

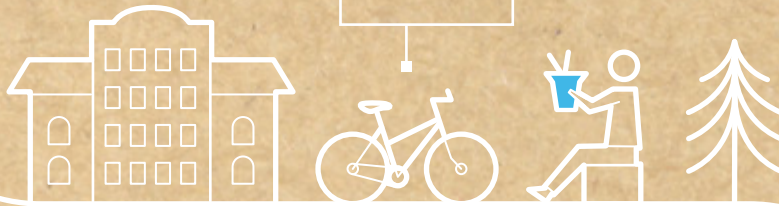
# Progress Book

Part of Stora Enso's Annual Report 2016

Made from  
a tree



Made from  
a tree



# Everything that's made with fossil-based materials today can be made from a tree tomorrow.

Stora Enso is a leading provider of renewable solutions in packaging, biomaterials, wooden constructions, and paper on global markets. Our aim is to replace fossil-based materials by innovating and developing new products and services based on wood and other renewable materials. We employ some 25 000 people and our shares are listed on the Helsinki (STEAV, STERV) and Stockholm (STE A, STE R) stock exchanges.

Stora Enso's Annual Report 2016 consists of four reports: Progress Book, Sustainability Report, Financial Report, and Corporate Governance Report.



**The Progress Book** explains Stora Enso's strategy, how we create value, and how our work is progressing. The publication is available in English, Finnish, and Swedish.



**The Sustainability Report** covers Stora Enso's social, environmental, and economic sustainability performance.



**The Financial Report** consists of Stora Enso in capital markets, a summary of our sustainability performance, the Report of the Board of Directors, and the financial statements.



**The Corporate Governance Report** covers Stora Enso's governance policy, practices, and actions as well as remuneration in 2016.



You can find the highlights of the year and the online Financial Report at [storaenso.com/annualreport](http://storaenso.com/annualreport), where all reports can be downloaded.

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# This is Stora Enso

At Stora Enso we use and develop our expertise in renewable materials to meet the needs of our customers and many of today's global raw material challenges. Our focus is on fibre-based packaging, plantation-based pulp, innovation in biomaterials, and sustainable building solutions.

We believe that everything that's made with fossil-based materials today can be made from a tree tomorrow. Our products provide a low-carbon alternative to many products made from non-renewable materials.

Being sustainable – doing good for the people and the planet – underpins our thinking and our approach in every aspect of business.

35

Countries

25 000

Employees

EUR 9.8 billion

Sales

EUR 884 million

Operational EBIT



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**Consumer Board** division develops and provides consumer packaging boards for printing and packaging applications. A wide board and barrier coating selection is suitable for the design and optimisation of packaging for liquid, food, pharmaceutical and luxury goods. We serve converters and brand owners globally and are expanding in growth markets such as China and Asia Pacific to meet rising demand.



24% share of group sales



**Biomaterials** division offers a variety of pulp grades to meet the demands of paper, board, tissue, textile and hygiene product producers. We also develop new ways to maximise the value extractable from wood, as well as other kinds of lignocellulosic biomasses. Sugars and lignin hold potential for use in applications in the specialty chemical, construction, personal care and food industries.



14% share of group sales



**Wood Products** division provides versatile wood-based solutions for building and housing. Our product range covers all areas of urban construction including massive wood elements, wood components and pellets. We also offer a variety of sawn timber goods. Our customers are mainly construction and joinery companies, merchandisers and retailers.



16% share of group sales



**Packaging Solutions** division develops fibre-based packaging, and operates at every stage of the value chain from pulp production, material and packaging production to recycling. Our solutions serve leading converters, brand owners and retailer customers helping to optimise performance, reduce total costs and enhance sales.



11% share of group sales



**Paper** division provides best-in-class paper solutions for print media and office use. The wide selection covers papers made from recycled and fresh wood fibre. Our main customer groups include publishers, retailers, printing houses, merchants, converters and office suppliers. Three of the mills produce paper based on 100%-recycled fibre.



33% share of group sales

## Divisions in brief

Read more about our divisions from page 22 onwards.

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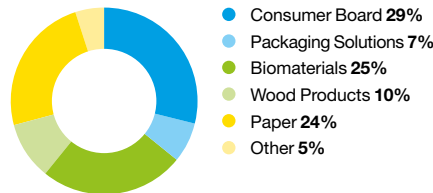
# Stora Enso in 2016

For Stora Enso 2016 was a year of solid performance and accelerated transformation. On our journey to becoming the renewable materials company, the transformation is nearly complete and our focus is now on customers and innovation.

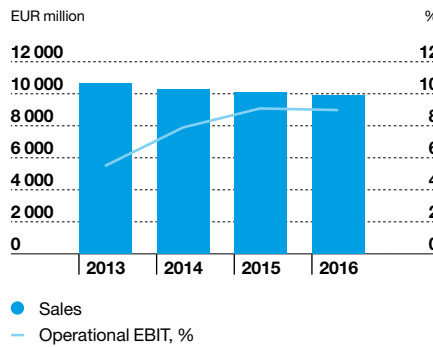


**Varkaus kraftliner reached EBITDA break-even.**

**Operational EBIT**



**Sales and operational EBIT**



**We are the renewable materials company – explore online 'What a tree can do'.**

[renewablefuture.storaenso.com](http://renewablefuture.storaenso.com)

**13%**

**Operational ROCE excl. transformational investment projects**

**Transformation is nearly completed.**

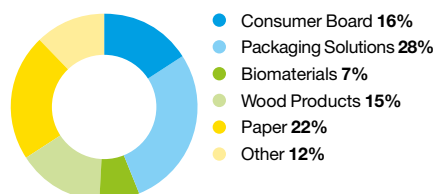
**67%**

**of sales from growth businesses**



**Stora Enso celebrated 100 years on Helsinki Stock Exchange.**

**Average personnel**



**EUR 0.37**

**Dividend proposal**

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**Key events**

- 01** Beihai consumer board mill in China started up.
- 02** Laminated Veneer Lumber (LVL) line started up in Varkaus, Finland.
- 03** Phased start-up process for xylose began in Raceland, USA.

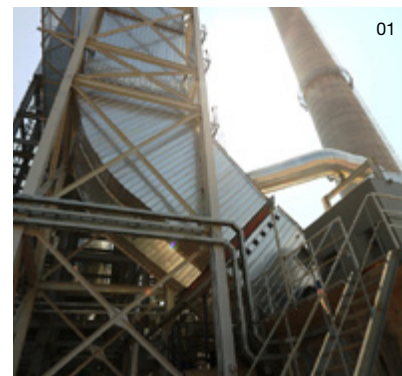


[Read more about LVL and the Wood Products division on page 44.](#)

**Soon, LVL will be glued with lignin-based glue.**



[Read more about xylose and the Biomaterials division on page 39.](#)



[Read more about the Beihai Mill and the Consumer Board division on page 27.](#)

**Key figures**

EUR million	2016	2015	2014	Change % 2016–2015
Sales	9 802	10 040	10 213	-2.4%
Operational EBITDA <sup>1</sup>	1 371	1 408	1 313	-2.6%
Operational EBIT	884	915	810	-3.4%
Operational EBIT margin	9.0%	9.1%	7.9%	
Operating profit (IFRS)	783	1 059	400	-26.1%
Net profit for the period	407	783	90	-48.0%
Net interest-bearing liabilities	2 726	3 240	3 274	-15.9%
Operational ROCE	10.2%	10.6%	9.5%	
EPS (basic), EUR	0.59	1.02	0.13	
Debt/equity ratio	0.47	0.60	0.65	

<sup>1</sup> Data for the comparative periods restated according to the new reporting structure. See more in the Financial Report.

**39%**  
Our fossil CO<sub>2</sub> emissions per saleable tonne of pulp, paper, and board were 39% lower than the 2006 benchmark level.

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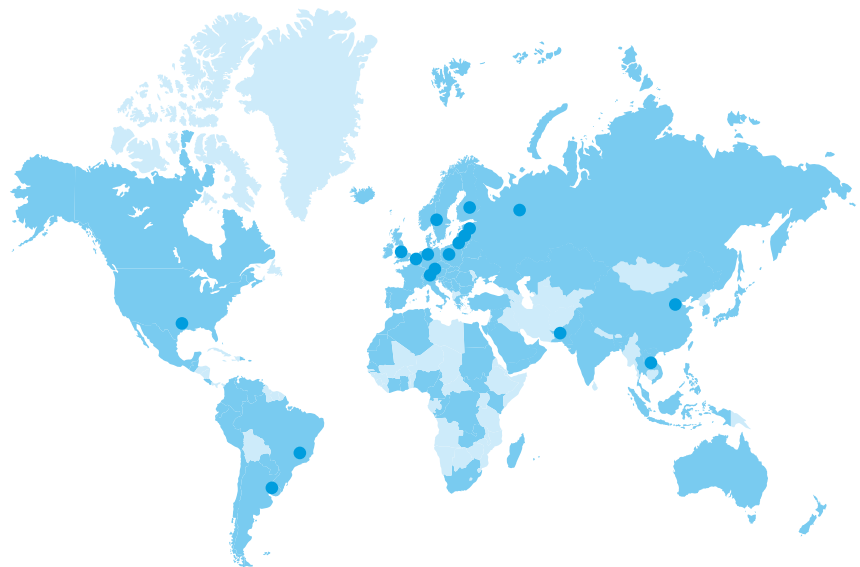
# Serving markets around the world

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

**We employ some 25 000 people in more than 35 countries.**



- Countries where Stora Enso has production, plantations or projects
- Stora Enso's markets



## South America

### Brazil

Latin America is important for Stora Enso to obtain low-cost pulp from tree plantations. In Brazil, we own 50% of Veracel Celulose pulp mill as part of a joint operation with Fibria. Our share of the eucalyptus pulp is mostly used in our European paper and board mills. We also own land, around half of which is former pasture lands planted with eucalyptus. The other half is dedicated to protecting local biodiversity by restoring the natural Atlantic rainforest.

#### Biomaterials

Number of employees..... **480**

### Uruguay

The Montes del Plata pulp mill, a 50% joint operation between Stora Enso and Arauco has been in operation since 2014. Stora Enso's share is sold entirely as market pulp, mainly in Europe and Asia. Stora Enso's tree plantations are also utilised as pastures by local farmers through land rental schemes.

#### Biomaterials

Number of employees..... **340**

## USA

Stora Enso has a pilot facility in Danville, Virginia to develop technologies for the conversion of biomass into highly refined sugars and lignin. The production of xylose from hemicellulose will begin in 2017 at the demonstration and market development plant in Raceland, Louisiana. These new technologies will enable the development of sustainable replacements for fossil-based technologies in various industries.

#### Biomaterials

Number of employees..... **90**





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**In Europe we are a leading producer of board, pulp, paper and wood products.**



**The demand for many of Stora Enso's products is growing fast in Asia.**

**Europe**

Stora Enso's head office is in Helsinki, Finland. It also has head office functions in Stockholm, Sweden. Most of the group's sales and operations take place in Europe, where we are a leading producer of board, pulp, paper and wood products. Germany and Sweden are the biggest markets for the group's products in Europe. Stora Enso operates an Innovation Centre for packaging in Finland and for biomaterials in Sweden. In Northern Europe we source most of our main raw material – wood – from private forest owners and our forest associates Bergvik Skog and Tornator. We promote forest certification and sustainable forestry. We also actively promote and participate in recycling schemes, especially in densely populated parts of Europe.

**Consumer Board, Packaging Solutions, Biomaterials, Wood Products, Paper**

**Number of employees**

Finland.....	<b>6 700</b>
Sweden.....	<b>5 100</b>
Poland.....	<b>1 900</b>
Germany.....	<b>1 500</b>
Russia.....	<b>1 100</b>
Other European countries.....	<b>3 700</b>

**Asia**

**China**

The demand for Stora Enso's products, especially consumer board and packaging, is growing fast in China. In 2016 our new consumer board mill started up in Beihai, in the Guangxi region, where our operations also include eucalyptus plantations. In addition, Stora Enso has three packaging plants and operates one joint operation paper mill.

**Consumer Board, Packaging Solutions, Paper**  
**Number of employees..... 5 100**

**Pakistan**

Stora Enso owns 35% of an equity-accounted investment in Pakistan. Bulleh Shah Packaging produces corrugated packaging, consumer board, containerboard and paper for the textile, dairy, food and electronics industries in Pakistan. With regard to sustainability we focus on human and labour rights, for example, by auditing and educating suppliers as well as through community investments.

**Consumer Board**

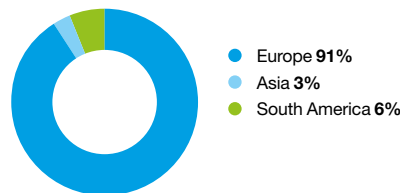
**Laos**

Stora Enso has a trial plantation in Laos that combines tree-growing with food production. Our focus on sustainability includes an agro-forestry model that enables local villagers to safely grow food on the plantation.

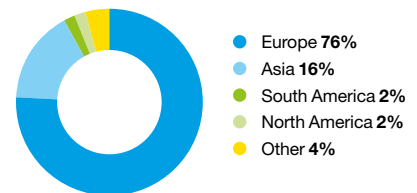
**Biomaterials**

**Number of employees..... 130**

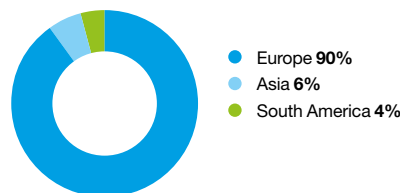
**Sales by origin**



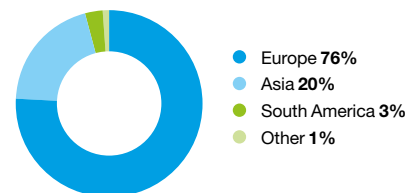
**Sales by destination**



**Purchases by region**



**Personnel by region**



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# How we create value as a renewable materials company

## Inputs

### Natural

- Forests and plantations
- 38 million m<sup>3</sup> of wood
- Pulp and paper for recycling
- Fuels 152 000 TJ (82% biomass)
- Electricity 13 TWh (41% generated internally)
- Water consumption 2.2 m<sup>3</sup>/tonne produced

### Human

- 25 000 employees
- Personnel turnover 23%

### Financial

- Debt/equity 0.47
- Capital employed EUR 8 594 million
- Capital expenditure EUR 729 million

### Manufactured

- More than 60 production units in nearly 20 countries
- Strong supplier network

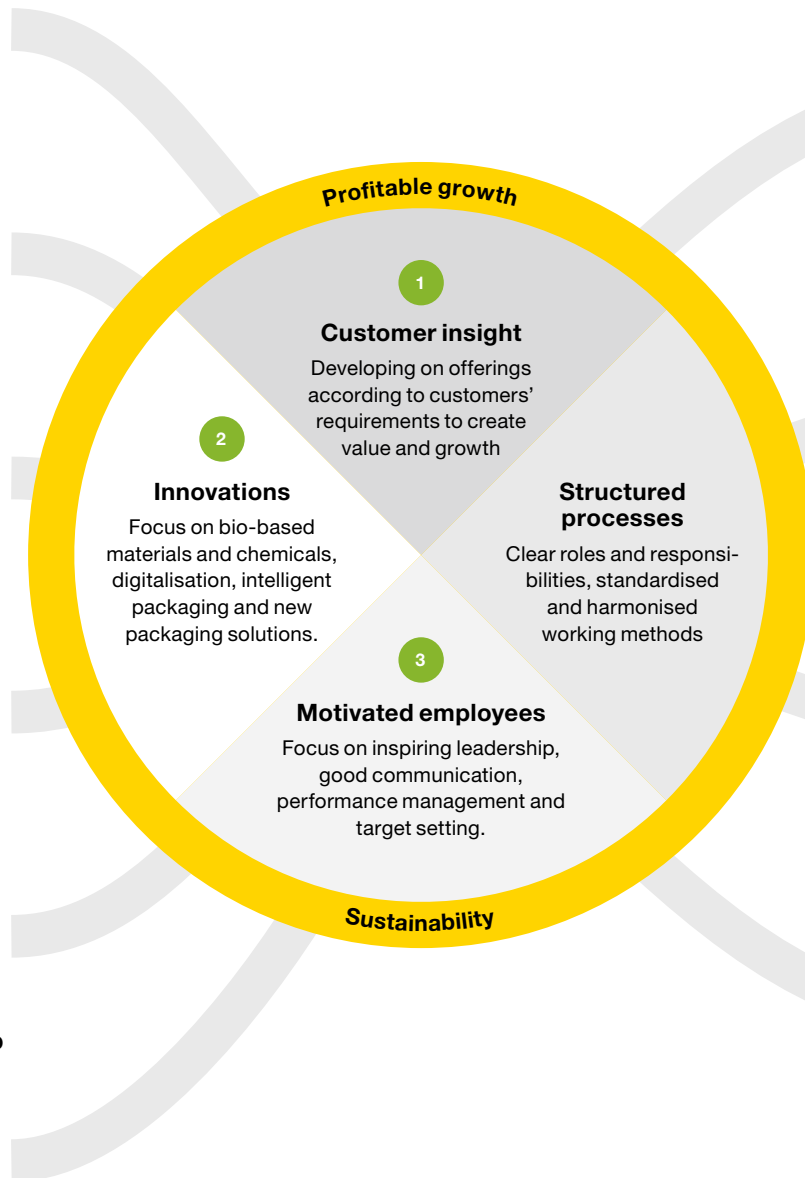
### Intellectual

- Patents, brand, competence
- Service concepts

### Social/relationship

- Safety
- Community and stakeholder relations
- Collaboration with partners

## Business model



## Outputs

### Products

- Packaging
- Biomaterials, incl. lignin
- Wood products
- Paper

### By-products and residuals

- Electricity/heat/steam
- Tall oil, sawdust, ash
- Forest biomass energy
- Other residuals for beneficial use

### Services

- Design studios
- Technical customer service
- Innovation centres
- Forest management
- Construction services

### Emissions and discharges

- Air emissions CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>
- Process waste to landfill
- Process water discharges

**CO<sub>2</sub>:** Trees absorb CO<sub>2</sub> and act as carbon sinks together with wood-based products.

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## Impacts



### Financial 6



Stakeholders	Economic value (EUR million)	2016	2015
<b>Customers</b>	Sales	9 802	10 040
	<b>Suppliers</b>	Payments to suppliers	6 753
	Capital expenditure	729	989
<b>Employees</b>	Wages and benefits	1 334	1 313
<b>Creditors</b>	Interest	151	186
<b>Public sector</b>	Taxes borne and collected <sup>1</sup>	1 241	1 215
<b>Communities</b>	Donations, community funds and sponsoring <sup>2</sup>	3	4
<b>Shareholders</b>	Dividends	260	237

<sup>1</sup> For more information on Stora Enso's tax footprint, see page 57.  
<sup>2</sup> Excluding joint operations Veracel and Montes del Plata



### Social 7

- Indirect and direct employment
- Human rights impacts
- Value creation with local communities
- Lost-time accident rate (LTA) 4.4
- 92% of supplier spend covered by Supplier Code of Conduct
- Green energy for surrounding communities



### Environmental 5

- Replacing non-renewable materials with renewable alternatives
- CO<sub>2</sub> emissions impact global warming – bioenergy helps to combat it
- Trees and products absorb and store carbon
- Enhancing recycling (20% utilisation rate for Paper for Recycling)
- Utilisation rate for by-products and residuals 98%
- Promoting sustainable forestry (90% of lands owned and managed covered by certification)

## Explore the value chain in our Annual Report

1. We serve many of the world's strongest brands and companies with our renewable solutions.  
➤ Read more from page 22 onwards.
2. Stora Enso is focused on innovation in renewable materials to replace non-renewable materials with products based on wooden fibres.  
➤ Read more on page 20.
3. Winning culture in Stora Enso is driven by motivated employees and investments in leadership.  
➤ Read more on page 54.
4. Our wood-based products are used by customers in various industries and across continents.  
➤ Read more on pages 29, 35 and 53.
5. How does Stora Enso combat global warming? Get familiar with our approach to sustainable forestry, and to materials, water, energy, and carbon dioxide.  
➤ Read more on page 33 in the Sustainability Report.
6. Stora Enso's financial performance in 2016 shows strong underlying performance during large investment ramp-ups.  
➤ Read more in the Financial Report.
7. The social agenda of our sustainability approach covers three topics: Employees and wider workforce, Community, and Business Ethics.  
➤ Read more on page 16 in the Sustainability Report.

**Recovery:** Our products are safely recyclable as raw material.

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# What a tree can do

With renewable materials at our foundation, Stora Enso plays a key role in the bio-economy.

To combat global warming and promote a more sustainable future, Stora Enso and the forest industry are pioneering a transition to a world that is less dependent on fossil fuels – to a bio-economy where the production and consumption of products is based on wood as a renewable resource.

Stora Enso's renewable solutions can be found across many industries, including building, retail, food and beverages, manufacturing, publishing, pharmaceutical, cosmetics, confectionary, hygiene and textiles. One in three beverage cartons in the world today is produced with our materials. We are also Europe's biggest supplier of wood-based construction materials and our pulp-based products are used around the world.

In the coming years, bio-based solutions will be used in many new ways, and will even be adopted by industries that have never used them before. We are using the latest technology to explore opportunities with trees that most people would not have thought to be possible. The aim is that renewable materials will replace plastics and metals and expand the reach and scope of our business.

Already today, it is possible to make stronger and lighter packaging from nano-cellulose and glues and carbon fibre from lignin, which is a natural polymer found in wood. Lignin is found in the parts of a tree currently unused by pulp processors and typically burnt for fuel. So there is an abundant supply and a clear business opportunity that can drive the trend towards a bio-based economy, with a backbone made of wood.

## Financial development shows the impacts of our transformation strategy

Our financial performance reflects our ongoing transformation. During 2016, our sales, excluding the structurally declining paper and the divested Barcelona Mill

increased by 3.1%. This was achieved primarily thanks to the ramp-ups at the Varkaus kraftliner and Beihai consumer board mills. 67% of our sales came from our growth businesses in packaging, biomaterials and wood products. Our operational EBIT decreased by 3.4% to EUR 884 million, mainly due to historically low hardwood pulp prices in the Biomaterials division, and higher fixed costs due to our transformation projects and increased innovation activities in Biomaterials. I am very glad that our Paper division performed well and increased its operational EBIT by 174% from last year, despite the continually challenging market.

Cash flow from operations reached a record high of EUR 1 633 million. Our balance sheet continued to strengthen and we have improved our ratio of net debt to operational EBITDA from over three to 2.0 in only 48 months, well in line with our target. The operational return on capital employed excluding the Beihai Mill project hit our target of 13.0% in 2016. This proves that our transformation into a renewable materials company has been successful and is improving our profitability. Our debt-to-equity ratio, at 0.47, is well below the target. What we still need to work on is our fixed-costs-to-sales ratio, which was 25.3%, while our target is below 20%.

We are now facing some uncertainties in the global business environment, such as an increased risk of global protectionism. We are proactively adapting to the changing

**Bio-based solutions will replace plastics and metals and expand the scope of our business.**

macroeconomic situation, and we have launched a profit improvement programme aimed at reducing our annual costs by EUR 50 million.

## Entering new business environments

During 2016, we opened our new consumer board mill in Beihai, China. This is the largest direct investment in China by a Nordic company and very significant in the history of Stora Enso. Additionally, we inaugurated the kraftliner machine and wooden building element production line at the Varkaus Mill in Finland, welcomed guests from all over the world to the inauguration of the modernised Murów sawmill in Poland, and started expanding the fluff capacity in Skutskär pulp mill in Sweden to deliver growth in the hygiene market. For the packaging of demanding goods, such as food and liquid, we are investing in a new polyethylene extrusion coating plant and automated roll warehouse at Imatra Mills in Finland.

Simultaneously, we continue to focus on new products and services. Our innovation centres in Sweden and Finland are ramping up activities, we have entered into a joint development project with the specialty chemicals company Rennovia, continued the commercialisation of the first micro-fibrillated cellulose (MFC) product, and we also have a number of ongoing promising customer trials with intelligent packaging. In 2016, we launched several products and concepts, including CKB Nude by Stora Enso, a new paperboard for renewable materials, as well as Building Systems by Stora Enso, which provides comprehensive guidance on how to build multi-storey houses out of solid wood.

## The majority of portfolio aimed at growth

In Consumer Board, we are working to expand market share in profitable niche areas, such as food service and liquid packaging. In Packaging Solutions, we see growth potential in packaging material used in a range of sectors including food, consumer electronics, household and furniture.

In Biomaterials, we are focusing on our existing pulp offering while at the same time exploring how to use all parts of the tree and expand into bio-chemicals. For example, we are developing lignin for use as phenol replacements, and xylose in food additives and oral care. Moreover, we are developing dissolving pulp for use in new types of textiles.

In Wood Products, we are working to accelerate growth in the key markets of Europe for advanced wood products and building systems

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**Our financial performance reflects the ongoing transformation.**



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**Stora Enso strives to use its resources, people and know-how to help meet the global challenges.**

**Reaching key financial targets**

EUR million	2016	2015	2014	Target
Payout ratio <sup>1</sup>	63%	32%	231%	See below <sup>2</sup>
Operational ROCE	10.2%	10.6%	9.5%	>13%
Debt/equity ratio	0.47	0.60	0.65	<0.80
Net sales growth <sup>3</sup>	3.1%	4.6%	0.9%	
Net debt/last 12 months' operational EBITDA <sup>4</sup>	2.0	2.3	2.5	<3.0
Fixed costs / Sales ratio	25.3%	25.0%	25.1%	<20%

<sup>1</sup> Dividend per share / EPS  
<sup>2</sup> To distribute 50% of net income over a cycle  
<sup>3</sup> Excluding the paper business and the divested businesses  
<sup>4</sup> Data for the comparative periods restated according to the new reporting structure

for the construction industry. Paper remains a strong cash generator for Stora Enso with its offering including newsprint, printing and writing papers as well as technical customer services.

**Customers: the starting point for our businesses**

There is a great eco-awareness among consumers, because people agree that we must use the resources of the planet more efficiently. Our renewability offering has an appeal that attracts new and existing customers. We have the privilege of working with customers around the world representing many strong brands, such as Tetra Pak, Nestlé, Coca-Cola, Samsung, Unilever, LG Electronics, SIG Combibloc, Munksjö, Oxford and METRO GROUP, to mention but a few.

Renewability is not only about our raw material which is re-usable and renewable. It is also linked to resource traceability and responsibility, production and material efficiency, logistics and the supply chain, and it is in the core of our agenda of sustainability – economically and environmentally. Our differentiation is also boosted by process know-how and a culture of innovation and ultimately by helping customers sell sustainable products to their consumers.

**Innovation: the springboard for renewable future**

Innovation at Stora Enso encompasses everything from forestry and biomass to new technologies, product development and digitalisation. As already mentioned, we are working with customers and NXP Semiconductors to explore intelligent packaging. Other examples include the development of micro-fibrillated cellulose (MFC) for source reduction and strength enhancement as well as barrier films that could potentially replace aluminium and plastics.

I would also like to point out the outstanding new multi-storey buildings built from our cross laminated wood (CLT), for example, in London,

Milan, Paris and Sydney. They demonstrate that 'wood is good' for building. In Trondheim, we have provided CLT to wooden accommodations for students. It is the largest CLT project in Europe and a real showcase of wooden construction, great architecture, interesting technology and smart energy solutions.

Biomaterials shows exceptional long-term promise as the demand for products based on sustainable sources continues to grow. Different fractions of biomass have the potential to be refined and made into new offerings. We are focusing on solutions that can exploit lignin, C5 and C6 sugars as building blocks for creating alternatives to fossil-based materials.

**We take sustainability seriously**

As a renewable materials company in the forest industry, we want to lead the way in combatting global warming, ensure the viability of forest land use, make a positive footprint in the communities where we are present and foster an ethical approach that goes beyond compliance.

Our work on sustainability was affirmed when Stora Enso was classified as a global leader in terms of combatting global warming by the international non-profit organisation CDP. It has included Stora Enso in its new 2016 Climate A List in recognition of our long-term actions and strategy to reduce emissions. In 2016 our CO<sub>2</sub> emissions per saleable tonne of board, pulp, and paper were 39% lower than the 2006 benchmark level (38% lower in 2015).

Our position as a global renewable materials company also depends on our partners and suppliers. Suppliers are expected to follow our Supplier Code of Conduct. Thus, we are pleased to report that, by the end of 2016, 92% of Stora Enso's supplier spend was covered by the Supplier Code of Conduct.

In 2016, the focus of Stora Enso's sustainability was also on implementing the Human Rights Action Plan – created on the basis of the recommendations of our group-wide Human Rights Assessment. By the end of 2016 a total of 86% (69% at the end

of 2015) of the preventive and remediation actions were completed based on UN Guiding Principles on Business and Human Rights and criteria created in collaboration with the Danish Institute for Human Rights.

**Focus on leadership and safety**

Importantly, we recognise the power of our own people to ensure success. During the year, we have continued our work to educate and develop the leaders in our company and we run programmes to deepen employee engagement that supports growth as well as responsible stewardship.

Safety remains at the top of our people agenda. Tragically, a contractor's employee was killed in an accident in 2016 at our Fors Mill in Sweden. All accidents are unacceptable to Stora Enso and the causes of any accident are always thoroughly investigated in collaboration with the authorities to prevent them from happening again.

**Transformation: responding to global trends**

A growing population, urbanisation, digitalisation, changing lifestyles, a growing middle class and eco-awareness – these megatrends have significant implications for the forestry business, as well as the global warming. Stora Enso strives to use its resources, people and know-how to help meet the challenges facing the world and to realise the business opportunities inherent in that.

We believe that everything that's made with fossil-based materials today can be made from a tree tomorrow. Wood is the renewable answer to a sustainable future.

This is an exciting journey we are on, and I would like to thank all our partners, suppliers and employees for their contributions in 2016 and our customers and investors for their trust.

**Karl-Henrik Sundström**  
Stora Enso's CEO

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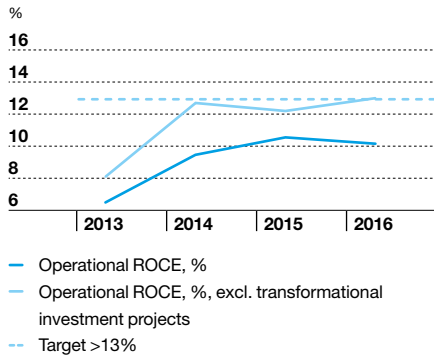
# EUR 0.37

Dividend proposal

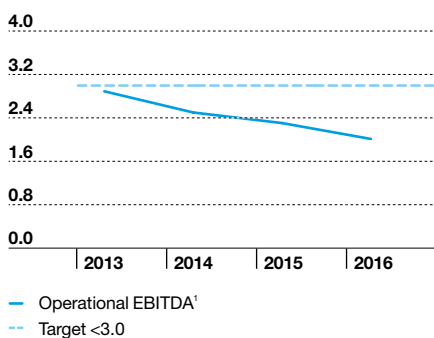
# EUR 0.59

Earnings per share

### Operational ROCE



### Net debt to operational EBITDA<sup>1</sup>



<sup>1</sup> Restated according to the new reporting structure.

## Financial performance

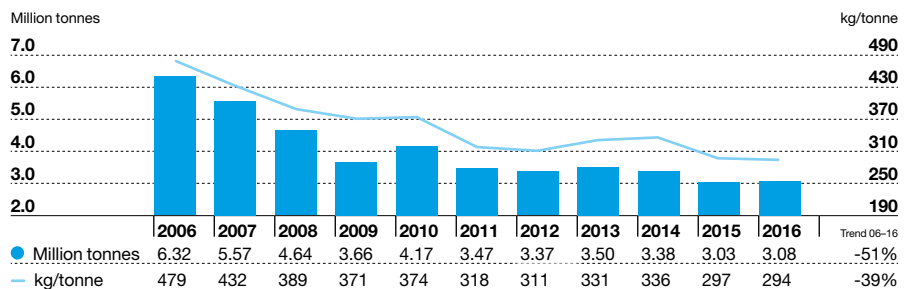
# 67%

of total sales came from growth businesses in 2016



## Capital expenditure decreased 26% year-on-year.

### Our fossil CO<sub>2</sub> emissions<sup>1</sup>



<sup>1</sup> Covering direct and indirect fossil CO<sub>2</sub> emissions (scopes 1 and 2) from pulp, paper, and board production units. Normalised figures are reported per unit of sales production. Historical figures recalculated due to changes in baseline following divestments or accuracy improvements.

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# Responding to megatrends

The world has a challenge on its hands. We have to lower our carbon footprint as temperatures continue to rise. Given the global challenges facing our planet, the need for new sustainable solutions is more important than ever. With trees as our base, we have an important role to play in creating a renewable future in bio-economy.

**This has changed everything.** The Paris climate change agreement in 2015 significantly increased interest in low-carbon solutions, encouraging a stronger transition towards an economy based on biological and renewable materials – the bio-economy.

Stora Enso is a part of the bio-economy and focused on innovation in renewable materials. Products based on wooden fibres store carbon and can also replace non-renewable materials such as plastic, glass, steel, concrete and fossil fuels.

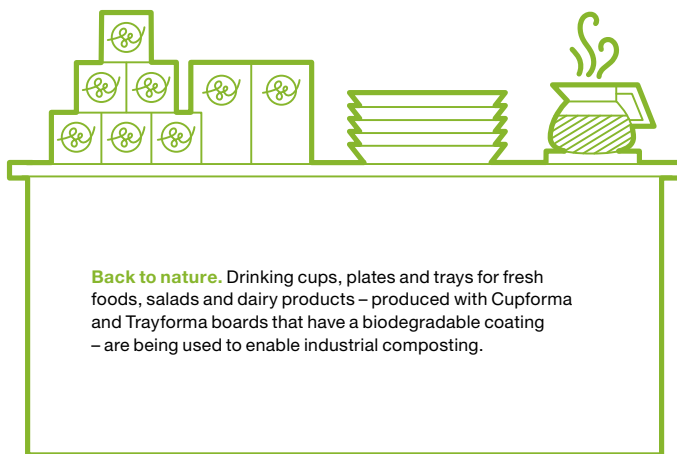
**More wooden buildings on the rise.**

Stora Enso has launched Building Systems to help developers, main contractors, architects, engineers and suppliers better understand how to build with wood and wood's advantages over concrete and steel. Lighter, easy-to-assemble, low-carbon and renewable.

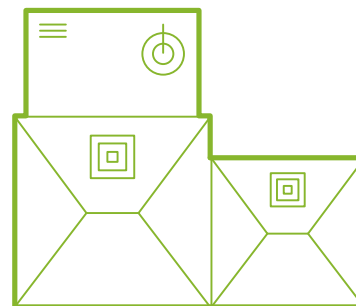
**Sustainable living, work and play.**

Australia's first wooden office building, the Allianz Riviera stadium in France, the PEFC certified building project in Finland and the largest residential building made of solid wood in France are some of the projects underway using CLT by Stora Enso – saving on resource use and helping the environment.

**Track and sense.** We have a number of on-going projects utilising Radio Frequency Identification (RFID) and Near Field Communications (NFC) for tracking and sensing to improve logistics as well as the functionality of packaging.



**Back to nature.** Drinking cups, plates and trays for fresh foods, salads and dairy products – produced with Cupforma and Trayforma boards that have a biodegradable coating – are being used to enable industrial composting.



## Shaping our future

Megatrends affect the world's demand for renewable materials.

### Global warming

In 2015, mankind produced 40 billion tonnes of carbon dioxide emissions. Carbon neutrality can create a EUR 6 000 billion market for smart green solutions by 2050.<sup>1</sup>

### Growing population

The global population is estimated to reach 9 billion by 2050, leading to an even greater resource shortage.<sup>1</sup>

By 2030, the world population of people aged 65 and older will double to one billion.<sup>2</sup>

### Urbanisation

Close to 70% of the world's population are expected to live in urban areas by 2050.<sup>1</sup> With pressure on infrastructure and resources, urbanisation is creating significant opportunities for more sustainable living.

### Digitalisation

Half of the world's population will have access to the internet by 2030.<sup>3</sup> Retail e-commerce sales are projected to increase to USD 4 058 billion in 2020, making up 14.6% of total retail spending that year.<sup>4</sup>

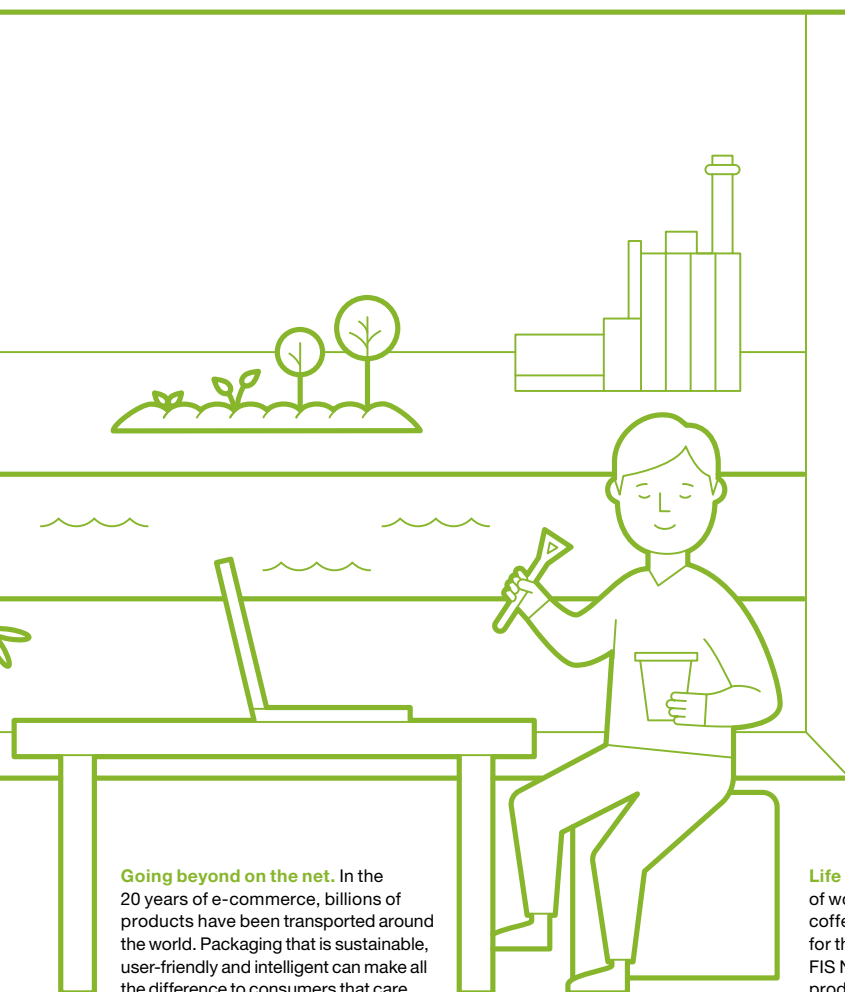


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## Products based on wooden fibres can replace non-renewable materials in bio-economy.



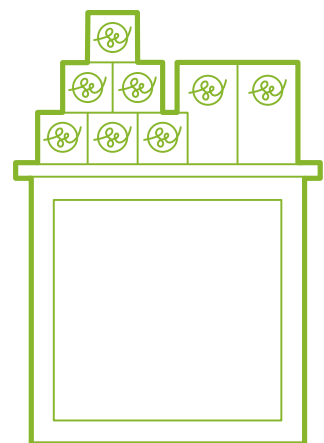
**Going beyond on the net.** In the 20 years of e-commerce, billions of products have been transported around the world. Packaging that is sustainable, user-friendly and intelligent can make all the difference to consumers that care.

**Life on-the-go.** One full truck load of wood can be turned into 850 000 coffee cups. The biodegradable board for the coffee cups at the Lahti 2017 FIS Nordic World Ski Championships is produced by Stora Enso.



**Useful side streams.** Stora Enso's fluting mill at Heinola, located by the headwaters of one of Finland's longest rivers, is turning organic material in the mill's wastewater into biogas – leading to cost savings and environmental improvements.

**Fully renewable.** A 100% renewable paper cup for hot and cold beverages, ice cream and take-away food made with Stora Enso board that has PE Green coating – an important step forward in substituting fossil-based plastics with a fully renewable material.



### Changing lifestyles

The Chinese packaged food market is expected to reach USD 347 billion by 2018.<sup>5</sup> China's demand for packaged food will continue to grow at about 8% a year up to 2024.<sup>6</sup>

### Growing middle class

By 2030 60% of the world's population will be middle class. Middle class is defined as earning between 10 to 100 USD a day.<sup>7</sup>

### Eco-awareness

70% of consumers state that they have purchased an environmental product, even if it was more expensive. 66% have avoided a particular product or brand for environmental reasons.<sup>8</sup>

### Sources:

- 1 Sitra: Megatrends, 2016.
- 2 National Institute on Aging, 2007.
- 3 European Union Institute for Security Studies, 2011.
- 4 eMarketer, 08/2016.
- 5 Agriculture and Agri-Food Canada: Global Analysis Report, 2014.
- 6 Research and Markets: Packaged food markets in China, 2016.
- 7 United Nations Development Program, 2013.
- 8 Millward Brown for Tetra Pak: Environment Research, 2015.

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# The renewable materials company

Specialising in wood-based renewable materials, Stora Enso aims to make the best use of its experience and know-how to find solutions that can help drive the bio-economy.

Stora Enso's products made from trees and wood fibres are used in the printing, construction, retail, food, pharmaceutical and hygiene industries as well as in textiles, paints, glues and automotive. We believe that forest resources should be used to their full potential

to extract the highest possible refinement value.

Growth in managed forests binds carbon dioxide and new generations of trees replace those that are logged. In our business we refine biomass in the form of forest resources into

materials, such as timber and wooden building elements, packaging board, paper, pulp and other biomaterials. Our wood-based products are renewable, act as carbon sinks, and can be recycled several times before eventually being burnt to make bioenergy for heating, power or fuel.

## Our customers



Brand owners and retailers



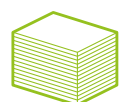
Converters



Food industry



Chemical industry



Office suppliers



Transportation



Textile industry



Pharmaceutical, cosmetics and hygiene industries



Construction businesses

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**Growth in renewable business**

Stora Enso's strategy is about profitable growth based on customer insight and innovation, supported by structured processes and motivated employees. The shift towards focusing on value added products is well underway. The financial results have improved, such as profit margins, profitability and cash generation. The transformation strategy now continues with a focus on customers and innovation.

In 2016, 67% of Stora Enso's sales came from growth businesses of Consumer Board, Packaging Solutions, Biomaterials and Wood Products. Although the paper business is declining, our Paper division provides a steady cash flow, which supports our transformation into a renewable materials company.

**Customer-driven innovation**

As expert in wood-based renewable materials, Stora Enso is striving to make the best use of its experience and know-how to find solutions for the future that can help meet the global challenges facing the world today. Innovation expands across the value chain to enable us to respond to market trends and customer demand by improved solutions for renewable materials. Partnerships, new business models and services are in the core of our thinking. The key innovation themes for Stora Enso are bio-based materials and chemicals, digitalisation, intelligent packaging and new packaging solutions.

To support the innovation agenda, Stora Enso has more than 250 scientists working in Helsinki, Imatra, Karlstad, Mönchengladbach and Stockholm. Additionally, Stora Enso has various co-operation agreements with Aalto University, KTH Royal Institute of Technology, Chalmers University, Rennova Inc., Wallenberg Wood Science Center and SweTree Technologies.

**Raw material – make the most of every fibre**

Our approach to sustainable forest and plantation management takes the economic, social, and environmental aspects of sustainability into account. All round wood, chips, sawdust, and externally purchased pulp supplied to our mills come from sustainable sources. We use various tools, such as international certification schemes and traceability systems, to optimise wood procurement and land use efficiency without compromising sustainability. We also always make sure that harvested trees will be replaced by new growth.

Today we use about 50% of the wood that is harvested for our products. The rest is used



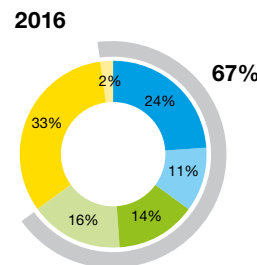
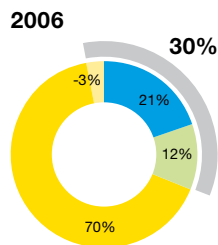
**Our Purpose and Values**

**Our Purpose** "Do Good for the People and the Planet" serves as an ethical compass as we balance the needs of different stakeholders in different markets.

**Our Values** – "Lead" and "Do What's Right" – are about setting an example and leading in all aspects of our business.

According to our annual employee survey in 2016, 83% of our employees feel that they can identify with our Purpose. Furthermore, 75% agree that "Lead" and 84% agree that "Do what's right" are values that guide them in their daily work.

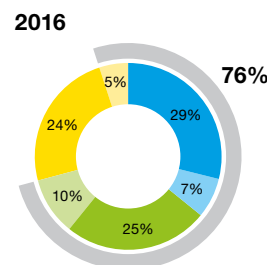
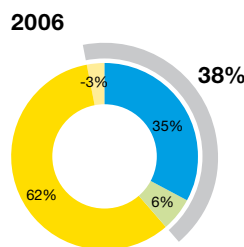
**Sales**



- Consumer Board
- Packaging Solutions<sup>1</sup>
- Biomaterials
- Wood Products
- Paper<sup>2</sup>
- Other and eliminations
- From growth businesses

<sup>1</sup> In 2006 in Consumer Board  
<sup>2</sup> In 2006 includes merchants

**Operational EBIT**



4.8 million tonnes of Stora Enso's paper, pulp and board capacity has been closed since 2006. The capital expenditure to transformation investments amounts to EUR 4.3 billion between 2012 and 2016.

for energy generation. With new innovative technologies, we will be able to create new products to use all of the wood fractions by utilising the lignin, hemi-cellulose and cellulose, thus paving the way for a myriad of new applications that were previously not thought possible.

**Resource and process efficiency**

Today over 75% of the energy we generate and use comes from carbon neutral sources.

Most of our paper, pulp and board mills, and most of our saw mills use biomass in their internal energy production, in addition to the externally purchased energy. The excess heat and electricity is often sold to the surrounding community. We minimise cost and risks when sourcing supplementary energy, with a preference for low-carbon energy sources. Some 89% (81%) of our purchased electricity was generated from low-carbon sources including nuclear and renewable energy.

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Continuous efforts are made at our mills to increase the efficient use of water and other raw materials, to reduce waste, to reuse materials, and to create business opportunities from residuals and by-products.

**Sourcing from the best partners**

In 2016, purchases of materials, goods, and services represented 48% of our total variable costs and fibre procurement 52%. We work with approximately 25 000 suppliers.

Stora Enso strives to build strong and measurable relationships with the best

suppliers globally, regionally and locally. We select our suppliers carefully, taking into consideration innovation, sustainability, quality and cost. Our best suppliers – partners – are innovators and leaders in their field.

Our suppliers are expected to follow Stora Enso's Supplier Code of Conduct and the applicable legal requirements. By the end of 2016, 92% of Stora Enso's spending on materials and services was covered by the Supplier Code of Conduct.

Read more on page 60 in the Sustainability Report.

**Capital expenditure**

Stora Enso aims to keep investments at or below the level of depreciation and the operational decrease in the value of biological assets over the business cycle.

Stora Enso's capital expenditure in 2016 was EUR 729 million while depreciation and the operational decrease in the value of biological assets totalled EUR 567 million.

**Shareholder return**

Stora Enso's dividend policy is to distribute half of the group's net profit over a business cycle to the shareholders as dividend.

**The transformation strategy now continues with a focus on customers and innovation.**



01



02

- 01 Leadership and open communication are important areas in building a winning culture within our company.
- 02 We look at renewability as a cycle, from raw material to product after-life through recycling or product degradability – and as energy.

**Sustainability – a positive total contribution to society**

Stora Enso's Sustainability Agenda consists of social, environmental and economic elements with human rights acting as an over-arching theme. Stakeholder relations and materiality guide our sustainability work. Our aim is to ensure a positive total contribution to society.

To combat global warming, we are pushing towards carbon neutrality with the ambition to be, within a decade, as close to zero fossil carbon emissions, as is technically and commercially reasonable. We are developing a human rights strategy using a best practice methodology which will be further refined during 2017. The strategy will define a set of prioritised human rights that are the most relevant for Stora Enso. To enhance

community investment, our Sponsorship & Donations policy has been updated and recently generated baseline data will be used to improve our impact. During 2017 we will implement a new corporate community investment framework and related guidelines.

**People – for a winning culture**

Stora Enso's long-term efforts to develop leadership and culture remain high on the agenda. Within human resources, we have five key priorities: Leadership, Align and Engage, Workforce Planning and Employer Branding, HR Services and Occupational Health and Safety. Leadership is at the core of our people strategy as it is the strongest driver of performance and a winning culture. Our leadership themes focus on Business

Acumen, Customer Focus, Do What's Right, People Management and Inspire & Motivate.

**Everyone home safe, every day**

At Stora Enso, our goal is to have a healthy workforce and accident-free workplace. While this work begins with our leaders, building up a company-wide safety culture means that everyone is responsible for making every workday healthy and safe. Safety management at Stora Enso is based on international standards, but our processes go beyond those requirements. Our Safety Toolbox is a set of tools designed to be used throughout the company. Responsibility for implementing each tool and programme in our units lies with line management, supported by local staff and the group-level OHS function.

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**Strengthened presence in China**

The Beihai consumer board mill in Guangxi started up in May. With an investment of EUR 800 million, it is the largest Nordic direct investment in China, and significant in the history of Stora Enso.

**Progress in 2016**

Transformation continued with investment start-ups and non-core asset divestments.

**Reducing environmental impacts**

A new chemical plant at Skoghall Mill and reduced sulphur emissions at Skutskär Mill.



**Building Systems by Stora Enso launched**

A new industrialised building system for wooden components to increase the use of wood as a construction material.



**Non-core asset divestments continued**

The coated magazine paper mills Arapoti in Brazil and Kabel in Germany and the coated paper mill Suzhou's site in China were divested during the year.

**Stora Enso was chosen as the Bio-based brand of the year by the World Biomarkets.**



**Strategic university partnerships**

Stora Enso collaborates with Aalto University, Chalmers University of Technology and the Royal Institute of Technology in long-term competence development, joint research and innovation.



**Improving assets in growth businesses**

- Fluff pulp capacity at Skutskär Mill will be increased to meet the growing demand in the hygiene market
- New polyethylene (PE) coating lines at Beihai and Imatra mills
- Warehousing and environmental performance improved at Imatra Mill



**Engineered wooden building elements**

The new Laminated Veneer Lumber (LVL) line in Varkaus, Finland, meets our customers' growing need for sustainable wood products for construction and industrial applications.

**Strengthening bio-based chemicals development**

A technology development agreement with specialty chemicals company Rennovia Inc.

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# Future growth with innovation

Connectivity makes it possible for brand owners to deepen consumer insight and engagement with Stora Enso's intelligent packaging solutions.

In recent years, we have innovated and developed new solutions from wood. Today, we can construct high-rise buildings, create stronger, lighter packaging and we are working to replace plastics with products from wood-based fibres. Even some paints and glues can be made using wood-based materials. On top of that, we can add intelligence to our products. It is now possible to put sensors on packages telling us exactly where they are, what is inside and if anything has happened to them.

Stora Enso's focus is on processing of wood for construction, fibre-based solutions for packaging, hygiene and textile applications as well as bio-based breakthrough material and chemical applications. Our innovations offer alternatives to the current use of oil or food-based products.

## An integral part of the whole value chain



**Forestry**  
Forest and plantation management practices are critical to all Stora Enso businesses. End product competitiveness is closely linked to selecting the right raw material for the process and product. Research and development experts, specialised in biomass and fibres, work closely with business units.

**New technologies**  
By innovating with new technologies, we believe there is the potential to use trees to produce anything that is currently made from fossil-based materials. The different fractions of fibre can be made into products that have new potential applications in specialty chemicals, construction, pharmaceutical, food, clothing, cosmetics, home and personal care.

**Research and innovation centres**  
In addition to the research centres in Imatra (Finland), Karlstad (Sweden), and Mönchengladbach (Germany), Stora Enso has opened two innovation centres. The Innovation Centre for biomaterials in Stockholm is focused on identifying business opportunities in markets for renewable materials and bio-based chemicals. The Innovation Centre for packaging in Helsinki is a cross-functional centre offering a design lab and virtual reality retail technology for customers seeking new ideas in packaging.

**Operations**  
Innovation is not limited to new products or applications: it also involves how Stora Enso uses

assets and resources and manages the value chain. We constantly improve our processes and use energy, water and other raw materials as efficiently as possible.

**Products and applications**  
Innovation continues in board and paper products to improve performance properties as well as reduce weight, costs and environmental impacts. Alternatives to plastic or aluminium packaging are driving many developments in consumer packaging. We are further developing solutions for wood-based construction as a viable alternative to concrete and steel. In biomaterials, cellulose and hemi-cellulose and lignin play a key role in the development of new or improved products.

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# Digitalisation is changing the world

**A key driver for rapid development is the increasing level of connectivity.**

With the Internet of Things, most of the world will be online and connected.

Digitalisation enables greater differentiation through Stora Enso's new business and operational models, and new products for our customers.

Industrial digitalisation provides forest industry opportunities to advance efficiency in production, product management and the supply chain.

Stora Enso has run several succesful pilot projects in predictive maintenance, automation process optimisation and maintenance work efficiency improvement.

Big data management and connectivity are powerful tools for Stora Enso to improve internal efficiency and support new customer services and solutions.

Improvements in sensor technology and the speed and ease of transferring data enables the more efficient running of operations, shortening time to market and developing services and products.

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# Intelligence in packaging

There is a strong market interest in intelligent packaging which enhances end-user engagement, increases efficiency in the supply chain and assures safety throughout a product's route from production to consumer. We can put sensors on packages telling us exactly where they are, what is inside and if anything has happened to them.

Tailored RFID tags can be designed and encoded for NFC and UHF applications, and setup tampering functionality or digital personalisation.

With connectivity comes valuable data about the customer's supply chain or consumer behaviour.



**Markus Mannström**  
Chief Technology Officer

With intelligent packaging, our main focus is to create solutions based on connectivity and cloud and data services. We respond to new customer needs with value-adding services in brand protection, consumer insight and supply chain applications.

With incorporated digital chips, a package itself can be loaded with information about origin, ingredients, history or any other information the producer wants to provide.

Precise shipping and careful handling are important to today's modern consumers, as is information about the product and how to use and care for it.

Smart packages can easily be tracked and traced through the entire supply chain, providing full end-to-end transparency.

Sensors to indicate a product's expiration date help to ensure integrity and safety.

Intelligent packaging can be used to verify the authenticity of the product.





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# Opportunities of renewability

## Biomass to bio-based chemicals

Research in the Biomaterials division is focused on four innovation clusters, among them the transformation of the different sugars extracted from biomass into bio-based chemicals for various industries. In this area, Stora Enso has an 18-month joint development agreement with Rennovia Inc. which specialises in catalyst and process technologies.



At our Innovation Centre for biomaterials, we have top scientists within different fields of expertise all working together. Stora Enso acts as a bridge between the research that is going on globally and how you can apply that to our current or future customer businesses.

**Heidi Saxell**  
**R&D Manager,**  
**Biomaterials division**



We are only at the beginning of exploring the possibilities of MFC. It is a great motivator to be amongst the first working with this and hopefully it will revolutionise the industry.

**Henri Kastinen**  
**MFC Specialist,**  
**Stora Enso Innovation**  
**Centre for packaging**

## More with MFC

Micro-fibrillated cellulose (MFC) has numerous possibilities within packaging for source reduction, strength enhancement, light weighting and moisture resistance. MFC based barrier films could potentially replace aluminium and reduce plastics. Following the successful commercial launch of MFC based liquid packaging board in the dairy segment, Stora Enso has additional MFC initiatives under development with customers.



## Collaboration

During 2016 co-operation agreements were made with Aalto University, KTH Royal Institute of Technology, Chalmers University and Rennovia Inc. Furthermore, Stora Enso is heavily involved in developing the Wallenberg Wood Science Center R&D agenda for 2017–2022. During 2016, we also increased our shareholding in SweTree Technologies, a Swedish institute conducting high tech R&D in forestry and especially eucalyptus breeding.



## The power of lignin

Utilising a greater part of wood is very much in focus these days in the bid to become more resource efficient and to develop the products of tomorrow. Lignin is one of the non-traditional products produced today on a commercially viable scale. Lignin has numerous applications in a range of industries, including automotive, construction and coatings. Refined lignin can replace petro-based phenols which are used in resins for adhesives, for example in plywood and veneer adhesive applications. In the future, lignin could also be developed into carbon fibre and carbon black applications.

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# Divisions

Stora Enso has five divisions: Consumer Board, Packaging Solutions, Biomaterials, Wood Products and Paper. Across businesses, our expertise in wood and other biomass is focused on responding to customer and consumer demand in a changing world and the further development of renewable solutions.



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# Share of group sales

## Paper

**33%**

[Read more on page 48.](#)

## Consumer Board

**24%**

[Read more on page 24.](#)

## Wood Products

**16%**

[Read more on page 42.](#)

## Packaging Solutions

**11%**

[Read more on page 30.](#)

## Biomaterials

**14%**

[Read more on page 36.](#)

Other and eliminations 2%



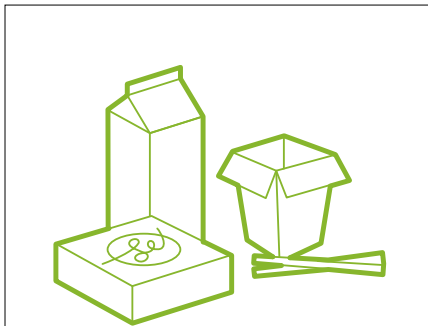
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# Consumer Board

The Consumer Board division's ambition is to be the global benchmark in high-quality virgin fibre cartonboard, and the preferred partner to customers and brand owners in premium end-use segments. A wide board and barrier coating selection is suitable for the design and optimisation of packaging for liquid, food, pharmaceutical and luxury goods.



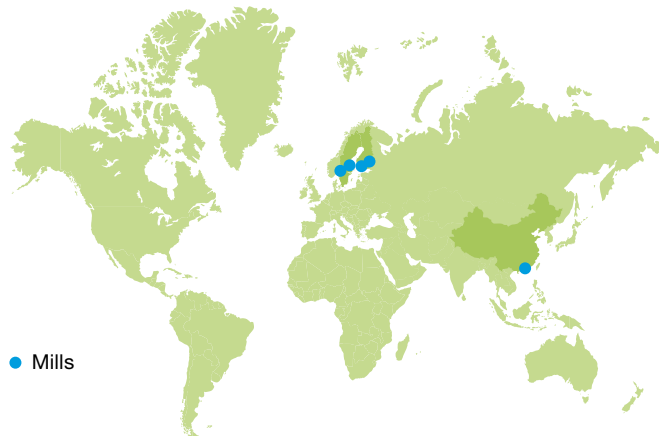
## Offering

- Liquid packaging board
- Food service board
- General packaging board
- Cigarette board
- Graphical board
- Specialty paper

## Advantages

- Renewable materials
- Broad portfolio with strong product brands
- Exciting innovations such as MFC and intelligent packaging
- Global market, local presence
- Worldwide distribution network and excellent service

The Consumer Board division serves converters, brand owners, and retailers globally and is expanding in growth markets to meet the rising demand for high-quality, functional and safe packaging.



● Mills

Consumer Board division operates five mills in Finland, Sweden and China.

## Sales by destination

**72%**  
Europe

**20%**  
Asia Pacific

**8%**  
Rest of the world

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01



02

- 01** The start-up of Stora Enso's new consumer board mill in Beihai meets the growing demand for high-quality fibre-based food packaging in China and Asia Pacific.
- 02** In full operation, the Beihai mill will have an annual capacity of 450 000 tonnes of liquid packaging board and other high-grade carton board products.

**Strategy**

**Global benchmark in high quality virgin fibre cartonboard**

The Consumer Board division aims at profitable growth by offering renewable solutions on a global scale. We are working in close cooperation with customers and brand owners to help them take full advantage of the division's offering of high quality virgin fibre board: Liquid Packaging, Food Service, General Packaging, Cigarette and Graphical Boards.

With growing consumer concerns over food safety, Consumer Board aspires to be the safest and most reliable supplier of high quality board for food packaging. Our ambition is to have the best offering in terms of customer value, innovation, product development, value chain co-operation and service. In addition, flawless delivery accuracy is one of the key purchasing criteria for customers.

**Business environment**

**Growth in the fragmented markets of China and Asia Pacific**

Our markets are constantly changing and the Consumer Board division is aiming to increase its share with existing customers, but also to add new customers globally. The demand for consumer packaging board is expected to grow globally nine million tonnes in 2014–2021. The most significant growth in virgin fibre-based consumer board is taking place in the fragmented markets of China and Asia Pacific. Indirectly, fibre-based packaging competes with non-renewable alternatives, such as plastics, glass and metals.

Being locally present in key market areas allows for the integration of sourcing with production, customers and consumers. Consumer Board has a strong foundation in European markets, where its main competitors are BillerudKorsnäs, Metsä Board and Holmen. The main competitors outside Europe include Klabin, Evergreen, Weyerhaeuser, Georgia-Pacific and International Paper.

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**Progress**

Target priority

**Main achievements in 2016**

- Start-up of Beihai consumer board machine ahead of plan
- Launch of a new board grade CKB Nude
- Further commercialisation of MFC-based liquid packaging board
- Step change in innovation activities with customers through Innovation Centre for Packaging
- Birch CTMP-based board Performa Brilliance commercialised

**Main focus and targets in 2017**

- Safety – aiming at zero accidents
- Continued ramp-up of Beihai board mill and China sales
- Commercialisation of intelligent packaging and continued commercialisation of MFC
- Successfully implement PE coating investments in Beihai and Imatra
- Price and volume steering in a more competitive market environment

**Focus for 2017 lies on continuing to ramp up the Beihai board mill and develop the sales in China and Asia-Pacific.**

**Innovation approach**

**Focus on material efficiency and new solutions**

Consumer Board division is developing new renewable solutions that meet the needs of customers and consumers. The Innovation Centre for packaging in Helsinki has been full with customer meetings since it opened in 2015. It enables us to innovate together with customers and we have entered into joint development agreements to implement customer-specific solutions.

Consumer Board's innovation work focuses on material efficiency, bio-barrier solutions and new materials and applications, such as MFC and intelligent packaging. We have continued the successful launch of MFC-based liquid packaging board for commercial applications in the dairy category. By using MFC in paperboard packaging, we can efficiently produce high-quality packaging that is durable and lighter, from fewer raw materials. Future developments include barrier films for grease and oxygen as well as biodegradable film as replacement for aluminum and transparent MFC films, which are expected to take 2–7 years before being commercially available.

**Transformation in action**

**Beihai ramp-up a historical milestone**

A new paperboard, CKB Nude™ by Stora Enso was launched in 2016. Made from pure virgin fibre, CKB Nude is designed to meet consumer preferences for renewable materials with a natural look and feel.

Stora Enso also introduced the new CKB® Carrier board grade in 2016. The CKB Carrier 380 g/m<sup>2</sup> grade is a multilayer kraft-back board ideal for beverage multipacks and other packaging applications that require high-level durability combined with excellent printability and food safety.

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- 01 Food Service Board offers high-quality board mainly for paper cups, plates and formed trays.
- 02 With RFID technology, smart packages can be easily tracked and traced through the supply chain.
- 03 General Packaging Board offers board for food, pharmaceutical, beverages, chocolate, cosmetics and luxury packaging.
- 04 Liquid Packaging Board serves a wide range of ambient and chilled packaging such as dairy products, juice and soups.

“



A growing number of consumers prefer bio-based products and want to make sustainable choices. The appearance of the packaging has a huge impact on how the product is perceived. The new CKB Nude is uncoated, brown board made from 100% virgin fibre and it is suitable for food packaging and many other end uses. I'm keen on seeing CKB Nude supporting brands in their bid to stand out on the shelf – by communicating a natural look and feel.

**Essi Lauri**  
Product Manager,  
Consumer Board division

Stora Enso's new consumer board machine at Beihai Mill in China successfully started production in May, and the official inauguration was held in June. The total investment of the project has been EUR 800 million as the mill area construction started from a green field site. The board machine is expected to reach full production within 18–24 months from the start-up, with an annual capacity of 450 000 tonnes of liquid packaging board and other high-grade paperboard products.


Customer demand for food service board and liquid packaging board is estimated to grow above the industry average. Stora Enso announced an investment of EUR 31 million in a new polyethylene (PE) coating line at the new Beihai consumer board mill. The investment supports the mill's future competitiveness by enabling short lead-times and full quality control for PE-coated prime Food Service Board (FSB). Another investment of EUR 70 million will increase the coating capacity and allow the further product development of the new generation of bio-barriers at Imatra Mills, Finland.

To further improve the environmental performance of the Skoghall Mill in Sweden, Stora Enso announced an investment of EUR 16 million in a new chemical plant at the mill. Another environmental investment of EUR 14 million at Imatra Mill was announced with the intention of reducing malodorous gas-related air emissions and improving air quality near the mill.

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**Launched in 2016: CKB Nude™**

The new cartonboard CKB Nude™, made from pure virgin fibre, is suitable for a wide range of end use applications: from food packaging to cosmetics and luxury due to its durability, light weight and printing quality. The printed cover of this report is also made of CKB Nude.

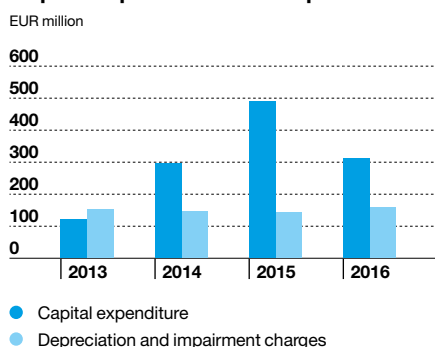
Financial performance:  
Consumer Board

**12.7%**

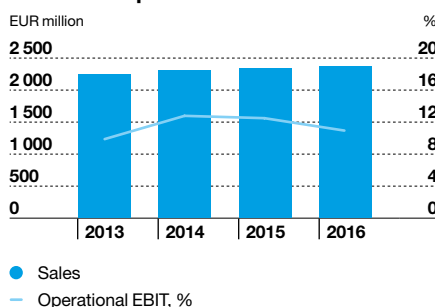
**Operational ROOC  
(Target: >20%)**



**Capital expenditure and depreciation**



**Sales and operational EBIT**



Consumer Board division sales at EUR 2 342 (EUR 2 340) million were on the same level as previous year. Sales grew by 3.9% excluding the divestment of Barcelona Mill in Spain in autumn 2015, mainly due to the ramp up of the Beihai consumer board mill and higher sales in Skoghall and Fors mills.

Operational EBIT at EUR 254 (EUR 290) million was 12% down from previous year. Operational EBIT was positively impacted by higher volumes in the European mills and lower variable costs. Operational EBIT was negatively impacted by slightly higher fixed costs and the Beihai consumer board mill ramp up in the Guangxi region, China.

**Key figures**

EUR million	2016	2015	2014
Sales	2 342	2 340	2 297
Operational EBIT	254	290	292
Operational ROOC	12.7%	15.5%	17.8%
Cash flow from operations	453	481	386
Cash flow after investment activities	40	21	60
Average number of employees	4 118	4 239	4 429
Board deliveries, 1 000 t	2 507	2 458	2 434



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### Combining renewable raw materials, personalised printing and a modern way to enjoy tea

Greenspoon is a new concept for single serve tea: a combination of a tea bag and spoon made of paperboard, which can be printed to meet any brand owner's needs. The aim behind this sustainable packaging innovation is to reduce the consumption of separate tea bags, spoons and stirrers – without affecting the appearance, aroma, texture and flavour of the beverage.

The unique application uses Ensocard by Stora Enso, an uncoated bleached board with an appealing, natural surface. The concept is a successful example of co-operation across the value chain: Greenspoon was invented by **Jochen Gabler** and developed in cooperation with the packaging company Edelmann GmbH in Germany.

“The advertising business is always looking for new and sustainable ways to reach potential customers or voters. We believe that Greenspoon will be a particularly effective marketing tool for many brand owners due to the individually printable advertising space on both sides of the spoon,” says Gabler, who has established the company Geschmacksentfaltung GmbH to run and develop the business.

For companies, Greenspoon is a unique promotional item and giveaway as well as a neat and easy way of serving tea at events, meetings and home. Paperboard, ink and filter paper were selected most carefully as they are in direct contact with food and hot water extraction. Geschmacksentfaltung GmbH uses only biodegradable materials tested by independent testing and certification institutes.

“The product has exceeded the expectations of our customers. We are ready to serve private people through our web shop, where you can select your favourite tea flavour, customise your design and place your order easily. No more plastic or wooden spoons and no messy tea bags, just one paperboard spoon with tea full of taste included!”

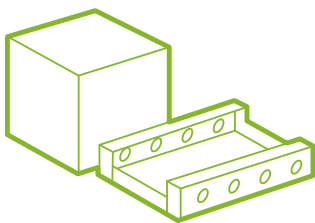
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# Packaging Solutions

The Packaging Solutions division develops fibre-based packaging and operates at every stage of the value chain from recycling, containerboard and kraft-pulp manufacturing to providing corrugated packaging solutions to converters, brand owners and retailers. Key segments are food, beverages, consumer electronics, household and furniture, retail and industrial.



## Offering

- Kraftliner
- SC fluting
- Recycled liner
- Recycled fluting
- Corrugated boxes
- Packaging automation
- Design services
- Technical service

## Advantages

- Access to fibre
- Consumer insight
- Design services
- Know-how in material optimisation
- Integrated supply chains and streams of recycled materials
- Modern technology
- Integrated pulp and energy efficiency
- Sustainability: the reduction of environmental impacts throughout the entire customer supply chain

**Our solutions for packaging serve leading converters, brand owners and retailer customers, helping to optimise performance, reduce total costs and enhance sales.**



- Container board
- Corrugated packaging

Our containerboard mills are located in Finland and Poland and we have converting plants in 10 countries in Europe and Asia.

## Sales by destination

**76%**  
Europe

**14%**  
Asia Pacific

**10%**  
Rest of the world

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**Gilles van Nieuwenhuyzen**  
Executive Vice President,  
Division Packaging Solutions

The billions of online retail transactions involving physical goods all have one thing in common; they need to arrive in a box. Ideally one that is sustainable, user-friendly and innovative. The market is here and it is growing fast. Now it is up to Stora Enso to deliver the package.

**Strategy**

**Opportunities for differentiation within the fragmented customer base**

Packaging Solutions division is driving the containerboard business to its full potential and selectively expanding in corrugated packaging, supporting containerboard. The best opportunities to grow value and volumes are in virgin fibre containerboard, in Eastern European RCP-based containerboard and in integrated corrugated packaging operations. The main operational focus is on succeeding with the kraftliner machine ramp-up at the Varkaus Mill and continuing to increase operational efficiency and improve profitability in all businesses through the recently implemented new operating models.

The customer base is fragmented both in Containerboards and Corrugated Packaging, offering opportunities for differentiation that serves all customers on the best level for their purposes. In Containerboards, the focus is to be a strategic supplier to important converters globally. In Corrugated Packaging, the focus is on building partnership positions with brand owners and retailers in our regional markets.

**Business environment**

**Leading status through vertically integrated supply chains**

A number of important trends present opportunities for building value through packaging. Aging populations, the development of millennials as a more dominant group of consumers and changes in consumer behaviour are contributing to the increased prominence of private labels, intelligent packaging and online retail. Stora Enso's Packaging Solutions division is positioned as the industry thought leader in renewable packaging.

The focus of the division is on manufacturing corrugated packaging and high performance lightweight containerboard, primarily in growth markets.

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**Progress**

Target priority

**Main achievements in 2016**

- Strong top-line growth
- Successful ramp-up of Varkaus conversion from paper to kraftliner production – reaching EBITDA break-even
- Enhancement of customer-centricity
- Higher asset productivity through operational excellence programmes

**Main focus and targets in 2017**

- Safety – aiming at zero accidents
- Continued successful ramp-up of Varkaus containerboard mill operations and sales
- Driving containerboard business to its full potential
- Growing the corrugated business in selected markets
- Further intelligent packaging initiatives
- Efficient execution of the consolidation of corrugated packaging operations in Finland
- Driving more asset productivity

**Success in ramping-up Varkaus supports to drive containerboard business to full potential.**

The division maintains a vertically integrated position in the supply chain, starting from collecting paper for recycling and purchasing virgin fibres to producing novel lightweight containerboards with modern low-cost technology and multiple and versatile corrugated packaging solutions. This approach has helped Packaging Solutions division achieve a leading status in the Nordic, Baltic, Polish and Russian markets. Our main competitors are Smurfit Kappa, Mondi, DS Smith and Billerud Korsnäs.

**Innovation approach**

**A holistic approach to creating value for customers**

The division's innovations go beyond smart design and structure solutions. Packaging Solutions develops ways to enhance the whole supply chain – lowering total costs, reducing waste, improving shop-floor efficiency and building stronger brands with renewable, recyclable and biodegradable packaging. The Innovation Centre for Packaging in Helsinki continues to play an important role as a meeting hub where new innovations and product concepts are generated with customers.

Packaging Solutions works on multiple innovation levels, including technology, branded concept and customer-driven innovations to increase differentiation and value to our customers. Within intelligent packaging, Packaging Solutions has selected three target application areas: supply chain traceability, brand protection and authentication, and consumer engagement.

**Transformation in action**

**Focusing on future growth**

The converted containerboard machine at the Varkaus Mill in Finland was officially inaugurated in April. Kraftliner production began in October 2015 and the market

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- 01** Along with high-class packaging solutions, Stora Enso creates value to customers with advice on material optimisation, packaging automation and processes.
- 02** Retail businesses are seeking ways to reduce waste and improve shop floor efficiency with shelf-ready packaging.
- 03** Customers are offered packaging design support in Stora Enso's ten DesignStudios worldwide.
- 04** Increasing online shopping raises the need for cost efficient logistics through weight reduction, fit-for-purpose packages and improved stacking and box filling.



In 2025, millennials born between 1980 and 2000 will represent 47% of the workforce. They are environmentally conscious and want brands which convey their values. For millennials, sustainable packaging is important throughout the value chain, from primary packaging to online delivery. They consider fibre-based packaging materials the most sustainable packaging material choice, and to guide their purchase decisions, they look for help from retailers and brand owners. 80% would prefer sustainable packaging to be clearly labelled as ecological.

**Stora Enso Viewpoint™**

acceptance for the quality of brown kraftliner has been good from the beginning. The mill reached EBITDA break-even during the third quarter of 2016. Full production is expected in the second half of 2017.

Stora Enso announced an investment of EUR 6.6 million to increase competitiveness in the Swedish corrugated packaging business. The investment encompasses a new corrugated cutting machine with high-quality printing in the Jönköping Mill and a smaller upgrade of the cutting system in the Skene Mill.


Stora Enso is also consolidating the manufacturing of corrugated packaging in Finland. The objective is to improve profitability and competitiveness by creating a centre of excellence for corrugated packaging in Lahti. As part of the consolidation, Stora Enso will invest approximately EUR 19 million in new machinery and supporting infrastructure in Lahti.

During 2016 Stora Enso started to evaluate the possible expansion of Ostrołęka Mill containerboard production in Poland. In early 2017 the feasibility study is at final stage.

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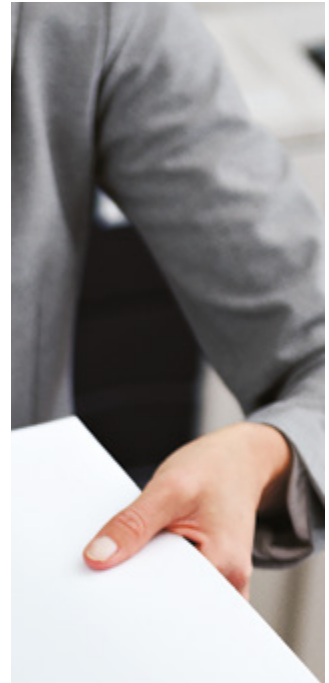
**Eco-packaging for the fish industry**

The EcoFishBox™ was developed at Stora Enso's DesignStudio for packing fresh fish for shipment. Delivered as a flat corrugated board sheet, the waterproof and leak tight EcoFishBox is both cost competitive and more sustainable than the traditional polystyrene fish box.

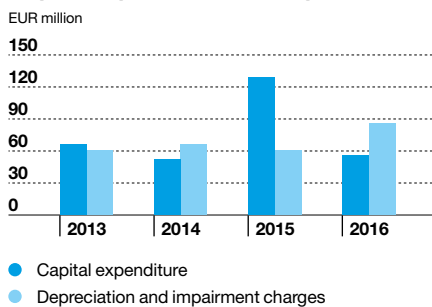
## Financial performance: Packaging Solutions

# 7.6%

**Operational ROOC  
(Target: >20%)**



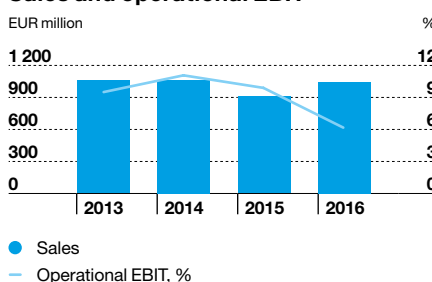
### Capital expenditure and depreciation



Packaging Solutions division sales were EUR 1 044 (EUR 913) million, up 14% compared to 2015. The increase is mainly due to the ramp up of the Varkaus kraftliner mill. Sales growth excluding Varkaus would have been 3%.

Operational EBIT at EUR 64 (EUR 90) million was 29% down from the previous year mainly due to the ramp up of the Varkaus kraftliner mill and the challenges with the corrugated China operations. Operational EBIT would have grown by EUR 3 million excluding Varkaus kraftliner mill and corrugated China operations.

### Sales and operational EBIT



### Key figures

EUR million	2016	2015	2014
Sales	1 044	913	1 065
Operational EBIT	64	90	118
Operational ROOC	7.6%	11.1%	14.1%
Cash flow from operations	132	138	182
Cash flow after investment activities	63	20	128
Average number of employees	7 372	7 141	8 227
Board deliveries (external), 1 000 t	869	587	724
Corrugated packaging deliveries, million m <sup>2</sup>	1 082	1 112	1 104

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### Shedding light on cardboard

AndBros is a Helsinki-based design company. Since its founding in 2011, the company has become well known for its playful design, especially the award-winning Cardboard Light Collection of cool lamp shades.

Ecological design is an integral part of what they do. Creatively, they also explore the possibilities of various materials. "In our lighting range, it is the design that first grabs people's attention. Only then do they notice that – Wow! – they are actually made of cardboard," says **Antti-Jussi Silvennoinen** from AndBros.

Stora Enso provides the corrugated cardboard sheets used in making the Cardboard Light lamp shades. The cardboard has a high quality and durability that makes it ideal for lamp shades. For the finished product, the material is laser cut and the coloured cardboard and transparent matt veneer added.

However, the outer package is as creatively designed as the lamp itself. Stora Enso's DesignStudio worked with AndBros to devise an outer package that supports the product through the logistics chain and ensures excellent product protection. Additionally, the outer package is produced from corrugated cardboard with "e-wave", which gives the consumer a sense of ecological premium.

"The outer packaging is a big part of the product – minimising the size and bundling the parts," says Silvennoinen. "Most importantly, it should reflect what the product stands for."


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# Biomaterials

The Biomaterials division offers a wide variety of pulp grades to meet the demands of paper, board and tissue producers. We are maximising the business potential of the by-products extracted in our process, such as tall-oil and turpentine from biomass. Based on our strong innovation approach, all fractions of biomass such as sugars and lignin hold substantial potential for use in various applications.



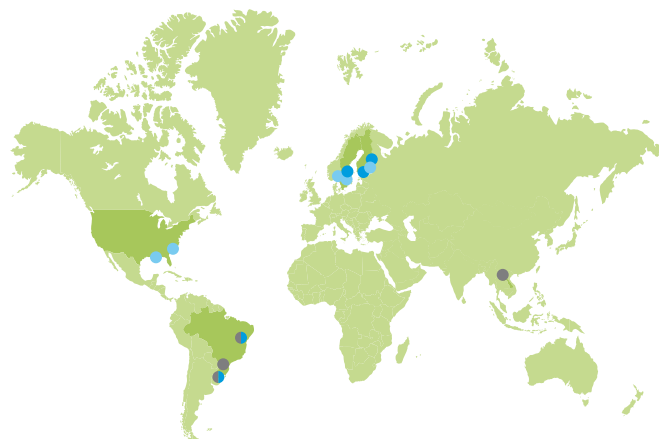
**Offering**

- Bleached Hardwood pulp
- Bleached Softwood pulp
- Unbleached pulp
- Fluff
- Dissolving pulp
- Tall oil
- Turpentine
- Lignin
- Xylose (2017)

**Advantages**

- Access to biomass
- Expertise in forests and plantations
- Largest portfolio of pulp grades
- Right pulp mix for customer needs
- New Innovation Centre
- Investments at Montes del Plata, Sunila, Skutskär, Danville and Raceland for current and future applications
- Ability to trace wood to its origins

**Biomaterials is developing new, innovative ways to maximise the value extractable from wood, as well as other kinds of non-food-competing biomasses.**



- Stora Enso Biomaterials pulp mills
- R&D facilities and/or pilot plants
- Plantations

The division has a global presence with operations in Brazil, Finland, Laos, Sweden, Uruguay and the United States.

**Sales by destination**





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**Juan Carlos Bueno**  
**Executive Vice President,**  
**Division Biomaterials**

In the Biomaterials division, our mission is to find new, innovative ways to utilise our valuable raw material – wood – and simultaneously run the existing pulp and by-products businesses as efficiently as possible and to do so according to the needs and wishes of our customers.



**Strategy**

**Strong position in existing pulp portfolio and new business platforms**

The division aims at profitable growth by strengthening its position in selected pulp grades and by building a new business platform, which is based on innovative solutions produced out of renewable materials: wood and agricultural by-products. Stora Enso differentiates from other pulp suppliers through its extensive product portfolio and stable quality, which is supported by our strong technical customer service. The aim is to increase the share of specialised pulp, such as fluff and dissolving pulp, in our Nordic mills.

Regarding the new business platform, our focus will be to continue building our strong lignin business, further develop extraction and separation technology, create business based on extracted sugars and develop new applications based on pulp. In lignin, the short-term focus is on phenol replacement, which offers great potential and attractive margins. In the longer term the aim is to explore potential applications in other industries, as well. On the sugar side, Biomaterials has started producing xylose in the Raceland facility. This xylose will be sold to xylitol producers to be used in dental care and food applications.

**Business environment**

**Arising opportunities in specialised pulp**

Fluff and dissolving pulp demand is expected to grow in the coming years due to a growing population, increasing disposable income, changes in consumer behaviour and an aging population. The other growing segment in pulp is Bleached Eucalyptus Kraft Pulp (BEKP). Its demand growth is linked to growth in China and to the growth in tissue and specialty paper production as well as changes in consumer behaviour in developing countries.

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**Progress**

Target  
priority

**Main achievements in 2016**

- Signing a Joint Development Agreement with Rennovia to co-operate on bio-based chemical development
- Getting the Innovation Centre up to full speed and proceeding in our four main innovation areas
- Decision on increasing fluff capacity in the Skutskär Mill in Sweden to meet growing demand in the hygiene market
- Start-up of Raceland bagasse-to-xylose demonstration plant
- Commercialisation of lignin

**Main focus and targets in 2017**

- Safety, aiming towards zero accidents
- Stabilising xylose production and commercialising xylose
- Transforming a softwood paper pulp line in Skutskär Mill in Sweden into fluff pulp

**Fluff pulp line at the Skutskär Mill increases the share of specialised pulp**

Other pulp makers in the markets include, for example, UPM, Metsä Fibre, Södra, Fibria (our partner in Veracel), Eldorado, CMPC, Arauco (our partner in Montes del Plata) and Suzano. In terms of new potential markets, the Biomaterials division will face competition not only from the traditional pulp makers mentioned above, but also from biochemical companies as well as the chemical industry.

**Innovation approach**

**Development in the bio-plastics, textile and non-woven business segments**

In the area of innovation, Biomaterials division is developing new offerings based on non-food competing biomasses. Complementary technologies are being scouted to speed up the innovation process to new products. Also the potential for bio-plastics is being explored – an area where the division is working closely together with Stora Enso's packaging divisions.

In pulp applications, we are focusing on developing technologies for the textile and non-woven business segments, in which there is an increasing need for new renewable and compostable solutions, for example in wet wipes.

**Transformation in action**

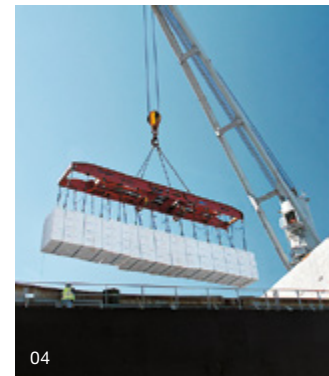
**Joint development and investments**

The commercialisation of lignin from the integrated lignin extraction plant at Sunila Mill in Finland went ahead during the year and the first customer agreement has been signed. In terms of potential markets, refined lignin can be used, for example, in the production of adhesives and resins, coatings and specialty chemicals.

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- 01** A good reputation and a high standard for sustainability remain priorities, especially in the tissue and hygiene segments where the requirements come from end-consumers.
- 02** Sugars and lignin hold potential for use in applications in the specialty chemical, construction, personal care and food industries.
- 03** The innovation work in Biomaterials focuses on exploring new opportunities of wood and other kind of lignocellulosic biomasses.
- 04** RFID tracking technology within pulp bales is being developed to support supply chain efficiency and to serve our customers better in the future.

**“**



I was hired by Stora Enso via our local employment office at Älvkarleby, close to the Skutskär Mill in Sweden. After my internship I worked my way up from being a summer worker to gaining a permanent position as an operator. With the high youth unemployment rate we have here, I think Stora Enso is doing the right thing by extending a helping hand to young people, so that they have the opportunity to work and learn new skills.

**Christoffer Makaroff**  
Operator at Skutskär Mill

The start-up process at the bagasse-to-xylose demonstration plant in Raceland, USA, was initiated in 2016 and the first batches of xylose are expected to be delivered in 2017. The demonstration plant is the first of its kind and will utilise sugar cane bagasse, which is a waste residue from the raw sugar manufacturing process.

To meet the growing demand in the hygiene market, Stora Enso announced an investment of EUR 26.5 million at Skutskär Mill in Sweden to increase its fluff pulp capacity by approximately 160 000 tonnes annually. Both hygiene and non-woven products are a fast-growing market.

To strengthen our bio-based chemicals development, Stora Enso signed a joint technology development agreement with specialty chemicals company Rennovia Inc in May. Companies will cooperate to develop processes for bio-based chemicals and the joint development will give Stora Enso a solid platform to build on when constructing a portfolio of sustainable bio-based solutions.

To further enhance the reliability and traceability of our pulp deliveries, Stora Enso is working with key customers to improve service and to decrease costs in the overall logistics chain. One example is a project with a key customer in inventory management, where we take care of the customer's pulp warehouse to guarantee the right amount of pulp for their production each day. Another development area is implementing RFID technology, where the pulp bales are tagged to enable the constant tracking of the delivery from our mill all the way to customer's production.

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**Full variety of pulp grades**

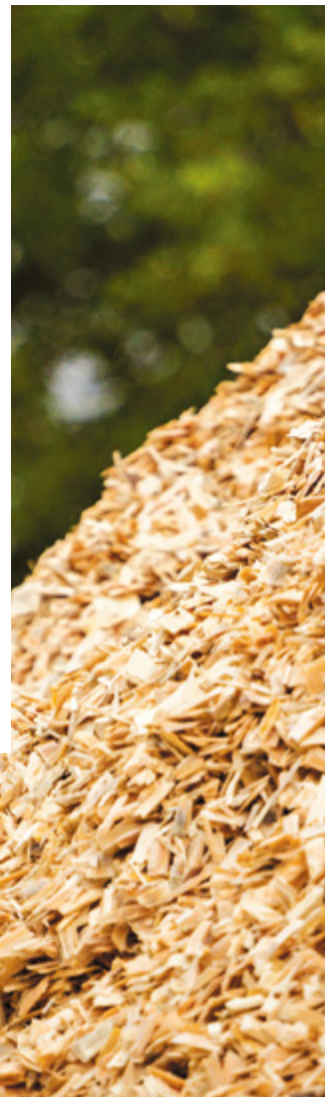
Pulp is an excellent raw material: it is sustainably made from renewable resources, and has many different end uses. Our offering includes fluff for hygiene applications and dissolving pulp for the textile and food industry as well as paper pulp for tissue, paper and board.



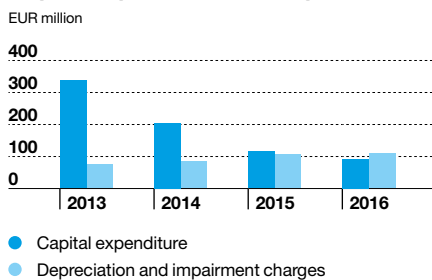
Financial performance:  
Biomaterials

**8.5%**

Operational ROOC  
(Target: >15%)



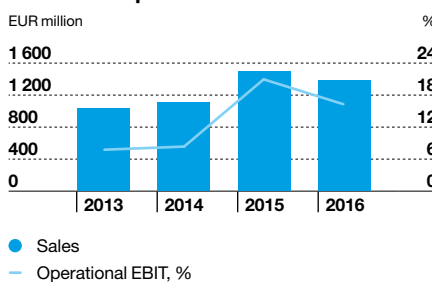
**Capital expenditure and depreciation**



Biomaterials division sales were EUR 1 376 (EUR 1 484) million, down 7% on 2015 due to significantly lower hardwood pulp sales prices and also lower softwood pulp prices.

Operational EBIT at EUR 224 (EUR 313) million was 28% down from previous year mainly due to lower hardwood and softwood pulp sales prices in local currencies and higher fixed costs due to investments into innovation activities. Foreign exchange rates had a positive impact on operational EBIT.

**Sales and operational EBIT**



**Key figures**

EUR million	2016	2015	2014
Sales	1 376	1 484	1 104
Operational EBIT	224	313	89
Operational ROOC	8.5%	12.4%	3.9%
Cash flow from operations	419	385	136
Cash flow after investment activities	278	187	-108
Average number of employees	1 797	1 655	1 569
Pulp deliveries, 1 000 t	2 508	2 499	2 076

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### Design meets sustainability

The products of Scandinavian fashion brand Filippa K represent long lasting simplicity; clothes that last long time. To support their ambition for sustainable design, Filippa K has worked together with Stora Enso to create deeper understanding of fibre-based textiles value chains.

“We are transforming our business to circular economy, using only renewable resources. Our collaboration with Stora Enso has been about mapping the different steps from raw material to ready clothes”, says **Elin Larsson**, Sustainability Director of Filippa K. “We are exploring together how the whole textile value chain can be sustainable.”

With the concept of circular design Filippa K is striving to minimise negative environmental and social impact.

“Our plan is to make our entire collection sustainable by 2030. As an important part of this, we are aiming to use fully traceable and sustainable viscose as one of our materials.”

Stora Enso is pursuing to increase the demand for dissolving pulp as sustainable raw material in the textile industry. The collaboration with Filippa K supports this objective, ensuring that cellulose-based fibres are truly sustainable alternative.


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# Wood Products

The Wood Products division aims to be the leading building solutions provider in wood-based construction and a leader in innovative wood-based solutions. The product range covers massive wood elements and wood components for urban construction. It also covers a variety of sawn timber goods and pellets for sustainable heating.



**Offering**

- Cross laminated timber (CLT)
- Laminated veneer lumber (LVL)
- Construction Beams; Post and beam, KVH
- Industrial Components
- Classic sawn
- Pellets
- Building Components
- Building Systems

**Advantages**

- Broad and versatile product portfolio
- Own global sales network and distribution to serve customers
- Customer service development
- Broad operational platform in more than 20 sites in 10 countries
- Industry leader in digitalised business processes
- Effective supply chain from forest to customer
- Sustainability throughout the supply chain

**Wood Products' solutions are geared to address high demands with regard to safety, quality, design and sustainability.**



● Production units

The division has over 20 production units in Europe and serves customers globally.

**Sales by destination**



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**Jari Suominen**  
Executive Vice President,  
Division Wood Products

Wood is an unbeatable construction material for the future because wooden buildings act as carbon storages, binding carbon dioxide. With our new innovations in building components and systems, we can build houses up to 12 floors high just with wood.



**Strategy**

**Classic sawn and higher value-added products**

Wood Products division aims to be the leading provider of innovative wood-based solutions. The strategy is based on cost competitive classic sawn and the integrated production of higher value-added products. The aim is to grow in businesses where the division has a sustainable and strong market position, higher profitability and room for differentiation.

New innovative solutions in massive wooden building components have allowed wood to enter the market for new construction end uses that was traditionally dominated by concrete and steel. By taking an active role in developing the ecosystem, the Wood Products division aims to capture market share from the competing materials. The Building Solutions unit was established to support sales by showing how to use all our wooden products and to promote wood as a construction material.

**Business environment**

**Fragmented market structure provides opportunities**

Wood Products division is well positioned to capture the growth opportunity created by current mega trends such as urbanisation, sustainability awareness and digitalisation. The fragmented structure of the market provides a unique opportunity for Stora Enso as a strong player to position itself against competitors. The relatively low level of technical development within the industry provides opportunities for differentiation for larger producers as well as the ability to invest in long-term developments, such as digitalisation.

Wood Products division's global sales network and a broad product portfolio create a competitive edge in terms of global know-how. In addition, we differentiate by offering value to our customers through innovative service offerings setting up integrated distribution centres, offering Building Systems and Building Components as well as eBusiness solutions, supporting sales growth in all product segments.

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Progress

Target priority

**Main achievements in 2016**

- Successful completion and startup of the LVL mill in Varkaus
- Building Systems by Stora Enso launched in six selected markets
- Added value for customers through sustainability in certified products and operations
- Grand opening of the modernised Murów Mill
- Strong growth in Building Components and Systems

**Main focus and targets in 2017**

- Safety, aiming at zero accidents
- Differentiation through services
- Harvest the potential of existing assets
- Improve the supply chain from forest to customer through digitalisation
- Maximise log profitability

**Services such as Building Systems and eBusiness solutions offer added value to our customers.**

**Innovation approach**

**Continuing to boost digitalisation for future growth**

Wood Products division continues to develop digitalised business processes and to go from being an industry leader to becoming world-class in digitalisation among all industries. Digitalisation is an important tool for optimising processes and realising operational efficiency throughout the value chain, driving sales by monitoring consumer behaviour and trends, and developing new product and service offerings such as the design software Calculatis and the online ordering system MySupply.

**Transformation in action**

**Enhancing LVL, CLT and classic sawn production**

Production started at Stora Enso's new laminated veneer lumber (LVL) line at Varkaus Mill in June. The new LVL line will meet the growing need for sustainable, high quality engineered, wooden building components.

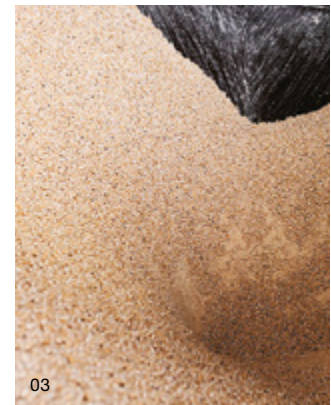
Stora Enso divested its Hartola pre-fabricated wooden housing modules unit in Finland and entered into a partnership with the buyer, Pyhännän Rakennustuote Oy. Stora Enso will continue providing the buyer with massive wooden construction materials from classic sawn goods to elements such as cross laminated timber (CLT) and LVL.



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- 03
- 01 The new LVL line in Varkaus Mill with yearly capacity around 100 000 m<sup>3</sup> further enhances Stora Enso's position as a global provider of high quality engineered wooden elements.
- 02 Wooden multi-storey houses constructed with Stora Enso's modular elements in Helsinki, Finland, won a Nordic housing competition organised by Housing Nordic.
- 03 Näpi, Imavere and Nebolchi Mills were the first Stora Enso mills to be granted the Sustainable Biomass Partnership (SBP) certificates for pellet production.



With the launch of Building Systems by Stora Enso, I am encouraged that a major company has made such a large commitment and is sharing this tool and detailed specifications. In wood construction, there is clearly a need to open up the market. The general public will then become more familiar with wood, thus designers and builders will learn how to use it. This is an important step forward for the industry.

**Santeri Lipasti**  
Architect,  
Huttunen-Lipasti-Pakkanen Ltd

Stora Enso started a feasibility study to examine the building of a CLT production unit in connection with Gruvön Mill in Sweden. The expansion would add a total annual capacity of approximately 75 000 m<sup>3</sup> of CLT, which would support our ambition to capture market share from non-renewable materials in the construction sector. The feasibility study will be finalised during spring 2017.

In spring 2016, Stora Enso launched Building Systems by Stora Enso in Central Europe – and in the Nordic region in the second half of 2016. For the first time in the wood industry there is a comprehensive architectural guideline and building systems descriptions that aim to increase the use of wood as a construction material. The building system allows the user to understand how to build with wood, to find options that are feasible for wooden construction, and to receive support throughout the construction.

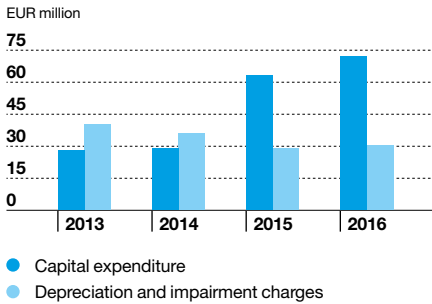
The modernised sawmill in Murów, Poland was inaugurated in September. It enables Wood Products to meet growing urban construction needs and better serve customers in Central and Eastern European markets and to strengthen our offering to customers in selected global markets. The modernisation increased the sawmill's yearly capacity from 70 000 m<sup>3</sup> to 400 000 m<sup>3</sup>.

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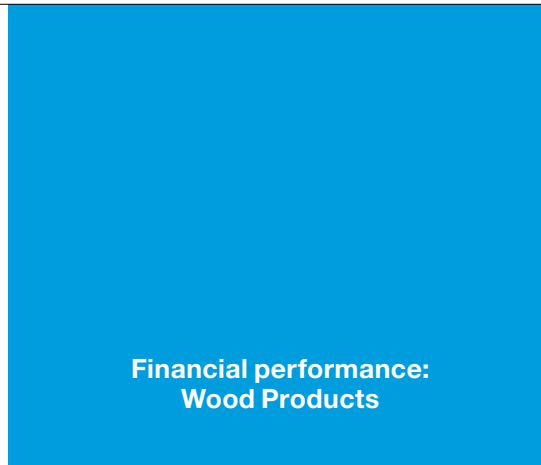
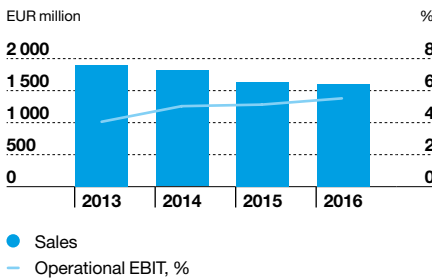
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**Capital expenditure and depreciation**

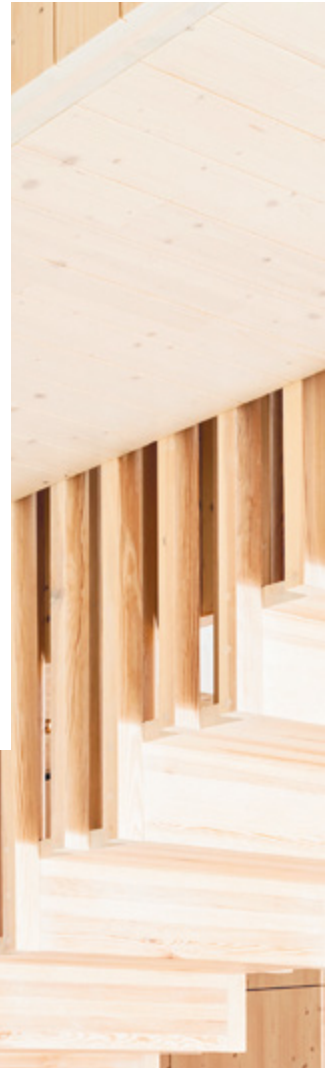


**Sales and operational EBIT**



**16.8%**

**Operational ROOC  
(Target: >18%)**



**PEFC® certified CLT by Stora Enso**

Mäihä house in Seinäjoki, Finland, was granted the first project certificate in the Nordic countries by PEFC, which is the world's largest forest and wood product certification system. Mäihä's CLT modules are built with 990 m³ of wood, including the frame, exterior claddings, other structures, built-in furniture and interiors.



Wood Products division sales were EUR 1 595 (EUR 1 603) million, down EUR 8 million from 2015, mainly due to conscious decision to lower the trading business volumes. The Building components sales has increased by 15%.

Operational EBIT at EUR 88 (EUR 81) million was 9% up from previous year. Operational EBIT was positively impacted by higher volumes of own products and lower volumes from the low margin trading business. Operational EBIT was negatively impacted by higher fixed costs related to the ramp up of new investments mainly at Murów sawmill and Varkaus LVL mill.

**Key figures**

EUR million	2016	2015	2014
Sales	1 595	1 603	1 779
Operational EBIT	88	81	89
Operational ROOC	16.8%	15.7%	17.3%
Cash flow from operations	142	118	86
Cash flow after investment activities	75	59	58
Average number of employees	3 937	3 824	4 046
Wood products deliveries, 1 000 m³	4 643	4 334	4 493

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### 24/7 with MySupply

Developed by Stora Enso, MySupply is an online ordering system for wood products providing 'live' access to product availability, trading and shipping information as well as a load optimiser. The aim is to streamline the ordering process, save time and make doing business easier for customers and the Stora Enso sales team.

"MySupply makes it possible to place orders anytime and anywhere, with the advantage of seeing the stock situation live," says **Greg Pickett**, UK Sales Manager. "Ease of navigation and automation enables faster ordering times and enhanced account information. The ability to do this 'on-the-go' is a real benefit."

Accessible by computer, tablet or mobile phone, customers receive an order confirmation and package list instantly, confirming exactly which packs will be delivered and the total value of their order. The load optimiser feature shows how an order of timber packs, for example, fits optimally into a 3D truck in one or multiple loads as needed.

**Duncan Rossall**, Commercial Director at GE Robinson in Salford, UK, is extremely impressed with MySupply. "We appreciate the immediate information on stock and the tool is very easy to use and understand. It has helped to make our operation more efficient. The 'virtual truck' is brilliant."

MySupply was piloted in Australia and an advanced version launched in the UK. Within only three months, over 50% of orders in the UK were being processed using MySupply. The plan is to expand the service into other markets.

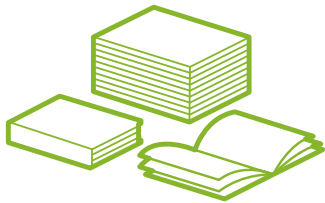
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# Paper

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



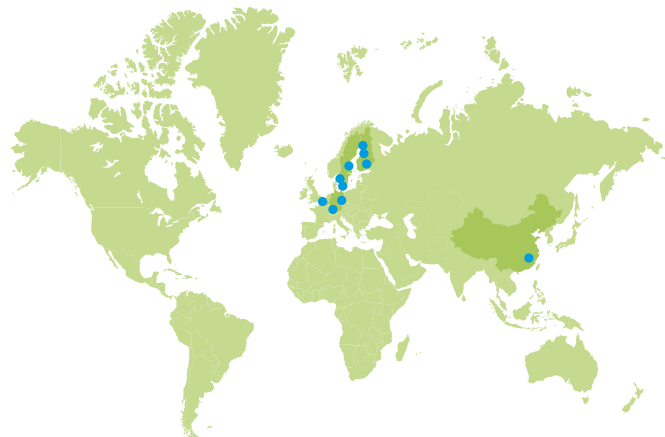
**Offering**

- Newsprint and book papers
- Uncoated magazine papers
- Coated papers
- Office papers
- Technical customer service and support services
- Supply chain and sustainability expertise
- E-business solutions

**Advantages**

- Competitive assets and efficient supply chain
- Access to virgin and recycled fibre
- Integrated pulp, well-invested in energy
- Long-term customer relationships
- Own sales network
- Innovation beyond products
- 90% of the paper brands awarded ecolabels for environmental excellence

**Our ambition is to be best in class in paper – better than the competition in operational excellence, understanding customer needs and profitability.**



● Paper production units

Stora Enso has nine paper mills with 19 production lines in Europe and operates one paper machine in China.



**Sales by destination**



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**Kati ter Horst**  
 Executive Vice President  
 Division Paper

Paper continues to be an attractive medium for communication, learning and creative expression. We believe in the power of paper and the coexistence of print and digital communication. We strive to ensure that we can help our customers with their business challenges and opportunities.



**Strategy**

**Operational efficiency and close co-operation with key customers**

Paper division's ambition is to be best in class in paper. This means being better than the competition in operational excellence, meeting customer needs and profitability. As European paper demand declines and competition intensifies, the Paper division is working closely with key customers and enhancing its competitiveness by lowering costs and improving efficiency and processes throughout its operations.

Since the borders between the end uses of the different paper grades are becoming more blurred, product segment strategies and offerings are regularly revised to maximise profitability and to ensure that we meet market needs. To ensure delivery reliability and reduced lead times, Paper division is implementing new supply chain management processes. E-commerce and other new services improve ways of working create new business models. The division also aims to gain new customers and business by offering these differentiating services and by strengthening sales-related processes and competencies.

**Business environment**

**Flyers and folders highly effective in retail and online commerce**

The megatrend of digitalisation is driving structural change in the marketplace and affecting the demand for paper. The increased use of digital media has had a negative impact, especially on newsprint demand. New devices such as tablets also affect the demand for printed magazines and books. However, print and digital coexist and support each other. Advertisers see flyers and folders as a highly effective means for getting consumers to brick-and-mortar retail or online stores. We also see online retailers publishing printed magazines and establishing physical store locations to improve customer experience.

Copy paper is performing relatively well as people continue to print in offices and at home. Developments in digital technologies are also opening up the potential for new cost efficient print processes and on-demand production processes.

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- 01** Stora Enso is continuously striving to improve operational efficiency and performance.
- 02** More than 90% of our paper brands have been awarded one or more Ecolabels for their environmental excellence. Production of MultiCopy Original involves zero CO<sub>2</sub> emissions from fossil fuels.
- 03** Our product range covers papers made from both recycled and fresh wood fibre: uncoated magazine, newspaper and book papers as well as coated paper and office products.

Progress

Target priority

**Main achievements in 2016**

- Clearly improved profitability due to lower variable and fixed costs and stable sales excluding the structural changes
- Divestment of non-core assets
- Strong cash flow, better productivity
- Successful office paper optimisation at the Veitsiluoto and Nymölla mills after Varkaus paper machine conversion to packaging grades

**Main focus and targets in 2017**

- Safety, aiming at zero accidents
- Increase competitiveness through fit-for-purpose product offering, tight cost management and high capacity utilisation
- Develop supply chain efficiency through digitalisation and automation
- Further develop new business models and service offerings
- Making sustainability a competitive advantage
- Operational excellence

**Increase competitiveness through operational excellence and fit-for-purpose products and services**

**Innovation approach**

**Toolbox to coach structured innovation work at mills**

In terms of innovation, Paper division has its main emphasis on new or improved products, business models and services, and operational excellence. Product development focuses on improving product quality while keeping production costs at an attractive level. Opportunities in lower energy consumption and productivity increases in operations are also being explored – as is the creating and promoting of an innovation culture that adds structure to innovation processes and helps in the coaching of innovation work at mills.

Work will also continue to improve Paper division's efficiency, to keep operating rates as high as is viable and to streamline operations. The development of a 'Model Mill' concept has begun with the goal of lifting our best mills and their processes to higher efficiency levels.

**Transformation in action**

**Focus on core assets after divestments**

During 2016 Stora Enso continued to divest its non-core assets. The divestment of the Arapoti magazine paper mill in Brazil to Papeles Bio Bio, a Chilean paper producer was completed in March.

The Kabel coated mechanical paper mill in Germany was divested to Hagen-Kabel Pulp & Paper GmbH. Stora Enso will continue to produce coated mechanical paper under the NovaPress brand at its Veitsiluoto Mill in Finland.

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“

 Thanks to the renewable energy pipeline opened between the manufacturing sites of Volvo Cars and Stora Enso Ghent, Belgium, we are now able to lower our CO<sub>2</sub> emissions and energy costs by using substantially lower amounts of fossil fuels for heating. This collaboration supports our efforts to improve our internal efficiency and promote sustainability, both in the cars we make and in our production processes.

**Eric Van Landeghem**  
**Managing Director, Volvo Car Gent**

The Suzhou Mill site in China was divested to the local government of the Suzhou National New & Hi-tech Industrial Development Area, which plans to convert the mill site from an industrial use to non-industrial use. The paper production stopped in June.

To reduce waste water emissions and to improve the profitability and energy-efficiency of Stora Enso's Veitsiluoto pulp mill, an investment of EUR 13 million was announced in August. The investment will also enhance pulp quality and production stability.

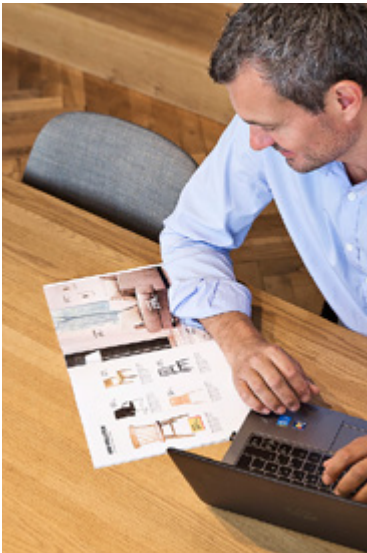
In Ghent, Belgium, Stora Enso and Volvo Cars opened a new hot water pipeline between their manufacturing sites. The four-kilometre pipeline takes hot water that is heated using renewable energy from Stora Enso's Langerbrugge paper mill to the Volvo plant, where it is used to heat buildings and paint booths. This has resulted in a reduction of 40% in annual CO<sub>2</sub> emissions at the Volvo plant.

Paper division has restructured its operations during recent years and Stora Enso is reviewing how to create the best conditions for Paper so that it can compete while facing increasing cost pressures and declining market demand. Therefore, an internal project was initiated to plan for the most efficient way to manage the paper business in the future.

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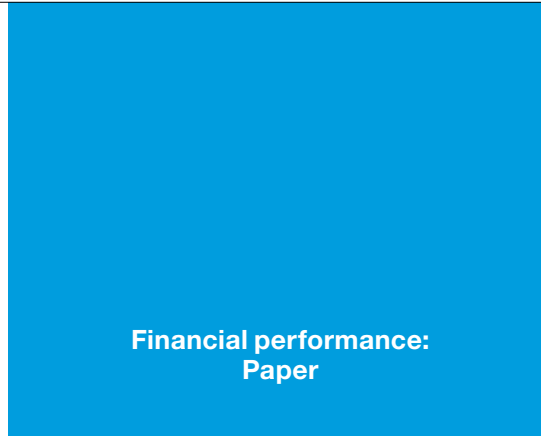
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**Launched in 2016:  
Prima Super G**

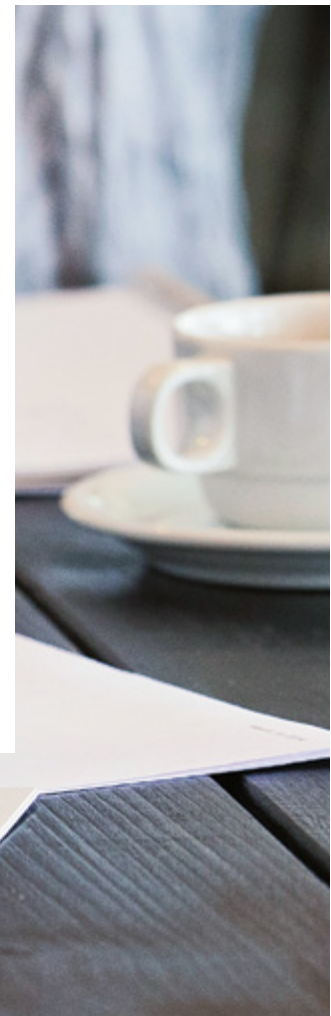
The new paper grade Prima Super G is a light-weight uncoated paper for heatset printing. The glossy and smooth Prima Super G is produced at Stora Enso's Kvarnsveden Mill and it is ideal for flyers, inserts, brochures and magazines.



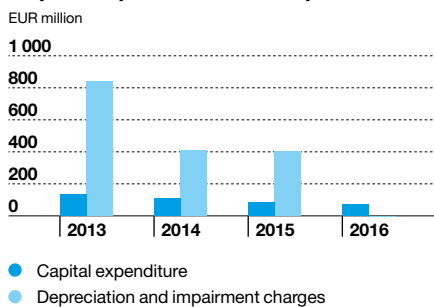
**Financial performance:  
Paper**

**8.5%**

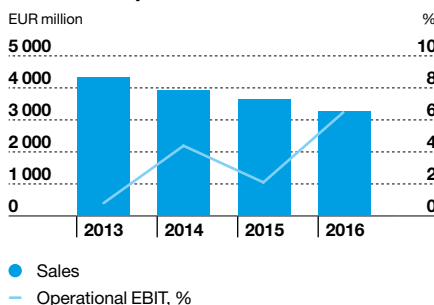
**Cash flow after investing  
activities to sales  
(Target: >7%)**



**Capital expenditure and depreciation**



**Sales and operational EBIT**



Paper division sales were EUR 3 245 (EUR 3 630) million, down 11% from 2015 due to restructuring and disposals. Stora Enso divested the Arapoti Paper Mill in Brazil in late 2015 and the divestment was completed in March 2016. Divestment of the Suzhou Mill site in China was announced and paper production ceased in June 2016. Divestment of the Kabel coated magazine paper mill in Germany was completed in September 2016. Paper production ended in August 2015 at the Varkaus office paper mill which was converted into kraftliner mill.

Operational EBIT at EUR 211 (EUR 77) million was 174% up from 2015 due to lower variable costs and tight fixed costs management. The foreign exchange rate impact including the hedging result was positive.

**Key figures**

EUR million	2016	2015	2014
Sales	3 245	3 630	3 912
Operational EBIT	211	77	172
Operational ROOC	19.4%	5.5%	9.4%
Cash flow from operations	351	286	354
Cash flow after investment activities	277	201	243
Cash flow after investment activities to sales	8.5%	5.5%	6.2%
Average number of employees	5 786	6 810	7 700
Paper deliveries, 1 000 t	5 141	5 778	6 006



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### Power of print in retail

METRO GROUP, based in Düsseldorf, is a leading international wholesale and retail group with some 220 000 employees worldwide. The operating business comprises METRO/MAKRO Cash & Carry, an international leader in the self-service wholesale trade; Media Markt and Saturn, the European market leader in consumer electronics retailing; and Real hypermarkets.

“Every year 144 billion pages of our advertising materials in A4 format are produced worldwide using 200 000 tonnes of paper supplied by our central paper sourcing function”, says **Heidi Stockum**, Division Manager Strategic Paper Sourcing, METRO GROUP Advertising. “Stora Enso’s customer-focus, quality of paper products, delivery accuracy and sustainability efforts have been the key to our successful long-term business partnership.”

METRO GROUP Advertising serves METRO GROUP internally in 28 countries as well as external customers along the value chain for the production and distribution of advertising products in both, physical and also digital formats.

“Resource and climate protection are high on our agenda – and on that of our customers”, says Stockum. “This starts from our paper supply – from recycling processes to global forestry certificates. Our customers benefit from our comprehensive expertise to achieve their climate protection targets and consistently reduce their carbon footprint.”

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# People and leadership

As Stora Enso becomes an increasingly global company, winning culture is driven by motivated employees and the right organisation, honouring the company's purpose "Do Good for the People and the Planet" and values "Lead" and "Do What's Right."

Commitment to leadership as the strongest driver of performance and winning culture is at the core of Stora Enso's People Strategy, which additionally focuses on workforce planning and employer branding, alignment and engagement, HR Services and occupational health and safety. Investments in leadership centre on the Leadership Themes: Customer Needs, Business Acumen, People Management, Inspire & Motivate and Do What's Right.

## Programmes and tools to support growth

Stora Enso has completed several actions to drive progress towards a winning culture. Investments in leadership allow every manager to undertake a structured programme, Lead through People, to practice individual leadership and manage high performing teams. Tools such as 360 degree coaching and development centres allow managers and participants to improve their leadership and develop in their professional role.

To support the transformation of the company, Stora Enso has developed change agents in the Pathfinders, Pathbuilders and Pathbreakers programmes. In the programmes, diverse teams have focused on solving real business cases for the executive Group Leadership Team. In the GROW Global Trainee Programme, young talents have been enabled to perform and learn while completing business projects. The Commercial Excellence Programme focuses on improving the value creation for customers by building capabilities in value propositions, sales management and sales leadership.

Along with leadership, safety, business ethics and sustainability remain priorities. Our employees are trained in the Code of

Conduct and to further strengthen our focus on Do what's right, we have launched an Ethics Ambassador Programme and Ethical Spotlights.

More information on these priorities can be found in the Sustainability Report.

## Measuring progress through the global employee survey – Your Voice

Stora Enso conducts an annual global employee survey (Your Voice) for all employees, for which the response rate in 2016 was 90%. The survey is both a tool to follow the progress on areas impacting our ability to deliver our strategic agenda, hence steering activities and priorities, as well as supporting managers and teams to continuously improve their way of working.

All main indices are showing a positive trend in 2016 and the data demonstrates how the quality of leadership impacts areas such as engagement and team efficiency. In addition to the positive trend, a key finding in the survey is a strong correlation between actively working with the result and an improved working climate.

### Investing in leadership

- 5 000 participants in structured leadership programme *Lead through People*
- 1 900 leaders with 360 degree leadership coaching
- 141 change agents in *Pathfinders, -builders and -breakers* programmes
- 48 graduated *GROW* Trainees



**Malin Bendz**  
Executive Vice President  
Human Resources

By investing in leadership, we are creating the engagement we need as an organisation to perform and take the transformation forward. Reaching our target of a Leadership Index of 80 is a strong signal that we are on the right track.



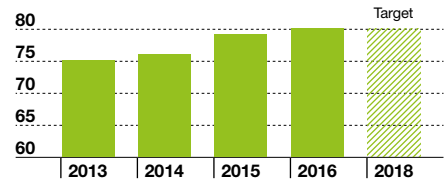
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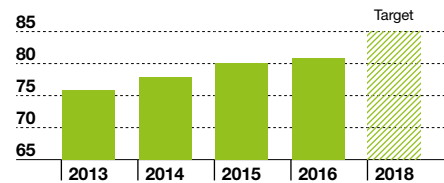


### Leadership



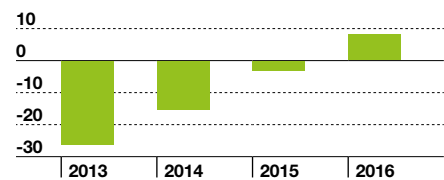
Leadership Index is measured annually in Stora Enso's Your Voice employee survey, and consists of numerical answers to 16 questions related to the respondent's view of the direct manager.

### Engagement



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

### Employee Net Promoter Score



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



I feel privileged to be a Pathbreaker. Our visit into the start-up scene in Silicon Valley, USA and the cross-divisional teamwork add value during and after the programme. We have gained invaluable insights into presenting our ideas. Start-ups need courage and speed – and so does Stora Enso.

**Mari Tarvainen**  
**SVP Market Services and Supply Chain, Wood Products division**

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### Deep diving into idea creation

Reconnect is an ideation process focused on accelerating Stora Enso's transformation into a forerunner in renewable materials. In Reconnect 2016, Stora Enso began the journey with an online ideation platform open for all employees.

Out of a total of more than 400 ideas, a diverse group of over 300 participants met in May at the Reconnect event in Stockholm, Sweden, to refine them into almost 50 embryos for projects. Each team focused on understanding the value proposition of an idea to a specific customer. To enable customer centricity, customers were interviewed to share their thoughts on the critical challenges.

Following Reconnect, Stora Enso's Group Leadership Team funneled five project ideas from embryos. These five projects were handed to a team of senior managers in the company: Pathbreakers. The Pathbreakers focused on challenging, reviewing, refining and finally presenting their project as a business case.

Pathbreakers is one example of the way Stora Enso develops change agents in the organisation through real life projects, enabling leadership and capability development. In 2016, two projects from the first group of Pathbreakers of 2015 were continued as investment cases.

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# Stora Enso as a taxpayer

Stora Enso's operations generate value through taxes for governments around the world. In 2016 Stora Enso paid more than EUR 1 billion into public sectors, including EUR 789 million in collected taxes.

Stora Enso aims to be transparent with respect to economic value generation. For this purpose, Stora Enso makes a voluntary commitment to openly provide details of the taxes paid by the group to governments in its main countries of operation. This commitment to our stakeholders is fully in line with Stora Enso's values to 'Do what's right' and 'Lead' as well as with the group's purpose: 'Do good for the people and the planet'.

### Stora Enso's tax policy

Stora Enso is committed to ensure that the group observes all applicable tax laws, rules

and regulations in all jurisdictions where it conducts its business activities. Stora Enso follows international transfer pricing guidelines and local legislation. In addition to our legal and regulatory requirements, our tax principles comply with our values, highlighting the importance of 'doing what's right'. Furthermore, we seek to ensure that our tax strategy is aligned with our business and commercial strategy. We only undertake tax planning that is duly aligned to economic activity. This means that all tax decisions are made in response to commercial activity, and tax is only one of many factors that are

taken into account when making business decisions.

As with any other business expense, however, we have an obligation to manage our tax costs as part of our financial responsibility to societies and shareholders. We are therefore willing to respond to tax incentives and exemptions granted by governments on reasonable grounds, and we currently have operations in countries that offer favourable tax treatments, where their location is also justified by sound commercial considerations.

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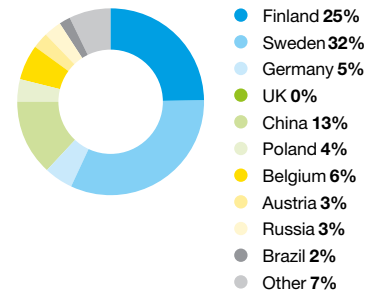
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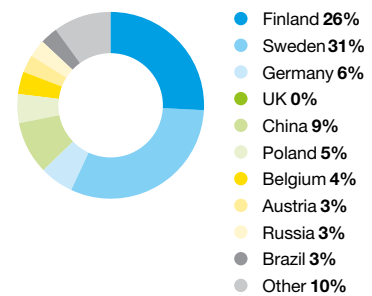


**Total taxes borne**

2016

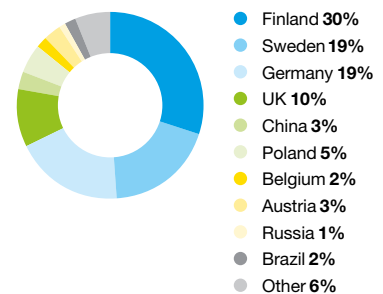


2015

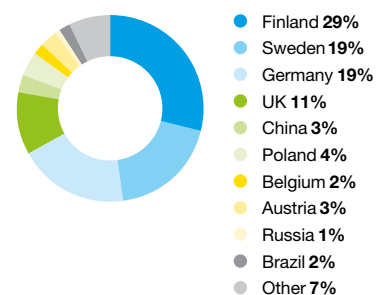


**Total taxes collected**

2016



2015



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

- The joint operation Montes del Plata operates a pulp mill in a Special Economic Zone in Uruguay.
- Stora Enso's two forestry companies in Guangxi, China are entitled to exemption from corporate income tax and value added tax on their sales, and our related industrial company will benefit from reduced tax rates during its first 10 years of operation.
- Stora Enso owns a dormant company in Luxembourg with equity of EUR 3 million, which is a remnant of a former legal structure.
- Stora Enso conducts business, mainly consisting of sales services, in the United Arab Emirates, Singapore and Hong Kong.
- For logistical and operational reasons, pulp from the group's joint operations in Brazil and Uruguay is traded via a pulp sourcing and marketing company based in the Netherlands.

> For more detailed information see [storaenso.com/investors](http://storaenso.com/investors).

Our commitment to tax transparency is also reflected in our relationships with tax authorities and governments. We seek to work positively, proactively and openly with tax authorities on a global basis, aiming to minimise disputes and to build confidence wherever possible.

**Stora Enso's tax footprint**

In 2016 Stora Enso paid EUR 1 241 million (1 215 million in 2015) in taxes to governments in countries where the group has operations. A total of EUR 452 (423) million was paid directly by the group (taxes borne) while EUR 789 (792) million was collected on behalf of governments (taxes collected).

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## Taxes paid in major countries of operation

		Year ended 31 December									
		Taxes borne									
		Corporate income tax		Employment taxes		Operational taxes		Total			
EUR million	Primary activity	2016	2015	2016	2015	2016	2015	2016	2015		
Finland	Production	0	0	97	89	15	20	112	109		
Sweden	Production and sales	47	37	89	87	7	6	143	130		
Germany	Production and sales	2	3	15	17	6	7	23	27		
UK	Sales	0	0	1	1	0	0	1	1		
China	Production and sales	14	4	12	13	31	20	57	37		
Poland	Production and sales	7	10	5	4	5	6	17	20		
Belgium	Production and sales	12	2	11	11	6	6	29	19		
Austria	Production and sales	2	0	12	11	0	1	14	12		
Russia	Production and sales	10	4	3	3	1	4	14	11		
Brazil	Production	3	2	2	3	4	9	9	14		
Other		8	17	16	20	9	6	33	43		
<b>Total</b>		<b>105</b>	<b>79</b>	<b>263</b>	<b>259</b>	<b>84</b>	<b>85</b>	<b>452</b>	<b>423</b>		

		Year ended 31 December								Total taxes paid	
		Taxes collected									
		VAT & similar <sup>1</sup>		Payroll taxes		Other taxes		Total			
EUR million	Primary activity	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015
Finland	Production	33	33	142	143	62	52	237	228	349	337
Sweden	Production and sales	70	71	83	82	0	0	153	153	296	283
Germany	Production and sales	116	113	33	37	0	0	149	150	172	177
UK	Sales	80	85	2	2	0	0	82	87	83	88
China	Production and sales	9	9	12	12	0	0	21	21	78	58
Poland	Production and sales	28	27	8	8	0	0	36	35	53	55
Belgium	Production and sales	9	9	9	10	0	0	18	19	47	38
Austria	Production and sales	8	8	14	14	0	0	22	22	36	34
Russia	Production and sales	10	9	1	1	0	0	11	10	25	21
Brazil	Production	3	3	2	3	8	10	13	16	22	30
Other		27	28	19	21	1	2	47	51	80	94
<b>Total</b>		<b>393</b>	<b>395</b>	<b>325</b>	<b>333</b>	<b>71</b>	<b>64</b>	<b>789</b>	<b>792</b>	<b>1 241</b>	<b>1 215</b>

<sup>1</sup> VAT, goods and services taxes and similar turnover related taxes

Stora Enso did not pay corporate income tax in Finland in 2016 because of tax losses carried forward from previous years. The tax losses of EUR 801 (887) million carried forward in Finland are the result of a number of factors including high closure and restructuring costs incurred over the past few years.

All companies within the scope of Stora Enso's tax footprint are consolidated or joint operations, which have been consolidated proportionally with Stora Enso's share amounting to at least 50%. Consolidation includes all companies that have either at least

10 employees or a turnover of EUR 5 million or above.

If a Stora Enso company was in a recovery position regarding VAT or energy taxation in a specific country, tax payments for this company have been reported at NIL.

Taxes borne include all tax and tax-like payments that Stora Enso has paid as own taxes. Tax-like payments include other forms of government revenue raised outside of the tax regime, such as payments for emission rights or social security payments.

Taxes collected include all tax and tax-like payments that Stora Enso has collected

on behalf of the government, including e.g. payroll taxes as well as VAT and similar sales-related taxes paid by Stora Enso. The economic burden for such taxes ends up with the buyer or final consumer.

Stora Enso's tax footprint figures also reflect governmental incentives granted in the form of reduced tax rates or tax exemption, by reporting lower tax payments. However, governmental support is often granted in the form of subsidies, particularly in relation to energy consumption or favoured investments, which are not considered in our tax footprint calculations.

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# Risk management


Effective risk management is a competitive necessity and an integral part of value creation, therefore Stora Enso's risk management process is closely aligned with the group's strategy. We are committed to ensure that the holistic, systematic and proactive management of risks and opportunities forms an integral part of our business performance management together with carefully designed mitigation actions.

A consistently applied methodology, utilising the COSO (Committee of Sponsoring Organizations) framework and Stora Enso's own risk universe, is applied to identify key risks which could prevent the group from reaching its business objectives. Consideration is given to strategic and operational risks, as well as risks related to compliance, financial markets and reporting, also including issues related to sustainability and the group's reputation. Once identified, risks are duly analysed and evaluated to

establish their financial and non-financial impacts, the likelihood of their occurrence, and their root causes. These existing risk controls are used to enable the creation of a group risk register and to determine risk mitigation actions, which are taken to manage those risks that exceed the perceived risk tolerance. Risk transfer through insurance solutions is a key element of Stora Enso's Group Risk Management.

Management examines identified and emerging risks, and monitors progress on

actions designed to mitigate key risks, through quarterly business reviews. This monitoring is supported by the group's internal audit programme, which evaluates the effectiveness of the controls designed to mitigate key risks. The results of this risk management process are periodically reported to the Financial and Audit Committee.

 The following risk map and the key risks table summarise the principle risks identified in 2016.

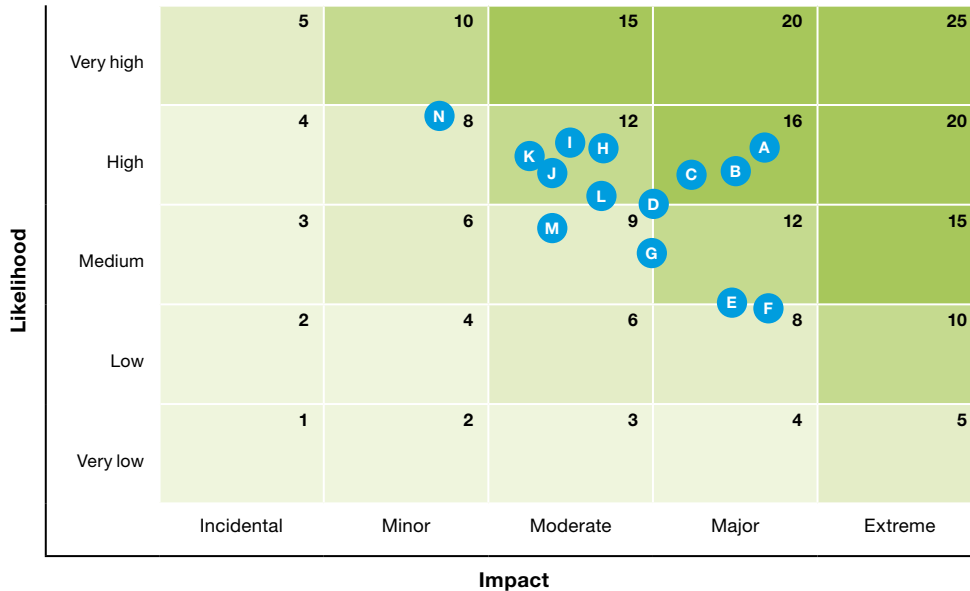


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Risk map



Key risks in 2016

Risk	Risk classification	Time span	Change vs 2015	Level of possible management influence
<b>Major impact – high likelihood</b>				
A Ethics and compliance	M/C	ST	→	Low
B Macroeconomy and FX	E/S/F	ST	→	Low
C Global warming	E/S	LT	↑	Low
<b>Major impact – medium likelihood</b>				
D Sourcing	M/I/O/C	ST	→	Low
E Mergers, acquisitions and divestures	I/S	ST	→	Low
F Litigation	M/C	ST	↓	Low
G Strategic investments	I/S/O	LT	↓	Low
<b>Moderate impact – high likelihood</b>				
H Product safety	M/O/C	ST	→	Low
I Regulatory changes	E/S/C	LT	→	Low
J Competition and market demand	E/S	LT	↑	Low
K Community relations and social responsibility	I/O/C	ST	→	Low
L Information technology and security	I/O	ST	↑	Low
<b>Moderate impact – medium likelihood</b>				
M People and empowerment	I/O	ST	→	Low
<b>Minor impact – high likelihood</b>				
N Occupational health and safety	I/O	ST	↓	Low

Symbols

- M = Mandatory obligations
- E = External factors
- I = Internal capabilities
- S = Strategic
- O = Operational
- C = Compliance
- F = Financial market and reporting
- ST = Short-term
- LT = Long-term

Change vs 2015

- Increased ↑
- Decreased ↓
- Stable →

Level of possible management influence



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**A Ethics and compliance**

Breach of laws and regulations, or of Stora Enso's policies – such as Code of Conduct, Supplier Code of Conduct, Business Practice Policy – regarding fraud, anti-trust, corruption, conflict of interests and other similar areas could have serious repercussions for the group. Potential impacts include prosecution, fines, penalties, and contractual, financial and reputational damage.

**Mitigation measures**

- Ethics and Compliance Programme – including policy setting, value promotion, training and knowledge sharing and grievance mechanisms – is continuously updated and developed.
- The group's internal control system and Internal Audit assurance
- Integration of the Supplier Code of Conduct into supplier contracts, supplier risk assessment, training, supplier audits and black-listing procedures

**Related opportunities**

Stora Enso's goal is to focus on wider ethical topics rather than mere compliance with regulations. We believe this approach will lead to successful business, foster accountability and enhance corporate reputation.

**B Macroeconomy and foreign exchange rates**

Changes in broad economic conditions, sharp market corrections, increasing volatility in foreign exchange rates, chronic fiscal imbalances and deteriorating economic conditions in emerging markets could all have negative impacts on Stora Enso's profits, cash flows and financial position.

**Mitigation measures**

- Continuous monitoring of leading economic indicators and movements in financial markets
- Hedging of 50% of the highly probable 12-month net foreign exchange flows in main currency pairs
- Translation risk reduced by funding assets, whenever economically possible, in the same currency as the asset

**Related opportunities**

Stora Enso's diverse business portfolio and geographical presence, competitive strength and resilient balance sheet reduce the group's risk exposures, but may also enable strategic opportunities in changing currency and macroeconomic environment.

**C Global warming**

Changes in precipitation patterns, the occurrence of typhoons and severe frost periods in subtropical regions could cause serious damage to tree plantations. Increases in average temperatures could lead to changes in the tree species composition of forests. Milder winters could impact the harvesting

and transportation of wood in northern regions and the related costs. Additional demand for biomass fuels and agricultural land may limit the availability of land for fibre production, affecting the price of biomass. The increasing global demand for water may in the long-term impact the group's operations through its supply chains.

**Mitigation measures**

- Reduction of our own carbon footprint to mitigate global warming
- Plantation planning to avoid frost-sensitive areas, with non-controversial tree-breeding programmes designed to increase trees' tolerance of extreme temperatures
- Maintenance of a diversity of forest types and structures, diversification of raw material supply
- Introduction of agroforestry concepts to integrate different land use forms and to mitigate competition for land and the effects of rising food prices

**Related opportunities**

With regards to global warming, we believe that the opportunities outweigh risks in near term. Our products are based on renewable materials with low carbon footprint and help customers and society at large to reduce CO<sub>2</sub> emissions by providing an alternative to solutions based on fossil fuels or other non-renewable materials.

**D Sourcing**

Violation of Supplier Code of Conduct could result in contractual, financial and reputational damages and loss of sales if Stora Enso were to be blacklisted by customers. Similarly poor occupational safety performance of subcontractors can be a risk to our reputation.

Increasing input costs or availability of materials, goods and services may adversely affect Stora Enso's profitability. Securing access to reliable cost-competitive supplies and proactively managing suppliers are of key importance.

**Mitigation measures**

- Further process improvement and implementation, including sourcing category strategies with competition for critical products, goods and services, and common supplier account management
- Supplier Code of Conduct mandatory for suppliers, audits based on risk assessment, global supplier register.
- Active ownership of joint ventures securing adaptation and implementation of Supplier Code of Conduct and active contractor occupational safety management.

**Related opportunities**

Add value and bring innovation to our business globally by building strong and measurable relationships with the best suppliers. Enforce harmonised sourcing processes to increase

capabilities, increase tender quality to reduce cost, and develop sustainable suppliers to reduce risk.

**E Mergers, acquisitions and divestitures**

Failure to achieve the expected benefits from any acquisition or value from assets or businesses sold can have serious financial impacts. The group could find itself liable for past acts or omissions of the acquired business, without any adequate right of redress. Failure to achieve expected values from the sales of assets or deliveries beyond expected receipt of funds may also impact the group's financial position.

**Mitigation measures**

- Rigorous guidelines, including due diligence procedures applied when evaluating and executing all acquisitions requiring the approval of the Board

**Related opportunities**

Stora Enso's strong balance sheet and cash flow enable value enhancing M&A, when timing and opportunity are right.

**F Litigation**

The international nature of the group's operations exposes it to the potential for litigation from third parties. Significant levels of litigation in our industry sector have in the past related mainly to major contracts and shareholder agreements. Acquisitions and disposals and the restructuring of under-performing businesses may also give rise to litigation.

**Mitigation measures**

- Levels of litigation are actively monitored. A periodic report of potential exposures and current litigation is submitted by all businesses and reviewed by the Group General Counsel.
- Contracting procedures are continuously reviewed and improved against a framework used by all Stora Enso business units.

➤ See also Product safety risk.

**Related opportunities**

Stora Enso determines cohesive litigation strategies on case-by-case basis to pursue desired litigation outcomes. Such outcomes may also result in significant financial redemptions and cost recovery.

**G Strategic investments**

Failure to complete a project in accordance with the agreed schedule, budget or specifications can have serious impacts on our financial performance. Significant, unforeseen changes in costs or an inability to sell the envisaged volumes or achieve planned price levels may prevent us from reaching our business goals.

**Mitigation measures**

- Group investment guidelines stipulating the related process, governance, risk management procedures and monitoring
- Pre-feasibility and feasibility studies

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- Diligent project management processes
- Post completion audit carried out for all significant investments

**Related opportunities**

Stora Enso is uniquely positioned to consider investment opportunities in replacing fossil-based materials by innovating and developing new products and services based on wood and other renewable materials.

**H Product safety**

Some of the group's products are used to package liquids and food, so any defects could cause health risks or packaging malfunctions, 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.

**Mitigation measures**

- Certified quality and hygiene management systems
- Improvements in product safety and standard operating procedures
- Contractual liability limitation and insurance

**Related opportunities**

Differentiation and value creation through superior product quality and highest level of product conformity.

**I Regulatory changes**

The group's businesses may be affected by political or regulatory developments in any of the countries in which the group operates, including changes to fiscal, tax or other regulatory regimes. Potential impacts include higher costs to meet new environmental requirements, the possible expropriation of assets, and the imposition of royalties, other taxes, or new requirements for local ownership. Political instability can also result in civil unrest or the nullification of existing agreements, harvesting permits or land leases.

**Mitigation measures**

- Active monitoring of regulatory and political developments in the countries where the group operates
- Participation in policy development mainly through industry associations

**Related opportunities**

Regulatory changes involve market growth potential for sustainable products. Resource efficiency, circular economy and renewability are increasingly important sources of competitive advantage.

**J Competition and market demand**

Continued tough competition and supply and demand imbalances in the raw material, energy and products market may have an impact on our market share and profitability. Stora Enso's principal competitors include both large international forest products companies, and regional and specialised competitors.

**Mitigation measures**

- Market analyses
- Identification of signs of competitor disruption
- Business intelligence and asset classification as part of strategic planning
- Strategic and continuous focus on operational efficiency, innovation, R&D and product development

**Related opportunities**

Our expertise in wood and other biomass is focused on responding to customer and consumer demand in a changing world.

**K Community relations and social sustainability**

Failure to successfully manage relationships with local communities and NGOs could disrupt our operations and adversely affect the group's reputation. The group operates in certain countries where land and resource ownership rights remain unclear, and where related disputes may arise.

**Mitigation measures**

- Grievance channels and active engagement with communities impacted by the group's operations
- Environmental and Social Impact Assessments (ESIAs) conducted for all new projects that could cause significant adverse effects in local communities
- Dialogue with NGOs as part of stakeholder engagement

**Related opportunities**

It is crucial for the success and sustainability of Stora Enso to ensure that the communities around our operations thrive economically, socially, and environmentally. Strong focus on social responsibility can also involve clear business benefits to Stora Enso, as customers, business partners, investors and potential employees are more and more attracted to socially responsible companies.

**L Information technology and information security**

The group is dependent on IT systems for both internal and external communications and for the day-to-day management of its operations. The group's information systems, personnel and facilities are subject to cyber security risk. Failure to capitalise on digitalisation and cognitive technologies could impair Stora Enso's competitiveness. Other IT related risks include the potential unavailability of IT services due to human error, damaged hardware, network connection issues and suppliers' failure to follow service level agreements.

**Mitigation measures**

- Information Risk Management System and best practice change management and project methodologies are applied.
- A number of security controls have been implemented to strengthen the protection of confidential information and to facilitate compliance with international regulations.

**Related opportunities**

Digitisation and sophisticated IT systems enable efficient operations, performance optimisation, innovative product offerings, and new customer services.

**M People and empowerment**

Recruiting, retaining and developing a competent workforce and managing key talent throughout Stora Enso's global organisation are crucial to success. Competition for personnel is intense and the group may not be successful in attracting or retaining qualified personnel. A significant portion of Stora Enso employees are members of labour unions and there is a risk that the group may face labour market disruptions especially in connection with restructuring and redundancies.

**Mitigation measures**

- Stora Enso manages the risks and loss of key talents for instance through providing a better overview of the whole workforce of the group, strengthening Stora Enso's employer brand internally and externally, globalising remuneration practices, and intensifying the efforts to identify and develop talents.
- Focus on talent and management assessments, including succession planning for key positions.

**Related opportunities**

Skilled and dedicated employees are essential for the company's success. Engaged high-performing people enable the implementation of the transformation strategy and commercial success.

**N Occupational health and safety (OHS)**

Failure to maintain high level of safety management can result in harm to the group's employees or contractors, and also to the environment and communities near our operations. Impacts in addition to physical injury, health effects and environmental damage could include liability to employees or third parties, impairment of the group's reputation, or inability to attract and retain skilled employees. Government authorities could additionally enforce the closure of our operations on a temporary basis.

**Mitigation measures**

- OHS governance
- Health and Safety Policy, Safety Toolbox and safety audits
- Safety performance target setting and action plans, with continuous reporting and monitoring
- Training and other initiatives designed to strengthen safety culture
- Incident investigations and root cause analyses

**Related opportunities**

Leading health and safety performance strengthens the brand as an employer, and improves engagement, efficiency and productivity.

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## Board of Directors



### Gunnar Brock

- Chairman of Stora Enso's Board of Directors since March 2010, member since March 2005. Independent of the company and the significant shareholders.<sup>1</sup>
- Born 1950. M.Sc. (Econ.).
- Owns 78 000 R shares in Stora Enso.



### Jorma Eloranta

- Vice Chairman of Stora Enso's Board of Directors since April 2016. Independent of the company and the significant shareholders.
- Born 1951. M.Sc. (Tech), D. Sc. (Tech) h.c.
- Owns 150 A shares and 5 648 R shares in Stora Enso.



### Anne Brunila

- Member of Stora Enso's Board of Directors since April 2013. Independent of the company and the significant shareholders.
- Born 1957. D.Sc. (Econ.).
- Owns 15 909 R shares in Stora Enso.



### Elisabeth Fleuriot

- Member of Stora Enso's Board of Directors since April 2013. Independent of the company and the significant shareholders.
- Born 1956. M.Sc. (Econ.).
- Owns 15 909 R shares in Stora Enso.

<sup>1</sup> The Board has evaluated the independence of Gunnar Brock taking into account that he has served on the Board since 2005 for a period exceeding 10 years, and has based on its overall evaluation of independence concluded Brock to be independent of the company.

The independence is evaluated in accordance with Recommendation 10 of the Finnish Corporate Governance Code of 2015. The full recommendation can be found at [cgfinland.fi](http://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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**Hock Goh**

- Member of Stora Enso's Board of Directors since April 2012. Independent of the company and the significant shareholders.
- Born 1955. B. Eng (Hons) in Mechanical Engineering.
- Owns 21 692 R shares in Stora Enso.



**Richard Nilsson**

- Member of Stora Enso's Board of Directors since April 2014. Independent of the company but not of its significant shareholders due to his employment at FAM AB.
- Born 1970. B.Sc. (BA and Econ.).
- Owns 14 042 R shares in Stora Enso.



**Mikael Mäkinen**


- Member of Stora Enso's Board of Directors since March 2010. Independent of the company and the significant shareholders.
- Born 1956. M.Sc. (Eng.).
- Owns 28 585 R shares in Stora Enso.



**Hans Stråberg**

- Member of Stora Enso's Board of Directors since April 2009. Independent of the company and the significant shareholders.
- Born 1957. M.Sc. (Eng.).
- Owns 31 470 R shares in Stora Enso.

**Juha Rantanen** was Vice Chairman of Stora Enso's Board of Directors since March 2010 (and member since March 2008) until his resignation on 28 April 2016. He was independent of the company and the significant shareholders.

 For more detailed information about the Board of Directors, see [storaenso.com/investors/governance/board-of-directors](http://storaenso.com/investors/governance/board-of-directors).

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## Group Leadership Team

### Karl-Henrik Sundström

- Chief Executive Officer (CEO), Acting Head of Division Consumer Board<sup>1</sup>
- Born 1960. B.Sc. (Business Studies). Joined the company in 2012.
- Owns 50 094 R shares in Stora Enso directly and 41 700 R shares through Alma Patria AB (related party).

### Seppo Parvi

- Chief Financial Officer (CFO), Deputy to the CEO, Country Manager Finland
- Born 1964. M.Sc. (Econ.). Joined the company in 2014.
- Owns 7 253 R shares in Stora Enso.

### Malin Bendz

- Executive Vice President, HR
- Born 1976. B.Sc. (Personnel Mgmt & Org. Development), MBA. Joined the company in 2000.
- Owns 10 647 R shares in Stora Enso.

### Juan Carlos Bueno

- Executive Vice President, Division Biomaterials
- Born 1968. M.Sc. (Industrial Eng.). Joined the company in 2011.
- Does not own any Stora Enso shares.

### Johanna Hagelberg

- Executive Vice President, Sourcing and Logistics
- Born 1972. M.Sc. (Industrial Eng. & Mgmt) and M.Sc. (Eng. and Mgmt of Manufacturing Systems). Joined the company in 2013.
- Owns 1 626 R shares in Stora Enso.

### Kati ter Horst

- Executive Vice President, Division Paper
- Born 1968. MBA (International Business), M.Sc. (Marketing). Joined the company in 1996.
- Owns 11 779 R shares in Stora Enso.

### Ulrika Lilja

- Executive Vice President, Communications
- Born 1975. M.Sc. (BA and Econ.). Joined the company in 2014.
- Owns 13 355 R shares in Stora Enso.

### Per Lyrvall

- Executive Vice President, Legal, General Counsel, Country Manager Sweden
- Born 1959. LL.M. Joined the company in 1994.
- Owns 36 697 R shares in Stora Enso directly and 1 257 R shares through related persons (spouse).

### Markus Mannström

- Chief Technology Officer
- Born 1963. M.Sc. (Paper Tech.). Joined the company in 2001.
- Owns 20 951 R shares in Stora Enso.

### Noel Morrin

- Executive Vice President, Sustainability
- Born 1958. B.Sc. (Chemistry and Biology). Joined the company in 2015.
- Owns 11 940 R shares in Stora Enso.

### Gilles van Nieuwenhuyzen

- Executive Vice President, Division Packaging Solutions
- Born 1959. M.Sc. (Applied Physics), MBA (INSEAD). Joined the company in 2015.
- Does not own any Stora Enso shares.

### Jari Suominen

- Executive Vice President, Division Wood Products
- Born 1969. M.Sc. (BA). Joined the company in 1995.
- Owns 16 836 R shares in Stora Enso.

**Lars Häggström**, Executive Vice President, Human Resources, was a member of the Group Leadership Team until 31 October 2016.

**Jari Latvanen**, Executive Vice President, Division Consumer Board, was a member of the Group Leadership Team until 28 October 2016.

<sup>1</sup> **Annica Bresky** has been appointed as Executive Vice President, Division Consumer Board and member of the Group Leadership Team. She will join Stora Enso at the latest by 1 May 2017.

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## For investors

### Why to invest in Stora Enso

Stora Enso is a leading provider of renewable solutions in packaging, biomaterials, wooden constructions and paper on global markets. Stora Enso is transforming from a traditional paper and board producer to a global renewable materials growth company.

#### Our key competitive differentiators are:

- Faster profitable growth than relevant markets<sup>1</sup>
- Successful transformation journey
- Strong focus on customers and innovation
- Strong cash generation
- Strong balance sheet
- Sustainability in business focus

<sup>1</sup> Excluding Paper

### Annual General Meeting (AGM)

Stora Enso Oyj's AGM will be held at 16.00 (Finnish time) on Thursday 27 April 2017 at the Marina Congress Center, Katajanokanlaituri 6, Helsinki, Finland.

Nominee-registered shareholders wishing to attend and vote at the AGM must be temporarily registered in the Company's register of shareholders on the record date, 13 April 2017. Instructions for submitting notice of attendance will be given in the invitation to the AGM, which can be consulted at [storaenso.com/agm](http://storaenso.com/agm).

### Dividend

The Board of Directors proposes to the AGM that a dividend of EUR 0.37 per share be paid to the shareholders for the fiscal year ending 31 December 2016. The dividend payable on shares registered with Euroclear Sweden will be forwarded by Euroclear Sweden AB and paid in Swedish crown. The dividend payable to ADR holders will be forwarded by Citibank, N.A. (Citi) and paid in US dollars.

### Contacts

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### AGM and dividend in 2017

13 APRIL	Record date for AGM
27 APRIL	Annual General Meeting (AGM)
28 APRIL	Ex-dividend date
2 MAY	Record date for dividend
9 MAY	Dividend payment

### Distribution of financial information

- Stora Enso's Annual Report 2016 is available at [storaenso.com/annualreport](http://storaenso.com/annualreport).
- Interim Reports are available at [storaenso.com/interimreportarchive](http://storaenso.com/interimreportarchive).

### Publication dates for 2017

3 FEB	Financial Statement Release for 2016
WEEK 8	Annual Report 2016
27 APRIL	Interim Report for January–March
26 JULY	Half Year Financial Report
24 OCT	Interim Report for January–September



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It should be noted that Stora Enso and its business are exposed to various risks and uncertainties and certain statements herein which are not historical facts, including, without limitation those regarding expectations for market growth and developments; expectations for growth and profitability; and statements preceded by "believes", "expects", "anticipates", "foresees", or similar expressions, are forward-looking statements. Since these statements are based on current plans, estimates and projections, they involve risks and uncertainties, which may cause actual results to materially differ from those expressed in such forward-looking statements. Such factors include, but are not limited to: (1) operating factors such as continued success of manufacturing activities and the achievement of efficiencies therein, continued success of product development, acceptance of new products or services by the group's targeted customers, success of the existing and future collaboration arrangements, changes in business strategy or development plans or targets, changes in the degree of protection created by the group's patents and other intellectual property rights, the availability of capital on acceptable terms; (2) industry conditions, such as strength of product demand, intensity of competition, prevailing and future global market prices for the group's products and the pricing pressures thereto, price fluctuations in raw materials, financial condition of the customers and the competitors of the group, the potential introduction of competing products and technologies by competitors; and (3) general economic conditions, such as rates of economic growth in the group's principal geographic markets or fluctuations in exchange and interest rates. All statements are based on management's best assumptions and beliefs in light of the information currently available to it and Stora Enso assumes no obligation to publicly update or revise any forward-looking statement except to the extent legally required.