europe. De Jong Packaging Group is one of the largest corrugated packaging producers in the Benelux countries. Its product portfolio and geographic presence complement and enhance Stora Enso's offering, especially in fresh produce, e-commerce and industrial packaging. The transaction was completed in January 2023.

Innovation, research and development

Stora Enso's total spend on innovation, research and development in 2022 was EUR 112 (133) million, equivalent to 1.0% (1.3%) of total sales. Research and development work is a basic element for staying relevant and competitive towards customers. The company employed approximately 400 people in research and development. The responsibility of product innovations and development of services is at the business divisions while long-term science and research priorities are driven by Group Innovation and R&D.

Stora Enso's innovation and growth focus is on the development of sustainable packaging applications to replace plastic-based materials, bio-based barriers solutions for packaging, innovative biomaterials or high-end applications, and the development of sustainable wooden-

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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 and processes. During 2022, Stora Enso continued to strengthen its patent portfolio by applying for patents for 83 new innovations. The focus of the new patent filings has been within Biomaterials, Packaging Materials and Packaging Solutions. Stora Enso's patent portfolio amounts to over 3,800 applications and granted patents.

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 in the chapter Risks and Risk Management, including Stora Enso's reporting according to Task Force on Climate-related Financial Disclosures (TCFD) recommendations.

Business model

Stora Enso is one of the leading providers of renewable products in packaging, biomaterials and wooden construction, and one of the largest private forest owners in the world. Sustainability is deeply embedded in the Group's strategy and responsible business practices. Stora Enso contributes to the transformation towards a biobased circular economy in three areas where it has the biggest impact and opportunities: climate change, biodiversity, and circularity. A description of Stora Enso's business model is 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 2022.

Stora Enso's Sustainability Policy describes the Group's overall approach to sustainability and the 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](#).

Environmental matters

Climate change

Key policy: Energy and Carbon Policy

Stora Enso's science-based target is to reduce absolute scope 1 and 2 greenhouse gas (GHG) emissions from operations by 50% by 2030 from the 2019 baseline year, in line with the 1.5-degree scenario. Stora Enso is also committed to a target to reduce scope 3 GHG emissions by 50% by 2030 from the 2019 baseline year.

In 2022, Stora Enso's absolute GHG emissions (scope 1 and 2) were 27% lower than the baseline level (14%¹ lower in 2021). During 2022, the emissions decreased mainly due to less use of fossil fuels in multiple production sites as well as the ceasing operations at the Veitsiluoto mill in Finland.

Stora Enso's estimated GHG emissions elsewhere along the value chain (scope 3) were 27% lower than the baseline level (4%¹ lower in 2021). The emissions decreased year-on-year due to mill closures and the end of dissolving pulp production.

¹ Historical figures recalculated due to divestments or additional data after the previous annual report.

Sustainable forestry and biodiversity

Key policy: Wood and Fiber Sourcing, and Land Management policies

Stora Enso is committed to achieving a net-positive impact on biodiversity in its own forests and plantations by 2050 through active biodiversity management. During 2022, Stora Enso launched a Biodiversity Leadership Programme with selected projects to drive the delivery of this target. The programme covers Stora Enso's own forests, suppliers' forests, and global forests, as well as improving biodiversity beyond the forest sector.

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 the Company's 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 monitors and measures the state of biodiversity and the impact of its operations on biodiversity with selected science-based indicators.

Currently, Stora Enso follows its progress in sustainable forestry with a key performance indicator that measures the proportion of land in wood production and harvesting owned or leased by Stora Enso covered by forest certification schemes. At the end of 2022, Stora Enso owned or leased lands covered a total area of 2.01 million hectares (2.01 million hectares in 2021). 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%, and in 2022, the certification coverage amounted to 99% (99%¹ in 2021). 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 2022.

In 2022, the total amount of wood (including roundwood and wood chips) delivered to Stora Enso's mills was 35.1 million m³ (solid under bark) (37.6 million m³ in 2021). The proportion of third-party certified wood in the Group's total wood supply was 80% (77%).

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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Circularity

Key policy: Stora Enso Circular Design Guidelines

Stora Enso is committed to transparent and circular material flows that help to minimise waste and combat climate change. The target is to achieve 100% recyclable products by 2030. By the end of 2022, 94% of the Group's products were recyclable.²

² 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.

Water

Key policy: Stora Enso Environmental Guidelines

The objective of the Group's key performance indicators on total water withdrawal and process water discharges is to drive a downward trend from the 2016 baseline of 59 m³ and 27 m³ per saleable tonne of product, respectively. In 2022, total water withdrawal was 61 m³ per saleable tonne (60 m³ in 2021) and process water discharges amounted to 31 m³ per saleable tonne (31 m³ in 2021). Water performance normalised by tonne was partly affected by lower production levels compared to the baseline year. From 2023, the target for process water discharge is to reduce specific process water discharges per saleable tonne (m³/tonne) by 17% by 2030 from its new baseline year, 2019. 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.

Social and employee matters

Employees

Key policies: Minimum Human Resources Requirements for labour conditions

On 31 December 2022, there were 20,879 (22,094) employees in the Group. The average number of employees in 2022 was 21,790, which is 1,281 less than the average number in 2021. The figures include 50% of the employees at Veracel in Brazil and Montes del Plata in Uruguay. Read more in the chapter Employees in the Sustainability reporting section.

Personnel expenses totalled EUR 1,315 (1,351) million or 11.3% of sales. Wages and salaries were EUR 996 (1,017) million, pension costs EUR 152 (165) million and other employer costs amounted to EUR 160 (162) million.

At the end of 2022, the Group's top four countries in respect to the number of employees were Finland, Sweden, China, and Poland. 25% (24%) of all employees were women. As of 2022, Stora Enso's target is to increase the share of female managers among all managers to 25% by the end of 2024. By the end of 2022, 23% of managers were female.

Personnel turnover in 2022 was 13.9%(13.2%). Illness-related absenteeism amounted to 4.1% (3.8%) of total theoretical working hours.

The Group's wages in relation to local minimum wages and approach to living wages are described in chapter Employees in the Sustainability reporting section. 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 2022, the Total Recordable Incident (TRI) rate decreased to 5.9 (6.2). The milestone of 5.3 for 2022 was not achieved. Even though Stora Enso's safety performance has remained stable over the past years, it does not reflect 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 for responsible sourcing measures the proportion of Group's total supplier spend covered by the Supplier Code of Conduct (SCoC), including all categories and regions. By the end of 2022, 96% of Stora Enso's total spend on materials, goods, and services was duly covered (96% at the end of 2021), which exceeds the target to maintain at least the level of 95%.

Respect for human rights

Key policy: Human Rights Policy and Guidelines

Stora Enso's commitment to respect human rights covers all our operations, including employees, contractors, suppliers, and neighbouring communities. In addition to the Group's 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.

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. This includes the following topics:

- Health and safety
- Fair labour (fair employment conditions, freedom from forced labour, freedom of association, non-discrimination and non-harassment)
- Land and natural resource rights acquisition and management
- Grievance mechanisms
- Children's rights (relevant to the forest sector)

In preparation for the upcoming EU Corporate Sustainability Due Diligence (CSDD) directive, Stora Enso, together with an external business and human rights consultancy, carried out three pilot projects in 2022 focused on improving our internal controls for two high risk supply chains, as well as the due diligence processes in our own operations. Read more in chapter Human Rights in the Sustainability reporting section.

During 2022, Stora Enso continued to address land and natural resource rights in Guangxi, China and Bahia, Brazil.

Guangxi, China

Stora Enso leases 73,133 hectares of land in Guangxi province China, of which 53,437 hectares is leased from state-owned forest farms. The remaining 19,696 hectares, or 27% 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 2022, with 6,124 hectares of land still under occupation at the end of the year. In December 2022, Stora Enso initiated a divestment process for the Beihai site and the forest operations.

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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 2022, 182 hectares or 0.2% of productive land owned by Veracel remained occupied by movements not involved in the agreements.

At the end of 2022, the total land area owned by Veracel was 210,000 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.

Community

Key policies: Human Rights Policy and Guidelines, Community Investment Guidelines

During 2022, Stora Enso initiated a number of large cash donations towards humanitarian emergency relief. Two donations were directed towards the Ukraine crisis and one towards the emergency relief following the severe flooding in Pakistan. The donations were channelled through UNHCR.

The total monetary value of the community contribution towards Ukraine across the Group was EUR 0.25 million. In 2022, Stora Enso's total voluntary community investment was EUR 2.0 million.

Anti-corruption and bribery matters

Key policies: Business Practice Policy, the Stora Enso Code (Code of Conduct)

A total of 153 (117 in 2021) potential non-compliance cases were reported in 2022. 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 140 (98) 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 44 (26) of the investigations. Based on the Group's categorisation, 12 (9) of the proven cases were related to corruption and/or fraud, resulting in employee dismissal or a disciplinary process. While Stora Enso continues to enforce zero tolerance of corruption, none of the proven cases had a material impact on the Company.

Furthermore, 13 (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.

EU Taxonomy

Background

To meet the EU's climate and energy targets for 2030 and reach the objectives of the European Green Deal, a classification system for sustainable economic activities called EU Taxonomy was published and entered into force in 2020. In the Annual Reports for 2021, published in 2022, large companies were obligated to report the share of Taxonomy-eligibility in their operations. Taxonomy-eligibility describes if an economic activity is included in the scope of activities recognised in the Taxonomy Regulation. In the Annual Reports for 2022, published in 2023, companies are obligated to report also the share of Taxonomy-alignment in their operations. Taxonomy-alignment describes if an economic activity is sustainable based on defined science-based technical screening criteria specified for the activity. The criteria for 'substantial

contribution' determine that the economic activity either has a substantial positive environmental impact or substantially reduces negative impacts on the environment. The criteria for 'do no significant harm' determine that the economic activity does not impede on the other environmental objectives from being reached, i.e. has no significant negative impact on them. Taxonomy-aligned activity needs to be also carried out in compliance with the minimum safeguards, thus sustainable activity is to respect basic human rights and follow good business conduct rules.

During the first two reporting years of the EU Taxonomy, the focus is on activities contributing to climate objectives, climate change mitigation and adaptation, according to the EU Climate Delegated Act. The Taxonomy Regulation is a developing regulation and not yet covering all sustainable activities in the market. The forest industry is not at the core of the current legislation and therefore has only few relevant economic activities to report on. From Stora Enso's main products, only wood-based solutions for construction industry are included in the EU Taxonomy through their contribution to buildings' energy efficiency. Other main products, production of pulp, consumer board, containerboard, corrugated packaging and paper, are out of the scope of the EU Taxonomy and therefore the reported Taxonomy-eligible KPIs are low. EU Taxonomy is anticipated to expand to four other environmental objectives during 2023 with the next delegated act, but the amendments are not expected to bring major impact to Stora Enso's Taxonomy-eligibility. Stora Enso supports the goals set by EU Taxonomy and welcomes the further development of the regulation.

EU Taxonomy accounting principles

The KPI's reported in the EU Taxonomy are presented in separate tables for turnover, CapEx and OpEx as defined in the regulation. The total turnover is Stora Enso Group's total sales and rental income in 2022, which respectively include the IFRS15 and the IFRS16 income according to the EU Taxonomy turnover definition. The external sales connected to the economic activities are correspondingly reported under Taxonomy-eligible turnover, either under Taxonomy-aligned or not Taxonomy-aligned. The total CapEx is the Group's total capital expenditure in 2022, as presented in the line of 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). The Taxonomy-eligible CapEx, either Taxonomy-aligned or not Taxonomy-aligned, are the investments related to the assets or processes associated with the respective economic activities. The total OpEx covers the maintenance expenses, short-term lease costs, non-capitalised research and development costs and silviculture costs on Stora Enso Group level. The Taxonomy-eligible OpEx include the corresponding direct non-capitalised costs associated to the economic activities, reported either under Taxonomy-aligned or not Taxonomy-aligned. Different to last year's practice, the reported CapEx and OpEx are reported in full amount for activities 1.3 Forest management and 4.20 Cogeneration of heat/cool and power from bioenergy instead in relation to external turnover as in 2021.

Stora Enso avoids double counting by having a clear cost structure in reporting which ensures that the profit centres and cost elements are separate for each activity.

Taxonomy eligible and aligned activities

Stora Enso has identified six eligible activities to report in the EU Taxonomy. Stora Enso has carried out the assessments for Taxonomy-eligibility and Taxonomy-alignment based on the best interpretation of the Taxonomy Regulation and the Climate Delegated Act and the currently available guidelines from the European Commission. During 2022 Stora Enso formed a working group of experts to assess if the eligible activities recognised in the EU Taxonomy are fulfilling the criteria for Taxonomy alignment. For each economic activity, Stora Enso conducted

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assessment for substantial contribution and 'do no significant harm' criteria to determine the alignment. The alignment was determined for the climate change mitigation objective. Minimum safeguards were assessed on the Group level. In the process Stora Enso used support from external experts to provide a second opinion and the assessments and the data is covered by external assurance.

1.3 Forest management

Stora Enso is one of the biggest private forest owners in the world and the forest assets share of Group total assets is significant, 39% (excluding leased land). While Stora Enso owns forests also via holdings, Taxonomy-eligible forest management includes only Stora Enso's own forest activities in Sweden where the Company has full control over the activity. Tree plantations in South America and China are not included in the EU Taxonomy reporting, under forest management. 100% of Stora Enso's Swedish forests are certified under certification systems (PEFC or FSC) which lays the foundation for sustainable forest management. Through assessment of the technical screening criteria for substantial contribution and 'do no significant harm' defined in the EU Taxonomy for 1.3 Forest management, the activity was concluded Taxonomy-aligned.

The output of the activity, the grown wood, is used mostly internally in Stora Enso's own operations and hence not included in EU Taxonomy reporting. In the EU Taxonomy, the forest management turnover includes the sale of externally sold roundwood and forest residuals. The CapEx includes investments that support the forest management activities, such as forest land acquisitions and investments in roads and bridges. In OpEx the silviculture costs and related research and development costs are included.

1.4 Conservation forestry

In Brazil, Stora Enso's 50% owned joint operation Veracel has dedicated approximately half of its land for protection and restoration of biological biodiversity in natural Atlantic rainforest. The aim is to restore each year new rainforest areas on degraded grasslands/pasture lands. The conservation operations are included in Taxonomy-eligible conservation forestry. Conservation forests are maintained as local habitat and species protection areas and are excluded from the harvesting activities and plans. Through assessment of the technical screening criteria for substantial contribution and 'do no significant harm' defined in the EU Taxonomy for 1.4 Conservation forestry, the activity was concluded Taxonomy-aligned.

There is no turnover nor CapEx connected to the conservation forestry activity. OpEx includes the expenses related to the conservation work.

3.4 Manufacture of batteries

Graphitic carbon in lithium-ion batteries can be replaced with renewable hard carbon made from lignin, which is a by-product in the production of cellulose fibers. Lignin is produced at Stora Enso's pulp production site in Sunila, where the pilot plant for refining of lignin and turning it into hard carbon material (Lignode®) for batteries was established. The pilot plant investment and research and development related to hard carbon innovation are included in Taxonomy-eligibility. Lignode offers a renewable active anode material for batteries, contributing to energy storage applications for transportation, stationary and off-grid energy storage, and hence to climate change mitigation. The alignment assessment is done based on the predicted future industrial scale operations and production which will be aligned with the technical screening criteria of 3.4 Manufacture of batteries once started.

No turnover is yet connected to this activity. CapEx includes the investment in the pilot plant in Sunila. OpEx includes the non-capitalised research and development costs of Lignode and

the maintenance material and other direct costs at the pilot plant in Sunila. External turnover for the activity is expected within the next few years.

3.5 Manufacture of energy efficiency equipment for buildings

Stora Enso produces wood-based solutions for the construction industry. Door, window and roofing components and external wall systems manufactured from classic sawn, CLT, LVL and construction beams are reported eligible in the EU Taxonomy. Stora Enso manufactures construction materials at sawmills in several countries and locations. As Stora Enso is not a manufacturer of the end products, the compliance with the substantial contribution was assessed based on the knowledge of the end use and the energy efficiency related regulations in the primary market areas. Through an assessment of the technical screening criteria for substantial contribution and 'do-no-significant harm' defined in the EU Taxonomy for 3.5 Manufacture of energy efficiency equipment for buildings, the activity was concluded Taxonomy-aligned.

The external sales related to the share of production that is estimated to end up for doors, windows, roofing and external wall systems, is included under the EU Taxonomy turnover. The same share is used in allocation of the related CapEx and OpEx costs for the activity. CapEx includes the investments related to the production of the Taxonomy-eligible products under this activity. The largest single CapEx item is the investment in a new CLT site in Ždírec that was inaugurated in October 2022. OpEx includes the maintenance salaries, maintenance material, research and development and other direct costs related to the day-to-day serving of the asset.

4.15 District heating/cooling distribution

Stora Enso has invested in connecting pipeline to provide district heating for Karlsruhe area in Germany. Industrial surplus heat produced at the Maxau site's combined heat and power plant in Germany is fed into the pipeline. The new connection is taken into use early 2023. Through assessment of the technical screening criteria for substantial contribution and do no significant harm defined in EU Taxonomy for 4.15 District heating/cooling distribution, the activity was concluded Taxonomy-aligned.

The investment in the district heating pipeline at Maxau is reported in the EU Taxonomy in 2022. The turnover and OpEx are expected to start generating during 2023. Stora Enso has signed an agreement to divest the Maxau paper production site and all related assets to Schwarz Produktion. The ownership is assumed to change in the beginning of 2023.

The turnover, CapEx and OpEx from other Stora Enso mills, that produce eligible bioenergy and are connected to local district heating systems, are reported under activity 4.20 Cogeneration of heat/cool and power from bioenergy.

4.20 Cogeneration of heat/cool and power from bioenergy

At Stora Enso, wood residuals like bark, saw dust powder, harvesting residuals and by-products from the pulp process like black liquor are used for energy production. Most of the produced bioenergy is consumed internally, but energy is also sold to external markets. The bioenergy that uses solely biobased feedstock in normal operations (excluding the usage of start-up fuel), is considered eligible in the EU Taxonomy reporting. Eligible bioenergy is produced in several Stora Enso sites. Through assessment of the technical screening criteria for substantial contribution and 'do no significant harm' defined in the EU Taxonomy for 4.20 Cogeneration of heat/cool and power from bioenergy, the majority of the activity was concluded Taxonomy-aligned. The few boilers that did not meet all the thresholds defined in 'do no significant harm' criteria for pollution, are reported as Taxonomy-eligible but not Taxonomy-aligned.

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In the EU Taxonomy, the turnover includes the external sales of the excess electricity and heat which is not consumed internally. CapEx includes the investments in the bioenergy production at different sites. OpEx includes the maintenance salaries, maintenance material and other direct costs related to the day-to-day serving of the asset.

Minimum safeguards

The Taxonomy Regulation specifies that in addition to substantial contribution and 'do no-significant harm' criteria, an economic activity can be considered environmentally sustainable only if it is carried out in compliance with the minimum safeguards. The minimum safeguards prevent activities from being labelled sustainable if they for example violate human or labour rights, engage in corrupt, anti-competitive or non-compliant taxation practices. The compliance can be assessed from two angles according to the published guidance from Platform on Sustainable Finance: there are adequate processes and controls in place in the areas of human rights, corruption, taxation and fair competition and there are no breaches or violations existing.

Stora Enso has assessed the compliance with minimum safeguards by reviewing the company processes for human rights, corruption, taxation and fair competition and investigated possible cases of violations by the parent company, its subsidiaries or senior management. While Stora Enso acknowledges the importance of continuous improvement of the processes in these areas, the Company considers its processes to be on a robust level and with no violations to meet the alignment with the minimum safeguards. Read more in the following chapters in the Sustainability reporting section: [Human rights](#), [Business ethics](#), and [Stora Enso's tax footprint](#).

Proportion of Turnover from products or services associated with Taxonomy-aligned economic activities 2022

EUR million

Economic Activities	Code(s)	Absolute turnover EUR	Proportion of turnover %	Substantial contribution criteria						DNSH criteria (‘Does Not Significantly Harm’)						Minimum safeguards	Taxonomy-aligned proportion of turnover, year N	Category (enabling activity) E	Category (transitional activity) T
				Climate change mitigation %	Climate change adaptation %	Water and marine resources %	Circular economy %	Pollution %	Biodiversity and ecosystems %	Climate change mitigation y/n	Climate change adaptation y/n	Water and marine resources y/n	Circular economy y/n	Pollution y/n	Biodiversity and ecosystems y/n				
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1 Environmentally sustainable activities (Taxonomy-aligned)																			
Forest management	1.3	111	0.9%	100%							N/A	y	y	y	y	y	y	100.0%	
Manufacture of energy efficiency equipment for buildings	3.5	595	5.1%	100%							N/A	y	y	y	y	y	y	100.0%	E
Cogeneration of heat/cool and power from bioenergy	4.20	54	0.5%	100%							N/A	y	y	N/A	y	y	y	96.6%	
Turnover of environmentally sustainable activities (Taxonomy-aligned) A.1		760	6.5%															99.7%	
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																			
Cogeneration of heat/cool and power from bioenergy	4.20	2	0.0%																
Turnover of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		2	0.0%																
Total (A.1+A.2)		762	6.5%																
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
Turnover of Taxonomy-non-eligible activities (B)		10,932	93.5%																
Total (A+B)¹		11,694	100%																

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

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Proportion of CapEx from products or services associated with Taxonomy-aligned economic activities 2022

Capital Expenditure

EUR million

Economic Activities	Code(s)	Absolute CapEx	Proportion of CapEx	Substantial contribution criteria						DNSH criteria ('Does Not Significantly Harm')						Minimum safeguards	Taxonomy-aligned proportion of capex, year N	Category (enabling activity)	Category (transitional activity)	
				Climate change mitigation	Climate change adaptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosystems	Climate change mitigation	Climate change adaptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosystems					
A TAXONOMY-ELIGIBLE ACTIVITIES																				
A.1 Environmentally sustainable activities (Taxonomy-aligned)																				
Forest management	1.3	13	1.6%	100%							N/A	y	y	y	y	y	y	100%		
Manufacture of batteries	3.4	3	0.3%	100%							N/A	y	y	y	y	y	y	100%	E	
Manufacture of energy efficiency equipment for	3.5	23	3.0%	100%							N/A	y	y	y	y	y	y	100%	E	
District heating/cooling distribution	4.15	2	0.3%	100%							N/A	y	y	N/A	y	y	y	100%		
Cogeneration of heat/cool and power from bioenergy	4.20	7	0.8%	100%							N/A	y	y	N/A	y	y	y	70.1%		
CapEx of environmentally sustainable activities (Taxonomy-aligned) A.1		47	6.0%															94.3%		
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																				
Cogeneration of heat/cool and power from bioenergy	4.20	3	0.4%																	
CapEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		3	0.4%																	
Total (A.1+A.2)		50	6.4%																	
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																				
CapEx of Taxonomy-non-eligible activities (B)		728	93.6%																	
Total (A+B)		778	100.0%																	

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Proportion of OpEx from products or services associated with Taxonomy-aligned economic activities 2022

EUR million

Economic Activities	Code(s)	Absolute OpEx EUR	Proportion of OpEx %	Substantial contribution criteria						DNSH criteria (‘Does Not Significantly Harm’)						Minimum safeguards	Taxonomy-aligned proportion of OpEx, year N %	Category (enabling activity) E	Category (transitional activity) T
				Climate change mitigation %	Climate change adaptation %	Water and marine resources %	Circular economy %	Pollution %	Biodiversity and ecosystems %	Climate change mitigation y/n	Climate change adaptation y/n	Water and marine resources y/n	Circular economy y/n	Pollution y/n	Biodiversity and ecosystems y/n				
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1 Environmentally sustainable activities (Taxonomy-aligned)																			
Forest management	1.3	27	3.2%	100%							N/A	y	y	y	y	y	y	y	100%
Conservation forestry	1.4	1	0.1%	100%							N/A	y	y	y	y	y	y	y	100%
Manufacture of batteries	3.4	13	1.6%	100%							N/A	y	y	y	y	y	y	y	100%
Manufacture of energy efficiency equipment for buildings	3.5	25	3.0%	100%							N/A	y	y	y	y	y	y	y	100%
Cogeneration of heat/cool and power from bioenergy	4.20	20	2.4%	100%							N/A	y	y	N/A	y	y	y	y	52.9%
OpEx of environmentally sustainable activities (Taxonomy-aligned) A.1		86	10.3%																82.9%
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																			
Cogeneration of heat/cool and power from bioenergy	4.20	18	2.1%																
OpEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		18	2.1%																
Total (A.1+A.2)		104	12.5%																
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
OpEx of Taxonomy-non-eligible activities (B)		733	87.5%																
Total (A+B)		837	100%																

Environmental investments and liabilities

In 2022 Stora Enso’s environmental investments amounted to EUR 82 (50) 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 2022 excluding interest and including depreciation totalled EUR 243 (191) 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. The reporting scope was changed in 2022 to exclude the payments related to provisions from environmental remediation projects. Due to this, the total costs for 2021 have been restated.

Provisions for environmental remediation amounted to EUR 73 (75) million at 31 December 2022, details of which are in Note 22. There are currently no active or pending legal claims concerning environmental issues that could have a material adverse effect on Stora Enso’s financial.

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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 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 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

Changes in global economic conditions, such as sharp market corrections and foreign exchange volatility, could have a negative and material impact on Stora Enso's profit, cash flows and financial position.

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, liquidity risk, refinancing 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 15–60% 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.

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The following table shows the operating profit sensitivity to a +/- 10% change in either price or volume for different segments based on figures for 2022.

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

Segments	Price	Volume
Packaging Materials	447	125
Packaging Solutions	72	19
Biomaterials	205	101
Wood Products	215	67
Forest	249	11
Paper	163	43

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, political instability and other drivers related to global trade. The following table shows Stora Enso's major cost items.

Composition of costs in 2022

Operative costs	% of costs	% of sales
Logistics and commissions	12%	10%
Manufacturing costs		
Fiber	33%	27%
Chemicals and fillers	10%	9%
Energy	9%	8%
Material	11%	9%
Personnel	13%	11%
Other	7%	6%
Depreciation	5%	5%
Total costs and sales	100%	85%
Total operative costs and sales in EUR million	9,847	11,680
Equity accounted investments (EAI), operational		58
Operational EBIT (EUR million)		1,891

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 environmental, social and business practices through our internal risk assessment tool. Supplier code of conduct audits are conducted on high-risk suppliers and findings from such audits are followed-up. Suppliers should have the possibility to mitigate, but where necessary, the supplier contract would be terminated.

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 2022 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.

Political decisions 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.

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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.

During 2022, a quantitative analysis regarding climate resilience was conducted in the South American plantations based on three scenarios: SSP1-1.9 (~1.5°C and net-zero CO₂ emissions), SSP2-4.5 (~2.7°C and CO₂ emissions are similar to current) and SSP5-8.5 (~4.4°C and CO₂ emissions are double that of the current). Results show a relative resilience of the plantations. Financial consequences are not expected to be material in SSP1-1.9 and SSP2-4.5 scenarios, but could be material in SSP5-8.5. Read more in the following chapter TCFD, and in an index table available at storaenso.com.

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 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.

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.

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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 technologies offering significant potential for higher level of process optimisation

and automatisisation, 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

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and Internal Audit assurance, as well as Supplier Code of Conduct in supplier contracts, risk assessments, trainings and audits. 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. Stora Enso's disclosures with reference to TCFD recommendations are listed in an online [index table](#), available at storaenso.com, with references to those locations where these issues are addressed in the Group's annual reporting.

Scenario analysis in 2022

Aligned with the TCFD recommendations, Stora Enso utilises scenarios to assess the impacts of climate change.

During 2022, a quantitative resilience analysis was conducted for tree plantations in South America against three global Shared Socioeconomic Pathway (SSP) scenarios: SSP1-1.9 (Sustainability – Taking the Green Road), SSP2-4.5 (Regional Rivalry – a Rocky Road) and SSP5-8.5 (Fossil-fuelled Development – Taking the Highway). Results show a relative resilience of Stora Enso's tree plantations in all the three scenarios. Financial impacts are not expected to be material in SSP1-1.9 and SSP2-4.5 scenarios but in SSP5-8.5 scenario the growth conditions of tree plantations would be affected resulting in potentially material financial impacts.

Scenario analysis the during previous years

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 were 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 showed 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 work concluded that the overall transition to a low carbon, circular bioeconomy is well aligned with Stora Enso's strategy. 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

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.

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. 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 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 Helsinki, 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.

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 4) 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



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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 the Group management

René Hansen joined Stora Enso as EVP, Brand and Communications and a member of the Group Leadership Team in February 2022.

Teemu Salmi, CIO, Head of IT & Digitalisation and a member of the Group Leadership Team left his position at Stora Enso in May. Seppo Parvi, CFO, assumed the responsibility for the IT & Digitalisation organisation.

Kati ter Horst, EVP Paper division and a member of the Group Leadership Team, left her position at Stora Enso in July. Seppo Parvi, CFO, assumed the responsibility for the Paper division.

Jari Suominen, EVP Forest division and a member of the Group Leadership Team, left his position at Stora Enso in December.

Per Lyrvall, previously EVP Legal, was appointed as new EVP Forest division. He continues as a member of the Group Leadership Team and as Stora Enso's country head for Sweden. The search for a new General Counsel is ongoing. In the interim period, Christian Swartling, SVP Group Legal, assumes the acting role in the position.

Minna Björkman was appointed EVP Sourcing and Logistics and a member of the Group Leadership Team as of January 2023. Minna Björkman joined Stora Enso in 2019 as Senior Vice President, Supply Chain and Operational Excellence for Packaging Solutions. Prior to joining Stora Enso, she held several senior level positions at Finnish companies such as Nokia, Fazer and Kemira.

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 2022, a total of 5,769 A shares converted into R shares were recorded in the Finnish Trade Register.

Number of shares as at 31 December 2022

	A shares	R shares	Total
Number of shares	176,238,280	612,381,707	788,619,987
Number of votes (at least)	176,238,280	61,238,171	237,476,451

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.

Major shareholders as of 31 December 2022

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	14,900,000	2.4%	2.4%
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	7,601,000	1.2%	1.2%
8 Bergslaget's Healthcare Foundation	626,269	1,609,483	0.3%	0.3%
9 SEB Investment Management	—	6,976,453	0.9%	0.3%
10 The State Pension Fund	—	5,000,000	0.6%	0.2%
11 The Society of Swedish Literature in Finland	—	3,000,000	0.4%	0.1%
12 Avanza Pension Insurance	146,285	1,268,398	0.2%	0.1%
13 Unionen (Swedish trade union)	—	2,612,750	0.3%	0.1%
14 Afa Insurance	—	2,381,676	0.3%	0.1%
15 SEB AB, Luxembourg Branch	2,177	1,785,231	0.2%	0.1%
Total	166,598,749	88,068,405	32.3%	73.9%
Nominee-registered shares ³	75,058,822	496,088,402	72.4 %	52.5%

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 are not included. The list is therefore incomplete.

Share distribution as at 31 December 2022

By size of holding, A share	Shareholders	% of shareholders	Shares	% of shares
1–100	6,834	59.28%	264,473	0.15%
101–1,000	4,120	35.74%	1,463,504	0.83%
1,001–10,000	542	4.70%	1,257,741	0.71%
10,001–100,000	22	0.19%	473,102	0.27%
100,001–1,000,000	2	0.02%	284,687	0.16%
1,000,001–	8	0.07%	172,494,773	97.88%
Total	11,528	100.00%	176,238,280	100.00%

By size of holding, R share	Shareholders	% of shareholders	Shares	% of shares
1–100	16,974	36.76%	821,972	0.13%
101–1,000	22,825	49.43%	9,047,232	1.48%
1,001–10,000	5,868	12.71%	15,492,151	2.53%
10,001–100,000	435	0.94%	11,584,478	1.89%
100,001–1,000,000	58	0.13%	20,922,126	3.42%
1,000,001–	17	0.04%	554,513,748	90.55%
Total	46,177	100.00%	612,381,707	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.



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Ownership distribution as at 31 December 2022

	% 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)	9.8%	7.7%
Swedish institutions (excl. FAM)	1.9%	1.1%
Finnish private shareholders	3.9%	2.4%
Swedish private shareholders	3.1%	2.3%
ADR holders	1.7%	0.6%
Under nominee names (non-Finnish/non-Swedish shareholders)	55.7%	21.3%

¹ Entirely owned by the Finnish State.

² As confirmed to Stora Enso.

Outlook

Stora Enso remains vigilant against persisting market disruptions and uncertainties, macroeconomic environment and inflationary pressures. Stora Enso enters the new year with market softness and variable cost pressures which are expected to be more challenging in 2023 than in 2022 weighing on our results this year. The high macroeconomic uncertainty and continued weak consumer confidence resulting in lower private consumption will continue to impact negatively, especially on containerboard demand. Lower demand in the construction sector remains challenging and is expected to especially impact on the demand for traditional sawn wood. Compared to 2022, Group margins are expected to be squeezed by increasing costs, particularly in relation to energy, wood, chemicals and logistics.

To manage volatility, variable costs are continually reviewed, and preparatory actions are taken to be prepared to respond to fluctuations in demand with reinforced cost control. Other measures such as pricing, flexibility in product mix, capacity and inventory management, and sourcing and logistics are in place. Stora Enso in Finland has completed negotiations on potential furloughs at its Wood Products division, and this year started negotiations on potential furloughs at its Packaging Materials division's production sites. Activities on adjusting capacity to respond to fluctuations in demand have also been put in place for the Wood Products division's sites in other countries. Stora Enso also benefits from its high self-sufficiency in energy of 72% as well as hedging, and from its ~30% self-sufficiency of wood.

The Group has made extensive changes to reshape the business over the past three years under its new leadership and disciplined capital allocation is firmly integrated to the Group's day to day operations. Stora Enso is now financially, operationally and strategically in better shape to handle market fluctuations and at the same time, invest for growth in renewable packaging, sustainable building solutions and biomaterials innovations.

Guidance

Stora Enso's full-year 2023 operational EBIT is expected to be lower than for the full-year 2022 (EUR 1,891 million).

Short-term risks and uncertainties

Risk 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.

The rapidly changing macroeconomic and geopolitical disruption is increasing complexity. The sanctions on Russia, retaliatory measures as well as conflict-related risks to people,

operations, trade credit, cyber security, supply, and demand, could all have an adverse impact on the Group.

There is a risk of continued higher cost inflation in general and in components such as chemicals, and increased price volatility for raw materials such as wood, components and energy in Europe, as well as continued logistical disruptions across the markets. The high market demand for wood could cause disruptions such as delays and/or lack of wood supply to the Group's production sites. The increased risk of a global economic downturn and recession, as well as sudden interest rate increases and currency fluctuations, could all affect the Group's profits, cash flow and financial position negatively.

Other risks and uncertainties include, but are not limited to; general industry conditions, unanticipated expenditures related to the cost of compliance with existing and new environmental and other governmental regulations, and related to actual or potential litigation; material process disruption at one of Stora Enso's manufacturing facilities with operational or environmental impacts; risks inherent in conducting business through joint ventures; and other factors that can be found in Stora Enso's press releases and disclosures.

Stora Enso has been granted various investment subsidies and has given certain investment commitments in several countries e.g. Finland, China and Sweden. If commitments to 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 adverse financial impact on Stora Enso.

Sensitivity analysis

Energy sensitivity analysis: the direct effect of a 10% change in electricity and fossil fuel market prices would have an impact of approximately EUR40 million on operational EBIT for the next 12 months.

Wood sensitivity analysis: the direct effect of a 10% change in wood prices would have an impact of approximately EUR 236 million on operational EBIT for the next 12 months.

Pulp sensitivity analysis: the direct effect of a 10% change in pulp market prices would have an impact of approximately EUR 165 million on operational EBIT for the next 12 months.

Chemical and filler sensitivity analysis: the direct effect of a 10% change in chemical and filler prices would have an impact of approximately EUR 64 million on operational EBIT for the next 12 months.

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 114 million, negative EUR 12 million and positive EUR 18 million annual impact, respectively. Weakening of the currencies would have the opposite impact. These numbers are net 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 164 million expense exposure in Brazilian real (BRL) and approximately EUR 77 million income exposure in Chinese Renminbi (CNY). These exposures arise 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 16 million and a positive EUR 8 million impact on operational EBIT, respectively.

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Annual General Meeting

Stora Enso Oyj's Annual General Meeting (AGM) will be held on Thursday 16 March 2023 at 4 p.m. Finnish time at the Marina Congress Center in Helsinki, Finland. 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 0.60 per share be distributed on the basis of the balance sheet adopted for the year 2022. 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 2022, 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 2022, EPS excluding fair valuation was EUR 1.55.

The Parent Company distributable shareholders' equity on 31 December 2022 amounted to EUR 1,970,697,938.32, including the profit for the period of EUR 415,641,225.97. 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 0.60 per share from the distributable shareholders' equity to be distributed on 788,619,987 shares, not to exceed EUR 473,171,992.20, which would leave EUR 1,497,525,946.12 in distributable shareholders' equity.

The dividend would be paid to shareholders who on the record date of the dividend payment, 20 March 2023, 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 27 March 2023.

Events after the reporting period

Divestment of paper sites

The divestment of the Nymölla paper site in Sweden to Sylvamo was completed in early January. The divestments of the Maxau site in Germany to Schwarz Produktion and the Hylte site in Sweden to Sweden Timber are expected to be completed during H1/2023. The divestment process for the Anjala paper site was discontinued and the site will be retained in Stora Enso.

Changes in segment reporting

Stora Enso's segment reporting changed as of 1 January 2023. The Paper division was discontinued as of 1 January 2023, and it is not reported as a separate segment going forward. From 1 January 2023 onwards, the Maxau and Hylte paper sites are reported in Segment Other until the completion of the divestments. The Langerbrugge and Anjala sites, which are retained in Stora Enso are reported as part of the Packaging Materials division.

From 1 January 2023, the reporting of emerging businesses, including Formed Fiber, Circular Solutions (biocomposites), and Selfly Stores, was transferred from the Packaging Solutions division to Segment Other.

The comparative figures will be restated accordingly.

Acquisition of De Jong Packaging Group

In January, Stora Enso finalised the acquisition of the Dutch De Jong Packaging Group for an enterprise value of approx. EUR 1,020 million. The acquisition will advance Stora Enso's strategic direction, accelerate revenue growth and build market share in renewable packaging in Europe, and provide an entry into the corrugated packaging market in the Netherlands, Belgium, Germany and the UK. De Jong Packaging Group's full year 2022 sales is estimated at approximately EUR 1 billion. Its product portfolio complements and enhances Stora Enso's offering, especially in fresh produce, e-commerce and industrial packaging.

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Calculation of key figures

Operational return on capital employed, operational ROCE (%)	100 x	$\frac{\text{Annualised operational EBIT}}{\text{Capital employed}^{1,2}}$
Operational return on operating capital, operational ROOC (%)	100 x	$\frac{\text{Annualised operational EBIT}}{\text{Operating capital}^2}$
Return on equity, ROE (%)	100 x	$\frac{\text{Net profit/loss for the period}}{\text{Total equity}^2}$
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 x	$\frac{\text{Dividend distribution / share}}{\text{EPS excl. FV}}$
Dividend and distribution yield, %	100 x	$\frac{\text{Dividend distribution / share}}{\text{Closing price of share}}$
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

¹ Capital employed = Operating capital – Net tax liabilities

² Average for the financial period

³ Attributable to owners of the Parent

Non-IFRS measures

The Group's key non-IFRS performance metric is operational EBIT, which is used to evaluate the performance of its operating segments and to steer allocation of resources to them.

Operational EBIT comprises the operating profit excluding items affecting comparability (IAC) and fair valuations from the segments and Stora Enso's share of the operating profit of equity accounted investments (EAI), also excluding items affecting comparability and fair valuations.

Items affecting comparability are exceptional transactions that are not related to recurring business operations. The most common IAC are capital gains and losses, impairments or impairment reversals, disposal gains and losses relating to Group companies, provisions for planned restructurings, environmental provisions, changes in depreciation due to restructuring and penalties. Items affecting comparability are normally disclosed individually if they exceed one cent per share.

Fair valuations and non-operational items include 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. Non-operational fair value changes of biological assets reflect changes made to valuation assumptions and parameters. Operational fair value changes of biological assets contain all other fair value changes, mainly due to inflation and differences in actual harvesting levels compared to the harvesting plan. 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 after investing activities (non-IFRS) is calculated as follows: cash flow from operations (non-IFRS) excluding cash spent on intangible assets, property, plant and equipment, and biological assets and acquisitions of EAIs.

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
Operational ROOC
Net debt/last 12 months' operational EBITDA ratio
Cash flow after investing activities

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Consolidated financial statements

Consolidated income statement

EUR million	Note	Year ended 31 December	
		2022	2021
Sales	3	11,680	10,164
Other operating income	5	326	345
Changes in inventories of finished goods and work in progress		258	122
Materials and services		-6,979	-5,936
Freight and sales commissions		-1,148	-939
Personnel expenses	6	-1,315	-1,351
Other operating expenses	5	-594	-610
Share of results of equity accounted investments	13	221	143
Change in net value of biological assets	12	195	328
Depreciation, amortisation and impairment charges	10	-635	-697
Operating profit	3	2,009	1,568
Financial income	8	40	42
Financial expense	8	-191	-190
Profit before Tax		1,858	1,419
Income tax	9	-322	-151
Net profit for the year		1,536	1,268
Attributable to			
Owners of the Parent	18	1,550	1,266
Non-controlling Interests	19	-13	3
Net profit for the year		1,536	1,268
Earnings per share			
Basic earnings per share, EUR	32	1.97	1.61
Diluted earnings per share, EUR	32	1.96	1.60

Consolidated statement of comprehensive income

EUR million	Note	Year ended 31 December	
		2022	2021
Net profit for the year		1,536	1,268
Other Comprehensive Income (OCI)			
Items that will not be reclassified to profit and loss			
Equity instruments at fair value through OCI	14	519	501
Actuarial gains and losses on defined benefit plans	20	147	126
Revaluation of forest land	12	259	225
Share of OCI of equity accounted investments (EAI)	13	58	16
Income tax relating to items that will not be reclassified	9	-77	-68
		906	800
Items that may be reclassified subsequently to profit and loss			
Cumulative translation adjustment (CTA)	28	-197	56
Net investment hedges and loans	28	-27	14
Cash flow hedges and cost of hedging	27	52	-35
Share of OCI of non-controlling interests (NCI)	19	0	-3
Income tax relating to items that may be reclassified	9	-6	9
		-177	42
Total comprehensive income		2,265	2,110
Attributable to			
Owners of the Parent		2,278	2,110
Non-controlling interests	19	-13	0
Total comprehensive income		2,265	2,110

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	
		2022	2021
Assets			
Goodwill	O 11	244	282
Other intangible assets	O 11	121	124
Property, plant and equipment	O 11	4,860	5,060
Right-of-use assets	O 11	418	441
		5,643	5,907
Forest assets	O 12	6,846	6,747
Biological assets	O 12	4,531	4,547
Forest land	O 12	2,315	2,201
Emission rights	O 15	123	137
Equity accounted investments	O 13	832	580
Listed securities	I 14	8	13
Unlisted securities	O 14	1,437	905
Non-current interest-bearing receivables	I 26	120	51
Deferred tax assets	T 9	74	143
Other non-current assets	O 15	38	34
Non-current assets		15,120	14,517
Inventories	O 16	1,810	1,478
Tax receivables	T 26	11	17
Operative receivables	O 17	1,473	1,449
Interest-bearing receivables	I 26	77	84
Cash and cash equivalents	I	1,917	1,481
Current assets		5,287	4,509
Assets held for sale	4	514	0
Total assets		20,922	19,026

EUR million	Note	As at 31 December	
		2022	2021
Equity and liabilities			
Share capital	18	1,342	1,342
Share premium		77	77
Invested non-restricted equity fund		633	633
Fair value reserve		3,002	2,175
Cumulative translation adjustment	28	-415	-195
Retained earnings		7,893	6,650
Equity attributable to owners of the Parent		12,532	10,683
Non-controlling Interests	19	-30	-16
Total equity		12,502	10,666
Post-employment benefit obligations	O 20	159	347
Provisions	O 22	81	91
Deferred tax liabilities	T 9	1,443	1,430
Non-current interest-bearing liabilities	I 26	2,792	3,313
Non-current operative liabilities	O 23	11	13
Non-current liabilities		4,486	5,195
Current portion of non-current debt	I 26	667	180
Interest-bearing liabilities	I 26	513	444
Bank overdrafts	I 26	0	1
Provisions	O 22	43	139
Operative liabilities	O 23	2,410	2,339
Tax liabilities	T 9	64	61
Current liabilities		3,697	3,165
Liabilities related to assets held for sale	4	237	0
Total liabilities		8,419	8,360
Total equity and liabilities		20,922	19,026

Items designated "O" comprise Operating Capital, items designated "I" comprise Interest-bearing Net Liabilities, items designated "T" comprise Net Tax Liabilities.
The accompanying Notes are an integral part of these consolidated financial statements.

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Consolidated cash flow statement

EUR million	Year ended 31 December		
	Note	2022	2021
Cash flow from operating activities			
Net profit for the year		1,536	1,268
Adjustments and reversal of non-cash items:			
Taxes	9	322	151
Depreciation and impairment charges	10	635	697
Change in value of biological assets	12	-195	-328
Change in fair value of share awards		7	3
Share of results of equity accounted investments	13	-221	-143
CTA and profits and losses on sale of fixed assets and investments ¹	5	52	-54
Net financial items	8	151	149
Other adjustments		22	17
Dividends received from equity accounted investments	13	25	16
Interest received		13	2
Interest paid		-119	-123
Other financial items, net		-7	-19
Income taxes paid	9	-178	-136
Change in net working capital, net of businesses acquired or sold		-461	-25
Net cash provided by operating activities		1,582	1,476
Cash flow from investing activities			
Acquisition of shares in equity accounted investments	13	-7	-6
Acquisition of unlisted securities	14	-11	-1
Cash flow on disposal of subsidiary shares and business operations, net of disposed cash	4	-77	55
Cash flow on disposal of shares in equity accounted investments	13	10	47
Cash flow on disposal of intangible assets and property, plant and equipment	11	17	105
Capital expenditure	3, 11	-603	-565
Investment in biological assets	12	-101	-79
Proceeds from/payment of non-current receivables, net		31	-4
Net cash used in investing activities		-742	-449

EUR million	Year ended 31 December		
	Note	2022	2021
Cash flow from financing activities			
Proceeds from issue of new long-term debt	26	366	19
Repayment of long-term debt and lease liabilities	26	-390	-940
Change in short-term interest-bearing liabilities	26	9	-59
Dividends paid		-434	-237
Purchase of own shares		-1	-3
Net cash used in financing activities		-450	-1,220
Net change in cash and cash equivalents		389	-193
Translation adjustment		48	18
Net cash and cash equivalents at beginning of year		1,480	1,655
Net cash and cash equivalents at year end		1,917	1,480
Cash and cash equivalents at year end²		1,917	1,481
Bank overdrafts at year end		0	-1
Net cash and cash equivalents at year end		1,917	1,480

¹ CTA = Cumulative Translation Adjustment

² Cash and cash equivalents comprise cash-in-hand, deposits held at call with banks and other liquid investments with original maturity of less than three months. Bank overdrafts are included in current liabilities.

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

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Consolidated cash flow statement

Supplemental cash flow information

EUR million	Note	Year ended 31 December	
		2022	2021
Change in net working capital consists of:			
Change in inventories		-454	-196
Change in interest-free receivables:			
Current		-165	-305
Non-current		-1	-7
Change in interest-free liabilities:			
Current		163	491
Non-current		-3	-7
Change in net working capital, net of businesses acquired or sold		-461	-25
Cash and cash equivalents consist of:			
Cash on hand and at banks		1,272	946
Cash equivalents		646	535
Cash and cash equivalents		1,917	1,481
Non-cash investing activities			
Total capital expenditure excluding right-of-use assets		656	576
Amounts paid		-603	-565
Non-cash part of additions to intangible assets and property, plant and equipment		53	11
Cash flow on disposals of subsidiaries and business operations			
Cash part of the consideration	4	13	67
Cash and cash equivalents in divested companies	4	-90	-12
Net cash flow from disposal		-77	55

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

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Statement of changes in equity

EUR million	Share capital	Share premium and reserve fund	Invested non-restricted equity fund	Treasury shares	Fair value reserve			OCI of Equity Accounted Investments	CTA and net investment hedges and loans	Retained earnings	Attributable to owners of the parent	Non-controlling interests	Total
					Equity instruments through OCI	Cash flow hedges	Revaluation reserve						
Balance at 1 January 2021	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
Net profit for the year	—	—	—	—	—	—	—	—	—	1,550	1,550	-13	1,536
OCI before tax	—	—	—	—	519	52	259	58	-224	147	812	—	812
Income tax relating to OCI	—	—	—	—	1	-9	-53	—	3	-25	-83	—	-83
Total Comprehensive Income	—	—	—	—	520	43	206	58	-220	1,672	2,278	-13	2,265
Dividend	—	—	—	—	—	—	—	—	—	-434	-434	—	-434
Acquisitions and disposals	—	—	—	—	—	—	—	—	—	—	—	—	—
Purchase of treasury shares	—	—	—	-1	—	—	—	—	—	—	-1	—	-1
Share-based payments	—	—	—	1	—	—	—	—	—	5	6	—	6
Balance at 31 December 2022	1,342	77	633	—	1,298	39	1,579	87	-415	7,893	12,532	-30	12,502

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.

The Financial Statements were authorised for issue by the Board of Directors on 30 January 2023.

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 2022

The Group has applied the following new and amended standards and interpretations which are effective from 1 January 2022:

- 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 in IFRS 3 relate to identifying the liabilities assumed in a business combination and that an acquirer does not recognise contingent assets acquired in a business combination. The amendment in IAS 16 prohibits deducting from the cost of a fixed asset any proceeds from selling items produced while bringing that asset in use. Instead, proceeds from selling such items and the cost of producing those items are recognised in profit or loss. The amendments in IAS 37 specify that the cost of fulfilling a contract includes the costs that relate directly to the contract (examples include direct labour, materials, and allocation of the depreciation for an asset used in fulfilling the contract). Annual Improvements to IFRS Standards 2018–2020 include minor amendments in IFRS 9 Financial Instruments, IFRS 16 Leases and IAS 41 Agriculture. The effective date is 1 January 2022. The amendments did not have a significant impact on the Group.
- Amendments to IFRS 16 Leases: COVID-19 Related Rent Concessions. The amendments extend the availability of the practical expedient and 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 April 2021. The amendments did not have a significant impact on the Group.

- Other standards standard amendments and interpretations did not have any significant impact on the Group’s consolidated financial statements or disclosures.

Changes in accounting principles

Valuation of Finnish forest assets

Stora Enso changed the valuation method for its forest assets in Finland at the end of 2022 to correspond to the valuation method applied with Swedish forest assets. Forest assets in Finland are owned through Group’s 41% shareholding in equity accounted investment Tornator. Forest assets are defined as biological assets (standing growing trees) and the related forest land. As a result of the valuation method change, the forest assets in Finland are valued using a market approach.

Forest assets in Finland are valued by using a market approach method based on the forest market transactions in those areas where Stora Enso’s forests are located. In Finland reliable market transaction data is considered to be available and also considered to provide a more transparent and observable valuation basis. The total forest assets net cash flows consist of cash flows related to standing trees (biological assets) and separate cash flows regarding forest land. The standing trees valuation is computed based on a discounted cash flow (DCF) method and using a discount rate implied by the market transactions in accordance with the IAS 41 Agriculture standard. The discount rate is determined as the rate at which the market transaction prices match the total forest assets cash

flows. The discount rate is the same for biological assets and forest land.

Previously, the discounted cash flow method was used for valuation of biological assets and forest land, where the discount rate applied was determined using the weighted average cost of capital method. There are no changes in applied accounting principles and the change in the valuation method concerns only forest assets in Finland, while there are no changes in the valuation method with Tornator’s minor forest holdings in Estonia and Romania.

Changes in the valuation method with Finnish forest assets increased Stora Enso’s share of the carrying amount of forest assets by approximately EUR 240 million, divided between an increase in biological assets of EUR 170 million and an increase in forest land of EUR 70 million. Net of taxes, the change resulted in about EUR 190 million increase in investments in equity accounted investments.

The increase in forest land assets is recognised in the OCI net of deferred taxes and does not have an impact on the income statement. The fair value changes in biological assets is recognised in the income statement. The comparative periods have not been restated. See [Note 12](#) Forest assets for more details.

Accounting considerations relating to Russia

As announced in March 2022, all import and export activities from and to Russia were halted, and operations in Russia were stopped. In May and July 2022, Stora Enso sold all of its operations in Russia. Related to one forest operations unit, the disposal will be completed in 2023, upon finalisation of certain formalities. More details about disposed Packaging Solutions, Wood Products and Forest operations are presented in [Note 4](#) Acquisitions disposals

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and assets held for sale. More information about valuation of remaining Russia related receivables see [Note 26](#) Interest-bearing assets and liabilities.

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 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 cash flow hedging result 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

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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 2022

- 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 will consider the amendment in disclosures and expects that the impact will not be significant.
- 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 expects that the amendment does not have a significant impact.
- 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 expects that

the amendment does not have a significant impact.

- No other published standards, standard amendments or interpretations which 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 2022

- Amendments to IFRS 16 Leases: Lease Liability in Sale and Leaseback. Amendment requires a seller-lessee to subsequently measure lease liabilities arising from a leaseback in a way that it does not recognise any amount of the gain or loss that relates to the right of use it retains. The new requirements do not prevent a seller-lessee from recognising in profit or loss any gain or loss relating to the partial or full termination of a lease. The effective date is 1 January 2024. The Group is evaluating the impact of the amendments.
- Amendments to IAS 1 Presentation of Financial Statements: Information about long-term debt with covenants. IAS 1 requires a company to classify debt as non-current only if the company can avoid settling the debt in the 12 months after the reporting date. However, a company's ability to do so is often subject to complying with covenants. The amendments specify that covenants to be complied with after the reporting date do not affect the classification of debt as current or non-current at the reporting date. Instead, the amendments require a company to disclose information about these covenants in the notes to the financial statements. The effective date is 1 January 2024. The Group is evaluating the impact of the amendments and expects that the amendment does not have significant impact.
- Amendments to IAS 1 Presentation of Financial Statements: Classification of liabilities as current or non-current. The

amendments clarify a criterion for classifying a liability as non-current. The amendments specify that an entity's right to defer settlement must exist at the end of the reporting period; clarify that classification is unaffected by management's intentions or expectations about whether the entity will exercise its right to defer settlement; clarify how lending conditions affect classification; and clarify requirements for classifying liabilities an entity will or may settle by issuing its own equity instruments. The effective date is 1 January 2024. The Group is evaluating the impact of the amendments and expects that the amendment does not have significant impact.

- Other published standards, standard amendments or interpretations are not expected to have any significant 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 is recognised if the carrying amount exceeds the recoverable amount. The discounted

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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 reflect the best estimate of the weighted average cost of capital.

The Group has evaluated the most sensitive estimates and assumptions, which, when changed, could have a material impact on the valuation of the assets including goodwill and, therefore, could lead to an impairment. These estimates and assumptions are expected sales prices, expected operating costs and the discount rate. The key assumptions used in the impairment testing are presented in [Note 10](#) Depreciation, amortisation and impairment charges.

Leases

When assessing the lease term and if an extension or renewal options are included or not, the Group considers all relevant facts, circumstances and incentives that might have an impact on the assessment. Options to extend or renew the lease are included in the lease term only if it is reasonably certain that Stora Enso will exercise the option. The Group will do a reassessment, for example upon changes in circumstances, receiving new information or an occurrence of a significant event that is within the control of the lessee and might have an impact on the assessment. See [Note 11](#) Intangible assets, property, plant and equipment and right-of-use assets for more details about right-of-use assets and [Note 26](#) Interest-bearing assets and liabilities for more details about lease liabilities.

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 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 Nordic forest assets and [Note 12](#) Forest assets for more detailed information about Nordic and plantation forest assets.

Nordic forest assets

The fair value of forest assets in the Nordics 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 provided by 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 regular 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.

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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. The activities of the reportable segments are:

Packaging Materials

The Packaging Materials division is a global leader and expert in 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, beverage and transport packaging. A wide selection of base boards and 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 carton board, and other new materials such as formed fiber and wood foams into standard and bespoke packaging solutions. The division also provides design and sustainability services for our customers, as we support a shift towards circular solutions.

Biomaterials

The Biomaterials division meets the growing demand for bio-based solutions which replace fossil-based and non-renewable materials. Stora Enso achieves this by using all fractions of biomass, like lignin, to develop new solutions including novel applications such as bio-based anode material for batteries and bio-based binders. Our pulp offering encompasses a wide variety of grades to meet the demands of packaging, paper, tissue, specialities, and hygiene product producers. We also serve the biochemicals market with tall oil and turpentine from biomass for further refining. Pulp continues to be our foundation while long-term growth is driven by new products and innovations.

Wood Products

The Wood Products division is the largest sawn wood producer in Europe and a leading provider of sustainable wood-based solutions for the global construction industry. The growing Building Solutions business offers building concepts and a full range of products to support low-carbon construction. Stora Enso develops services and digital tools to simplify the design and construction of buildings with wood. Additionally, we offer applications for windows and doors, and pellets for sustainable heating solutions.

Forest

The Forest division creates customer value through innovative solutions, competitive wood supply and sustainable forest management. 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 and Baltic operations and B2B customers. Stora Enso is one of the biggest private forest owners in the world.

Paper

At the end of 2022, Stora Enso had an established customer base and its product portfolio had offerings 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.

Read more about the changes in segment reporting in 2023 in the [Note 33](#) (Events after the reporting period).

Sales by segment

EUR million	External	Internal	Total	External	Internal	Total
	2022			2021		
Packaging Materials	4,473	218	4,690	3,715	183	3,898
Packaging Solutions	714	23	737	704	19	723
Biomaterials	1,798	382	2,180	1,499	229	1,728
Wood Products	2,058	137	2,195	1,766	106	1,872
Forest	848	1,671	2,519	781	1,530	2,311
Paper	1,691	81	1,772	1,644	59	1,703
Other	97	1,000	1,097	55	1,037	1,092
Elimination of internal sales		-3,512	-3,512		-3,163	-3,163
Total	11,680	0	11,680	10,164	0	10,164

Disaggregation of revenue

EUR million	2022	2021
Product sales	11,521	10,047
Service sales	159	117
Total	11,680	10,164

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Segment share of operating profit/loss

EUR million	Year Ended 31 December	
	Operating Profit/Loss	
	2022	2021
Packaging Materials	595	552
Packaging Solutions	-101	23
Biomaterials	668	506
Wood Products	253	363
Forest	523	622
Paper	172	-423
Other	-59	-67
Eliminations	-41	-8
Total	2,009	1,568
Net financial items	-151	-149
Profit before Tax	1,858	1,419
Income tax expense	-322	-151
Net Profit	1,536	1,268

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	
	2022	2021	2022	2021	2022	2021
Packaging Materials	3,344	3,206	253	255	342	330
Packaging Solutions	235	245	66	32	46	34
Biomaterials	2,796	2,520	110	99	121	88
Wood Products	718	678	59	46	87	66
Forest	6,963	6,696	50	20	35	25
Paper	333	123	88	207	60	55
Other	1,477	860	9	37	10	11
Eliminations	-61	-21	0	0	0	0
Total	15,806	14,307	635	697	701	609

¹ Excluding biological asset 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. Operating capital includes assets held for sale and liabilities related to assets held for sale.

Goodwill by segment

EUR million	Year Ended 31 December	
	Goodwill ¹	
	2022	2021
Packaging Materials	24	25
Packaging Solutions	6	6
Biomaterials	45	45
Wood Products	117	116
Forest	0	0
Paper	51	90
Other	0	0
Total	244	282

¹ Goodwill excluding assets held for sale

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	
	2022	2021
Packaging Materials	6,274	5,801
Packaging Solutions	3,966	4,361
Biomaterials	2,135	1,865
Wood Products	4,445	4,177
Forest	1,412	1,476
Paper	2,298	3,292
Other	1,261	2,098
Total	21,790	23,071

Location	Year Ended 31 December	
	2022	2021
Austria	1,067	1,028
Baltic States	1,512	1,459
Belgium	506	506
Czech Republic	1,118	1,039
Finland	5,666	6,003
Germany	598	734
Poland	1,994	1,976
Russia	585	1,132
Sweden	4,659	5,023
Other Europe	230	236
Total Europe	17,934	19,137
Brazil	527	477
China (incl. Hong Kong)	2,894	3,006
USA	33	43
Uruguay	313	310
Other countries	89	98
Total	21,790	23,071

Year-End Personnel	As at 31 December	
	2022	2021
	20,879	22,094

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External sales by destination

EUR million	Sales by Destination	
	2022	2021
Austria	450	403
Baltic States	377	315
Belgium	117	102
Czech Republic	231	188
Denmark	128	108
Finland	759	610
France	449	357
Germany	1,208	1,049
Italy	650	450
Netherlands	317	207
Poland	733	548
Russia	112	307
Spain	311	246
Sweden	1,071	975
UK	444	395
Other Europe	577	837
Total Europe	7,934	7,096
Australia / New Zealand	202	146
Brazil	50	41
China (incl. Hong Kong)	1,125	1,183
Japan	417	316
Middle East	275	252
Uruguay	31	28
USA	397	320
Other countries	1,250	782
Total	11,680	10,164

Reconciliation of operating capital to total assets

EUR million	As at 31 December	
	2022	2021
Operating capital	15,806	14,307
Operative liabilities	2,909	2,930
Interest-bearing receivables	2,122	1,629
Tax receivables	85	160
Total assets	20,922	19,026

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	
	2022	2021	2022	2021	2022	2021
Austria	125	107	128	120	16	8
Baltic States	163	151	74	72	12	9
Belgium	99	123	135	153	13	21
Czech Republic	196	162	198	158	41	39
Finland	4,543	3,358	2,729	2,382	311	296
Germany	44	-68	53	216	10	5
Poland	413	406	379	378	35	36
Russia	-2	112	0	73	3	12
Sweden	7,021	6,777	6,837	6,951	173	129
Other Europe	66	92	11	6	8	1
Total Europe	12,668	11,219	10,543	10,508	623	556
Brazil	303	261	278	231	21	16
China (incl. Hong Kong)	1,093	1,173	1,044	1,116	25	18
Uruguay	1,722	1,636	1,580	1,514	31	18
USA	41	47	32	30	0	0
Other countries	-22	-29	4	6	1	1
Total	15,806	14,307	13,481	13,405	701	609

¹ Non-current assets excluding assets held for sale, financial instruments and deferred tax assets.

² Excluding biological asset capex

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Note 4 Acquisitions, disposals and assets held for sale

Accounting principles

Acquired companies are accounted in accordance with the acquisition method whereby these companies are included in the consolidated financial statements from the date the control 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. Gains and losses on the disposal of a Group entity include any goodwill relating to the entity sold.

Assets are classified as held for sale, if their carrying amounts will be recovered mainly through a sale transaction rather than through continuing use. The assets must be available for immediate sale in their present condition subject only to terms that are usual and customary for sale of such assets. Also, the sale must be highly probable and expected to be completed within one year from the date of classification. These assets and related liabilities are presented separately in the consolidated statement of financial position and measured at the lower of the carrying amount and fair value less costs to sell. Comparative information is not restated when classification is made. Assets classified as held for sale are not depreciated.

Acquisition of Group companies

Stora Enso did not complete any company or business acquisitions in 2022 or 2021.

In September 2022, Stora Enso signed an agreement to acquire De Jong Packaging Group and the transaction was completed on 6th January 2023, presented as non-adjusting event after the reporting period. Following the completion of the transaction, purchase accounting for the acquisition has been initiated, including the preparation of a purchase price allocation. As of the date of authorisation for issuance of these financial statements, given the size, complexity and timing of the acquisition, the provisional purchase price allocation is incomplete. Accordingly, assets acquired, liabilities assumed, and the resulting non-controlling interest and goodwill to be recognised have not yet been estimated on a preliminary basis and therefore not presented.

The goodwill will represent the expected synergies, mainly through sourcing, containerboard integration optimisation and commercial opportunities. The goodwill will be allocated to Divisions benefiting from the acquisition, Packaging Solutions and Packaging Materials. None of the goodwill recognised is expected to be deductible for tax purposes. The shares of the acquired companies are mainly 100% owned, with certain units having minor non-controlling interests. The non-controlling interest will be measured based on the proportionate share of the identifiable net assets.

The preliminary cash purchase consideration was EUR 612 million, excluding contingent earn-out component. The earn-out component will be settled in cash in 2024 and is subject to De Jong Packaging Group achieving certain earnings thresholds. The contingent consideration is measured at its fair value at the date of acquisition and the maximum amount of earn-out is EUR 45 million. The final purchase price is subject to customary purchase price adjustments.

De Jong Packaging Group is based in the Netherlands and is one of the largest corrugated packaging producers in the Benelux countries. De Jong Packaging Group is also active in containerboard production through the acquisition of the De Hoop mill in the Netherlands in 2021. De Jong Packaging Group has 17 sites in the Netherlands, Belgium, Germany and the UK and it employs approximately 1,300 people. With the acquisition, Stora Enso's Packaging Solutions division will increase its corrugated packaging capacity by approximately 1,200 million m² to more than 2,000 million m², including De Jong Packaging Group's ongoing expansion projects.

The acquisition will advance Stora Enso's strategic direction, accelerate revenue growth and build the market share in renewable packaging in Europe. De Jong Packaging Group's product portfolio and geographic presence will complement and enhance Stora Enso's offering. The acquisition is also expected to generate synergies over the cycle, mainly through sourcing, containerboard integration optimisation and commercial opportunities. The acquired units will be reported in Packaging Solutions and Packaging Materials divisions.

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Disposal of Group companies

EUR million	Year Ended 31 December	
	2022	2021
Net assets sold		
Cash and cash equivalents	90	12
Property, plant and equipment	8	32
Intangible assets	0	1
Working capital	-1	10
Tax assets and liabilities	6	9
Interest-bearing assets and liabilities	-19	-1
Net assets in disposed companies	85	62
Total disposal consideration	70	67
CTA release	-47	1
Asset writedowns ¹	-155	-20
Loan impairments	-23	0
Transaction costs	-4	-2
Total net gain/loss	-244	-16

¹ 2022 mainly related to writedowns in connection to Russia operations and including also writedowns related to assets held for sale.

2022

Kvarnsveden site

In December 2022, Stora Enso divested its 100% owned Kvarnsveden site in Sweden to Northvolt, a European supplier of sustainable battery cells. Due to structural decline in demand for graphical paper, in April 2021 Stora Enso announced a plan to close its Kvarnsveden paper site and the production was ended in September 2021. The site will be developed into a battery manufacturing plant, reusing and refurbishing the existing facilities and site infrastructure. The sold unit was part of segment Other at the time of disposal. The transaction did not have a significant impact on the Group.

Russia operations - Wood Products and Forest

In July 2022, Stora Enso divested its two Nebolchi and Impilahti sawmills in Russia to local management. In addition, the divestment included Russian forest operations which supplies wood to the sawmills. The disposed sawmill sites are located in Novgorod and Karelia and have a total annual capacity of 350,000 m³ of sawn timber, including 55,000 m³ of processed timber and 65,000 tonnes of pellets. Russian forest operations managed long-term harvesting rights for around 370,000 hectares. The divested seven legal entities were mainly 100% owned, with exception of one unit that was 99.48% owned. Related to one forest operations unit, the disposal will be completed in 2023, upon finalisation of certain formalities. This does not have any significant impact on the Group. During 2022, the Group recognised asset write-downs of EUR 74 million (mainly fixed assets, inventories and trade receivables) related to the transaction. About two thirds of the sale consideration is to be received in instalments at future dates. The loss on disposal was EUR 24 million, including cumulative translation adjustments (CTA) being released from equity to income statement. In addition, there were impairments of loan receivables of EUR 23 million related to the transaction. The sold units were part of the Wood Products and Forest divisions.

Russia operations - Packaging Solutions

In May 2022, Stora Enso divested its three 100% owned corrugated packaging plants in Russia to local management. The divested three packaging plants are located in Lukhovitsy, Arzamas and Balabanovo and have a total annual capacity of 395 million m² of corrugated packaging. The sites primarily produce corrugated packaging in the domestic Russian market. During 2022, the Group recognised asset write-downs of EUR 42 million (mainly fixed assets, inventories and trade receivables) related to the transaction. The sale consideration is to be received in instalments at future dates. The loss on disposal was approximately EUR 49 million, consisting mainly of cumulative translation adjustments (CTA) being released from equity to income statement. The sold units were part of the Packaging Solutions division.

Vlar Papier

In February 2022, Stora Enso divested its 100% shareholdings in Vlar Papier NV in Belgium. The sold company was part of the Paper division. The transaction did not have a significant impact on the Group.

2021

Laos

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.

ECO RFID

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.

Sachsen

In May 2021, Stora Enso signed an agreement to divest its 100% shareholding in the Sachsen Mill to Model Group. The 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.

Forest division units

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.

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Assets held for sale

EUR million	Year Ended 31 December	
	2022	2021
Property, plant and equipment	264	0
Intangible assets	55	0
Inventories	91	0
Current operative receivables	104	0
Tax assets	0	0
Assets held for sale	514	0
Non-current operative liabilities	42	0
Current operative liabilities	163	0
Tax liabilities	28	0
Interest-bearing liabilities	4	0
Liabilities related to assets held for sale	237	0

Assets held for sale at the end of 2022 include the Maxau, Nymölla and Hylte sites.

In September 2022, Stora Enso signed an agreement to divest its 100% owned Maxau paper production site in Germany and all related assets to Schwarz Produktion (part of Schwarz Group) with an enterprise value of approximately EUR 210 million. The transaction is expected to be completed during the first half of 2023. The mill has an annual supercalendered paper (SC paper) capacity of 530,000 tonnes. Maxau mill is part of the Paper division.

In September 2022, Stora Enso signed an agreement to divest its 100% owned Nymölla paper production site in Sweden and all related assets to Sylvamo, a US-based global producer of uncoated paper, with an enterprise value of approximately EUR 150 million. Transaction was completed in the beginning of 2023. The Nymölla site's annual capacity is 485,000 metric tonnes of wood free uncoated office papers. In 2022 and in connection to the transaction, the Group recognised approximately EUR 14 million of asset writedowns. Nymölla mill is part of the Paper division.

In January 2023, Stora Enso signed an agreement to divest its 100% owned Hylte paper production site in Sweden to Sweden Timber with an enterprise value of approximately EUR 18 million. The transaction is expected to be completed during the first half of 2023. The Hylte site's annual capacity is 245,000 tonnes of newsprint paper. In 2022 and in connection to the transaction, the Group recognised approximately EUR 19 million of asset writedowns in the unit. Hylte mill is part of the Paper division.

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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 received are recognised at grant date market value only in the balance sheet. As such, subsequent changes in market prices do 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	
	2022	2021
Other operating income		
Emission rights allocated and disposal gains	177	154
Sale of green certificates	10	20
Gains on disposal of fixed assets	4	31
Gains on disposal of Group companies and business operations	18	34
Dividend and gain on sale of unlisted shares	1	0
Insurance compensation	10	7
Other ¹	85	83
Government grants	16	14
CTA release	5	2
Total	326	345

¹ Including rent income, fair value changes for non-hedge accounted derivatives and other items. Derivatives are discussed in more detail in Note 27 Derivatives.

EUR million	Year Ended 31 December	
	2022	2021
Other operating expenses		
Lease expenses	40	38
Research and development	89	82
Credit losses, net of reversals	13	3
Losses on disposal of Group companies and business operations	26	3
CTA release	52	16
Provision changes in income statement	31	184
Other ¹	342	284
Total	594	610

¹ Including expenses related to, among others, consultancy and other services, IT and telecommunications, properties and administration, audit, training, travelling, insurance, penalties, currency translation differences on operative payables.

Materials and services include	Year Ended 31 December	
	2022	2021
Emissions rights to be delivered	112	99

The Group has recorded an other operating income of EUR 177 (EUR 154) million related to Emissions. Under Materials and Services an expense of EUR 112 (EUR 99) million has been booked related to the cost of CO₂ emissions from production. Actual realised profits amounted to EUR 59 (EUR 22) 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 10 (EUR 20) million.

Lease expenses include expenses relating to short-term leases of EUR 12 (EUR 10) million, low-value assets of EUR 21 (EUR 20) million and variable lease payments not included in the measurement of lease liabilities of EUR 2 (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	
	2022	2021
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.

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Note 6 Personnel expenses

Personnel expenses

EUR million	Year Ended 31 December	
	2022	2021
Wages and salaries	996	1,017
Pension expenses	152	165
Share-based remuneration	8	7
Other statutory employer costs	140	143
Other voluntary costs	20	19
Total	1,315	1,351

Pension expenses

EUR million	Year Ended 31 December	
	2022	2021
Defined benefit plans	5	12
Defined contribution plans	146	153
Total	152	165

The average number of employees in 2022 amounted to 21,790 compared with 23,071 in 2021. Pension costs are discussed further in [Note 20](#) Post-employment benefit obligations.

In 2022, the expense of the share-based remuneration was EUR 8 (EUR 7) million. Share-based remuneration comprising of share awards is 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 2022					
Antti Mäkinen, Chair	133	81	214	208	People and Culture, Nomination ^{2,3}
Håkan Buskhe, Vice Chair	76	46	122	118	People and Culture, Nomination ^{2,3}
Elisabeth Fleuriot	63	32	94	91	Financial and Audit
Hock Goh	63	32	94	91	Financial and Audit
Helena Hedblom	54	32	86	82	Sustainability and Ethics
Kari Jordan	54	32	86		People and Culture
Christiane Kuehne	58	32	90	87	Sustainability and Ethics
Richard Nilsson	69	32	101	97	Financial and Audit
Hans Sohlström	54	32	86	82	Sustainability and Ethics
Former Board members					
Mikko Helander (until 15 March 2022)	0	0	0	82	
Total remuneration as Directors¹	624	348	972	939	

¹40% of the Board remuneration, excluding Committee remuneration, in 2022 was paid in Stora Enso R shares purchased from the market and distributed as follows: to Chair 4 332 R shares, Vice Chair 2 454 R shares, and members 1 686 R shares each. The Company has no formal policy requirements for the Board members to retain shares received as remuneration.

²Stora 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.

³Marcus Wallenberg, appointed by FAM AB, is Chair of the Nomination Board. Reima Rytsölä 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.

⁴The 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.



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Board share interests at 31 December 2022

	Shares held	
	A	R
Board members at 31 December 2022		
Antti Mäkinen, Chair		16,576
Håkan Buskhe, Vice Chair		7,933
Elisabeth Fleuriot		30,029
Hock Goh		34,782
Helena Hedblom		3,517
Kari Jordan		1,686
Christiane Kuehne		14,590
Richard Nilsson ¹	127	27,132
Hans Sohlström ²		13,517
Total shares held	127	149,762

¹ Spouse holds 127 of A shares and 236 of R shares

² Spouse holds 179 of the shares

The following Board members also served in 2022

	Shares held when Board membership ended	Effective date of Board membership ending
Mikko Helander	8,910	15 March 2022

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 2022 amounted to EUR 15 (EUR 11) million. The total number of GLT members was eleven (thirteen) at the year end in 2022.

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 2022, and Long term incentive programmes for the performance years 2020 to 2022 were reviewed and confirmed by the People and Culture Committee, and approved by the Board of Directors in January 2023.

Note 21 Employee variable compensation and equity incentive schemes includes details of incentive schemes and share opportunity programmes for the management and staff of Stora Enso.

Group Leadership Team remuneration

EUR thousand	Year Ended 31 December					
	2022			2021		
	CEO	Others ^{2,5}	GLT Total	CEO	Others	GLT Total
Remuneration^{1,4}						
Annual salary	953	4,802	5,755	981	4,695	5,676
Local housing (actual costs)	0	2	2	0	1	1
Other benefits	32	272	304	33	342	375
Termination benefits	0	0	0	0	0	0
Short Term Incentive programme ³	845	2,167	3,012	672	2,053	2,725
Long Term Incentive programme ³	987	2,848	3,835	0	137	137
	2,817	10,091	12,908	1,686	7,228	8,914
Pension Costs						
Mandatory plans	477	1,154	1,631	341	1,226	1,567
Stora Enso voluntary plans	0	933	933	0	735	735
	477	2,087	2,564	341	1,961	2,302
Total Compensation	3,294	12,178	15,472	2,027	9,189	11,216

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 Teemu Salmi until 20 May 2022 and Kati ter Horst until 30 June 2022 and Jari Suominen until 30 November 2022.

³ Relate to amounts due at year end, which will be paid in 2023. LTI value is calculated using the 30 December 2022 closing price of EUR 13.15. The final value of the vested shares will depend on the share price on vesting date 1 March 2023.

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

⁵ Remuneration of GLT members increased in 2022 compared to 2021 mainly due to the performance outcome of variable pay programmes. The average number of GLT members during 2022 was 11.71.

Group Leadership Team remuneration in Income statement

EUR thousand	Year ended 31 December					
	2022			2021		
	CEO	Others	GLT Total	CEO	Others	GLT Total
Salaries and other short-term employee benefits	1,830	7,243	9,073	1,686	7,091	8,777
Long Term Incentive programme ^{1,2}	714	1,581	2,295	468	1,638	2,106
Post-employment benefits	477	2,087	2,564	341	1,961	2,302
Total recognised in Income statement	3,021	10,911	13,932	2,495	10,690	13,185

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.

² Year 2021 figures have been restated.

Executives other than CEO

Short term incentive (STI) programmes for management

In 2022, GLT members have STI programmes with up to a maximum of 70% or 80% of their annual fixed salary, payable the year after the performance period. 70% of the STI for 2022 was based on financial measures and 30% on individual key targets.

Long term incentive (LTI) programmes for management

The 2020 LTI programme has a three-year performance period. The 2021 programme has three one-year performance periods which are accumulated after three years. The 2022 programme features performance metrics with one-year performance periods, which are accumulated after



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three years, as well as three-years performance periods. 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 2020 programme is related to performance period 2020–2022, the 2021 programme is related to performance period 2021–2023 and the 2022 programme is related to performance periods 2022–2024. The opportunity under the programmes is in Performance Shares, where the shares are vested in accordance with performance criteria proposed by the People and Culture Committee and approved by the Board of Directors.

During the year the 2022 programme was launched, in which the GLT members (in GLT at year end) can potentially receive a value corresponding to 242,650 shares before taxes, assuming the maximum vesting level during the three-year vesting period (2022–2024) 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 or during part of the year.

At the end of the year, the performance period for the 2020 programme ended, and will be settled in one portion after three years in March 2023, 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 100% performance outcome. The number of shares due for executives (GLT members at year end) from programmes that ended during 2022 amounted to 265,340 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 2022, the CEO is entitled to an STI programme decided by the Board each year giving a maximum of 100% of the annual fixed salary. The STI for 2022 was 70% based on financial measures, and 30% based on ESG-, operational- and individual key measures.

Long term incentive (LTI) programmes for CEO

The CEO participates in 2020, 2021 and 2022 share based LTI programmes. The 2020 programme has a three-year performance period. The 2021 programme has three one-year performance periods which are accumulated after three years. The 2022 programme features performance metrics with one-year performance periods which are accumulated after three years as well as performance metrics with three-years performance periods. All three programmes will be settled in only one portion after three years. The 2020 programme is related

to performance period 2020–2022, the 2021 programme is related to performance period 2021–2023 and the 2022 programme is related to performance periods 2022–2024. The opportunity in the programmes is in performance shares, where shares vest in accordance with performance criteria proposed by the People and Culture Committee and approved by the Board of Directors.

During the year the 2022 LTI programme was launched in which the CEO has the potential to receive a value corresponding to a maximum of 65,430 shares before taxes. The grant value of EUR 1,154,251 is based on the share price at the grant date, assuming a maximum vesting level during the three-year vesting period (2022–2024) 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 2020 programme ended and will be settled in one portion after three years in March 2023, dependent on Economic Value Added (EVA) and Earnings Per Share (EPS) for the Stora Enso Group. 75,080 shares are due for the CEO from Performance Share programmes that ended during 2022 due to a 100% performance outcome.

Group Leadership Team share interests

Executives in office at the year end	R shares held ¹	Shares due 2023 ²	Performance share opportunity 2024–2025 ⁵
Annica Bresky	19,763	75,080	122,817
Seppo Parvi	50,924	25,340	43,484
Tobias Bäärman	1,960	5,200	22,629
David Ekberg	1,245	17,640	32,481
Johanna Hagelberg	28,146	17,440	32,803
Rene Hansen	—	3,400	12,000
Hannu Kasurinen	38,421	29,640	47,406
Katariina Kravi	—	21,500	27,938
Per Lyrvall ³	73,383	22,100	34,459
Annette Stube	—	20,000	26,271
Lars Völkel	—	28,000	41,623
Total, serving officers⁴	213,842	265,340	443,911

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 2022 and are due to be paid 2023. The Performance Share programme resulted in a 100% performance outcome due to be paid in 2023. Some GLT members hold restricted shares in the Restricted Shares programme that ended in 2022 and those shares are due to be paid 2023.

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 2023-2024 and are due to be paid 2024-2025.

The following Executive Officers also served in 2022	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
Teemu Salmi ¹	10,150	32,380	2,335	20 May 2022
Kati ter Horst ¹	61,996	86,556	—	30 June 2022
Jari Suominen ¹	53,168	65,331	—	30 November 2022

¹ Unvested shares are forfeited at end of employment

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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	
	2022	2021
Net financial expense in the income statement		
Financial income	40	42
Financial expense	-191	-190
Total	-151	-149
Represented by		
Interest expense		
Interest expense from borrowings measured at amortised cost	-96	-95
Interest component of the effective hedges under cash flow hedge	-12	-15
Interest expense on leases	-17	-17
Interest capitalised	0	1
Interest income on loans and receivables measured at amortised cost	20	2
Net interest expense	-105	-124
Foreign exchange gains and losses		
Currency derivatives	8	-39
Borrowings, cash equivalents, lease liabilities and other	-10	37
Net foreign exchange gains and losses	-1	-2
Other financial income	2	1
Other financial expense		
Financial fees	-8	-17
Fair valuation losses	-4	-3
Impairments of interest-bearing assets	-30	0
Net interest on net defined benefit liabilities	-3	-3
Net other financial expense	-45	-22
Total	-151	-149

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

In 2022, the net interest expense decreased mainly as a result of higher interest income rate on loans and receivables. Costs on long-term debt issues capitalised as part of non-current debt amounted to EUR 6 (EUR 7) million in the statement of financial position. During the year, EUR 2 (EUR 4) million was amortised through interest expense by using the effective interest rate method.

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

deposits. Impairments of interest-bearing assets relate to divestment of Russia operations and are discussed in more detail in Note 4 Acquisitions and disposals.

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 taxes. Tax assets and liabilities reflect uncertainty related to income taxes, if any.

Deferred 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	
	2022	2021
Current tax	-196	-118
Deferred tax	-126	-34
Total income tax	-322	-151

Income tax rate reconciliation

EUR million	Year Ended 31 December	
	2022	2021
Profit before tax	1,858	1,419
Tax at statutory rates applicable to profits in the country concerned ¹	-337	-263
Non-deductible expenses and tax exempt income ²	-15	49
Valuation of deferred tax assets	15	-7
Taxes from prior years	2	39
Changes in tax rates and tax laws	0	1
Profits from equity accounted investments	44	29
Other ³	-31	1
Total income taxes	-322	-151
Effective tax rate	17.3%	10.7%
Statutory tax rate (blended)	18.2%	18.5%

¹ Includes a EUR 55 million impact from countries with tax holidays and tax benefits in 2022 and a EUR 37 million impact from tax holidays and other tax benefits in 2021.

² The tax value of non-deductible expenses of EUR 16 million has been netted against tax exempt income of 1 EUR million in 2022, and tax value of non-deductible expenses of EUR 30 million has been netted against tax exempt income of EUR 79 million in 2021.

³ Includes a EUR 34 million negative impact from disposal of Russian operations in 2022.

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

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Change in deferred taxes in 2022

EUR million	Value at 1 Jan 2022	Income statement	OCI	Acquisitions / disposals ¹	Translation difference	Value at 31 Dec 2022
Forest assets	-1,268	-43	-53	0	97	-1,267
Fixed assets	-103	-44	0	17	7	-123
Financial instruments	1	-3	-8	0	0	-10
Untaxed reserves	-80	-16	0	4	7	-85
Pensions and provisions	58	-1	-25	-4	-2	26
Tax losses and tax credits carried forward	107	-34	0	0	1	74
Other deferred taxes	-2	19	0	-2	0	15
Total	-1,287	-122	-86	15	110	-1,370
Equity hedges and net investment loans (CTA)		-3	3			
Cash flow hedging		0	0			
Change in deferred tax		-125	-83	15	110	
Assets ²	143					74
Liabilities ²	-1,430					-1,443

¹ Includes assets held for sale.

² 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 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 and net investment loans (CTA)		-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

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.

Non-recognised deferred tax assets on deductible temporary differences amounted to EUR 50 (EUR 58) 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 367 (EUR 339) million.

Tax losses

EUR million	As at 31 December					
	Tax losses carried forward		Recognised tax values		Unrecognised tax values	
	2022	2021	2022	2021	2022	2021
Expiry within five years	359	417	5	7	72	79
Expiry after five years	100	343	9	60	14	11
No expiry	1,173	1,137	58	38	198	210
Total	1,633	1,897	73	106	283	300

At the end of 2022, there were no material tax losses related to Finland. At the end of 2021 tax losses of EUR 274 million related to Finland and a deferred tax asset of EUR 55 million was recognized relating to these tax losses.

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.

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. 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 annually. 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.

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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	
	2022	2021
Depreciation and amortisation		
Intangible assets	24	26
Buildings and structures	81	79
Plant and equipment	371	373
Right-of-use assets	50	62
Other tangible assets	8	9
Total	533	549
Impairment		
Goodwill	11	4
Intangible assets	1	7
Buildings and structures	25	10
Plant and equipment	75	126
Right-of-use assets	0	1
Other tangible assets	2	2
Total	114	149
Reversal of impairment		
Plant and equipment	-7	0
Total	-7	0
Disposal gains/losses		
Gain on sale of assets	-10	-4
Loss on sale of assets	4	3
Total	-5	0
Depreciation, amortisation and impairment charges	635	697

Impairment testing

The recoverable amount for the cash generating units (CGUs) has been determined based on a value in use calculation using cash flow projections from financial estimates approved by the Board of Directors and management. The pre-tax discount rates are calculated for each CGU taking into account the business environment of the CGU and the tax and risk profile of the country in which the cash flow is generated. The table in the goodwill impairment testing section below sets out the pre-tax discount rates used for goodwill impairment testing, which are similar to those used in the impairment testing of other intangible assets, property, plant and equipment, and ROU assets.

Impairments were tested using a value in use method for each CGU based on the following main assumptions:

- Sales price estimates in accordance with internal and external specialist analysis
- Cash flows and discount rates were prepared in 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 2022 amounted to EUR 103 (EUR 145) million and resulted from business restructuring and Group company disposals. In 2022, impairments were mainly related to Group company disposals in Russia and upcoming disposals in the Paper division. Russia related impairments of EUR 75 million concerned Wood Products Baltic and Russia CGU, Packaging Solutions Europe CGU and Forest operations CGU. Paper related impairments of EUR 22 million concerned News and Office CGUs. 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.

Goodwill impairments

In 2022 or 2021, the goodwill impairment testing did not result in any impairment. In 2022 and due to upcoming disposals in the Paper division, goodwill impairment of EUR 11 million was recognised in News and Office CGUs. 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 CGUs containing goodwill

EUR million	Year ended 31 December			
	2022	Pre-tax discount rate	2021	Pre-tax discount rate
Wood Products - Central Europe	111	9.9%	109	8.7%
Paper - Book Paper	28	8.4%	28	7.2%
Paper - Uncoated Mechanical	12	8.4%	40	7.2%
Biomaterials - Nordic and Innovation	45	8.2%	45	7.2%
Other CGUs ¹	47		60	
Total	244		282	

¹ Other CGUs 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.

² Goodwill excluding assets held for sale

The calculation of value in use is highly sensitive to discount rates, sales prices and costs. Sensitivity analysis are conducted to calculate the 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 for which a reasonably possible change in an assumption could result in an impairment. In 2022 any reasonably possible change in key assumptions would not cause carrying amount to exceed its recoverable amount.

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Summary of impairments and impairment reversals per division

EUR million	Year ended 31 December	
	2022	2021
Packaging Materials	0	10
Packaging Solutions	36	2
Biomaterials	0	0
Wood Products	10	0
Forest	31	1
Paper	33	131
Other	-4	4
Total (impairment +) / (impairment reversal -)	107	149

Note 11 Intangible assets, property, plant and equipment and right-of-use assets

Accounting principles

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. Goodwill arising on the acquisition of non-euro foreign entities is treated as an asset of the foreign entity denominated in the local currency and translated at the closing rate.

Goodwill is not amortised but tested for impairment on an annual basis, or more frequently if there is an indication of impairment.

Other 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.

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.

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 carrying amount 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 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

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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).

Intangible assets

EUR million	Year ended 31 December				
	Computer software	Other intangible assets	Assets in progress	Goodwill	Total
Acquisition cost					
At 1 January 2021	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	-23	-19	0	-171	-213
At 31 December 2021	226	103	7	532	867
Translation difference	0	-1	0	-2	-4
Reclassifications	5	2	-4	0	3
Additions	3	2	16	0	21
Disposals and classification as held for sale ¹	-11	-6	0	-28	-46
At 31 December 2022	222	100	18	502	842
Accumulated amortisation and impairment					
At 1 January 2021	176	38	0	414	629
Translation difference	1	4	0	3	8
Disposals	-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
Translation difference	0	0	0	-3	-3
Disposals and classification as held for sale ¹	-11	-6	0	0	-17
Amortisation	17	8	0	0	24
Impairment	1	0	0	11	12
At 31 December 2022	185	35	0	258	478
Net Book Value at 31 December 2022	38	65	18	244	364
Net Book Value at 31 December 2021	48	69	7	282	405

¹ Company disposals are included in Disposals line. Company disposals and classification of assets as held for sale are discussed in more detail in Note 4 Acquisitions, disposals and assets held for sale.

Property, plant and equipment

EUR million	Year ended 31 December					Total
	Land and water	Buildings and structures	Plant and equipment	Other tangible assets	Assets in progress	
Acquisition cost						
At 1 January 2021	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	-13	-82	-503	-19	-4	-620
At 31 December 2021	117	3,355	13,421	448	394	17,735
Translation difference	-1	-12	-266	-11	-10	-300
Reclassifications	0	57	207	10	-277	-3
Reclassifications to biological assets	0	-2	-1	0	0	-3
Additions	6	33	217	4	373	634
Disposals and classification as held for sale ¹	-19	-390	-2,668	-58	-27	-3,162
At 31 December 2022	103	3,041	10,909	393	454	14,900
Accumulated depreciation and impairment						
At 1 January 2021	3	2,096	10,186	386	11	12,683
Translation difference	0	9	-30	0	1	-20
Disposals	-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
Translation difference	0	-30	-262	-9	0	-302
Disposals and classification as held for sale ¹	-1	-378	-2,458	-49	0	-2,886
Depreciation	0	78	371	10	1	460
Impairments and reversals	0	21	68	4	2	95
At 31 December 2022	2	1,804	7,882	336	16	10,040
Net Book Value at 31 December 2022	101	1,237	3,027	57	437	4,860
Net Book Value at 31 December 2021	114	1,242	3,256	68	380	5,060

¹ Company disposals are included in the Disposals line. Company disposals and classification of assets as held for sale are discussed in more detail in Note 4 Acquisitions, disposals and assets held for sale.

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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 2021	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
Translation difference	-2	-2	-3	-1	-7
Reclassifications to biological assets	0	-17	0	0	-17
Additions	1	6	20	18	45
Disposals and classification as held for sale ¹	-2	0	-23	-36	-62
Other changes	1	2	0	4	6
At 31 December 2022	105	243	96	113	556
Accumulated depreciation and impairment					
At 1 January 2021	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
Translation difference	0	-1	-2	-1	-4
Disposals and classification as held for sale ¹	-1	0	-23	-34	-58
Depreciation	3	5	19	23	50
Impairment	0	0	1	0	0
At 31 December 2022	10	22	49	56	138
Net Book Value at 31 December 2022	95	221	47	57	418
Net Book Value at 31 December 2021	99	235	49	59	441

¹ Company disposals are included in the Disposals line. Company disposals and classification of assets as held for sale are discussed in more detail in Note 4 Acquisitions, disposals and assets held for sale.

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 and logistic equipment, as well as 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.

See [Note 26](#) Interest-bearing assets and liabilities for more details about lease liabilities and [Note 5](#) Other operating income and expense for details about lease expenses included in the income statement.

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 701 (EUR 609) 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. The Group changed its valuation method related to Finnish forest asset valuation at the end of 2022 to correspond to the valuation method applied with Swedish forest assets, as explained in [Note 1](#) Accounting principles.

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 and plantation forest assets include holdings in China, Brazil and Uruguay. Accounting policies for the different class of forest assets are presented separately below. In addition the Group has minor forest asset holdings in Estonia and Romania through associate company Tornator. 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 and Finland 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.

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Information relating to forest asset transactions are available from market data suppliers. 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](#).

The total value of the forest assets in Nordics 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.

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 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 6,846 (EUR 6,747) million as shown below. The Group's indirect share of forest assets held by associated company amounts to EUR 1,271 (EUR 985) million. The total forest asset value, excluding leased forest land, amounts to EUR 8,117 (EUR 7,732) million.

Forest assets

EUR million	Biological assets		Forest land ²		Forest assets total	
	Year Ended 31 December 2022	2021	Year Ended 31 December 2022	2021	Year Ended 31 December 2022	2021
Subsidiaries and joint operations						
Value at 1 January	4,547	4,250	2,201	2,005	6,747	6,256
Translation differences	-305	-43	-145	-26	-449	-68
Unrealized change in fair value ¹	336	471	259	225	596	696
Additions	77	58	2	1	78	59
Disposals	-2	-64	-2	-5	-4	-69
Change due to harvesting ¹	-141	-127	0	0	-141	-127
Other operative changes ¹	-1	-17	0	0	-1	-17
Reclassification from PPE	20	17	0	0	20	17
Value at 31 December	4,531	4,547	2,315	2,201	6,846	6,747
Associated company						
Tornator Oyj (41%)	1,122	906	149	78	1,271	985
Value at 31 December	1,122	906	149	78	1,271	985
Total	5,653	5,453	2,464	2,279	8,117	7,732

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 Not including leased forest land.

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Valuation and standing stock of forest assets

		As at 31 December 2022						
		Swedish forests	Guangxi	Veracel (50%)	MdP (50%)	Tornator (41%)	Total	
Total area	Thousand ha	1,389	73	113	138	301	2,014	
- of which owned	Thousand ha	1,389	—	105	95	300	1,890	
- of which leased	Thousand ha	—	73	8	43	—	124	
Productive area	Thousand ha	1,142	64	47	92	277	1,622	
Total area	Standing stock	million m ³ fo. ¹	152.7	4.2	5.2	15.5	33.2	210.8
Productive area	Standing stock	million m ³ fo. ¹	150.5	4.1	5.2	15.5	32.8	208.1
	Estimated growth	million m ³ fo. ¹	5.8	1.3	1.8	3.2	1.5	13.6
	Harvesting	million m ³ fo. ¹	4.6	1.2	1.7	1.8	1.3	10.7
	Other changes	million m ³ fo. ¹	-1.1	-0.8	0.0	0.2	-0.1	-1.8
	Harvesting	million m ³ u.b. ²	3.8	1.0	1.4	1.5	1.2	8.9
Biological assets	EUR million	3,963	196	103	269	1,122	5,653	
Biological assets	Productive area	EUR/ha	3,471	3,062	2,162	2,922	4,054	3,485
Forest land	EUR million	2,113	—	29	173	149	2,464	
Total forest assets	EUR million	6,076	196	131	441	1,271	8,117	
Leased forest land	EUR million	—	166	3	52	—	221	

¹Forest cubic meters
²Solid under bark (sub) cubic meters

		As at 31 December 2021						
		Swedish forests	Guangxi	Veracel (50%)	MdP (50%)	Tornator (41%)	Total	
Total area	Thousand ha	1,389	77	113	136	295	2,009	
- of which owned	Thousand ha	1,389	—	106	95	295	1,884	
- of which leased	Thousand ha	—	77	7	41	—	125	
Productive area	Thousand ha	1,141	68	47	90	271	1,617	
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	

¹Forest cubic meters
²Solid under bark (sub) cubic meters

Subsidiaries and joint operations

At the end of 2022, forest assets (excluding leases) were located by value, in Sweden 89% (89%), China 3% (3%), Brazil 2% (2%) and Uruguay 6% (6%). The total area amounts to 1,713 (1,715) thousand hectares of which 7% (7%) is leased and under 1% (1%) is restricted. From Stora Enso's total forest holdings 1,345 (1,346) 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 2022, the value of the biological assets in Swedish forests amounted to EUR 3,963 (EUR 4,005) million, related forest land amounted to EUR 2,113 (EUR 2,012) million and the total forest assets amounted to EUR 6,076 (EUR 6,017) million. The value increase in the forest assets value is mainly driven by higher market prices, whereas foreign exchange impact netted the impact of price increases and decreased the value with approximately EUR 485 million. Deferred tax liabilities related to forest assets amounted to EUR 1,250 (EUR 1,237) million. The discount rate of 3.6% (3.5%) was applied in the valuation.

The productive area in Swedish forests amounted to 1,142 (1,141) thousand hectares with a standing stock of 150.5 (150.5) million forest m³. The weighted three-year average market transaction price applied in the valuation for Swedish forests assets in 2022 is EUR 40 (EUR 40) per forest m³. The forest asset value corresponds to an average of EUR 5,320 (EUR 5,270) 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

2022		North	Middle	South	Total
Productive area	Thousand ha	190	951	0	1,142
Percentage of total	%	17%	83%	0%	100%
Standing stock	million m ³ fo.	17.5	133.0	0.0	150.5
Percentage of total	%	12%	88%	0%	100%

2021		North	Middle	South	Total
Productive area	Thousand ha	191	950	0	1,141
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%	—%	100%

Guangxi

At the end of 2022, the value of the biological assets in Guangxi, China, amounted to EUR 196 (EUR 200) million. All the forest land in China is leased. The value decrease is mainly driven by foreign exchange impact and increased discount rate, whereas higher prices increased the value. The biological assets included young standing timber with a value of EUR 27 (EUR 33) million. The discount rate of 10.2% (8.6%) used in the discounted cash flows (DCF) increased in 2022. The productive forest area in Guangxi totals to 64 (68) thousand hectares with a standing stock of 4.1 (4.9) million forest m³.

Veracel

Veracel is a 50% joint operation in Brazil. Stora Enso's share of the biological assets was EUR 103 (EUR 81) million. The increase is mainly driven by increased prices and foreign exchange impact, whereas increased discount rate and higher costs decreased the value. The biological

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assets included young standing timber with a value of EUR 31 (EUR 21) million. The discount rate of 7.9% (6.9%) used in the DCF increased in 2022. 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 5.2 (5.0) 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 269 (EUR 260) million. The movement is mainly driven by foreign exchange impact and discount rate change. The biological assets included young standing timber with a value of EUR 50 (EUR 46) million. The discount rate of 9.0% (6.5%) used in the DCF increased in 2022. The related forest land is measured at cost. Stora Enso's share of the productive forest area totals to 92 (90) thousand hectares with a standing stock of 15.5 (13.9) million forest m³.

Associated company

Tornator

Tornator Oyj is a 41% owned Finnish associate company. Stora Enso's share of the biological assets was EUR 1,122 (EUR 906) million, related forest land amounted to EUR 149 (EUR 78) million, and total forest assets equalled to EUR 1,271 (EUR 985) million. The increase in the value of forest assets is mainly driven by moving to market transaction based valuation method from discounted cash flow based method concerning forest assets in Finland. Acquisitions also increased the forest asset value. See [Note 1](#) for more details related to changes in the valuation method.

Stora Enso's share of the productive forest area totals to 277 (271) thousand hectares with a standing stock of 32.8 (32.7) million forest m³. The weighted three-year average market transaction price applied in the valuation for forest assets located in Finland in 2022 is EUR 42 per forest m³. The forest asset value in Finland corresponds to an average of EUR 4,750 per ha of productive forest area.

Valuation sensitivities of significant assumptions of a +/- 10% movement

EUR million	Wood market prices	Growth rate	Discount rate
Guangxi	+/-28	+/-1	+/-4
Veracel	+/-10	+/-10	+/-2
Montes del Plata	+/-30	+/-30	+11/-10

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 151 (EUR 150) 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 40) 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 goodwill. Goodwill arising from the acquisition of an equity accounted investment is included in the carrying amount of the investment and is assessed for impairment as part of that investment. There is no material goodwill in the carrying amount of equity accounted investments.

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.

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	
			2022	2021	2022	2021
Tornator Oyj	Forest	Finland	41.00	41.00	800	545
Others					32	35
Carrying amount					832	580

In 2022, Stora Enso divested its 30.41% participation in Encore Ympäristöpalvelut Oy. The transaction did not have a material impact on the Group.

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

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Group share of equity accounted investments income statements

EUR million	Year Ended 31 December	
	2022	2021
Sales	147	142
Net operating expenses	-103	-97
Biological asset valuation	189	120
Operating profit	233	166
Net financial items	40	10
Net profit before tax	273	176
Income tax	-52	-34
Net profit for the year	221	143

The average number of personnel in the equity accounted investments was 1,043 in 2022, compared with 1,193 in 2021.

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	2022	2021
Forest Assets	3,101	2,401
Other non-current assets	70	39
Current assets	73	53
Non-current liabilities	752	821
Current liabilities	120	43
Tax liabilities	420	300
Sales	176	155
Net profit for the year	542	349
Other comprehensive income	141	39
Total comprehensive income	683	388
Dividends received during the financial year	25	16
Net assets of the associate	1,952	1,329
Ownership interest	41.00%	41.00%
Carrying amount of the Group's interest in Tornator Oyj	800	545

The Group's current 41% ownership is valued at EUR 800 (EUR 545) million at the year-end of 2022. The Group's share of Tornator's net profit was EUR 222 (EUR 143) million, including a biological asset valuation gain net of taxes of EUR 152 (EUR 96) million.

Aggregate information of equity accounted investments that are not individually material

EUR million	As at 31 December	
	2022	2021
Non-current assets	35	30
Current assets	12	22
Non-current liabilities	3	2
Current liabilities	12	15
Sales	74	78
Net profit for the year	-2	0
Dividends received during the financial year	1	0
Net assets of the associates	32	35
Equity accounting value	32	35
Equity accounting value for Tornator Oyj	800	545
Total equity accounting value	832	580

Equity accounted investment balances

EUR million	As at 31 December	
	2022	2021
Receivables from equity accounted investments		
Non-current loan receivables	2	2
Trade receivables	1	1
Other receivables	0	10
Liabilities due to equity accounted investments		
Trade payables	101	55

Equity accounted investment transactions

EUR million	Year Ended 31 December	
	2022	2021
Sales to equity accounted investments	19	19
Interest on loan receivables from equity accounted investments	0	1
Purchases from equity accounted investments	163	109

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	
	2022	2021
Acquisition cost at 1 January		
Listed securities	3	3
Unlisted securities	135	135
Investments classified as equity instruments	139	138
OCI in opening balance	779	279
Equity Instruments at 1 January	918	417
Translation difference and other	-2	0
Additions	10	1
Change in fair values accounted for as OCI	519	501
Carrying amount at 31 December	1,445	918

Unrealised gains and losses on listed and unlisted securities

EUR million	Year Ended 31 December	
	2022	2021
Net unrealised holding gains (OCI)	1,299	780
Cost	147	139
Fair value	1,445	918
Net unrealised holding gains (OCI)	1,299	780
Deferred tax	-1	-2
Net unrealised holding gains shown in equity as OCI	1,297	778
Change in net unrealised holding gains shown in equity as OCI	519	501

PVO shares

The Group holds a 15.6% (15.6%) interest in Pohjolan Voima Oyj (PVO), a public limited company in the energy sector that produces electricity and heat for its shareholders in Finland at cost-based and non-profit making principle (Mankala-principle). Each subsidiary of the PVO group has its own class of shares that, instead of dividends, entitle the shareholder to the energy produced in proportion to its ownership of that class of share. Also, 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 2022. The holding is fair valued quarterly using the discounted cash flow method. During the last quarter of 2022 the

Group refined the valuation method to be based on discounted cash flow analysis only, while previously, also market multiples were used. Trading multiples are considered to be less reliable under current market conditions. 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 used in the valuation are based on market future derivative prices for the first three years and on long-term electricity price estimates for the years thereafter. The historical financial statements provide the basis for the cost structure for each power asset and for future periods, estimates from PVO shareholder information is used when available and these are adjusted by inflation factor in future years. The discount rate of 7.99% 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 +127 million and -127 million, respectively. A +/- percentage point change in the discount rate would change the valuation by EUR -158 million and +200 million, respectively.

Stora Enso holds an indirect share of approximately 8.9% of the capacity of Olkiluoto 3 nuclear plant unit through its PVO B2 shares. The Olkiluoto 3 plant unit has been running test production during 2022. During the test production, in October 2022, damages were identified in the plant unit's feedwater pumps. After an investigation into the damages, Teollisuuden Voima Oyj announced in December 2022 that the regular electricity production is expected to start in March 2023.

PVO shareholding on 31 December 2022

EUR million	Share Series	% Holding	Asset Category	Fair Value 2022	Fair Value 2021
PVO-Vesivoima Oy	A	20.6	Hydro	307	302
Teollisuuden Voima Oyj	B	15.7	Nuclear	735	540
Teollisuuden Voima Oyj	B2	14.8	Nuclear	377	54
Other	C,C2,V,M	Various	Various	4	4
Total				1,423	900

The valuation in 2022 amounted to EUR 1,423 (EUR 900) million against a cost value of EUR 130 (EUR 130) million, with the revaluation of EUR 1,293 (EUR 770) million presented in equity as part of the fair value reserve. 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	Holding %	31 December 2022		
		Number of Shares	Acquisition Cost	Fair Value
Packages Ltd, Pakistan - listed shares	6.0	5,396,650	3	8
Total listed securities			3	8
Pohjolan Voima Oy - unlisted shares	15.6	5,073,972	130	1,423
Others - unlisted securities			14	14
Total unlisted securities			144	1,437
Total Equity instruments at 31 December 2022			147	1,445
Total Equity instruments at 31 December 2021			139	918

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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	
	2022	2021
Value on 1 January	137	36
Emission allowances allocated	160	167
Sales	-62	-35
Settlement with the government	-85	-31
Classification as held for sale	-27	0
Value on 31 December	123	137

The liability to deliver allowances is presented in the consolidated statement of financial position in line other operative liabilities. As of 31 December 2022, the liability to deliver allowances amounted to EUR 91 (EUR 99) million as presented in [Note 23 Other liabilities](#). The excess emission rights held at the year end were valued at EUR 32 (EUR 38) million.

Other non-current assets

EUR million	As at 31 December	
	2022	2021
Prepaid expenses and accrued income	22	15
Tax credit	4	3
Other non-current operative assets	12	15
Total	38	34

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 same cost formula is used for all inventories having a similar nature and use to the Group. 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 when needed. 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	
	2022	2021
Materials and supplies	501	422
Work in progress	84	97
Finished goods	962	689
Spare parts and consumables	337	331
Other inventories	25	23
Advance payments and cutting rights	63	55
Obsolescence allowance - spare parts and consumables	-103	-125
Obsolescence allowance - finished goods	-19	-9
Net realisable value allowance	-40	-5
Total	1,810	1,478

EUR 6,576 (EUR 5,740) million of inventories in total have been expensed during the year. EUR 78 (EUR 29) million of inventory write-downs have been recognised as an expense. EUR 9 (EUR 16) million have been recognised as a reversal of previous write-downs.

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Note 17 Operative receivables

Accounting principles

Trade receivables

Trade receivables are recognised initially at fair value and subsequently at their anticipated realisable value with an estimate made for loss allowance on expected credit losses based on a forward-looking and objective review of all outstanding amounts at period end. A simplified approach under IFRS 9 has been implemented for trade receivables and loss allowances are recognised based on expected lifetime credit losses in the consolidated income statement within other operating expenses. For non-defaulted receivables, expected credit losses are estimated based on externally generated customer level probability of default data that is used in the forward-looking loss allowance calculation model. The 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 will be written off and booked as a credit loss only with the court's decision of bankruptcy or in some other cases when there is objective evidence supporting the write-off. 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 programmes 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	
	2022	2021
Trade receivables - gross carrying amount before amount held for sale	1,329	1,175
Trade receivables - gross carrying amount held for sale	-92	0
Trade receivables - gross carrying amount	1,236	1,175
Loss allowance	-32	-26
Prepaid expenses and accrued income	68	82
Other receivables	200	218
Total	1,473	1,449

Age analysis of trade receivables

EUR million	As at 31 December	
	2022	2021
Not overdue	1,213	1,093
Less than 30 days overdue	55	38
31 to 60 days overdue	10	7
61 to 90 days overdue	2	0
91 to 180 days overdue	3	0
Over 180 days overdue	47	37
Total	1,329	1,175

As at 31 December 2022, a gross amount of EUR 116 (EUR 82) 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 2022, lifetime expected credit losses for trade receivables amounted to EUR 32 (EUR 26) 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 74 (EUR 90) 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	
	2022	2021
Not overdue and less than 90 days overdue	5	1
91 to 365 days overdue	7	0
Over 365 days overdue	21	25
Total	32	26

Reconciliation of loss allowance

EUR million	As at 31 December	
	2022	2021
Opening balance at 1 January	26	35
Change in loss allowance booked through income statement	13	3
Write-offs	-6	-12
Closing Balance at 31 December	32	26

The actual credit losses during 2022 amounted to EUR 6 (EUR 12) 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 174 (EUR 184) 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.

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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 2022, shareholders' equity amounted to EUR 12,532 (EUR 10,683) million, compared to the market capitalisation on Nasdaq Helsinki of EUR 10,503 (EUR 12,809) million. The market values of the shares were EUR 13.90 (EUR 16.60) for A shares and EUR 13.15 (EUR 16.14) for R shares. In 2022, EUR 434 (237) million of dividend was paid, corresponding to EUR 0.55 (0.30) per share.

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 2022, 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 2022, Directors and Group Leadership Team members owned 127 (0) A shares and 363,604 (475,519) R shares representing 0.02% of the total voting rights of the company. Full details of Director and Executive interests are shown in Note 7 Board and executive remuneration. A full description of company share award programmes is shown in Note 21 Employee variable compensation and equity incentive schemes. However, none of these have any impact on the issued share capital.

Change in share capital and number of shares

	A shares	R shares	Total
At 1 January 2021	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
Conversion of A shares to R shares	-5,769	5,769	—
At 31 December 2022	176,238,280	612,381,707	788,619,987
Number of votes as at 31 December 2022 ¹	176,238,280	61,238,171	237,476,451
Share capital at 31 December 2022, EUR million	300	1,042	1,342
Share capital at 31 December 2021, 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 6 March 2023 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	
	2022	2021
At 1 January	-16	-16
Disposals	0	0
Share of profit for the period	-13	3
Share of other comprehensive income	0	-3
Dividends	0	0
At 31 December	-30	-16

Principal non-controlling interests

Company	Principal place of business	Proportion of ownership interests held by non-controlling interests, %	As at 31 December	
			2022	2021
Stora Enso Pulp and Paper Asia AB Group	Sweden and China	See separate table below	-31	-18
Others	-	-	1	1
Total	-	-	-30	-16

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

Company	Principal place of business	31 December 2022			31 December 2021		
		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.

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Stora Enso Pulp and Paper Asia AB Group

EUR million	2022	2021
Assets	1,235	1,282
Equity attributable to the owners of the parent	-165	-115
Non-controlling interests ¹	-31	-18
Total equity	-196	-133
Liabilities	1,430	1,414
Net profit or loss for the period	-74	7
Attributable to		
Owners of the parent	-61	4
Non-controlling interests	-13	3
Net profit or loss for the period	-74	7
Net cash flow from operating activities	64	90
Net cash flow from investing activities	-41	-37
Net cash flow from financing activities	4	-26
Net cash flow	27	27

¹ No dividends were paid to non-controlling interests in 2022 or 2021.

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 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 expenses amounted to EUR 152 (EUR 165) million in 2022, as shown in Note 6 Personnel expenses. Pensions are classified as defined contribution plans and defined benefit plans. The majority of the Group's pensions plans are defined contribution plans for which the charge amounted to EUR 146 (EUR 153) million. The priority of the Group is to provide defined contribution plans as its post-employment benefits.

Net defined benefit obligation reconciliation

EUR million	Defined benefit obligation		Fair value of plan assets		Net defined benefit liability / (asset)	
	2022	2021	2022	2021	2022	2021
At 1 January	1,108	1,210	-762	-737	347	473
Current service cost	12	14			12	14
Past service cost	-6	-2	0	0	-6	-2
Settlements	-7	-5	7	5	0	0
Interest expense (+) income (-)	13	9	-10	-6	3	3
Total included in income statement	11	17	-3	-1	9	15
Actuarial changes in demographic assumptions	-13	3			-13	3
Actuarial changes in financial assumptions	-306	-21			-306	-21
Actuarial changes from experience adjustments	63	-42			63	-42
Return on plan assets ¹			105	-65	105	-65
Asset ceiling impact ¹			5	0	5	0
Total remeasurement gains (-) / losses (+) included in OCI	-256	-61	109	-65	-147	-126
Benefit payments	-54	-58	41	44	-13	-14
Employer contributions and refunds			4	1	4	1
Translation difference	-38	1	33	-3	-5	-3
Disposals and classification as held for sale	-35	0	0	0	-35	0
At 31 December	736	1,108	-577	-762	159	347

¹ Excluding amounts included in interest expense (+) income (-)

In 2023, contributions of EUR 19 (EUR 17) million are expected to be paid to Group's defined benefit plans.

Significant actuarial assumptions used in the valuation of defined benefit obligations

	Year ended 31 December					
	Finland		Germany		Sweden	
	2022	2021	2022	2021	2022	2021
Discount rate %	3.6	0.7	3.6	0.8	4.0	1.7
Future salary increase %	3.0	3.2	2.5	2.5	2.9	2.9
Future pension increase %	2.2	2.3	2.0	1.8	2.0	2.0
Duration of pension plans	8.0	10.0	10.2	13.0	13.1	16.5

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Sensitivity of the defined benefit obligation

	Impact on defined benefit obligation		
	Change in assumption	Increase in assumption	Decrease in assumption
Discount rate	0.50%	Decrease by 5.8%	Increase by 6.4%
Salary growth rate	0.50%	Increase by 1.2%	Decrease by 1.1%
Pension growth rate	0.50%	Increase by 4.8%	Decrease by 4.4%
Life expectancy	1 year	Increase by 4.2%	Decrease by 4.1%

The Group defines following actuarial risks associated with defined benefit plans:

Interest 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.

Life expectancy

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 2022

EUR million	31 December 2022				
	Finland	Germany	Sweden	Other	Total
Present value of funded obligations	172	3	226	163	563
Present value of unfunded obligations	0	134	15	24	173
Defined benefit obligations (DBO)	172	137	241	187	736
Fair value of plan assets	-157	-4	-266	-150	-577
Net liability in the balance sheet	15	134	-26	36	159
Represented by					
Defined benefit pension plans	15	134	-26	13	136
Other post-employment benefits	0	0	0	23	23
Net liability in the balance sheet	15	134	-26	36	159

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

Finland

In Finland the employees are entitled to a statutory pensions benefit determined by Employee's pension Act (TyEL). These benefits are defined as contribution benefits. They are insured with an insurance company and provide coverage for old age, disability and death. Charge in the income statement from contribution benefits is EUR 64 (EUR 71) million.

In addition, the Group has additional defined benefit plans which resulted in a charge of EUR 0 (EUR 1) million excluding finance costs. Defined benefit plans and plan assets 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 6 (EUR 7) million, of which EUR 6 (EUR 6) million related to defined contribution plans and EUR 1 (EUR 1) million to defined benefits excluding finance costs. The net defined benefit liability amounted to EUR 134 (EUR 225) million. The decrease in net liability arose mainly from changes in actuarial assumptions, especially from an increase in discount rate.

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 plans, the charge in the Income statement being EUR 54 (EUR 56) million. Defined benefit plans are covering the remaining white-collar staff and resulted in a charge of EUR 1 (EUR 8) million excluding finance costs. The net defined benefit asset amounted to EUR 26 (liability EUR 55) million. The decrease in net liability arose mainly from changes in actuarial assumptions, especially from an increase in discount rate. Stora Enso has undertaken to pay all local legal pension liabilities for the main ITP scheme to the foundation, thus the remaining liability relates

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to other small plans. 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 36 (EUR 37) million. The most material change in liability was recognised for United Kingdom. The decrease in net liability arose mainly from changes in actuarial assumptions.

Plan assets

EUR million	2022				2021			
	Quoted	Unquoted	Total	% of total	Quoted	Unquoted	Total	% of total
Equity	88	12	101	17%	122	37	159	21%
Debt	46	44	90	16%	58	55	112	15%
Property	0	55	55	9%	0	50	50	7%
Cash	10	0	10	2%	25	0	25	3%
Assets held by insurance companies	0	226	226	39%	0	308	308	40%
Others	0	96	96	17%	7	101	108	14%
Total pension fund assets	144	433	577	100%	211	551	762	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.

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 100%. 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 2022, the annual incentive programmes were based on financial measures as well as targets related to operational efficiency, emission reduction, safety and individual targets. The financial success metrics in the STI programme 2022 are Sales growth and EBITDA.

Long term incentive (LTI) programmes

Since 2005, new share based programmes for executives have been launched every year. The 2020 programme, ending in 2022 and settled in 2023 has a three-year performance period. The 2021 programme, ending in 2023 and settled in 2024, has three one-year performance periods which are accumulated after three years. The 2022 programme features performance metrics with one-year performance periods which are accumulated after three years as well as three-years performance periods. 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 People and Culture Committee and approved by the Board of Directors. The financial performance metrics are 3-year Economic Value Added (EVA) and Earnings Per Share (EPS) for the Stora Enso Group for the 2020 and 2021 programme and EPS and Relative Total Shareholder Return for the 2022 programme, which in addition features ESG metrics (emissions reduction and diversity). 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 2022

Number of shares	Outstanding restricted and performance share awards at year end			
	2023	2024	2025	Total
2020 programme	903,289			903,289
2021 programme		716,460		716,460
2022 programme			822,240	822,240
Total	903,289	716,460	822,240	2,441,989

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

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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.

Provisions

EUR million	Environmental provisions	Restructuring provisions	Other provisions	Total provisions
Carrying Value at 1 January 2021	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
Carrying Value at 31 December 2021	75	88	67	231
Translation difference	-4	-3	-2	-9
Disposals and classification as held for sale	-3	-1	0	-4
Charge in Income Statement				
New provisions	14	8	19	40
Increase in existing provisions	1	12	2	15
Reversal of existing provisions	-1	-16	-8	-25
Payments	-9	-66	-50	-124
At 31 December 2022	73	21	30	124
Allocation between current and non-current provisions				
Current provisions: Payable within 12 months	10	20	14	43
Non-current provisions: Payable after 12 months	64	2	16	81
Total at 31 December 2022	73	21	30	124

Provisions for environmental remediation amounted to EUR 73 (75) million at 31 December 2022. 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 Koppberg mine before releasing the water into the environment. The provision at year end amounted to EUR 31 (EUR 37) 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 2022 amounted to EUR 21 (EUR 88) million for restructuring provisions and EUR 30 (EUR 67) million with respect to other provisions. Material payments in 2022 in restructuring and other provisions are mainly related to closing down pulp and paper production at Kvarnsveden Mill in Sweden and Veitsiluoto Mill in Finland as announced in 2021.

Note 23 Operative liabilities

Non-current operative liabilities

EUR million	As at 31 December	
	2022	2021
Share-based payments	2	1
Other payables	9	12
Total	11	13



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Current operative liabilities

EUR million	As at 31 December	
	2022	2021
Trade payables	1,831	1,704
Payroll and staff-related accruals	245	256
Accrued liabilities and deferred income	130	155
Emission liabilities	91	99
Advances received	18	18
Other payables ¹	94	107
Total	2,410	2,339

¹ Other payables consist especially of taxes payable to government, such as VAT and payroll taxes.

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, currency risk, liquidity risk, 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.

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 2022		As at 31 December 2021	
	Floating rate	Fixed rate	Floating rate	Fixed rate
Non-current interest-bearing receivables ¹	11	80	5	40
Current interest-bearing receivables	1	—	—	49
Cash and cash equivalents	1,917	—	1,481	—
Interest-bearing liabilities ²	-1,074	-2,818	-974	-2,863
Interest-bearing assets and liabilities excluding derivatives	855	-2,738	512	-2,774
Interest-rate and cross-currency swaps	650	-650	682	-682
Interest-bearing assets and liabilities, net of derivatives	1,506	-3,388	1,194	-3,456

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 duration for the Group's net interest-bearing liabilities, including all interest rate derivatives but excluding cash and cash equivalents, is 3.3 (4.6) years.

As of 31 December 2022, one percentage point increase in interest rates would increase annual net interest expenses by approximately EUR 4 (EUR 2) million and a similar decrease in interest rates would decrease net interest expenses by EUR 4 (EUR 1) 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 10 (EUR 16) 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 1 (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. 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 foreign exchange options. The Group may also hedge periods between 12 months and 36 months, or

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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 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 2022						As at 31 December 2021					
	EUR	SEK	USD	GBP	AUD	UYU	EUR	SEK	USD	GBP	AUD	UYU
Estimated annual net cash flow exposure in hedged foreign-currency flows ¹	960	-238	1,983	240	83	-48	995	-191	1,712	346	138	-41
Cash flow hedges for the next 12 months	-525	119	-843	-59	-26	26	-553	89	-740	-78	-38	23
Estimated annual net cash flow exposure, net of hedges	435	-119	1,139	181	57	-22	442	-101	971	268	100	-18
Hedging percentage as at 31 December for next 12 months	55 %	50 %	43 %	24 %	31 %	54 %	56 %	47 %	43 %	22 %	27 %	57 %
Weighted-average hedged rate against EUR ²		10.63	1.09	0.87	1.52	45.20	—	10.21	1.20	0.85	1.60	52.63
Operative receivables and payables net exposure	-22	8	284	30	49	-5	-42	5	233	32	58	-2
Net receivable currency hedges	-18	-3	-186	-16	-51	—	16	—	-200	-26	-26	—
Net operative receivables exposure, net of hedges	-39	5	98	14	-2	-5	-26	5	34	5	31	-2
Estimated annual net transaction risk exposure after hedges	396	-113	1,238	195	55	-27	416	-97	1,005	274	131	-20

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.

The following table includes the estimated effect on the annual operating profit of a 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 2022						As at 31 December 2021					
	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	-48	12	-99	-12	-4	5	-50	10	-86	-17	-7	4
Effect on cash flow hedging OCI reserve before taxes as at year end ²	26	-6	42	3	1	-3	28	-4	37	4	2	-2
Effect on net operative receivables and payables after hedges ³	2	—	-5	-1	—	—	1	—	-2	—	-2	—
Estimated annual EBIT impact⁴	-20	6	-62	-10	-3	3	-21	5	-50	-14	-7	2

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. Internal transaction exposure includes foreign-currency payables and receivables outstanding within the Group at reporting date. 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



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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 2022					As at 31 December 2021				
	SEK	USD	CNY	PLN	CZK	SEK	USD	CNY	PLN	
Foreign-currency net debt ¹	-418	-101	355	-6	-62	-30	-95	462	-1	
Currency hedges	-3	-46	-211	-7	62	7	-31	-272	-16	
Net exposure after hedges	-422	-146	144	-12	—	-23	-125	190	-18	
Internal transaction exposure				138	45					
Currency hedges				-124	-41					
Net non-operative exposure	—	—	—	14	3					
Exposure currency change by	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	
Effect in the Income Statement²	21	7	-7	—	6	1	6	-10	1	

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 398 (EUR 348) 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.

Translation exposure in Income statement

EUR million	As at 31 December 2022					As at 31 December 2021				
	SEK	USD	BRL	CZK	CNY	SEK	USD	BRL	CZK	CNY
Translation exposure in Income Statement	-147	-192	-164	-38	77	-196	-129	-111	11	83
Exposure currency change by	-5%	-5%	-10%	-5%	-5%	-5%	-5%	-10%	-5%	-5%
Effect on EBIT from translation risk exposure	7	10	16	2	-4	10	6	11	-1	-4

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 practice, 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	
	2022	2021
Translation exposure on equity in USD area ¹	1,686	1,502
EUR/USD equity hedges ²	-281	-265
Translation exposure after hedges	1,405	1,237
Sensitivity before hedges - EUR strengthening 5%	-84	-75
Sensitivity after hedges - EUR strengthening 5%	-70	-62

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

Liquidity 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 2022, undrawn committed credit facilities and undrawn loans were at EUR 1,100 (EUR 700) million. During 2022, altogether EUR 550 million of bilateral bank loans were arranged. EUR 200 million of these loans were undrawn at reporting date. The EUR 700 million committed credit facility agreement with a syndicate of 12 banks had originally a maturity of five years with two one-year extensions. In October 2022, the first extension option of this facility was used together with all 12 banks and the new maturity is in 2027. In May 2022, the Group signed a new EUR 200 million committed credit facility with a maturity of one year and one six month extension option. The extension option was exercised in October 2022 and therefore the new maturity is during the last quarter of 2023. The credit facilities are used as a backup for general corporate purposes and are both fully undrawn. Additionally, Stora Enso has access to various additional long-term sources of funding up to EUR 1,050 (EUR 1,000) million. These mainly relate to available funding sources from Finnish pension funds.

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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: 2022

EUR million	2023	2024	2025	2026	2027	2028+	Total
Bond loans	300	270	404	90	325	1,081	2,470
Loans from credit institutions	306	40	273	5	0	0	624
Lease liabilities	63	49	44	33	30	159	377
Other non-current financial liabilities	0	2	0	0	0	0	2
Non-current borrowings including current portion	668	361	721	128	355	1,240	3,472
Estimated contractual finance charges	108	90	74	43	40	190	545
Estimated contractual lease charges	16	14	13	11	10	58	123
Contractual repayments on non-current borrowings	792	465	807	182	405	1,489	4,140
Current borrowings, carrying amounts	429	0	0	0	0	0	429
Gross-settled derivative liabilities - receipts	-2,405	0	0	0	0	0	-2,405
Gross-settled derivative liabilities - payments	2,401	0	0	0	0	0	2,401
Net-settled derivative liabilities	-4	0	0	0	0	0	-5
Trade payables	1,831	0	0	0	0	0	1,831
Bank overdrafts	0	0	0	0	0	0	0
Estimated contractual finance charges	6	0	0	0	0	0	6
Total Contractual Repayments at 31 December 2022	3,050	464	807	182	405	1,489	6,398

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	73	72	63	55	39	218	521
Estimated contractual lease charges	16	14	13	12	11	61	126
Contractual repayments on non-current borrowings	269	693	452	693	182	1,834	4,123
Short-term 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

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 2022, 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 41 (EUR 22) million and credit rating of A+ (A+) using Standard and Poor's credit rating symbols.



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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 2022				As at 31 December 2021			
	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	175,200 MWh	EUR 29.1	5	18	438,000 MWh	EUR 29.02	13	15
- Central Europe					87,600 MWh	EUR 43.06	4	12
Oil purchases	200,474 barrels	USD 73.5	14	—	189,808 barrels	USD 58.06	10	2

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. 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 1,423 (EUR 900) 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 6) 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 2022, the maturities of the energy and commodity contracts, including both financial hedges and fixed-price physical purchase agreements, ranged between 2023 and 2024. In 2021, the maturities ranged between 2022 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 8 (EUR 13) million at the year end. Market value changes in these investments are recorded, after taxes, directly under Shareholders' Equity in the Equity instruments through OCI reserve. Detailed discussion regarding the publicly traded securities can be found from [Note 14](#) Equity instruments.

Capital risk management

Stora Enso's debt structure is focused on capital markets and 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 maintain reasonable 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.

Capital structure

EUR million	As at 31 December	
	2022	2021
Interest-bearing liabilities	3,972	3,938
Interest-bearing assets	2,122	1,629
Net debt	1,850	2,309
Equity attributable to owners of the parent	12,532	10,683
Operational EBITDA¹	2,529	2,184
Net debt to equity ratio	0.15	0.22
Net debt to operational EBITDA	0.73	1.06

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 and Forestry Company Ltd have complied with financial covenants related to debt-to-assets ratio during the reported periods. There are no other covenants in the Group's financing contracts.

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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 2022 and 2021. 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: 2022

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	—	8	—	8	8	8	—	—	14
Unlisted securities	—	1,423	14	1,437	1,437	—	—	1,437	14
Non-current interest-bearing receivables	92	28	—	120	120	—	28	—	26
Derivative assets	—	28	—	28	28	—	28	—	
Loan receivables	92	—	—	92	92	—	—	—	
Trade and other operative receivables	1,138	66	—	1,204	1,204	—	66	—	17
Current interest-bearing receivables	10	50	16	77	77	—	67	—	26
Derivative assets	—	50	16	67	67	—	67	—	
Other short-term receivables	10	—	—	10	10	—	—	—	
Cash and cash equivalents	1,917	—	—	1,917	1,917	—	—	—	
Total	3,157	1,576	30	4,763	4,763	8	161	1,437	

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	2,792	—	—	2,792	2,749	—	—	—	26
Derivative liabilities	—	—	—	0	0	—	—	—	
Non-current debt	2,792	—	—	2,792	2,748	—	—	—	
Current portion of non-current debt	667	—	—	667	667	—	—	—	26
Current interest-bearing liabilities	462	30	20	513	513	—	50	—	26
Derivative liabilities	—	30	20	50	50	—	50	—	
Current debt	462	—	—	462	462	—	—	—	
Trade and other operative payables	2,076	—	—	2,076	2,076	—	—	—	23
Bank overdrafts	—	—	—	0	0	—	—	—	
Total	5,998	30	20	6,048	6,005	—	51	—	

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: 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.

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-current loan receivables, considered as a level 2 fair value measurement, is based on the discounted cash flow analysis. 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	2022	2021
Financial assets		
Opening balance at 1 January	905	401
Reclassifications	-1	0
Gains/losses recognised in other comprehensive income	523	504
Additions	10	1
Closing balance at 31 December	1,437	905

The Group did not have level 3 financial liabilities as at 31 December 2022.

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 2022 was indexed to US dollar LIBOR and related amount of interest bearing liabilities outstanding at 31 December 2022 was EUR 211 (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	
	2022	2021
Listed securities	8	13
Long-term derivative assets	28	6
Long-term deposits	48	42
Long-term loans to equity accounted investments	2	2
Other long-term loan receivables	41	1
Total non-current interest-bearing assets	128	64
Short-term derivative assets	66	32
Short-term deposits	0	49
Other short-term loan receivables	11	3
Cash and cash equivalents	1,917	1,481
Total current interest-bearing assets	1,994	1,565
Total interest-bearing assets	2,122	1,629

The annual average interest income rate for deposits and loan receivables during 2022 was approximately 1.0% (0.1%). Current interest-bearing receivables included EUR 10 (EUR 3) million accrued interest at 31 December 2022. The Group has evaluated that there has not been a significant increase in credit risk related to interest-bearing deposits and investments after the initial recognition. Accordingly, the loss allowance is recognised based on 12-month expected credit losses.

As part of Other long-term loan receivables balances, EUR 41 million represent receivables, net of impairment allowance, originating from sale of Russia operations, to be received in instalments in future periods. These receivables were recognised at inception at their fair value (EUR 58 million) using a discount rate of 27.1% and are carried in the financial statement of position at amortised cost. At reporting date, loss allowance of EUR 7 million, based on 12-month expected credit losses was recognised in profit and loss. The fair valuation of these receivables and evaluation of their credit risk and collectability involves a significant degree of judgement.

Interest-bearing liabilities

EUR million	As at 31 December	
	2022	2021
Bond loans	2,460	2,497
Loans from credit institutions	623	577
Lease liabilities	375	387
Long-term derivative financial liabilities (see Note 25)	0	30
Other non-current liabilities	2	4
Non-current interest-bearing liabilities including current portion	3,459	3,493
Short-term borrowings	429	372
Interest payable	35	34
Short-term derivative financial liabilities (see Note 25)	49	38
Bank overdrafts	0	1
Total Interest-bearing Liabilities	3,972	3,938

EUR million	2022	2021
Carrying Value at 1 January ¹	3,938	4,756
Translation differences on opening balance	-4	120
Proceeds of new long-term debt	366	19
Repayment of long-term debt	-351	-862
Additions in lease liabilities	45	33
Repayment of lease liabilities and interest	-73	-88
Proceeds/repayments of short-term borrowings	75	-73
Change in interest payable	19	16
Change in derivative financial liabilities	-19	38
Disposals and classification as held for sale	-5	-1
Other	8	2
Translation differences during the year	-28	-22
Total Interest-bearing Liabilities	3,972	3,938

¹ The table format has been updated to better present changes in liabilities arising from cash flow activities and non-cash activities. The comparison figures have been restated accordingly.

Events during 2022 and 2021

During 2022, altogether EUR 550 million of bilateral bank loans were arranged. Maturities of these loans vary from 18 months to 3 years with extension options. Proceeds from these loans are used for general corporate purposes and EUR 200 million of these loans were undrawn at reporting date. Stora Enso repaid credit institution loans, according to maturity schedule, amounted to a nominal of EUR 289 million during 2022.

In May 2022, Stora Enso signed a new EUR 200 million committed credit facility with a maturity of one year and one six month extension option which was exercised in October 2022.

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. In October 2022, the first extension option of this facility was used together with all 12 banks and therefore maturity is now in 2027. Simultaneously, the existing EUR 600 million RCF with original maturity in 2023 was cancelled.

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.

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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 2023 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 3.2% (3.0%) with a run-rate of 3.3% 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.

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	
					2022	2021	2022	2021
					Currency million		EUR million	
All Liabilities are Held by the Parent Company								
Fixed Rate								
2006-2036	Global 7.250% Notes 2036	7.25	USD	300	300	300	278	262
2016-2023	Euro Medium Term Note	2.125	EUR	300	300	300	300	300
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	299	298
2019-2024	Euro Medium Term Note (Green Bond)	1.875	SEK	1,750	1,750	1,750	157	171
2020-2025	Euro Medium Term Note (Green Bond)	2.375	SEK	1,550	1,550	1,550	140	152
2020-2030	Euro Medium Term Note (Green Bond)	0.625	EUR	500	500	500	495	495
Total Fixed Rate Bond Loans							1,968	1,976
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
2019-2024	Euro Medium Term Note (Green Bond)	Stibor+1.45	SEK	1,250	1,250	1,250	112	122
2019-2026	Euro Medium Term Note (Green Bond)	Stibor+1.60	SEK	1,000	1,000	1,000	90	97
2020-2025	Euro Medium Term Note (Green Bond)	Stibor+2.20	SEK	1,550	1,550	1,550	140	152
Total Floating Rate Bond Loans							492	521
Total Bond Loans							2,460	2,497

Net debt

In 2022 net interest-bearing liabilities, including held for sale related assets, decreased by EUR 456 (decreased by EUR 611) million to EUR 1,854 (EUR 2,309) 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 increased by EUR 437 (decreased by EUR 175) million to EUR 1,917 (EUR 1,480) million as at 31 December 2022. In 2022, the total cash outflow for leases was EUR 73 (EUR 88) million including interest component of EUR 17 (EUR 17) million.

The ratio of net debt to the last 12 months' operational EBITDA was 0.7 (1.1). The net debt/equity ratio was 0.15 (0.22) as per the year-end.

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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. During 2022 and 2021, the Group did not enter into new interest rate swap contracts.

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 foreign exchange forwards, both the spot element and forward points have been included to the hedge designation. In case of foreign exchange 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 five years with the longest hedging contract maturing in 2027 (2027). However, the majority of the contracts are expected to mature in 2023.

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.

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 2022, 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

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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:

- Foreign exchange forward contract fair values are calculated using forward exchange rates at the reporting date.
- Foreign exchange 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	
	2022	2021
Other operating income	42	31
Other operating expense	-21	-14
Borrowings, cash equivalents, lease liabilities and other	-10	37
Total	11	54

Hedge gains and losses in operating profit

EUR million	Year ended 31 December	
	2022	2021
Cash flow hedge accounted derivatives		
Currency hedges	-105	9
Commodity hedges	43	34
Total	-62	43
As adjustments to sales	-103	6
As adjustments to materials and services	41	37
Realised from OCI through income statement	-62	43
Currency hedges ineffectiveness	-2	-1
Net losses from cash flow hedges	-65	42
Non-hedge accounted derivatives		
Net receivable hedges	-12	-17
Commodity contract hedges	9	0
Net gains/losses on non-hedge accounted derivatives	-3	-17
Net hedge losses in operating profit	-67	26

In 2022, 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 2 (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	
	2022	2021
Cash flow hedge accounted derivatives		
Interest rate hedges ineffectiveness	0	-2
Net gains/losses from cash flow hedges	0	-2
Non-hedge accounted derivatives		
Currency derivatives	8	-40
Interest rate derivatives	-4	0
Net gains on non-hedge accounted derivatives	4	-40
Net gains/losses in financial items	4	-42

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Nominal and fair values of derivative instruments

EUR million	As at 31 December							
	Nominal values	Positive fair values	Negative fair values	Net fair values	Nominal values	Positive fair values	Negative fair values	Net fair values
		2022				2021		
Currency derivatives								
Forwards: Operational cash flow hedging	902	19	-13	6	1,104	4	-19	-16
Options: Operational cash flow hedging	1,700	12	-16	-4	980	2	-13	-10
Total cash flow hedge accounted	2,603	32	-30	2	2,084	6	-32	-26
Forwards: Trade and loan receivables hedging	1,151	7	-5	2	469	1	-6	-5
Total non-hedge accounted	1,151	7	-5	2	469	1	-6	-5
Total currency derivatives	3,754	39	-35	4	2,553	7	-38	-32
Commodity derivatives								
Electricity swaps: Costs hedging	5	18	0	18	16	27	0	27
Oil swaps: Costs hedging	14	1	-1	0	10	3	0	2
Total cash flow hedge accounted	19	18	-1	18	27	29	0	29
Electricity swaps: Closed contracts	11	9	0	9	0	0	0	0
Total non-hedge accounted	11	9	0	9	0	0	0	0
Total commodity derivatives	30	27	-1	27	27	29	0	29
Interest rate derivatives								
Interest rate swaps: Financial expenses hedging	450	28	0	28	482	1	-8	-7
Total cash flow hedge accounted	450	28	0	28	482	1	-8	-7
Cross-currency swaps: Financial expenses hedging	200	0	-15	-15	200	0	-25	-25
Total non-hedge accounted	200	0	-15	-15	200	0	-25	-25
Total interest rate derivatives	650	28	-15	13	682	1	-32	-31
Total cash flow hedge accounted	3,072	78	-30	48	2,593	36	-40	-4
Total non-hedge accounted	1,363	16	-20	-4	669	1	-31	-30
Total derivatives	4,435	95	-51	44	3,261	37	-71	-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 2022

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	77	-79	-2
Foreign exchange risk - Net investment hedges	-16	16	0
Commodity price risk - Commodity swaps	-31	31	0
Interest rate risk - Interest rate swaps	-34	34	0

¹ Ineffectiveness booked in Operating profit.

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)	65	-66	-1
Foreign exchange risk - Net investment hedges	21	-21	0
Commodity price risk - Commodity swaps ¹	-60	60	0
Interest rate risk - Interest rate swaps	-11	11	0
Interest rate and foreign exchange risk - Cross-currency swaps ²	15	-18	-3

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 2022

EUR million	At 1 Jan 2022	Change in fair value recognised in OCI/CTA	Reclassified from OCI to profit and loss	Reclassified to non-financial assets	Tax impact	At 31 Dec 2022
Foreign exchange risk - Operational cash flow hedging	-21	-82	107	3	-5	2
Commodity price risk - Commodity swaps	23	41	-52	0	3	15
Interest rate risk - Interest rate swaps	-4	33	0	0	-7	23
Interest rate and foreign exchange risk - Cross-currency swaps	-1	0	2	0	0	1
Cost of hedging reserve	-1	0	0	0	0	-1
Total cash flow hedge reserve in OCI	-4	-8	57	3	-9	39
Foreign exchange risk - Net investment hedges	14	-16	0	0	3	1
Total net investment hedges in CTA	14	-16	0	0	3	1
Total hedging reserves	10	-24	57	3	-6	40

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

Financial impact of netting for instruments subject to an enforceable master netting agreement 2022

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	95	-30	0	65
Derivative liabilities	-51	30	0	-21

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

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 entities. Exchange rate differences arising from the retranslation of net investments in foreign non-euro entities, and financial instruments that are designated as 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 in the same currency whenever economically viable, but if matching the assets and liabilities in the same currency is not possible, hedging of the remaining translation risk may take place. The Group has also applied net investment loan accounting for certain intragroup loans for which settlement is neither planned nor likely to occur in the foreseeable future. These are in substance, a part of the entity's net investment in the foreign operation.

Cumulative translation adjustment - movement

EUR million	Year ended 31 December	
	2022	2021
At 1 January		
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
CTA movement OCI		
CTA movement	-244	42
CTA release through income statement	47	14
Net investment hedges and loans	-27	14
Income tax related to hedges and loans	3	2
CTA movement OCI total	-220	72
At 31 December		
CTA on net investments	-432	-235
Net investment hedges and loans	21	48
Income tax related to hedges and loans	-5	-8
Net CTA in equity	-415	-195

In 2022 the release of cumulative translation adjustments to the income statement amounted to a loss of EUR 47 million and was related to disposal of Russian Packaging Solutions, Wood Products and Forest operations. After the release, there is no CTA remaining related to Russian ruble. In 2021 the release to the income statement amounted to a loss of EUR 14 million and was mainly related to the divestment of 20% ownership in Arauco Florestal Arapotí S.A.

Cumulative translation adjustment - financial position

EUR million	Cumulative Translation Adjustments (CTA)		Net investment hedges and loans		Net CTA in the statement of financial position	
	2022	2021	2022	2021	2022	2021
Brazil	-255	-281	0	0	-255	-281
China	131	83	10	28	141	111
Czech Republic	43	38	-9	-9	34	29
Poland	-59	-52	17	17	-42	-35
Russia	0	-81	0	0	0	-81
Sweden	-543	-97	47	47	-497	-50
Uruguay (USD)	248	154	-44	-34	204	119
USA	8	4	0	0	8	4
Others	-4	-3	0	0	-4	-3
CTA before Tax	-432	-235	21	48	-411	-187
Taxes	0	0	-5	-8	-5	-8
Net CTA in Equity	-432	-235	17	40	-415	-195

The main movements in CTA in 2022 were a gain of EUR 98 (gain of EUR 116) million related to the US dollar, a loss of EUR 446 (loss of EUR 103) million related to the Swedish crown and a gain of EUR 48 (gain of EUR 9) million related to Chinese renminbi. The net amount of hedging loss included in the CTA during the period amounted to EUR 24 (gain EUR 16) million.

Hedging instruments and unrealised hedge losses

EUR million	Nominal amount (Currency)		Nominal amount (EUR)		Unrealised losses (EUR)	
	2022	2021	2022	2021	2022	2021
Borrowings						
USD area	300	300	281	265	-41	-28
Total hedging			281	265	-41	-28

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.

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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	
	2022	2021
On own behalf		
Guarantees	14	15
On behalf of equity accounted investments		
Guarantees	5	0
On behalf of others		
Guarantees	5	6
Other commitments	36	36
Total	60	57
Guarantees ¹	24	21
Other commitments ¹	36	36
Total	60	57

¹The comparative figures have been restated due to a reclassification from other commitments to guarantees.

In 2022, the Group's commitments amounted to EUR 60 (EUR 57) million. In addition, the parent company Stora Enso Oyj has guaranteed the liabilities of many of its subsidiaries and joint operations up to 826 EUR (EUR 1,126) million as of 31 December 2022.

Capital commitments

EUR million	As at 31 December	
	2022	2021
Total	593	220

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 mill conversion at Oulu site in Finland, the board production expansion at Skoghäll site in Sweden and the wood handling upgrade at Imatra site in Finland.

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 several countries e.g. Finland, China and Sweden. If commitments to 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 adverse financial impact on Stora Enso.

The Group announced its intention in December 2022 to divest its consumer board production and forest operations sites in Beihai, China. As previously disclosed, Stora Enso has been granted investment subsidies and has given certain investment commitments in China. There is a risk that the majority owned local Chinese company may be subject to a claim based on alleged costs resulting from certain uncompleted investment commitments. Given the specific mitigating circumstances surrounding the investment case as a whole, Stora Enso does not consider it to be probable that this situation would result in an outflow of economic benefits that would be material to the Group. The Company continues to monitor the situation as the divestment process proceeds.

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.

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 4) 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, % 2022	Group ownership, % 2021
A/O Ladsenso	Russia	100.00	100.00
Anjala Fiber & Energy Oy	Finland	100.00	100.00
AO Stora Enso	Russia	0.00	100.00
AS Stora Enso Latvija	Latvia	100.00	100.00
Bergnät 1 AB	Sweden	100.00	100.00
Beta Skog 1 AB	Sweden	100.00	0.00
Cellutech AB	Sweden	100.00	100.00
Centrum Dystrybucji i Obróbki 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
DuraSense AB (formerly Box Inc.)	Sweden	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	0.00	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
Jiashan Stora Enso Inpac Packaging Co. Ltd.	China	100.00	100.00
Lignode AB	Sweden	100.00	0.00
Lignode Holding Oy	Finland	100.00	0.00
Lignode Oy	Finland	100.00	0.00
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	0.00	99.48
OOO Setles	Russia	0.00	100.00
OOO Setnovo	Russia	0.00	100.00
OOO Stora Enso Forest West	Russia	0.00	100.00
OOO Stora Enso Packaging BB	Russia	0.00	100.00
OOO Stora Transport	Russia	0.00	100.00
OOO Terminal	Russia	0.00	100.00
Primaskog 9 AB	Sweden	0.00	100.00
Selfly Store Oy	Finland	100.00	100.00
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
Stora Enso AB	Sweden	100.00	100.00
Stora Enso Amsterdam B.V.	Netherlands	100.00	100.00
Stora Enso Arapotí Holding Florestal S.A.	Brazil	100.00	100.00
Stora Enso Australia Pty Ltd	Australia	100.00	100.00
Stora Enso Austria GmbH	Austria	0.00	100.00
Stora Enso Belgium NV	Belgium	100.00	100.00

Subsidiaries	Country	Group ownership, % 2022	Group ownership, % 2021
Stora Enso Bergskog 2 AB	Sweden	100.00	100.00
Stora Enso Bergskog 3 AB	Sweden	100.00	0.00
Stora Enso Bioenergi AB	Sweden	0.00	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 Hylte Bruk AB	Sweden	100.00	0.00
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	0.00	99.98
Stora Enso Kvarnsveden Industriutveckling AB	Sweden	100.00	100.00
Stora Enso Langerbrugge NV	Belgium	100.00	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, LLC	USA	100.00	100.00
Stora Enso Nymölla Paper AB	Sweden	100.00	0.00
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
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



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Subsidiaries	Country	Group ownership, % 2022	Group ownership, % 2021
Stora Enso Plantor AB	Sweden	0.00	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 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 Turkey Karton Ve Kağıt Ticaret Anonim Sirketi	Turkey	100.00	0.00
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	0.00	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 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
Södra Norrlands Hamnbolag nr 1 AB	Sweden	100.00	0.00
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	0.00	100.00

Subsidiaries	Country	Group ownership, % 2022	Group ownership, % 2021
A.C.D.F. Industrie	France	35.00	0.00
Encore Ympäristöpalvelut Oy	Finland	0.00	30.41
Honkalahden Teollisuuslaituri Oy	Finland	50.00	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	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	28.94	27.96
ZMP GMBH	Austria	30.00	30.00
Österbergs Förpackningsmaskiner AB	Sweden	50.00	50.00

Other companies	Country	Group ownership, % 2022	Group ownership, % 2021
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
PulPac AB	Sweden	10.30	0.00
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
Suomen Puukauppa Oy	Finland	10.74	0.00
Sölvesborgs Stuveri & Hamn AB	Sweden	7.36	7.36
Union Developement Récup. Pap.	France	10.70	10.70

Joint operations	Country	Group ownership, % 2022	Group ownership, % 2021
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. Solidium Oy is entirely owned by the State of Finland, and it owned 10.7% of Stora Enso shares and 27.3% of all votes on 31 December 2022. 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 and Wallenberg Investments AB as related parties. FAM AB owned 10.2% of Stora Enso shares and 27.3% of all votes on 31 December 2022. FAM AB is completely owned by Wallenberg Investments AB.

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 of wood at market prices with the Tornator Group, and in 2022 purchases of 3 (2) million cubic metres came to EUR 126 (82) 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 2022 the purchases from the related party amounted to EUR 23 (29) million. At the end of 2022 the Group had EUR 6 (3) million of open payables to 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, Finnlines and Ahlström Capital. The stevedoring services are provided by Steveco at market prices and in 2022 amounted to EUR 27 (26) 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	
	2022	2021
Net profit for the period attributable to the owners of the parent, EUR million	1,550	1,266
Total comprehensive income attributable to the owners of the parent, EUR million	2,278	2,110
Weighted average number of A and R shares	788,619,987	788,619,987
Weighted average number of share awards	771,150	505,705
Weighted diluted number of shares	789,391,137	789,125,692
Basic Earnings per Share, EUR	1.97	1.61
Diluted Earnings per Share, EUR	1.96	1.60
Total Comprehensive Income Attributable to the Owners of the Parent per Share, EUR	2.89	2.67

Note 33 Events after the reporting period

The Group has had the following non-adjusting events after the reporting period

At 6 January 2023 Stora Enso completed the transaction to acquire De Jong Packaging Group.

In the beginning of January 2023, Stora Enso completed the divestment of its Nymölla paper production site in Sweden, and all related assets to Sylvamo, a US-based global producer of uncoated paper.

In January 2023, Stora Enso signed an agreement to divest its Hylte paper production site in Sweden to Sweden Timber.

More details about the above transactions are presented in [Note 4](#) Acquisitions, disposals and assets held for sale.

As of 1 January 2023 and due to the divestments and reorganisation of retained Paper division operations, Stora Enso's segment reporting will be changed. According to the changes, the Paper division will be discontinued and will not reported as a separate segment going forward. The Maxau, Nymölla and Hylte sites together with all previously sold and closed sites will be reported as part of the segment Other going forward. The remaining sites Langerbrugge and Anjala will be reported as part of the Packaging Materials division. Comparative figures will be restated accordingly during the first quarter of 2023.

As of 1 January 2023 emerging business related units in Packaging Solutions division will be moved to segment Other. These units are including Formed Fiber, Circular Solutions (biocomposites) and Selfly Stores. Comparative figures will be restated accordingly.

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Parent company income statement

EUR million	Note	Year ended 31 December	
		2022	2021
Sales	2	3,325	2,822
Changes in inventories of finished goods and work in progress + / -		86	16
Production for own use		2	1
Other operating income	3	703	308
Materials and services	4	-2,288	-1,864
Personnel expenses	5	-320	-259
Depreciation and impairment	6	-133	-129
Other operating expenses	7	-889	-490
		2,839	2,417
Operating profit		485	405
Financial income and expenses	9	290	351
Profit before Appropriations and Taxes		775	756
Appropriations	10	-331	-119
Income tax expense	11	-28	0
Profit for the period		416	637

Parent company statement of financial position

EUR million	Note	As at 31 December	
		2022	2021
Assets			
Non-current assets			
Intangible assets	13	49	49
Tangible assets	13	1,032	987
Investments	14	8,187	8,234
Non-current assets total		9,269	9,270
Current assets			
Inventories	15	574	387
Short-term receivables	16	1,278	1,314
Financial securities	17	1,130	607
Cash in hand and at bank		1,117	744
Total current assets		4,099	3,051
Total assets		13,368	12,322
Equity and liabilities			
Equity	18		
Share capital		1,342	1,342
Share premium		3,639	3,639
Fair value reserve		25	-6
Invested non-restricted equity fund		633	633
Retained earnings		922	719
Profit for the period		416	637
Total equity		6,977	6,964
Accumulated appropriations	19	290	234
Obligatory provisions	20	25	12
Liabilities			
Non-current liabilities	22	2,265	2,513
Current liabilities	23	3,811	2,599
Total liabilities		6,076	5,113
Total equity and liabilities		13,368	12,322

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Parent company cash flow statement

EUR million	Year ended 31 December	
	2022	2021
Cash provided by operating activities		
Profit for the period	416	637
Adjustments and reversal of non-cash items:		
Direct taxes	28	0
Appropriations	331	119
Depreciation according to plan and impairment	133	129
Unrealised foreign exchange gains and losses	18	10
Other non-cash items	13	-84
Financial income and expenses	-290	-351
Change in working capital:		
Increase(-)/decrease(+)		
in current non-interest-bearing receivables	-198	-108
Increase(-)/decrease(+) in inventories	-187	-42
Increase(+)/decrease(-)		
in current non-interest-bearing liabilities	199	159
Cash flow from operating activities before financial items and taxes	463	471
Interest received from operating activities	58	41
Interest paid from operating activities	-79	-74
Dividends received from operating activities	626	502
Other financial items, net	-57	-46
Direct taxes paid	-2	-2
Cash provided by operating activities	1,009	892
Net cash provided by investing activities		
Investments in tangible and intangible assets	-186	-140
Capital gains from sale of tangible and intangible assets	0	3
Investments in other financial assets	0	-13
Investments in subsidiary shares and other capital contributions	-374	-138
Proceeds from disposal of subsidiary shares and other repayment of capital	0	-98
Proceeds from disposal of shares in equity accounted investments and repayment of capital	10	0
Payments of non-current loan receivables	-626	-706
Proceeds from non-current loan receivables	944	120
Net cash provided by investing activities	-233	-972

EUR million	Year ended 31 December	
	2022	2021
Cash flow from financing activities		
Proceeds from (issue of) long-term liabilities	350	1,040
Proceeds from (payment of) long-term liabilities	-560	-1,431
Proceeds from (issue of) short-term liabilities	1,587	722
Proceeds from (payment of) short-term liabilities	-546	-570
Dividends paid	-434	-250
Group contributions received	-275	-14
Cash flow from financing activities	121	-503
Net change in cash and cash equivalents	897	-584
Translation differences	-1	-18
Cash and cash equivalents at start of year	1,350	1,953
Cash and cash equivalents at year end	2,247	1,350
Cash and cash equivalents at year end includes:		
Financial securities	1,130	607
Cash in hand and at bank	1,117	744
Cash and cash equivalents total	2,247	1,350

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. The financial statements are presented in millions of euros and rounded and therefore the sum of individual figures might deviate from the presented total figure.

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 change in 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](#).

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.

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.

Non-current assets

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.

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. Investments in subsidiaries and other companies are measured at cost, or fair value in case the fair value is less than cost.

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.

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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.

Emission rights

During 2022, 0.6 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 at 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 80.78 per tonne.

Comparability of the information for the financial period

The operational functions of Efora Oy, Stora Enso's maintenance business subsidiary, were transferred to the organisations of Stora Enso, Stora Enso Packaging Oy and Stora Enso Oulu Oy. The maintenance development and support functions were decentralised to the divisions. Due to these changes, in the transfer of business on 1 January 2022, Efora Oy's personnel, fixed and current assets and contracts were transferred from Efora Oy to the companies concerned. In the business transfer, EUR 1.5 million of fixed assets, EUR 1.1 million of inventories and 543 employees were transferred to Stora Enso Oyj.

During 2022, Stora Enso divested all its subsidiaries in Russia to local management. For more information, please refer to the Group's financial statements in [Note 4](#).

Other operating income and expenses include an item relating to change of operative model in the Group.

Note 2 Net sales by division and market area

EUR million	Year ended 31 December	
	2022	2021
By division		
Packaging Materials	1,882	1,567
Packaging Solutions	0	1
Biomaterials	296	329
Forest	700	759
Wood Products	228	38
Other	219	128
Total	3,325	2,822

EUR million	Year ended 31 December	
	2022	2021
Distribution by region		
Finland	1,361	1,330
Other Europe	1,076	995
North and South America	298	158
Asia and Oceania	381	227
Africa	118	32
Others	91	80
Total	3,325	2,822

Note 3 Other operating income

EUR million	Year ended 31 December	
	2022	2021
Rent and equivalents	3	3
Gains on sale of fixed assets	0	1
Production and maintenance services	1	4
Subsidies, grants and equivalents	2	1
Administration services	60	177
Proceeds from sales of emission rights	52	21
Other operating income	586	32
Merger profit	0	69
Total	703	308

Other operating income includes an item relating to change of operative model in the Group.

Note 4 Materials and services

EUR million	Year ended 31 December	
	2022	2021
Materials and supplies		
Purchases during the period	1,822	1,366
Change in inventories +/-	-105	-30
External services	571	527
Total Materials and Services	2,288	1,864

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Note 5 Personnel expenses and average number of employees

EUR million	Year ended 31 December	
	2022	2021
Salaries and fees	263	211
Statutory employer costs		
Pensions	47	38
Other personnel costs	9	9
Total	320	259

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	2022	2021
Number of employees during the financial period	4,066	3,057

Note 6 Depreciation and impairment

EUR million	Year ended 31 December	
	2022	2021
Depreciation according to plan	133	124
Impairment of fixed assets	1	5
Total	133	129

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	
	2022	2021
Product freight	267	168
Sales commissions	55	39
Rental costs	20	15
Administration and office services	319	213
Insurance premiums	12	9
Other personnel expenses	17	10
Public and other relations	4	3
Emission rights expenses	40	20
Other operating expenses	154	13
Total	889	490

Other operating expenses includes an item relating to change of operative model in the Group.

Note 8 Auditors' fees

EUR million	Year ended 31 December	
	2022	2021
Audit fees	1	1
Other audit-related fees	0	0
Tax fees	0	0
Other fees	0	0
Total	2	1

Note 9 Financial income and expenses

EUR million	Year ended 31 December	
	2022	2021
Dividend income		
From Group companies	601	486
From equity accounted investments	25	16
Total	626	503
Interest income from non-current investments		
From Group companies	52	41
From equity accounted investments	0	1
From others	2	0
Total	55	42
Other interest and financial income		
From Group companies	20	-1
From equity accounted investments	9	0
From others	14	10
Total	44	9
Total financial income	725	553
Interest and other financial expenses		
To Group companies	-38	-1
Other financial expenses	-93	-103
Total	-131	-103
Impairment on investments		
Impairment on investments in non-current assets	-305	-98
Total financial expenses	-435	-202
Total financial income and expenses	290	351
The item "Financial Income and Expenses" includes exchange rate gains/losses (net)		
The item "Financial Income and Expenses" includes exchange rate gains/losses (net)	-17	-27

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Note 10 Appropriations

EUR million	Year ended 31 December	
	2022	2021
Difference between depreciation according to plan and depreciation recognised in taxation	-56	-46
Group contributions paid	-275	-73
Total appropriations	-331	-119

Note 11 Income tax expense

EUR million	Year ended 31 December	
	2022	2021
Income taxes from primary operations for the period	-28	0
Total income tax	-28	0

Note 12 Environmental expenses

EUR million	Year ended 31 December	
	2022	2021
Materials and services	43	36
Personnel expenses	3	3
Depreciation and impairment	12	12
Total	58	50
Air quality protection	9	9
Wastewater treatment	25	19
Waste management	15	12
Soil and groundwater protection	1	1
Other environmental protection measures	7	9
Total	58	50

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	172	22	5	198
Increases	3	0	13	16
Decreases	-8	0	0	-8
Reclassification	4	1	-3	1
Acquisition cost 31 Dec	171	23	14	208
Accumulated depreciation and impairment 1 Jan	-130	-20	0	-150
Accumulated depreciation on decreases and reclassifications	7	0	0	7
Depreciation for the period	-15	-1	0	-15
Accumulated depreciation 31 Dec	-138	-21	0	-158
Book value on 31 December 2022	33	2	14	49
Book value on 31 December 2021	42	2	5	49

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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	586	2,726	174	149	3,654
Increases	0	6	72	1	86	166
Decreases	0	-9	-43	-1	0	-54
Reclassification	0	22	98	7	-129	-1
Acquisition cost 31 Dec	18	605	2,853	181	107	3,764
Accumulated depreciation and impairment 1 Jan	0	-428	-2,082	-159	0	-2,668
Accumulated depreciation on decreases and reclassifications	0	9	42	1	0	52
Depreciation for the period	0	-14	-101	-2	0	-117
Accumulated depreciation 31 Dec	0	-433	-2,141	-160	0	-2,734
Increase in value 31 Dec	2	0	0	0	0	2
Book value on 31 December 2022	20	173	712	21	107	1,032
Book value on 31 December 2021	20	158	644	15	149	987
Production plant and equipment			693			
Book value on 31 December 2022			693			
Book value on 31 December 2021			624			

Advance payments and acquisitions in progress

EUR million	Intangible assets	Buildings and structures	Plant and equipment	Other tangible assets	Total
Acquisition cost 1 Jan	5	1	148	0	154
Increases	13	5	81	0	98
Reclassification	-3	-1	-128	0	-132
Acquisition cost 31 Dec	14	5	101	0	121

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	Total
Acquisition cost 1 Jan	4	24	51	4	11	95
Increases	1	0	9	1	8	18
Depreciations for the period	0	-2	-8	-1	0	-12
Book value on 31 December 2022	4	22	52	5	19	101
Air quality protection	1	7	35	0	12	55
Wastewater treatment	0	2	13	0	4	20
Waste management	2	0	1	3	0	7
Soil and groundwater protection	1	12	2	0	2	18
Noise and vibration prevention	0	0	1	1	0	1
	4	22	52	5	19	101

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	4	26	51	5	3	89
Increases	0	0	7	0	8	16
Increases due to mergers	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

In 2022 and 2021, no environmentally based fines, charges or compensation were paid, and no subsidies or grants were received for environmental protection.

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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	6,514	1,578	37	2	193	48	8,372
Increases	374	328	0		0	112	815
Decreases	-44	-479	0		0	-58	-581
Acquisition cost 31 Dec	6,845	1,428	37	2	193	102	8,606
Impairments 1 Jan	-136	0	0	0	-1	0	-138
Increases	-276	0	0	0	0	-5	-281
Impairments 31 Dec	-412	0	0	0	-1	-5	-419
Book value on 31 December 2022	6,432	1,428	37	2	191	97	8,187
Book value on 31 December 2021	6,378	1,578	37	2	191	48	8,234

Note 15 Inventories

EUR million	As at 31 December	
	2022	2021
Materials and supplies	288	183
Work in progress	11	14
Finished goods	247	158
Other inventories	0	0
Prepayments	27	31
Total	574	387

Note 16 Short-term receivables

EUR million	As at 31 December	
	2022	2021
Short-term loan receivables		
Receivables from Group companies		
Loan receivables	536	764
Interest receivables	50	42
Total	585	806
Receivables from others		
Loan receivables	0	49
Commodity derivative receivables	18	23
Other receivables	29	5
Interest receivables	23	4
Total	69	82
Total current interest-bearing receivables	654	887
Current non-interest-bearing receivables		
Receivables from Group companies		
Trade receivables	150	112
Other receivables	183	60
Total	333	172
Receivables from others		
Trade receivables	219	200
Deferred tax assets	0	2
Other receivables	41	23
Accrued income	30	29
Total	290	254

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 30,0 million (EUR 34,3 million in 2021) 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	
	2022	2021
Total current non-interest-bearing receivables	624	427
Total current receivables	1,278	1,314
Significant accruals		
Other accruals from Group	-1	0
Tax-equivalent receivables	3	3
Advances paid	9	7
Other accruals	19	19
Total	30	29



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Note 17 Financial securities

EUR million	As at 31 December	
	2022	2021
From Group companies	620	72
From others	510	535
Total	1,130	607

Note 18 Shareholders' equity

EUR million	As at 31 December	
	2022	2021
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	-6
Increase (-) / Decrease (+)	32	0
Fair value reserve 31 Dec	25	-6
Total restricted equity	5,006	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	1,356	955
Dividend distribution	-434	-237
Retained earnings 31 Dec	922	719
Profit for the period	416	637
Total non-restricted equity	1,971	1,989
Total shareholders' equity	6,977	6,964
Calculation of distributable equity 31 Dec		
Fair value reserve 31 Dec	0	-6
Invested unrestricted equity reserve 31 Dec	633	633
Retained earnings 31 Dec	922	719
Profit for the period	416	637
Total	1,971	1,983

Note 19 Accumulated appropriations

EUR million	As at 31 December	
	2022	2021
Depreciation difference		
Intellectual property rights	-1	-3
Goodwill	0	-1
Other non-current expenditure	1	0
Buildings and structures	34	33
Plant and equipment	257	205
Other tangible assets	-1	0
Total	290	234

Note 20 Obligatory provisions

EUR million	As at 31 December	
	2022	2021
Restructuring provisions	3	3
Environmental provisions	20	7
Pension provisions	1	1
Total	24	11

Note 21 Deferred tax liabilities and receivables

EUR million	As at 31 December	
	2022	2021
Deferred tax liability due to depreciation difference	-41	-30
Deferred tax receivables and liabilities due to derivatives	-6	2
Deferred tax receivable due to provisions	5	3
Deferred tax receivables and liabilities due to other temporary differences	-1	-1
Total deferred tax receivable	-43	-27

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	
	2022	2021
Non-current liabilities		
Bonds	2,165	2,502
Loans from credit institutions	100	7
Other non-current liabilities to group companies	0	4
Total	2,265	2,513
Liabilities with maturities later than five years		
Bonds	1,075	1,383
Other non-current liabilities	5	4
Total	1,080	1,387

Specifications of Bond loans are presented in Note 26 Interest-bearing liabilities in consolidated financial statements.



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Note 23 Current liabilities

EUR million	As at 31 December	
	2022	2021
Current interest-bearing liabilities		
Liabilities to Group companies		
Other loans	1,966	1,677
Commodity derivative liabilities	18	23
Total	1,984	1,700
Liabilities to others		
Other loans	141	161
Interest due	32	27
Bonds	300	0
Loans from credit institutions	250	0
Total	722	187
Total current interest-bearing liabilities	2,706	1,888
Current non-interest-bearing liabilities		
Liabilities to Group companies		
Trade payables	90	83
Other loans	275	73
Commodity derivative liabilities	6	10
Accrued liabilities and deferred income	0	1
Total	371	166
Liabilities to equity accounted investments		
Trade payables	98	54
Total	98	54
Liabilities to others		
Advances received	5	5
Trade payables	468	375
Other loans	27	17
Accrued liabilities and deferred income	134	95
Total	635	491
Total current non-interest-bearing liabilities	1,105	712
Total current liabilities	3,811	2,599
Substantial accrued liabilities and deferred income		
Payroll payments accrued	66	58
Income tax accrued	28	0
Annual discounts	22	21
Other accrued liabilities and deferred income	18	17
Total	134	96

Note 24 Commitments and contingencies

EUR million	As at 31 December	
	2022	2021
For Group debt		
Guarantees	794	1,044
For joint venture debt		
Guarantees	32	82
On behalf of Associated companies		
Guarantees	5	0
On behalf of others		
Other commitments	36	36
Other commitments, own		
Leasing commitments, in next 12 months	8	6
Leasing commitments, after next 12 months	14	10
Lease commitments	5	5
Other commitments	12	13
Total	906	1,197
Guarantees	831	1,126
Leasing commitments	22	16
Lease commitments	5	5
Other commitments	47	48
Total	906	1,197

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 has been granted various investment subsidies and has given certain investment commitments in Finland. 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 Oyj and the outcome of such a process could result in a negative financial impact on Stora Enso Oyj.

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.

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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:

- Foreign exchange forward contract fair values are calculated using forward exchange rates on the reporting date.
- Foreign exchange 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 2022			
	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				
Foreign exchange forwards	1,523	29	-26	3
Foreign exchange options	3,222	28	-28	0
Commodity contracts	10	18	-18	0
Interest rate swaps	442	28	0	28
Non-hedge accounted derivatives				
Foreign exchange forwards	1,493	8	-8	0
Commodity contracts	11	9	0	9
Total	6,702	120	-79	41
of which against subsidiaries	2,571	29	-45	-15
of which against external parties	4,131	91	-34	57

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

Fair value reserve

The net amount of the parent company's unrealised cash flow hedge gains in the fair value reserve was EUR 25.3 (6.4) million, which was related to currency and interest rate derivatives. Currency and interest rate derivatives also include a gain of EUR 0.1 (a loss 0.1) million related to the time value of options. These unrealised gains 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 2023. The ineffective portions of hedges are recognised as adjustments to financial items, revenue or materials and services according to the hedged item. During 2022 and 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	
	2022	2021
Cash flow hedge accounted derivatives		
Currency hedges	-20	-2
Commodity hedges	0	3
Total	-20	1
As adjustments to sales	-20	-2
As adjustments to materials and services	0	3
Items realised from the fair value reserve that are recognised in the income statement	-20	1
Net losses from cash flow hedges	-20	1
Non-hedge accounted derivatives		
Currency derivatives	-5	-4
Net gains on non-hedge accounted derivatives	-5	-4
Net hedge gains/losses in operating profit	-25	-3

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Hedge gains and losses in financial items

EUR million	Year ended 31 December	
	2022	2021
Non-hedge accounted derivatives		
Currency derivatives	-1	-11
Net gains/losses in financial items	-1	-11

Sensitivity of currency derivatives to strengthening of EUR

EUR million	31 December 2022		
	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	-184	-16
Estimated effect on fair value reserve in EUR (net of taxes)	0	9	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. Commodity derivative contracts are related to a closed position of Stora Enso Oyj's subsidiary. The market value is settled during year 2023.

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	
	2022	2021
Related party transactions with associated companies and joint ventures:		
Purchase of materials and supplies during the year	63	88
Interest income on non-current loan receivables	0	1
Non-current loan receivables at year end	2	2
Trade payables at year end	92	54

The Group's principles for related party transactions are presented in [Note 31](#) to the consolidated financial statements.



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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 2022. The liquidity of the Parent Company remains good and the proposed dividend does not risk the solvency of the Company.

30 January 2023

Antti Mäkinen
Chair

Håkan Buskhe
Vice Chair

Elisabeth Fleuriot

Hock Goh

Helena Hedblom

Kari Jordan

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 2022. 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 60 million.
- We performed audit procedures at 26 reporting components in 10 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 60 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 10 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, 2022 the fair value of the Group's forest assets owned through subsidiaries, joint operations and associated companies was EUR 8 117 million. The fair value of EUR 5 653 million was related to biological assets and EUR 2 464 million was related to forest land.

Forest assets in Sweden and Finland 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.

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 and Finland 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 European 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 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 2022, the Group had environmental, restructuring and other provisions totaling EUR 124 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. The financial statements are prepared using the going concern basis of accounting unless there is an intention to liquidate the parent company or the group or to cease operations, or there is no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with good auditing practice will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with good auditing practice, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

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- 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 13 February 2023

PricewaterhouseCoopers Oy
Authorised Public Accountants

Samuli Perälä
Authorised Public Accountant (KHT)

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Capacities by production site in 2023

Packaging Materials

Consumer board	Location	Grade	Capacity 1,000 t
Beihai	CHN	LPB, CKB, FSB, FBB	550
Fors	SWE	FBB	455
Imatra	FIN	SBS, FBB, LPB	1,230
Ingerois	FIN	FBB	310
Skoghall	SWE	LPB, CUK	945
Total			3,490

Containerboards	Location	Grade	Capacity 1,000 t
Eerbeek	NLD	Testliner	380
Heinola	FIN	SC fluting	300
Ostroleka	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			2,315

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	165
Lahti		
Kristiinankaupunki		
Poland	Corrugated packaging	410
Łódź		
Mosina		
Ostroleka		
Tychy		
Sweden	Corrugated packaging	205
Jönköping		
Skene		
Vikingstad		
Western Europe	Corrugated packaging	770
Total	Corrugated packaging	1,705

China Packaging	Location	Grade	Capacity million pcs	Capacity million m ²
Gaobu, Dongguan	CHN	Consumer packaging	390	30
Qian'an, Hebei	CHN	Consumer packaging	200	20
Wu Jin, Jiangshu	CHN	Consumer packaging	150	20
Total			740	70

Formed Fibre

Mill	Location	Product	Division	Capacity million pcs
Hylte	SWE	Formed Fiber	Packaging Solutions	115
Total Formed Fibre				115

Circular Solutions

Mill	Location	Product	Division	Capacity mt
Hylte	SWE	Granules	Packaging Solutions	15,000
Total Circular Solutions				15,000

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Biomaterials

Mill	Location	Grade	Division	Capacity 1,000 t
Enocell	FIN	Short and long-fibre, Short and long fibre dissolving pulp	Biomaterials	630
Skutskär	SWE	Short, long-fiber and fluff pulp	Biomaterials	545
Sunila	FIN	Long-fibre 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
Ostrołęka	POL	Long-fiber	Packaging Materials	130
Oulu	FIN	Long-fiber	Packaging Materials	550
Skoghall	SWE	Long-fiber	Packaging Materials	390
Tainionkoski, Imatra	FIN	Long-fiber	Packaging Materials	195
Varkaus	FIN	Long-fiber	Packaging Materials	335
Chemical Pulp Total (incl. Biomaterials)				5,585*

* 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	CTMP	Packaging Materials	220
Kaukopää	FIN	CTMP	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	-	-	-	-	-
Launkalne ²	LAT	270	70	50	-	-
Murow	POL	300	210	-	-	-
Näpi	EST	50	180	25	-	-
Planá	CZE	390	220	-	-	-
Uimaharju ³	FIN	240	-	-	-	-
Varkaus	FIN	260	120	30	-	85
Veitsiluoto	FIN	200	-	-	-	-
Ybbs	AUT	700	450	-	110	-
Zdírec	CZE	580	220	80	40	-
Total		5,430	2,495	485	310	85

¹ Gruvön CLT ramping up

² Launkalne pellets ramping up

³ Uimaharju sawmill belongs to division Biomaterials

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Paper

Mill	Location	Grade	Capacity 1,000 t
Anjala	FIN	Impr. news, book, LWC	435
Hylte ¹	SWE	News	245
Langerbrugge	BEL	SC, news	555
Maxau ¹	GER	SC	530
Total			1,765

¹ Capacity figure for the full year, divestment expected to be completed during the first half of 2023.

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

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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