Stora Enso investor kit
strategy and market environment, and financial performance
Disclaimer

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.
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Stora Enso in brief

Leading global provider of renewable solutions in packaging, biomaterials, wooden constructions and paper

Sales
EUR 10.5 billion in 2018

Operational EBIT
EUR 1 325 million in 2018

Some 26 000 employees in 30 countries

Stora Enso shares are listed on NASDAQ OMX Helsinki and Stockholm. In addition, the shares are traded in the USA as ADRs.
Portfolio aimed at growth

**Stora Enso group 2018:** Sales 10 486 MEUR / Operational EBIT 1 325 MEUR / Operational ROCE 15.5%

- **Consumer Board – Expansion of relative market share in profitable niches**
- **Packaging Solutions – Selective profitable growth**
- **Biomaterials – Strengthening current business and creating new profitable growth**
- **Wood Products – Accelerating growth**
- **Paper – Strategy for maximum cash generation**
The renewable materials growth company

We are a leading global producer of board, pulp, wood products and paper

- Sales 10.5 BEUR (2018)
- 1.7 net debt/EBITDA
- 85% wood from certified forests
- 100% of our wood is used from sustainable sources
- 26 000 people in 30 countries
- 15.5% Operational ROCE (2018) (well above strategic target of 13%)

Our growth businesses = 71% of sales and 83% of operational EBIT...

Paper
- Market growth: 2.6 BEUR
- Position: #2 in Europe

Wood Products
- Global sawn softwood 2–3%, European new construction 3–5%
- #1 in Europe and #4 in the world in supplying wooden construction material

Other
- Market growth: 2.8 BEUR
- Position: #1 in LPE, FSB and CINK in Europe in the world

Packaging Solutions
- Market growth: 1.3 BEUR
- Position: #6 in compositeboard in Europe

Biomaterials
- Market growth: 1.6 BEUR
- Position: Widest pulp grades portfolio #1 in Europe in bulk

...and these are our drivers for accelerating renewable growth

- Value added services in wood: Bio-composites
- Next generation: liquid & food packaging
- Building Components and systems
- High-quality Containerboards
- Intelligent packaging
- Futurebio-based chemicals

...and these are our targets and progress

Group strategic targets
- Q2 18
- Q2 19
- Dividend: To distribute 50% of net income over the cycle
  - 0.41
  - 0.50
- Growth**: To grow faster than the relevant market
  - 5.4% (YoY)
  - -0.9% (YoY)
- Net debt to operational EBITDA
  - >2.0
  - 1.3
- Fixed costs to sales
  - >30%
  - 23.5%
- Debt to equity
  - >50%
  - 42%
- Operational ROCE
  - >13%
  - 15.5%

Divisional strategic targets
- Q2 18
- Q2 19
- Consumer Paper: Operational ROOC > 20%
  - 13.1%
  - 12.8%
- Packaging Solutions: Operational ROOC > 20%
  - 35.6%
  - 16.3%
- Biomaterials: Operational ROOC > 15%
  - 25.6%
  - 11.6%
- Wood Products: Operational ROOC > 20%
  - 31.7%
  - 25.3%
- Paper: Cash flow after investing activities
  - 0.5%
  - 0.8%

* Annual dividend. Payment: Q1 in 2019 and Q2 in 2018 ** Excluding Paper

This is our strategy for delivering sustainable profitable growth...

- Customer insight
  - Developing offerings according to customer requirements to create value and growth, with sales excellence.
- Sustainable profitable growth
  - Structural processes
    - Clear roles and responsibilities, harmonised working methods, operational excellence.
- Motivated employees
  - Focus on inspiring leadership, good communication, performance management and target setting.
- Strong balance sheet
  - Not debt to operational EBITDA target reduced from 3x to less than 2x.
- Cash flow from operations
  - Dividends
  - Strong profitable growth
  - Business and CAPEX driven by ROCE.

9% of our sales came from NEW products and services (2018)
Global environmental drivers support our strategy

Note: Fair value of Biological assets and Group’s indirect share of forest assets is as of 31 Dec 2018, in total 3 328 MEUR

Montes del Plata, Uruguay (ownership 50%)
Stora Enso’s share 81 200 ha of productive forest land

Veracel plantations, Brazil (ownership 50%)
Stora Enso’s share 43 700 ha of productive forest land

A balanced market in pulp supports our growth

Hardwood and softwood average capacity growth (Mt/year)

2007–2017
+ 1.4 Mt/y (90% ratios)
+ 0.56 Mt/y

2018–2022

Announced capacity growth 2018–2022: 2.6 Mt (0.56 Mt/year)

Hardwood 2.0 Mt
Softwood 0.8 Mt

We have ambitious targets to reduce GHG emissions by 31% by 2030...

The first forest products company to have externally approved science-based targets to reduce its greenhouse gas (GHG) emissions

Targets for our operations
Reducing GHG emissions from operations by 31% per tonne of pulp, paper, and board produced by 2030, compared to a 2010 baseline

Engagement targets for our suppliers
70% of our non-fibre suppliers in terms of spend to set GHG reduction targets

...and this is how we are delivering on these targets

Cash cost by country

Cumulative capacity, thousand tonnes

Pulp (softwood and hardwood) delivered cost
Pulp demand 2018–2022: +1.6 Mt/year (2.5% CAGR)

Note: CO₂ per saleable tonne of product produced

SWEDISH FORESTS
1 150 000 ha of productive forest land in Sweden

LAOS: trial plantation, 3 100 ha; Russia: 369 500 ha

Tornator, Finland (ownership 41%)
Stora Enso’s share 223 200 ha of productive forest land in Finland, Estonia and Romania

Guangxi, Southern China (leased)
77 300 ha of productive forest land

In addition, leased plantations:
- Laos: trial plantation, 3 100 ha
- Russia: 369 500 ha

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Ulla Paajanen, SVP, Head of Investor Relations
Email ulla.paajanen@storaenso.com
Phone +358 40 763 8767
Further deteriorating trading conditions caused by geopolitical uncertainties related to trade wars and a possible hard Brexit are expected to impact Stora Enso negatively. Demand growth is forecast to slow down for Stora Enso’s businesses in general and demand decline is escalating for European paper. Costs are forecast to increase in 2019 compared to 2018. Stora Enso will implement additional Profit Protection measures to mitigate these cost increases and the geopolitical uncertainties. Due to the current uncertainties in the business environment Stora Enso will not comment on estimated sales development in the outlook.

Financial highlights Q2/2019

- Sales decreased by 2.1% to 2 608 MEUR
  - Sales excluding Paper decreased 0.9%
  - Lower volumes and prices
- Operational EBIT margin was 11.0% (12.3%), above 10% for the eighth consecutive quarter
  - Operational EBIT 287 (327) MEUR
  - Decrease due to volumes and prices partly offset by profit protection programme with impact of +45 MEUR
- IAC negative 120 MEUR due to Bergvik Skog transaction, environmental provisions, restructuring and profit protection programme
  - EPS decreased to 0.08 (0.28) EUR and EPS excl. IAC 0.22 (0.31) EUR
- Strong cash flow from operations at 548 (357) MEUR. Cash flow after investing activities 428 (231) MEUR
- The net debt to operational EBITDA ratio at 2.2 (1.3) increased temporarily slightly over the target level of 2.0, due to the restructuring of Bergvik Skog (impact 0.6) and the adoption of IFRS 16 Leases (impact 0.3)
- Operational ROCE at 11.3% (15.5%) was below the strategic target of 13%. The adoption of IFRS 16 Leases had a negative 0.4 percentage points and the Bergvik Skog restructuring a negative impact of 0.8 percentage points on ROCE

Main events

- The restructuring of the Swedish forest assets from Bergvik Skog was finalised
- Stora Enso decided to invest approximately 350 MEUR to convert the Oulu paper mill in Finland into packaging production. Production on the converted machine is estimated to start by the end of 2020
- Stora Enso evaluated expansion in Wood Products. The plan includes potential investment of 90 MEUR in CLT and construction beams production. The Group also plans to close Klitee sawmill with a possible consolidation of spruce production to Varkaus
- Stora Enso will invest 10 MEUR to build a pilot facility for producing bio-based carbon materials based on lignin. Wood-based carbon can be utilised as a crucial component in batteries that are typically used in consumer electronics, the automotive industry and large-scale energy storage systems
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Outlook for 2019

- Further deteriorating trading conditions caused by geopolitical uncertainties related to trade wars and a possible hard Brexit are expected to impact Stora Enso negatively.
- Demand growth is forecast to slow down for Stora Enso’s businesses in general and demand decline is escalating for European paper.
- Costs are forecast to increase in 2019 compared to 2018. Stora Enso will implement additional Profit Protection measures to mitigate these cost increases and the geopolitical uncertainties. Due to the current uncertainties in the business environment Stora Enso will not comment on estimated sales development in the outlook.

Guidance for Q3/2019

- Q3/2019 operational EBIT is expected to be in the range of 200-280 MEUR
- During Q3/2019, there will be annual maintenance shutdown at Beihai, Imatra, Heinola, Ostroleka, Enocell and Veitsiluoto mills. The total maintenance impact is estimated to be on the same level as in Q3/2018 and 30 MEUR more than in Q2/2019.

<table>
<thead>
<tr>
<th>Annual maintenance</th>
<th>Q3 2019</th>
<th>Q3 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
<td>Beihai and Imatra mills</td>
<td>Imatra and Ingerois mills</td>
</tr>
<tr>
<td>Packaging solutions</td>
<td>Heinola and Ostroleka Kraft</td>
<td>Ostroleka Mill</td>
</tr>
<tr>
<td>Biomaterials</td>
<td>Enocell Mill</td>
<td>Sunila Mill</td>
</tr>
<tr>
<td>Paper</td>
<td>Veitsiluoto Mill</td>
<td>Veitsiluoto Mill</td>
</tr>
</tbody>
</table>
We are well-positioned for profitable growth – strength of our portfolio

<table>
<thead>
<tr>
<th>Consumer Board</th>
<th>Sales 2018 EUR and % of group’s sales</th>
<th>Market growth</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.6 BEUR 25%</td>
<td>2016–2030 for virgin board: Europe 1.8%, North America 1.2%, Latin America 3.3%, China 4.3%, Rest of Asia 3.4%, Africa 2.5%</td>
<td>#1 in LPB, FSB and CUK in Europe or the world</td>
</tr>
<tr>
<td>Packaging Solutions</td>
<td>1.3 BEUR 13%</td>
<td>High quality SC fluting 1-3%; Kraftliner 2–3% excl. North Am; Testliner 3–4% Eastern Europe</td>
<td>#6 in containerboard in Europe</td>
</tr>
<tr>
<td>Biomaterials</td>
<td>1.6 BEUR 16%</td>
<td>Market pulp 2.3%; Fastest growth in tissue (3.2%)</td>
<td>Widest pulp grades portfolio #1 in Europe in fluff</td>
</tr>
<tr>
<td>Wood Products</td>
<td>1.6 BEUR 15%</td>
<td>Global sawn softwood 2–3%, European new construction 3.5%</td>
<td>#1 in Europe and #4 in the world in supplying wooden construction material</td>
</tr>
<tr>
<td>Paper</td>
<td>3.1 BEUR 29%</td>
<td>Declining 3–5% annually</td>
<td>#2 in Europe</td>
</tr>
</tbody>
</table>
Our road to success in the bioeconomy

- Introducing new products and services
- Addressing attractive end-use segments
- Delivering sustainable profitable growth
- Generating superior ROCE
Our transformation strategy continues… ...
delivering sustainable profitable growth

- **Customer insight**: Developing offerings according to customers’ requirements to create value and growth, with sales excellence.
- **Structured processes**: Clear roles and responsibilities, standardised and harmonised working methods, operational excellence.
- **Motivated employees**: Focus on inspiring leadership, good communication, performance management and target setting.
- **Innovation**: Focus on bio-based materials and chemicals, digitalisation, intelligent packaging and new packaging solutions.

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- **Sustainable profitable growth**

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- **Strategic growth investments**: Capex at or below depreciation and depletion* over the business cycle.
- **Cash flow from operations**: Business and CAPEX driven by ROCE.
- **Dividend**: To distribute 50% of EPS over the cycle. 2015–2018 CAGR 14%.
- **Strong balance sheet**: Net debt to operational EBITDA target reduced from 3x to <2x.

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*Operational decrease in the value of biological assets*
Innovation never happens in isolation

Awarded as Finland’s most startup-friendly company

Screened ~500 digital start-ups - deeper collaboration with 17

TRÄ Group - innovative digital services for wooden buildings

Husqvarna’s most innovative supplier

Sustainable RFID tag technology, ECO™ by Stora Enso

Piloting MFC films

DuraSense™

Lineo™

Sulapac - renewable and biodegradable straws

TreeToTextile partnership

Asset transformation

Profitable growth

Innovation & customer focus
## Developing further in the bioeconomy

### PRODUCT / TECHNOLOGY

#### BIO-BASED CHEMICALS – INDUSTRIAL INTERMEDIATES
- Lignin
- Xylose
- Biomass polymers
- Dissolving pulp
- Modified fibres

#### REPLACING FOSSIL MATERIALS IN PRODUCTS
- Micro-fibrillated cellulose (MFC)
- Biocomposites
- Lignin carbon fibre
- Building systems
- Modified wood

#### ENABLING INNOVATIONS OF NEW CONSUMER EXPERIENCES
- Nano cellulose
- Digitalisation

### CUSTOMER USE EXAMPLES

#### Performance chemicals
- Replace phenol
- Sweetener, personal care
- Replace oil-based plastic
- Textiles, packaging
- Performance chemicals

#### Biobased materials
- Biobases in food cartons
- Light-weight board
- Strengthening liner
- Compounding wood fibre with polymers
- Lightweight structures, energy storage, transportation

#### Modified materials
- High rise buildings
- Cladding, decking

#### Digital solutions
- Transparent / electronic programmable / foam / spheres
- Material with in-built monitoring and tracking capabilities for intelligent packaging

### Phase

- Scaling
- Piloting
- R&D
- Fully adopted by markets

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**Stora Enso**

13 19 July 2019
These are our drivers for accelerating renewable growth

In 2018 9% of our sales came from new products and services.

Long-term target 15% of our sales is expected to come from new products and services.

- High-quality container-boards
- Intelligent packaging
- Value added services in corrugated packaging
- Building components and systems
- Bio barriers
- Biocomposites
- Next generation liquid and food packaging
- Future bio-based chemicals
- Value added services in corrugated packaging

15% of our sales is expected to come from new products and services.
## Development of strategic targets

### Group strategic targets

<table>
<thead>
<tr>
<th>Metric</th>
<th>Q2 18</th>
<th>Q2 19</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividend</td>
<td>0.41*</td>
<td>0.50*</td>
<td>🟢</td>
</tr>
<tr>
<td>Growth**</td>
<td>5.4% (YoY)</td>
<td>-0.9% (YoY)</td>
<td>🔴</td>
</tr>
<tr>
<td>Net debt to operational EBITDA</td>
<td>&lt;2.0x</td>
<td>1.3</td>
<td>🟠</td>
</tr>
<tr>
<td>Fixed costs to sales</td>
<td>&lt;20%</td>
<td>23.5%</td>
<td>🔴</td>
</tr>
<tr>
<td>Net debt to equity</td>
<td>&lt;60%</td>
<td>40%</td>
<td>🟠</td>
</tr>
<tr>
<td>Operational ROCE</td>
<td>15.5%</td>
<td>11.3%</td>
<td>🔴</td>
</tr>
</tbody>
</table>

### Divisional strategic targets

<table>
<thead>
<tr>
<th>Division</th>
<th>Operational ROOC</th>
<th>Q2 18</th>
<th>Q2 19</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
<td>&gt; 20%</td>
<td>13.1%</td>
<td>12.8%</td>
<td>🔴</td>
</tr>
<tr>
<td>Packaging Solutions</td>
<td>&gt; 20%</td>
<td>25.6%</td>
<td>16.3%</td>
<td>🔴</td>
</tr>
<tr>
<td>Biomaterials</td>
<td>&gt; 15%</td>
<td>18.6%</td>
<td>15.6%</td>
<td>🟠</td>
</tr>
<tr>
<td>Wood Products</td>
<td>&gt; 20%</td>
<td>31.7%</td>
<td>20.3%</td>
<td>🟠</td>
</tr>
<tr>
<td>Paper</td>
<td>Cash flow after investing activities to sales &gt; 7%</td>
<td>5.7%</td>
<td>6.6%</td>
<td>🟠</td>
</tr>
</tbody>
</table>

*Annual dividend. Payment: Q1 in 2019 and Q2 in 2018** Excluding Paper
## Capacities by grade

<table>
<thead>
<tr>
<th>Grade</th>
<th>Capacity 1 000 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
<td>3 360</td>
</tr>
<tr>
<td>Containerboards*</td>
<td>1 410</td>
</tr>
<tr>
<td>Corrugated Packaging</td>
<td>1 370 (Mm²)</td>
</tr>
<tr>
<td>Sawn goods</td>
<td>5.8 Mm³</td>
</tr>
<tr>
<td>Short-fibre pulp</td>
<td>950</td>
</tr>
<tr>
<td>Long-fibre pulp</td>
<td>550</td>
</tr>
<tr>
<td>Fluff pulp</td>
<td>350</td>
</tr>
<tr>
<td>Dissolving pulp</td>
<td>250</td>
</tr>
<tr>
<td>Unbleached kraft pulp</td>
<td>50</td>
</tr>
<tr>
<td><strong>Net market pulp</strong></td>
<td><strong>2 150</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Capacity 1 000 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newsprint</td>
<td>1 800</td>
</tr>
<tr>
<td>Uncoated Magazine (SC)</td>
<td>1 200</td>
</tr>
<tr>
<td>Coated Magazine</td>
<td>250</td>
</tr>
<tr>
<td>Total Magazine Paper</td>
<td>1 450</td>
</tr>
<tr>
<td>Coated Fine*</td>
<td>1 100</td>
</tr>
<tr>
<td>Uncoated Fine</td>
<td>1 000</td>
</tr>
<tr>
<td>Total Fine Paper</td>
<td>2 100</td>
</tr>
<tr>
<td><strong>Paper Total</strong></td>
<td><strong>5 350</strong></td>
</tr>
</tbody>
</table>

*Oulu coated fine paper production to continue until end of September 2020. Containerboards capacity to increase by 450 000 t/a after Oulu PM7 conversion. The production of the converted machine to start by end of 2020.*
Global position – capacity and biological asset allocation

- Board capacity by country 2019
- Paper capacity by country 2019
- Chemical Pulp capacity by country 2019
- Biological assets by country as at Dec 2018
- Total assets by country as at Dec 2018

**Paper capacity by country 2019**
- Finland: 43%
- Sweden: 28%
- Brazil: 10%
- Germany: 16%
- China: 3%
- Other countries: 10%

**Chemical Pulp capacity by country 2019**
- Finland: 55%
- Sweden: 21%
- China: 5%
- Other countries: 9%

**Biological assets by country as at Dec 2018**
- Finland: 34%
- Sweden: 23%
- Germany: 3%
- China: 11%
- Other countries: 9%

**Total assets by country as at Dec 2018**
- Sweden: 68%
- Finland: 18%
- Uruguay: 6%
- Other countries: 10%

**Board capacity by country 2019**
- Finland: 49%
- Sweden: 27%
- Brazil: 10%
- China: 5%
- China: 10%
- China: 5%
- Other countries: 10%
We are perfectly positioned to benefit from the megatrends:

- Global warming
- Growing middle class
- Eco awareness
- Changing lifestyles
- Urbanisation
- Growing population
- Digitalisation

Increasing demand for raw material that is **renewable**, **reusable** and **fossil free**
The renewable materials growth company

Everything that’s made with fossil-based materials today can be made from a tree tomorrow.
We control ~30% of our wood raw material – a critical advantage in the bioeconomy

Stora Enso’s forest assets*

<table>
<thead>
<tr>
<th>Country</th>
<th>Mm³ sub</th>
<th>Sweden</th>
<th>Finland</th>
<th>Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>18</td>
<td>2.5</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>12</td>
<td>0.5</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>0.0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>0.0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>0.0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>0.0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>100%</td>
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<tr>
<td></td>
<td>1.0</td>
<td>1.0</td>
<td>0.0</td>
<td>100%</td>
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<tr>
<td></td>
<td>1.5</td>
<td>1.5</td>
<td>0.0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>2.0</td>
<td>0.0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>2.5</td>
<td>0.0</td>
<td>100%</td>
</tr>
</tbody>
</table>

Pulpwood plantation availability and wood cost

- Potential for wood supply expansion
- Wood supply restrictions for expansion

* Sweden includes Stora Enso’s share of Bergvik Skog (status before 31 May 2019) and Finland Stora Enso’s share of Tornator.

Brazil and Uruguay with 50% share.

<table>
<thead>
<tr>
<th>Country</th>
<th>Standing stock</th>
<th>Annual procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>79.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Finland</td>
<td>24.6</td>
<td>13.5</td>
</tr>
<tr>
<td>Brazil</td>
<td>2.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Uruguay</td>
<td>8.1</td>
<td>2.1</td>
</tr>
<tr>
<td>China</td>
<td>6.4</td>
<td>0.3</td>
</tr>
</tbody>
</table>

( ) Wood cost (USD/m³/sob) at mill - hardwood
Forest assets – Northern and Southern hemisphere

Swedish forests
1 150 000 ha of productive forest land
Fair value: 2.8 BEUR (30 June 2019)

Tornator, Finland
Stora Enso's share 223 200 ha of productive forest land in Finland, Estonia and Romania
Fair value: 595 MEUR (31 Dec 2018)

Veracel plantations, Brazil
Stora Enso’s share 43 700 ha of productive forest land
Fair value: 75 MEUR (31 Dec 2018)

Montes del Plata, Uruguay
Stora Enso’s share 81 200 ha of productive forest land
Fair value: 199 MEUR (31 Dec 2018)

Guangxi, Southern China (leased)
77 300 ha of productive forest land
Fair value: 166 MEUR (31 Dec 2018)

In addition, leased lands:
- Laos: trial plantation, 3 100 ha
- Russia: 369 500 ha
Bergvik Skog forests holdings restructuring finalised

- Indirect forest holdings from 1.1 million hectares to direct ownership of 1.4 million hectares in Sweden
  - Productive forest land increase from 0.94 to 1.15 million hectares

- Financial impacts
  - Increase of net debt by about 1.0 BEUR. Issued a 600 MEUR green bond dedicated to finance Bergvik Skog acquisition
  - The net debt to EBITDA ratio exceeds the strategic target of <2.0x temporarily before all the steps of the transaction have been finalised
  - Increase of capital employed ~1.0 BEUR, resulting in a decrease in the operational ROCE of 0.8 percentage point in Q2 2019
  - Fully owned subsidiary and consolidated in segment Other from 1 June 2019 onwards

<table>
<thead>
<tr>
<th>IAC Income statement</th>
<th>MEUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A net gain in Share of results of equity accounted investments</td>
<td>+82</td>
</tr>
<tr>
<td>Reclassification from Other comprehensive income in equity to Other operating expenses of a currency translation adjustment (CTA)</td>
<td>-171</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>-88</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equity movements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CTA</td>
<td>+171</td>
</tr>
<tr>
<td>Total IAC</td>
<td>-88</td>
</tr>
<tr>
<td>Interest rate swap termination</td>
<td>+10</td>
</tr>
<tr>
<td><strong>Total change in Equity</strong></td>
<td><strong>+93</strong></td>
</tr>
</tbody>
</table>
## Bergvik Skog transaction

<table>
<thead>
<tr>
<th></th>
<th>Hectares</th>
<th>Price per ha (EUR)</th>
<th>Value (BEUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect ownership*</td>
<td>1 150 000</td>
<td>2 000</td>
<td>2.3</td>
</tr>
<tr>
<td>EUR to SEK translation impact on indirect ownership (June 2019 vs Dec 2018)</td>
<td></td>
<td></td>
<td>-0.1</td>
</tr>
<tr>
<td>Acquired additional forest</td>
<td>250 000</td>
<td>2 400</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Total forest holdings in Sweden</strong></td>
<td>1 400 000</td>
<td>2 000</td>
<td>2.8</td>
</tr>
<tr>
<td>Forest value based on Billerud Korsnäs/AMF**</td>
<td>1 400 000</td>
<td>3 700</td>
<td>5.1</td>
</tr>
<tr>
<td>Forest value based on LRF**</td>
<td>1 400 000</td>
<td>5 700</td>
<td>7.9</td>
</tr>
</tbody>
</table>

* As at 31 Dec 2018 indirect ownership 49.79% of Bergvik Skog
** AMF Pensionsförsäkring AB, LRF Konsult
Oulu paper mill conversion into a packaging board mill
Reduction of Stora Enso paper capacity by 20%

• 350 MEUR investment (2019–2022)
  − Of which 70 MEUR in 2019
• High-quality virgin-fibre-based kraftliner line (450 000 t/a)
• Unbleached softwood pulp (530 000 t/a)
• Oulu Mill’s EBITDA margin expected to improve by 15–20 percentage points
• Expected to meet Packaging Solutions division’s operational ROOC target of 20%
• Conversion of woodfree coated paper machine (PM 7)
• Closure of PM 6 and sheeting plant
• Paper production to continue until end of September 2020
• Production on the converted machine to start by end of 2020
Financial performance - divisions
Sales, EBITDA margins, EBIT margins and ROOC

Stora Enso

Sales
Operational EBIT margin
Operational EBITDA margin
Operational ROOC, 4Q rolling

Sales
Operational EBIT margin
Operational EBITDA margin
Operational ROOC, 4Q rolling

Sales
Operational EBIT margin
Operational EBITDA margin
Operational ROOC, 4Q rolling

Sales
Operational EBIT margin
Operational EBITDA margin
Operational ROOC, 4Q rolling
Our formula for success continues

- Sustainable profitable growth 4–6%*
- Strong cash flow generation
- Capex ~$3 BEUR**
- Dividend ~50% of EPS
- Net debt to operational EBITDA <2.0x
- Debt to equity <60%

* Excluding Paper  ** Next five years
We have several attractive profitable growth options

Sales in Q2 2019

- Consumer Board: 73%
- Paper: 27%
- Packaging Solutions
- Wood Products
- Biomaterials
- Other

CAGR potential 2018–2023 (excluding paper)

- Consumer Board: 3–4 %/a
- Packaging Solutions: 6–8 %/a
- Biomaterials: 2–4 %/a
- Wood Products: 6–8 %/a
- TOTAL (excl. Paper): 4–6 %/a
Divisions
Consumer Board

• The ambition of the Consumer Board division is to be the global leader in high-quality virgin fibre cartonboard.

• Aim to be the preferred partner to customers in premium end-use packaging and graphical segments

• A wide board and barrier coating selection suitable for consumer packaging for liquid, food, pharmaceutical and luxury goods

• Serves converters and brand owners globally
Consumer Board – geared towards growth

Sample product categories
- Liquid Packaging: Natura
- Food Service Board: Cupforma, Tamfold
- General Packaging and graphical board: CKB, Trayforma, Performa, Ensocoat, Tambrite
  - Chocolate and confectionary
  - Cosmetics and luxury
  - Pharmaceuticals
  - Food Packaging
  - Drinks, wines and spirits
- Cigarette board: Koppar
- Speciality paper: Lumiflex, LumiLabel

Main competitors include BillerudKorsnäs, Metsä Board, Klabin and International Paper

<table>
<thead>
<tr>
<th></th>
<th>Divisional strategic target</th>
<th>Q2/18</th>
<th>Q2/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
<td>Operational ROOC</td>
<td>13.1%</td>
<td>12.8%</td>
</tr>
</tbody>
</table>

Stora Enso 31
Our target is 25% of sales from new products and services

- REPLACING PE-FILMS IN CUPS
- POUCHES FOR LOW TO MEDIUM SHELF LIFE
- LIDS
- REPLACING ALUMINIUM FOIL
- POUCHES WITH HIGH BARRIER PROPERTIES

**BIO-BARRIERS AND FILMS**

**GLOBAL MARKET SIZE**

- 2019-2021: ~80 BEUR
- 2021-2023: 2023-2025: ~25 BEUR

**BIOCOMPOSITES**

- STRAWS
- CAPS, CLOSURES & PACKAGING COMPONENTS
- RIGID CONTAINERS
- TRAYS
- CAPS WITH HINGES
- TUBES

Source: SmithersPira, internal analysis
Geographical exposure – Consumer Board

Worldwide sales network
R&D: Karlstad, Sweden and Imatra, Finland

Production Facilities

Sales

Grade | Capacity
--- | ---
Consumer Board | 3 360
We continue to grow our premium offering in Beihai

**DEMAND AND CAPACITY IN CHINA**
**VIRGIN FIBRE BOARD**

(Million tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>7.2</td>
<td>11.9</td>
</tr>
<tr>
<td>2018e</td>
<td>7.8</td>
<td>11.9</td>
</tr>
<tr>
<td>2020f</td>
<td>8.5</td>
<td>13.4</td>
</tr>
<tr>
<td>2025f</td>
<td>10.3</td>
<td>13.4</td>
</tr>
</tbody>
</table>

**PRICING OF PREMIUM AND COMMODITY GRADE VIRGIN FIBRE BOARD IN CHINA**

(RMB/t)

- **Premium grades**
- **Commodity grades**

Source: Pöyry, RISI
Attractive end-use segments offer significant opportunities

GLOBAL PACKAGING MATERIALS MARKET

ADDRESSABLE MARKET FOR CONSUMER BOARD

~400 BEUR

Food & Dairy 27%
Beverages 8%
Healthcare & Cosmetics 5%
Other consumer goods 10%
Industrial and transport packaging 50%

PAPER BOARD’S SHARE OF TOTAL PACKAGING

Food & Dairy
Beverages
Healthcare & Cosmetics

SEGMENT GROWTH (p.a. – 2022)

+2.3%
+2.6%
+2.8%

Source: SmithersPira, Euromonitor

19 July 2019
Stora Enso
2.6% CAGR until 2030 for virgin fibre board grades

Virgin fibre board grades:
- Coated Unbleached Kraft (CUK)
- Solid Bleached Sulphate (SBS)
- Liquid Packaging Board (LPB)
- Folding Box Board (FBB)
- Food Service Boards (FSB)

Source: Pöyry
We have a strong position with global customers
Top 10 customers account for 53% of sales and 60% of EBITDA

Coated Unbleached Kraft (CUK), Solid Bleached Sulphate (SBS), Liquid Packaging Board (LPB), Folding Box Board (FBB)

Source: Stora Enso, Pöyry
Packaging Solutions

• Packaging Solutions provides fibre-based board materials and corrugated packaging products and services designed for a wide array of applications

• Our renewable high-end packaging solutions serve leading converters, brand owners, and retailers – including those in e-commerce that are looking to optimise performance, drive innovation and improve their sustainability

• Modern light-weight containerboard offering

• Vertically integrated board production and converting

• Customer-centric solutions including design, packaging automation and support

<table>
<thead>
<tr>
<th>Grade</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containerboards</td>
<td>1,410</td>
</tr>
<tr>
<td>Corrugated Packaging</td>
<td>1,370 (Mm²)</td>
</tr>
</tbody>
</table>
Packaging Solutions – geared towards growth

Sample product categories
- Containerboards: AvantFlute Recycled, AvantFlute SC, AvantKraft, AvantLiner Recycled
- Corrugated Packaging: Flexo-printed packaging, Offset printed packaging, Protective packaging

Main competitors for containerboards include Mondi, Prinzhorn, BillerudKorsnäs and SCA and for corrugated packaging Smurfit Kappa and DS Smith

<table>
<thead>
<tr>
<th>Divisional strategic target</th>
<th>Q2/18</th>
<th>Q2/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging Solutions</td>
<td>Operational ROOC &gt; 20%</td>
<td>25.6%</td>
</tr>
</tbody>
</table>
Geographical exposure – Packaging Solutions

Production Facilities

Switzerland

Sweden
Jönköping
Skene
Vikingstad

Estonia
Tallinn

Latvia
Riga

Lithuania
Kaunas

Poland
Lodz
Mosina
Ostroleka
Tychy

Russia
Arzamas
Balabanovo
Lukhovitsy

Finland
Heinola
Kristinankaupunki
Lahti
Varkaus

Sales

Beijing
Shanghai
Dongguan
We have strong market position and growth in our home packaging markets

Europe

**Northics**
- 0.7 BEUR
- 0–1% CAGR
- #1
- 107%*

Poland & Baltics
- 1.5 BEUR
- 3–5% CAGR
- #2
- 85%*

Russia
- 1.7 BEUR
- 3% CAGR
- #4
- 62%*

Source: Stora Enso analysis
Note: CAGR 2016–2026
* Relative market share, measured as a share of largest competitor

China

Using virgin fibre boards from Beihai and Europe

**Corrugated packaging**

- Corrugated & consumer packaging

**China**
- 1.8 BEUR
- 5–6% CAGR
- #5
- ~20%*
Strong position and growth in our home box markets

Key box markets:

<table>
<thead>
<tr>
<th>Country</th>
<th>BEUR</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordics (#1)</td>
<td>0.7</td>
<td>1–2%</td>
</tr>
<tr>
<td>Poland &amp; Baltics (#2)</td>
<td>1.9</td>
<td>3–5%</td>
</tr>
<tr>
<td>Russia (#5)</td>
<td>2.4</td>
<td>3%</td>
</tr>
<tr>
<td>China (#3)*</td>
<td>1.8</td>
<td>7%</td>
</tr>
</tbody>
</table>

*Position in rigid box market

Key box segments:

- Food
- Retail
- Industrial goods
- E-commerce
- Consumer electronics

*19 July 2019
Stora Enso
E-commerce is driving growth in packaging

E-commerce packaging by materials
(Global market value share, 2017)

- 80% Corrugated
- 15% Flexibles
- 1% Protective mailers
- 3% Cushioning

Corrugated packaging growth in E-commerce
• ~15% CAGR (2017–2021)
• ~33 BEUR market value globally and ~6 BEUR in Europe in 2021
• ~13 BEUR market value added in E-commerce segment globally until 2021

Note: Market values for Global and Europe (Western, Central and Eastern) in 2021. 0.85 USD/EUR average exchange rate used in calculations.
Source: Statista 2018; Smithers Pira – Future of e-commerce packaging to 2022
Containerboard net balance

Testliner. Recycled fluting, 600 000 tonnes
SC Fluting capacity 300 000 tonnes
Kraftliner Capacity 390 000 tonnes

Containerboard
Production
1 200 000 tonnes

Internal consumption
310 000 tonnes
External purchases
240 000 tonnes

Balance
~650 000 tonnes
Corrugated packaging is also growing in Europe

Source: Pöyry, Risi, ICCA, Stora Enso analysis
Biomaterials

• Biomaterials offers a wide variety of pulp grades

• End uses: printing and writing papers, specialty papers, graphic papers, packaging paperboards and tissue

• Fluff pulp primarily used in diapers and hygiene products

• Dissolving pulp for textiles

• We are maximising the business potential of the by-products extracted in our processes, such as tall oil and turpentine from biomass. Based on our strong innovation approach, all fractions of biomass, like sugars and lignin, hold substantial potential for use in various applications
Biomaterials—geared towards growth

<table>
<thead>
<tr>
<th>Divisional strategic target</th>
<th>Q2/18</th>
<th>Q2/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomaterials</td>
<td>18.6%</td>
<td>15.6%</td>
</tr>
</tbody>
</table>

Sample product categories:

- Paper, packaging and tissue production: **Supreme by Stora Enso (Softwood)**, **Perform by Stora Enso (Hardwood)** and **Select by Stora Enso (Hardwood)**.
- Fluff pulp for hygiene products; diapers, and feminine care products: **Care by Stora Enso**
- Dissolving pulp for viscose fabrics e.g. textiles, pharmaceuticals, sponges, cellophane: **Pure by Stora Enso**
- Lignin (adhesive for construction, carbon fibre and energy storage) **Lineo™ by Stora Enso**
- Xylose
- By-products: tall oil, turpentine

Main competitors include UPM, Metsä Fibre, Södra, Arauco and Suzano.

---

47 19 July 2019

Stora Enso
Biomaterials worldwide

<table>
<thead>
<tr>
<th>Grade</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-fibre pulp</td>
<td>950</td>
</tr>
<tr>
<td>Long-fibre pulp</td>
<td>550</td>
</tr>
<tr>
<td>Fluff pulp</td>
<td>350</td>
</tr>
<tr>
<td>Dissolving pulp</td>
<td>250</td>
</tr>
<tr>
<td>Net market pulp</td>
<td>2,100</td>
</tr>
</tbody>
</table>

- **Montes del Plata**
  - Capacity: 1.4Mt/a,

- **Veracel**
  - Capacity: 1.2Mt/a

- **Enocell**
  - Capacity: 490kt/a

- **Skutskär**
  - Capacity: 540kt/a

- **Sunila**
  - Capacity: 375kt/a

- **Stora Enso**
  - Shared Ownership (50%)

- **Stora Enso Biomaterials’ Mills**
Demand for all pulp grades is growing by 2.3%

**Textiles, nonwovens**
- 107 Mt market, growing 3%/y
- 6.8 Mt market pulp (dissolving)

**Carton board**
- 48 Mt market, growing 2%/y
- 5.3 Mt market pulp

**Tissue**
- 36 Mt market, growing 4%/y
- 23 Mt market pulp

**Hygiene**
- 590 billions of converted unit, growing 3.5%/y
- 6.2 Mt market pulp (fluff)

**Paper**
- Specialty: 29 Mt market, growing 2%/y
- 9 Mt market pulp

**Graphic:**
- 101 Mt market, declining -1%/y
- 17 Mt market pulp

Pulp consumption increase (Mt)

- Grow segments
- Graphic paper

Sources:
Pöyry Consulting Group, Hawkins Wright, Smithers Pira, RISI
Balanced market expected in pulp

Announced capacity growth 2018–2022: 2.8 Mt (0.56 Mt/year)

- Softwood 0.8Mt
- Hardwood 2.0Mt

Source: Hawkins Wright (April 2018)

Pulp demand 2018–2022: + 1.6 Mt/year (2.5% CAGR)

No new major projects announced
Megatrends support the demand for virgin pulp in China

To 2030:

- **Urbanisation**: 58% (5+200 million people)
- **Growing middle class**: 70%
- **Changing lifestyles**: 60% (safe sanitation services)
- **Eco awareness**: 90%

**From 14 kg to 21 kg per capita consumption**

- **5 trillion** (private consumption in USD)
- **9.6 trillion**

**+10 Mt** of hardwood and softwood

Source: World Bank, UN Global Goals, Morgan Stanley Research, RISI, Stora Enso
We continue with our strategic focus areas

Maximise value from eucalyptus pulp
- Continue to improve production efficiency
- Constantly improve the cost competitiveness of Montes del Plata

Differentiate our Nordic pulp business
- Reduce exposure in softwood
- Grow in fluff and dissolving pulp
- Continue to improve production efficiency
- Innovate on pulp applications with current customers

Generate profitable growth from innovation platforms
- Build and develop strong business on:
  - Improved pulp properties
  - Regenerated cellulose and MFC
  - Lignin
  - Bio-based chemicals
  - Extraction and separation technologies
We are differentiating our pulp mix

Maximize value from eucalyptus pulp

Improve competitiveness of our Nordic mills (Fluff and dissolving)

Today

- Softwood: 45%
- Hardwood: 29%
- Fluff/dissolving: 26%

Target 2020

- Softwood: 43%
- Hardwood: 42%
- Fluff/dissolving: 15%
Innovation is key for sustainable profitable growth

Product platforms

1. Improved pulp properties
2. Regenerated cellulose & MFC
3. Lignin
4. Bio-based chemicals

Technology platform for extraction & separation
Creating value from renewable, reusable and fossil free materials

<table>
<thead>
<tr>
<th>Innovation Platforms</th>
<th>Value proposition</th>
<th>End markets</th>
<th>Time to market</th>
<th>Market Potential: Size / value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved pulp properties</td>
<td>Increased material efficiency and performance</td>
<td>Specialty papers, hygiene fibre-based packaging</td>
<td>Continuous</td>
<td>2.6 Mt / 1.4 BEUR</td>
</tr>
<tr>
<td>Regenerated cellulose</td>
<td>Novel sustainable material from cellulose</td>
<td>Textile, and as film material in packaging</td>
<td>2020–2022</td>
<td>20 Mt / 35 BEUR</td>
</tr>
<tr>
<td>MFC</td>
<td>Increased material efficiency and performance</td>
<td>Specialty papers, coatings, cosmetics, and as film material in packaging</td>
<td>2019–2021</td>
<td>0.7 Mt / 1.6 BEUR</td>
</tr>
<tr>
<td>Lignin</td>
<td>Replace fossil-based materials</td>
<td>Resins and adhesives Carbon fibre Carbons for energy storage</td>
<td>2017–2023</td>
<td>1 Mt / 1.7 BEUR</td>
</tr>
<tr>
<td>Bio-based chemicals</td>
<td>Replace fossil-based materials for plastics</td>
<td>Packaging</td>
<td>2026–2027</td>
<td>2 Mt / 2.5 BEUR</td>
</tr>
</tbody>
</table>

Sources: Hawkins Wright, The Fiber Year 2018, EMBS, Smithers Pira, Transparency market research, Price Hanna consultants, Composites Marktbericht, Plastics Insight, Stora Enso experts
Wood Products

**Products**

- Cross Laminated Timber - CLT
- Laminated Veneer Lumber - LVL
- Construction beams
- Industrial components
- Biocomposites
- Classic sawn
- Classic Planed
- Pellets

**Services**

- Panel systems
- Modular systems
- Building Systems
- Walls, floor, roofs etc.
- Building Components
- Integrated distribution concept

**E-tools**

- MySupply E-business
- Pellet webshop
- BIM Digital tools
- CLT360
- Calculatis
The wood used removed 1,500 tonnes of CO₂ from the atmosphere, and it equals annual emissions of over 500 passenger cars.
Strong and light without losing flexibility in design

Millimetre precision using latest technology

Head above Water
London, England
Wood Products – accelerating growth

Sample product categories:
- Classic sawn
- Classic planed
- CLT (Cross laminated timber)
- LVL (Laminated Veneer Lumber)
- Construction beams
- Window and door components
- Building Solutions
- Building Components
- ThermoWood
- Pellets
- Biocomposites

Main competitors include Binderholz, Holzindustrie Schweighofer, SCA Timber and Metsä Fibre
Our operations well positioned in Europe

- **Number of mills**: 4,038
- **Capacity**: 5.6 Mm³
- **Sales to countries**:
  - Czech: 3
  - Poland: 2
  - Germany: 1
  - Netherlands: 1
  - Austria: 1
  - Finland: 1
  - Russia: 2
  - Sweden: 2
  - Estonia: 2
  - Latvia: 1
  - Lithuania: 1

**Grade and Capacity**:

- **Sawn goods**: 5.6 Mm³
- **Further processing**: 2.7 Mm³
- **CLT**: 205,000 m³
- **LVL**: 75,000 m³
- **Pellets**: 495,000 t

**Revenue**: EUR 1.6 billion
Getting the right log is critical for profitability in Wood Products

- Customer demand
- Sawing pattern
- Log pricing
- Cutting
- Purchasing

Demand flow

Material flow
Biocomposites will generate further growth
First time a truly cost-competitive material compared to general purpose plastics

- Revenue creation from totally new production stream
- Development in 2018
  - Production line in Hylte inaugurated
  - Next investments ongoing
  - Competence Centre under progress
- Market introduction ongoing
  - DuraSense™ by Stora Enso brand launched
  - First commercial deliveries with brand owners: ie Orthex and H&M
  - Cooperation with NorDan to develop biocomposite materials for 3D printing ongoing
The leading provider of innovative wood based solutions

2012–2014  
Building a foundation

• Saved 50 MEUR
• Created a lean base

✓ IMPLEMENTED

2015–2017  
Selected growth

• Increased the annual growth of added value products with 15%
• Started Business Process Development program (BPD) based on digitalisation

✓ IMPLEMENTED

2017–  
Profitable growth for total division

• ROOC > 20%
• Target 10% annual growth in sales
• Continue focus on BPD and digitalisation
• Launch new products and services

➢ ONGOING
Paper

• The second largest paper producer in Europe with an established customer base and wide product portfolio for print and office use

• The wide selection covers papers made from virgin wood and recycled fibres

• Customers: publishers, retailers, printing houses, merchants, converters and office suppliers

• End uses: newspapers and supplements, books, magazines, advertising, note books, art books, office
Paper – geared to cash generation

Sample product categories
- Paper selection for print media: Newsprint and book papers, Uncoated mechanical papers (SC), Coated papers (Brands: e.g Nova, InnoPress)
- Paper selection for office use: transactional needs, office printing, writing and educational needs (Brands: e.g 4CC, MultiCopy, Zoom)

Main competitors include UPM, Sappi, Norske Skog, Holmen and the Navigator company
## Paper worldwide

<table>
<thead>
<tr>
<th>Grade</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 000 t</td>
</tr>
<tr>
<td>Newsprint</td>
<td>1 800</td>
</tr>
<tr>
<td>Uncoated Magazine (SC)</td>
<td>1 200</td>
</tr>
<tr>
<td>Coated Magazine</td>
<td>250</td>
</tr>
<tr>
<td>Total Magazine Paper</td>
<td>1 450</td>
</tr>
<tr>
<td>Coated Fine*</td>
<td>1 100</td>
</tr>
<tr>
<td>Uncoated Fine</td>
<td>1 000</td>
</tr>
<tr>
<td>Total Fine Paper</td>
<td>2 100</td>
</tr>
<tr>
<td><strong>Paper Total</strong></td>
<td><strong>5 350</strong></td>
</tr>
</tbody>
</table>

*Oulu coated fine paper production to continue until end of September 2020*
Since 2013 we have transformed our Paper business

<table>
<thead>
<tr>
<th>Metric</th>
<th>Change 2013-Q3/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper demand in Europe</td>
<td>-17%</td>
</tr>
<tr>
<td>Our production capacity</td>
<td>-33%</td>
</tr>
<tr>
<td>Our deliveries</td>
<td>-21%</td>
</tr>
<tr>
<td>Our accidents</td>
<td>-82%</td>
</tr>
<tr>
<td>Customer satisfaction*</td>
<td>+20%</td>
</tr>
</tbody>
</table>

Optimising profitability and cash flow:
- Focus on the right product and customer segments
- Pricing excellence
- Variable and fixed cost control
- High operational efficiency and capacity utilisation
- Focused investments
- Working capital reduction
- Innovation and digitalisation

*) Percentage points in NPS
Innovations
Innovations – a few snapshots
Focus on innovations

In 2018, Stora Enso’s expenditure on research and development was EUR 149 million, which was equivalent to 1.4% of sales.

56 priority founding patent applications filed and over 324 patents granted worldwide
We are investing more in innovation and R&D

Source: Stora Enso, annual reports 2018

R&D expenditure in 2018

149 MEUR

Peers:
- Borregaard
- IP
- Metsä Board
- Mondi
- SCA
- Smurfit Kappa
- UPM
Innovation projects with high potential impact to transformation

- Bio-barriers, MFC films
  - Liquid and food packaging
- Native and modified MFC
  - Specialty papers, nonwovens, personal and home care, barrier materials
- Intelligent packaging
  - Sophisticated applications to brand owners and supply chains
- Bio-based plastics
  - Chemical intermediates
- Dissolving pulp to novel cellulose materials
  - Textiles and nonwovens

- Lignin for phenol replacement
- Carbon fibre
  - Sports and leisure, wind energy, automotive, aviation
- Bio-based carbons for energy storage
  - Anode material for batteries, activated carbon for double layer capacitors
- Biocomposites
  - Replacement of fossil-based plastics in composites
Innovation in packaging
Advancing the renewable packaging industry with innovations

- Microfibrillated cellulose (MFC)
- Biobarrier coatings
- Biocomposites
- Intelligent packaging
- Design driven innovation
We see many new opportunities to replace fossil-based materials... 

**Lignin-based products**
- Lineo™ by Stora Enso
- Carbon fibre
- Carbon for energy storage

**Biocomposites**
- DuraSense™ by Stora Enso for wood-based biocomposites
- Less fossil-based materials with higher share of fibre

**Liquid packaging MFC**
- Source reduction

**MFC films**
- Functional barriers for paper and board packaging

- Market size 1.2 BEUR
- Growth ~20%/a
- EBITDA 30–50%

- Market size 7 BEUR
- Growth ~15%/a
- EBITDA 20–30%

- Market size 1.5 BEUR
- Growth ~5%/a
- EBITDA >20%
...Iceland Foods chooses our Trayforma to replace plastics

- Iceland Foods, the UK’s leading specialist retailer in the frozen food category, launched the first plastic-free pledge for its own brand products for a UK supermarket
  - Target is to be plastic-free by 2023 through an overhaul of their entire product range
- Ready meals packed in paperboard trays
- Trayforma™ by Stora Enso food-safe and suitable for cooking at high temperatures in ovens and microwaves food trays
Micro-fibrillated cellulose improves product properties and can replace fossil-based materials

**Today**

• MFC is used to make more durable, lighter, high-quality packaging products

**Future potential**

• Barrier coating solutions for grease and oxygen barriers
• Biodegradable replacement for aluminium foil
• Carrier for example in cosmetics
• 3D printing
Biocomposites – gradually replacing plastic

- Use in products, such as disposable cutlery, furniture, as well as storage and logistics goods
- Raw material for markets where plastics dominate
- Can reduce the consumption of fossil-based plastic by up to 60%
- Always a better alternative than fossil-based plastic
  - Reduce the carbon footprint of a product up to 80%

Target market
4.5 Mt
1-5 years

DuraSense™ by Stora Enso
Stora Enso, Intelligent Packaging

- Digitalization of packaging and product flows using RFID technology
- Offering provided in three focus areas from tag products to retail and pulp&paper solutions
- Circa 40 people in Europe and Asia
- Milestones:
  - Started 10 years ago in Stora Enso, last 3-4 active commercialization.
  - 2017 - Inauguration of PackPerformance Center in: a dedicated RFID development and testing site in Tampere, Finland
  - 2018 – Establishment of Business Unit structure for Intelligent Packaging within Stora Enso group
  - 2018 – Launching ECO™ technology
Intelligent packaging
Connecting packages, products and value chains
Scope of Intelligent Packaging

- Complete offering for end-to-end execution
- Value driven approach to digitalisation projects
- Unique capabilities to connect products and embed identifiers
- Post sales support
- Software platform and supporting enterprise software integrations
Business success requires end-to-end solution
From tags and integration to cloud and applications

**ENTERPRISE APPLICATIONS**
- Asset Management
- Track & Trace
- Data Analytics

**CLOUD PLATFORM**
- Data Integration
- Data Collection
- Data Processing
- Data Analytics

*Intelligent Packaging Cloud data platform (Microsoft Azure)*

**READER INFRASTRUCTURE**
- RFID Gate
- RFID Cabinet
- RFID Forklift
- RFID Station
- RFID Tunnel
- RFID Truck Gate
- Handhelds

**TAG & INTEGRATION**
- Tags Design & Performance
  - Bracket
  - Bobbin
  - Bumper
  - Tail
  - Stripe
- Tag Manufacturing & Converting
  - Conventional
  - Sustainable ECO RFID Tech

**Integrations**
- ERP
- MES
- PDM
- CRM

---

Business case evaluations
Solution design
Installation & Maintenance Services
Application development
Studies show significant benefits for RFID

<table>
<thead>
<tr>
<th>Key Retail Metric</th>
<th>Before RFID</th>
<th>After RFID</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory Accuracy</td>
<td>67.4%</td>
<td>84.5%</td>
<td>25.4%</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>64.6%</td>
<td>71.7%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Store Out-of-Stocks</td>
<td>16.5%</td>
<td>9.8%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Shrinkage</td>
<td>17.8%</td>
<td>11.8%</td>
<td>33.7%*</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>8.9%</td>
<td>14.3%</td>
<td>60.7%</td>
</tr>
<tr>
<td>Average Markdown</td>
<td>14.8%</td>
<td>11.9%</td>
<td>19.6%*</td>
</tr>
</tbody>
</table>

* Improvement is reflected by reduction
Source: EKN—Kurt Salmon RFID in Retail Survey, 2016

McKinsey study 2018 on Supply Chain potential of Intelligent Packaging in industrial goods

- Tied-in capital reduction: 3-11%
- Cost decrease in supply chain: 4-7%
- Improvement in service level and product availability: 1-2%
ECO RFID Tag Technology
Unique RFID technology launched in Nov 2018

Key benefits:
- Sustainable
- Reliable
- Performant
- Cost neutral

Available in several tag designs

Traditional RFID structure:
6 layers + release liner

ECO RFID structure:
3 layers + release liner
Digitizing Supply Chains for better visibility

- **Automated inventory management** with RFID-gates that auto-register which RFID-tagged items enter the warehouse at inbound and leave the warehouse at outbound.

- **Automated counting and scanning** as RFID reader scans contents of box with RFID-tagged items, useful in receiving and picking.

- **Automated cycle count** with handheld RFID-reader (or even a drone with an RFID-reader) performs cycle count of items in floor storage.

- **Forklifts** with RFID-scanners enable sensing of pick/put-away locations quality controls that correct packages are picked.

- **Stock location management** RFID readers on shelves sense which RFID-tagged items are placed on the shelves.

- **Shipping QC** with RFID-reader gate verifies that correct RFID-tagged packages are loaded on the truck avoiding incorrect shipments.

- **Dispatch navigation** with RFID-readers in the ceiling identify items in the dispatch area and lights guide workers to correct boxes.

- **Packaging validation** with RFID-reader in pack stations verifies content of package being built – verifies pack completion and warns if line items are missing.

- **Returns management** with RFID tags also on return flow from customers or other warehouses to enable full integration with other use cases.

- **RFID-reader in trunk of van** keeps automated inventory count and tracks RFID-tagged equipment.

- **Smart container** with RFID-readers at the door that register which RFID-tagged items enter and leave the container.

- **Returns management** anti-tamper protection of goods with sealed tag and/or unique code to identify genuine product.
Retail and RFID
RFID market development example – Macy’s

“Men’s and women’s undergarments, men’s slacks, denim apparel and women’s shoes”

30% 2012
60% 2016
100% 2017

Source: RFID Journal October 2016
Stora Enso

“All lines of businesses at its stores, except for jewelry and cosmetics.”

“All items in every store tagged.”

“Men’s and women’s undergarments, men’s slacks, denim apparel and women’s shoes”

Macy’s to RFID-Tag 100 Percent of Items
Speaking at last week’s RFID in Retail and Apparel conference, Bill Carson, the company’s SVP of logistics and operations, said Macy’s aim is to have all items RFID-tagged at the source by the end of 2017.

By Mark Reuther
Tags: Apparel, Retail, RFID Journal, Source: Chain

Stora Enso

The company plans to RFID-enable its Macy’s and Bloomingdale’s stores in 2012, and will tag garments most often replaced—accounting for about 30 percent of the retailer’s sales.

By Claire Swedberg
Tags: Apparel, Inventory, Warehouse Management, Manufacturing, Retail

What is RFID?
• Radio Frequency Identification (RFID) is the use of radio waves to read and capture information stored on a tag attached to an object.

• RFID tag can be read from up to several metres away
• There is no need for a direct line of sight
• Fast reading speeds
• Two types — NFC for short range consumer applications — UHF for long range reading in supply chain applications

30% 2012
60% 2016
100% 2017

“Men’s and women’s undergarments, men’s slacks, denim apparel and women’s shoes”

“All lines of businesses at its stores, except for jewelry and cosmetics.”

“All items in every store tagged.”

Source: RFID Journal October 2016
Stora Enso
Item Level Tagging Benefits in retail stores

Example in food category

- Waste reduction **up to 20%**
- Labour cost reduction **up to 50%**
  - Cut labour costs of shelf life management
  - Improve visibility of use-by dates
  - Simplify mark down process
  - Reduce net food waste in store
  - Improve stock rotation
  - Enhance recall management

*Based on Avery Dennison pilots and retailer feedback*
Innovative and award-winning design

• Leak-tight renewable and 100% recyclable packaging for fresh fish
• WorldStar packaging award
• Sustainability award by World Packaging Organisation

• Original design replacing traditional pressed pulp packaging for eggs
• Best packaging and label award for Food at ProdExtraPack
Stora Enso named Husqvarna’s most innovative supplier

Long term collaboration between Stora Enso and Husqvarna Group

Motivation for the award:

Stora Enso invests for the long term in competence, resources and proactive involvement in order to understand its customers’ needs. Through this initiative, Stora Enso has enabled Husqvarna to sustainably achieve its ambitious goals concerning development and innovations in the supply chain.

New packaging for chain saws reduces cost and CO₂ emissions

- + 37% capacity fill
- - 5 300 pallets/year
- - 180 containers/year
- - 190 000 kg CO₂/year
Innovation in Biomaterials

- Pulp applications
- Cellulose modification and pulp process by-products
- Developing the extraction technology
- Further development of sugars
From wood to renewable products

Extraction and separation technologies

20–30% lignin
25–35% hemicellulose
35–45% cellulose

Cellulose and hemicellulose

Sugars

Lignin

Lignin, biochemicals, bioplastics, regenerated cellulose, pulp etc
Innovation is key for sustainable profitable growth

Product platforms

1. Improved pulp properties
2. Regenerated cellulose & MFC
3. Lignin
4. Bio-based chemicals

Technology platform for extraction & separation
Platform 1: improving pulp properties for existing products

**Fluff pulp**
- Hygiene and health, growing by 3.6% per year
- Life expectancy and increased disposable income in developing countries
- Improve fluff pulp properties to increase customer value

**Dissolving pulp**
- Dissolving pulp to textiles is a 6.1 Mt market, growing 6.8% per year
- The increase of cellulosic fibre in textiles is driven by global brand owners
- Improve quality to be able to differentiate in the value chain

**Pulp for specialty papers**
- Flexible packaging, labels, security, décor, among others
- 28 Mt market, growing 1.8% per year
- Fibre improvements, special additives, sustainable coatings & barriers, source reduction and other innovation opportunities

Source: Smithers Pira, Hawkins Wright
Platform 2: Developing new technologies for using wood fibre in textiles, non-woven and specialty papers

### Regenerated cellulose
- Participate in the development of new technologies for using wood fibre in textile
- Growing interest from global brand owners increases demand for renewable fibres
- Opportunity to leverage on existing assets to enter this new market

### MFC
- MFC has potential to be used in specialty papers and non-woven
- MFC is a versatile material with potential to work as strength enhancer, additive, binder and barrier material
- Stora Enso has a long history in the research of MFC and has a demonstration plant in Imatra, Finland

Source: Stora Enso
Platform 3: Lignin – big opportunities in many markets

**Phenol replacement**
- Phenolic resins is a 2.8 Mt market, growing at 4% CAGR
- It replaces phenol in adhesives for plywood, OSB (oriented strand board), laminates, LVL and other wood construction materials
- The carbon footprint for lignin is roughly 1/10 of the carbon footprint of phenol

**Carbon fibre**
- Light-weight high performance composites
- 70–80 Kt market, growing at 9–12% CAGR
- Low-carbon-footprint carbon fibre is unoccupied market space

**Energy storage**
- Substitution of conventional hard carbon anode materials in energy storage, namely Li-Ion Batteries and Supercapacitors
- Market growing on average by 20% CAGR
- Key applications: portable consumer electronics, power tools, electrical vehicles, stationary applications and back-up systems

Source: Stora Enso, Carbon Composites, IDTechEx, LuxResearch, Markets and Research, Zion Research
Renewable Lineo™ by Stora Enso can replace fossil-based materials

- Wood-based lignin is a renewable, non-toxic, traceable material
- Environment benefit, for example, in carbon fibres, energy storage and mechanical forest industry
- Today as a replacement for oil-based phenolic materials in glues for example in plywood and paper lamination
- Lignin makes up 20-30% of round wood
Platform 4: Bio-based chemicals replacing fossil-based materials

Bioplastics and intermediates

- Growing interest in packaging/bottling markets for renewable solutions
- Reduction on carbon footprint and enhanced properties are key target areas
- Market clearly favoring second generation biomass as the raw material source
- It is a very populated market place, thus, strategic alliances will be crucial to win in this industry

Xylose

- Key application is the xylitol (sweetener) market (approximately 120 Kt at 4–6% CAGR)
- Compared to C6 sugars it still is a rather undeveloped market, mainly due to lack of pure xylose availability. This is changing with the biorefinery concepts
- Growing interest and developments taking place in the market
- Stora Enso well positioned to be a frontrunner here

Source: PwC, Kline and Industry experts
Innovation in Wood Products

Product innovations

Building Systems

Digitalisation
From a classic sawn producer to a leading provider of innovative wood-based solutions

- Classic sawn
- Cross Laminated Timber (CLT)
- Laminated Veneer Lumber (LVL)
- Industrial components
- Construction beams
- Pellets
- Building Solutions
- Online services and e-business
Building Systems driving growth

Find the film from Stora Enso’s YouTube page (youtube.com/storaenso), or use a direct link youtube.com/watch?v=3El9h9p_T5k
New ways of improving efficiency through digitalisation – Forest categorisation & log value

- Buyer takes pictures
- Pictures to cloud service
- Cloud
- Calculation
- ProCalc data - Value of logs
- Results
  - Quality class
  - Value for sawmills
  - Pricing proposal for buyer

Stora Enso
Digitalisation in Wood Products

1. Market information

2. Product demand forecast based on market

3. Optimised raw material specification based on demand

4. Forest categorisation based on collected info

5. Trees cut based on profit optimisation

6. Individualisation of each log and digital data transfer to mill

7. Scan each single log

8. Simulate production, based on demand and log info

9. Automate, robotise and mobilise production

10. Scan each single product

11. Intelligent products

12. Digital customer interaction

Wood Products end-to-end Digitalisation

Stora Enso
Group’s financial performance, dividend policy, ownership and top management
Financial performance - Group

MEUR

2012 2013 2014 2015 2016 2017 2018 Q1-Q2/18 Q1-Q2/19
Sales Operational EBIT margin (%) Operational EBITDA margin (%) Operational ROCE (%)
Cost structure 2018
% of costs

- Logistics and commissions: 5%
- Fibre: 14%
- Chemicals and fillers: 10%
- Energy: 7%
- Material: 7%
- Personnel: 7%
- Depreciation: 11%
- Other: 12%
- Depreciation: 34%
Capex on targeted levels

Capex estimate for 2019 includes the capitalised leasing contracts according to IFRS 16 Leases standard.
Large number of opportunities prioritised through robust capital allocation

- Systematic approach on Group capex (>10MEUR)
  - Investment Working Group headed by CFO reviews all the proposals to ensure quality and prioritisation
  - Alignment with the Stora Enso strategy and financial and sustainability targets
- Selective investments to strategic projects in winning markets and products
- New cash flow modelling tool helps asset prioritisation with 20–30 years perspective

<table>
<thead>
<tr>
<th>Divisional financial targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
</tr>
<tr>
<td>Packaging Solutions</td>
</tr>
<tr>
<td>Biomaterials</td>
</tr>
<tr>
<td>Wood Products</td>
</tr>
<tr>
<td>Paper</td>
</tr>
</tbody>
</table>
Targeted ROOC is driving CAPEX allocation
Capex forecast in 2019 (at the end of Q2 2019)

* Operational ROOC target
** Cash flow after investing activities to sales target
Year-on-year net debt/EBITDA

MEUR

Q114  Q314  Q115  Q315  Q116  Q316  Q117  Q317  Q118  Q318  Q119

Net debt  Net debt to operational EBITDA
Maturity profile Q2 2019

Revolving Credit Facility 600 MEUR matures in January 2023 and is fully undrawn

- Bonds
- Forest owner deposits
- Loans from Financial Institutions
- Other loans / liabilities
- Joint Venture Financing
- Commercial Papers
- Bridge loan for Swedish forest holdings
- Revolving Credit Facility 600 MEUR
Sustainability in our funding and reporting

**Revolving Credit Facility with a green aspect**

Pricing includes sustainability component based on ability to reduce greenhouse gas emissions.

**Green Bond Framework**

A loan-format to support sustainability-focused fixed income investors and to report environmental impacts.

**Green Bonds**

First green bonds issued in February 2019 to finance Bergvik Skog forest acquisition.

**Sustainable Finance strategy**

The aim is to influence and develop the financial markets and to secure funding partners with sustainability agenda.

**Climate-related financial disclosure**

CFO support for better disclosure of climate risks and opportunities based on recommendations by the Financial Stability Board’s Task Force on Climate-related Financial Disclosures (TCFD).

**Integrated reporting**

Stora Enso dividend policy

- Strive to pay stable dividends linked to the long-term performance
- Half of the EPS over the cycle
Ownership Distribution
as of 30 June 2019

<table>
<thead>
<tr>
<th>Ownership Category</th>
<th>% of Shares</th>
<th>% of Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solidium Oy*</td>
<td>10.7%</td>
<td>27.3%</td>
</tr>
<tr>
<td>FAM AB</td>
<td>10.2%</td>
<td>27.3%</td>
</tr>
<tr>
<td>Social Insurance Institution of Finland (KELA)</td>
<td>3.1%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Finnish institutions (excl. Solidium and KELA)</td>
<td>12.7%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Swedish institutions (excl. FAM)</td>
<td>7.9%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Finnish private shareholders</td>
<td>4.7%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Swedish private shareholders</td>
<td>3.9%</td>
<td>2.5%</td>
</tr>
<tr>
<td>ADR holders</td>
<td>2.1%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Under nominee names (non-Finnish/non-Swedish shareholders)</td>
<td>44.7%</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

* Entirely owned by the Finnish State
# Major Shareholders

**as of 30 June 2019**

<table>
<thead>
<tr>
<th>By voting power</th>
<th>A shares</th>
<th>R shares</th>
<th>% of shares</th>
<th>% of votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Solidium Oyj*</td>
<td>62 655 036</td>
<td>21 792 540</td>
<td>11</td>
<td>27.3</td>
</tr>
<tr>
<td>2 FAM AB**</td>
<td>63 123 386</td>
<td>17 000 000</td>
<td>10</td>
<td>27.3</td>
</tr>
<tr>
<td>3 Social Insurance Institution of Finland (KELA)</td>
<td>23 825 086</td>
<td>973 982</td>
<td>3</td>
<td>10.1</td>
</tr>
<tr>
<td>4 Varma Mutual Pension Insurance Company</td>
<td>8 513 018</td>
<td>1 140 874</td>
<td>1</td>
<td>3.6</td>
</tr>
<tr>
<td>5 Ilmarinen Mutual Pension Company</td>
<td>3 153 488</td>
<td>18 846 477</td>
<td>3</td>
<td>2.1</td>
</tr>
<tr>
<td>6 MB-Bolangen i Vetlanda AB (incl. Stiftelsen Seydlitz Småland)</td>
<td>4 826 020</td>
<td>1 100 000</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>7 Erik Johan Ljungberg's Education Foundation</td>
<td>1 780 540</td>
<td>2 336 224</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>8 Swedbank Robur Funds</td>
<td>0</td>
<td>15 366 517</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>9 Elo Mutual Pension Insurance Company</td>
<td>0</td>
<td>8 369 000</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>10 Bergslagetz's Healthcare Foundation</td>
<td>626 269</td>
<td>1 609 483</td>
<td>0</td>
<td>0.3</td>
</tr>
<tr>
<td>11 AFA Insurance</td>
<td>0</td>
<td>7 082 090</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>12 The State Pension Fund</td>
<td>0</td>
<td>5 613 755</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>13 Lannebo Funds</td>
<td>0</td>
<td>5 605 000</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>14 Nordea Investment Fund</td>
<td>0</td>
<td>5 569 847</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>15 Keva (Local Government Pensions Institution)</td>
<td>0</td>
<td>5 251 101</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>16 Investment Fund OP Suomi</td>
<td>0</td>
<td>4 340 000</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>17 Unionen (Swedish trade union)</td>
<td>0</td>
<td>3 782 750</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>18 SEB Investment Management</td>
<td>0</td>
<td>3 236 441</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>19 Schweizerische Nationalbank</td>
<td>0</td>
<td>2 773 676</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>20 The Society of Swedish Literature in Finland</td>
<td>0</td>
<td>2 050 000</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>20 largest total</td>
<td>168 502 843</td>
<td>133 839 757</td>
<td>39</td>
<td>76.4</td>
</tr>
</tbody>
</table>

*Entirely owned by the Finnish State. **As confirmed to Stora Enso.

List has been compiled by the company, based upon shareholder information from Euroclear Finland Oy and Euroclear Sweden AB share registers and a database managed by Citibank, N.A. (as the company's ADR agent bank). This information includes only direct registered holdings, thus certain holdings (which may be substantial) of ordinary shares and ADRs held in nominee or brokerage accounts can not be included. The list is therefore incomplete.
Group Leadership Team

CEO
Karl-Henrik Sundström

CFO
Seppo Parvi

HR
Malin Bendz

Consumer Board
Annica Bresky

Sourcing
Johanna Hagelberg

Paper
Kati ter Horst

Communication
Ulrika Lilja

Legal
Per Lyrvall

Biomaterials
Markus Mannström

Sustainability
Noel Morrin

 Packaging Solutions
Gilles van Nieuwenhuyzen

Wood Products
Jari Suominen
Board of Directors

- **Jorma Eloranta**
  - since April 2016
  - Chairman

- **Hans Stråberg**
  - since April 2009
  - Vice chairman

- **Elisabet Fleuriot**
  - since April 2013

- **Hock Goh**
  - since April 2012

- **Mikko Helander**
  - since March 2019

- **Christiane Kuehne**
  - since April 2017

- **Antti Mäkinen**
  - since March 2018

- **Richard Nilsson**
  - since April 2014

- **Göran Sandberg**
  - since April 2017
ESG indices and other external recognition in 2018

- **Euronext Vigeo**: Stora Enso is listed in the Euronext Vigeo World, Europe, and Eurozone 120 indices as one of the 120 most advanced companies in terms of environmental, social, and governance performance.

- **FTSE4Good Index**: Stora Enso is included in the FTSE4Good Index Series. These indices measure the performance of companies that meet globally recognised corporate responsibility standards.

- **ECPI Ethical Indices**: Stora Enso is included in the ECPI EMU Ethical Equity index, which covers environmental, social, and governance criteria.

- **ISS-oekom Research**: Stora Enso is classified as “Prime” by ISS-oekom Research’s environmental, social, and governance rating methodology. In 2018, Stora Enso also received the best possible Environmental & Social Quality score by the Institutional Shareholder Services (ISS).

- **MSCI**: Stora Enso is included in several of MSCI’s ESG indices.

- **EcoVadis**: Stora Enso was included in the top 1% (industry supplier) of the EcoVadis ethical supplier rating system, and achieved the highest recognition level (Gold).

- **CDP**: CDP has included Stora Enso on its new 2018 Climate A List, which identifies the global companies that are taking leadership in climate action.

- **Sustainability Reporting Awards Finland**: Stora Enso’s Sustainability Report 2017 was ranked best by the media in a competition organised by seven not-for-profit organisations representing various sectors of society. The report was short-listed among the 10 best reports in the overall competition.

- **ReportWatch**: Stora Enso’s Sustainability Report 2017, part of our Annual Report, was included in ReportWatch’s Best Practices in Annual Sustainability Reporting.

- **WBCSD**: Stora Enso’s Sustainability Report 2017 was included in the top ten sustainability reports globally, according to the 2018 Reporting matters publication by the World Business Council for Sustainable Development (WBCSD).

- **Sustainable Brand Index**: Stora Enso was ranked “Industry Leader 2018” in the Sustainable Brand Index™ B2B, which is the largest brand study on sustainability in the Nordics.

- **Equileap**: Stora Enso was ranked number 12 globally and the best performing Finnish company in gender balance and gender equality by Equileap, an organisation set up to accelerate progress toward gender equality at work.

**Most sustainable company 2018**

In November 2018, Stora Enso was ranked as the most sustainable listed company in Sweden by Dagons Industri, Aktuell Hållbarhet, and Lund University School of Economics and Management.
Sponsored ADR Programme

Stora Enso has established a sponsored Level I ADR programme in the US. The ADRs trade on the premier tier of Over-The-Counter (“OTC”) market in the US. Details are as follows:

Ticker Symbol  SEOAY
CUSIP      86210M106
Ratio           1 ADR : 1 Ordinary Shares
ADR depositary   Citibank

Share price information www.citi.com/DR or www.otcqx.com

Please contact the Citibank’s dedicated ADR broker desks:

Scott Pollak (New York) Mike Woods (London)
Tel: +1 212 723 5676 Tel: +44 20 7500 2030
Email: scott.h.pollak@citi.com Email: michael.woods@citi.com
Financial results for Q2 2019

Fit for the future, protecting profit and cash flow – Bergvik Skog transaction completed

CEO Karl-Henrik Sundström
CFO Seppo Parvi

19 July 2019
Focusing on cash flow and costs
– Profit protection programme increased to 200 MEUR
Q2 2019 year-on-year

- Sales decreased by 2.1% to 2,608 (2,664) MEUR, sales excluding Paper -0.9%
  - Decrease due to lower volumes and prices

- Operational EBIT margin 11.0% (12.3%), above 10% for 8th consecutive quarter
  - Operational EBIT 287 (327) MEUR
  - Decrease due to volumes and prices partially offset by profit protection programme with impact of +45 MEUR

- IAC negative 120 MEUR due to Bergvik Skog transaction, environmental provisions, restructuring and profit protection programme

- EPS decreased to 0.08 (0.28) EUR and EPS excl. IAC 0.22 (0.31) EUR

- Strong cash flow from operations at 548 (357) MEUR. Cash flow after investing activities 428 (231) MEUR

- Net debt to operational EBITDA ratio at 2.2x (1.3x) increased temporarily slightly over the target level of 2.0x
  - Restructuring of Bergvik Skog impact 0.6x, IFRS 16 Leases impact 0.3x

- Operational ROCE at 11.3% (15.5%) below the strategic target of 13%
  - IFRS 16 Leases impact negative 0.4 percentage points, Bergvik Skog restructuring impact negative 0.8 percentage points
Protecting profitability
Operational EBIT Q2 y-o-y

Q2 2018
Sales prices and mix
Volume
Fibre
Other variable and fixed costs
Depreciation
Profit protection programme
Associates
Q2 2019
Costs related to Bergvik Skog

327 12.3%
-32
-.16
-.16
-.5
45
-13
287 11.0%
9
296 11.3%
Profit protection programme target increased to 200 MEUR

• Programme is proceeding ahead of plan
  - 60 MEUR cost savings achieved by end of Q2
  - About half of the increased target will be achieved during 2019 and the full impact by the end of 2020

• Programme includes announced Wood Products related actions for value creation
Events during Q2

- Decision on Oulu conversion
  - 350 MEUR investment
  - Conversion of PM7 into 450 000 t/a high-quality virgin-fibre-based kraftliner production
  - Closure of PM6 and the sheeting plant
  - Paper production ending in Sept 2020
  - Production of kraftliner to start by the end of 2020

- A new renewable paperboard for paper cups, Cupforma Natura Solo™ introduced
  - Without a traditional plastic coating layer
  - Designed for full fibre recovery in a recycling process

- DuraSense White launched
  - Biocomposite with lower carbon footprint suitable for replacing plastic packaging components as caps, lids and other types of food contact closures
Expansion evaluation in Wood Products

• Feasibility study for a possible cross laminated timber (CLT) unit in connection with Ždírec sawmill in Czech Republic
  - CLT capacity approximately 120,000 m³/a
  - Study to be completed by the end of 2019

• Feasibility study for a new construction beam mill at Ybbs sawmill in Austria
  - Construction beams capacity of 60,000 m³/a
  - Study to be completed by end of Q1 2020

• Capex estimate approximately 90 MEUR
investment in bio-based carbon materials for energy storage

• Investment further strengthens Stora Enso’s opportunities to replace fossil-based and mined raw materials as well as to connect sustainable materials to ongoing technology innovations.

• Wood-based carbon can replace fossil-based graphite and be utilised as a crucial component in batteries typically used in consumer electronics, the automotive industry and large-scale energy storage systems.

• 10 MEUR investment to build a pilot facility for producing bio-based carbon materials based on lignin
  - Pilot plant to Sunila Mill in Finland
  - Construction of the pilot facility to be complete by early 2021
  - Decisions about commercialisation will follow after evaluating the results of the pilot-scale production.
## Strong cash flow
### Summary financials Q2 2019

<table>
<thead>
<tr>
<th></th>
<th>Q2/19</th>
<th>Q2/18</th>
<th>Change% Q2/19-Q2/18</th>
<th>Q1/19</th>
<th>Change% Q2/19-Q1/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>2,608</td>
<td>2,664</td>
<td>-2.1%</td>
<td>2,635</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Operational EBITDA</td>
<td>435</td>
<td>466</td>
<td>-6.6%</td>
<td>471</td>
<td>-7.6%</td>
</tr>
<tr>
<td>Operational EBITDA margin</td>
<td>16.7%</td>
<td>17.5%</td>
<td></td>
<td>17.9%</td>
<td></td>
</tr>
<tr>
<td>Operational EBIT</td>
<td>287</td>
<td>327</td>
<td>-12.3%</td>
<td>324</td>
<td>-11.4%</td>
</tr>
<tr>
<td>Operational EBIT margin</td>
<td>11.0%</td>
<td>12.3%</td>
<td></td>
<td>12.3%</td>
<td></td>
</tr>
<tr>
<td>Profit before tax excl. IAC</td>
<td>214</td>
<td>285</td>
<td>-25.0%</td>
<td>286</td>
<td>-25.2%</td>
</tr>
<tr>
<td>Net profit for the period</td>
<td>52</td>
<td>213</td>
<td>-75.6%</td>
<td>226</td>
<td>-76.9%</td>
</tr>
<tr>
<td>EPS excl. IAC, EUR</td>
<td>0.22</td>
<td>0.31</td>
<td>-27.5%</td>
<td>0.30</td>
<td>-25.8%</td>
</tr>
<tr>
<td>EPS (basic), EUR</td>
<td>0.08</td>
<td>0.28</td>
<td>-73.2%</td>
<td>0.29</td>
<td>-74.5%</td>
</tr>
<tr>
<td>Operational ROCE</td>
<td>11.3%</td>
<td>15.5%</td>
<td>-27.1%</td>
<td>14.0%</td>
<td>-19.3%</td>
</tr>
<tr>
<td>Cash Flow from Operations</td>
<td>548</td>
<td>357</td>
<td>53.4%</td>
<td>223</td>
<td>145.6%</td>
</tr>
<tr>
<td>Net debt/last 12 months’ operational EBITDA</td>
<td>2.2*</td>
<td>1.3</td>
<td></td>
<td>1.7</td>
<td></td>
</tr>
</tbody>
</table>

* Restructuring of Swedish forest holding impact 0.6x and adoption of IFRS 16 Leases impact 0.3x
Consumer Board
Value management continues
Q2 y-o-y

- Sales decreased slightly to 675 MEUR
  - Lower carton board deliveries
  - Price increases coming through in Europe

- Operational EBIT increased 7 MEUR to 72 MEUR
  - Lower variable costs and price increases coming through
  - Production issues in Fors Mill and lower board volumes

- Operational ROOC remained stable at 12.8%
Packaging Solutions
Focusing on cost management
Q2 y-o-y

• Sales decreased 4% to 316 MEUR
  - Clearly lower RCP containerboard and kraftliner prices
  - Slight delivery growth

• Operational EBIT decreased 18 MEUR from record high Q2 level a year ago to 39 MEUR
  - Clearly lower RCP containerboard and kraftliner prices
  - Lower fixed costs related to altered maintenance schedule and lower costs in corrugated units

• Operational ROOC at 16.3% (25.6%) decreased due to lower profitability driven by clearly lower containerboard prices

• Oulu conversion proceeding according to plan
Biomaterials
Stable performance in a rocky environment
Q2 y-o-y

• Sales decreased 5% from record high Q2 last year to 394 MEUR
  - Higher deliveries
  - Clearly lower pulp prices

• Operational EBIT decreased only 6 MEUR from record high Q2 level last year to 103 MEUR
  - Clearly lower pulp prices
  - Higher volumes and lower fixed costs related to altered maintenance schedule in Enocell Mill

• Operational ROOC remained above strategic target level at 15.6%

• Investment in bio-based carbon materials for energy storage
Wood Products
Focusing on value management
Q2 y-o-y

- Sales decreased 4% to 412 MEUR
  - Lower sales prices and deliveries

- Operational EBIT decreased 12 MEUR from record high Q2 level last year to 35 MEUR
  - Lower sales prices, especially in classic sawn products
  - Negative impact from volumes, mainly due to decreased overseas sales

- Operational ROOC above strategic target at 20.3%

- Feasibility study for a possible (CLT) unit in connection with Ždírec mill, Czech Republic and a new construction beam unit at the Ybbs Mill, Austria initiated
  - Plans to consolidate production to increase focus on efficiency and to streamline asset base

- The plan is to consolidate spruce production in Finland including possible closure of Kitee sawmill
Paper
Stable performance in a declining market
Q2 y-o-y

• Sales -6% to 712 MEUR
  – Clearly lower deliveries
  – Prices higher in all segments

• Operational EBIT decreased slightly to 50 MEUR
  – Higher sales prices and lower fixed costs
  – Clearly lower volumes
  – Higher variable costs, especially in wood

• Cash flow after investing activities to sales ratio 6.6 (5.7)%
  – Positive working capital development

• Reducing paper capacity by over million tonnes, 20% of Stora Enso paper capacity, with Oulu conversion in 2020
Outlook for 2019

Further deteriorating trading conditions caused by geopolitical uncertainties related to trade wars and a possible hard Brexit are expected to impact Stora Enso negatively. Demand growth is forecast to slow down for Stora Enso’s businesses in general and demand decline is escalating for European paper. Costs are forecast to increase in 2019 compared to 2018. Stora Enso will implement additional Profit Protection measures to mitigate these cost increases and the geopolitical uncertainties. Due to the current uncertainties in the business environment Stora Enso will not comment on estimated sales development in the outlook.
Guidance for Q3 2019

• Operational EBIT is expected to be in the range of 200–280 MEUR

• During Q3, there will be annual maintenance shutdown at the Beihai, Imatra, Heinola, Ostrołęka, Enocell and Veitsiluoto mills. The total maintenance impact is estimated to be on the same level as in Q3/2018 and 30 MEUR more than in Q2 2019.

<table>
<thead>
<tr>
<th>Annual maintenance</th>
<th>Q3 2019</th>
<th>Q3 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
<td>Beihai and Imatra mills</td>
<td>Imatra and Ingerois mills</td>
</tr>
<tr>
<td>Packaging Solutions</td>
<td>Heinola and Ostrołęka</td>
<td>Ostrołęka Mill</td>
</tr>
<tr>
<td></td>
<td>kraft mills</td>
<td></td>
</tr>
<tr>
<td>Biomaterials</td>
<td>Enocell Mill</td>
<td>Sunila Mill</td>
</tr>
<tr>
<td>Paper</td>
<td>Veitsiluoto Mill</td>
<td>Veitsiluoto Mill</td>
</tr>
</tbody>
</table>
Fit for the future, protecting profit and cash flow
Q2 2019 year-on-year

- Eighth consecutive quarter of double digit operational EBIT margin
- Bergvik Skog transaction completed
- Strong cash flow from operations, 548 (357) MEUR
- Further deteriorating trading conditions
- Profit protection programme increased to 200 MEUR from 120 MEUR
  - 60 MEUR positive impact so far
  - About half of the increased target will be achieved during 2019 and the full impact by the end of 2020