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.
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

Market growth

Paper

Market growth

Position

Declining 3-5% annually

#2 in Europe

Wood Products

Market growth

Position

Global sawn softened 2-3%, European new construction 3%

#1 in Europe and #4 in the world in supplying wooden construction material

Other

Market growth

Position

2016-2030 for virgin board: Europe 1.6%, North America 1.2%, Latin America 3.3%, China 4.2%, Rest of Asia 3.4%, Africa 2.0%

#1 in LPE, FSB and CUK in Europe in the world

Market growth

Position

2.2 BEUR

25%

3.2 BEUR

29%

5.1 BEUR

40%

1.3 BEUR

13%

1.6 BEUR

16%

2.6 BEUR

25%

2016-2030 for recycled board: Europe 3.7%, North America 4.2%, Latin America 4.3%, China 5.2%, Rest of Asia 3.6%

#6 in Europe in LPB, FSB and CUK

Market growth

Position

2.9 BEUR

29%

3.6 BEUR

34%

4.9 BEUR

48%

2.0 BEUR

20%

2.3 BEUR

23%

2.7 BEUR

27%

3.0 BEUR

30%

3.3 BEUR

33%

3.6 BEUR

36%

3.9 BEUR

39%

4.2 BEUR

42%

4.6 BEUR

46%

4.9 BEUR

50% (well above)

4.2 BEUR

42%

4.5 BEUR

45%

4.8 BEUR

48%

5.1 BEUR

51%

5.4 BEUR

54%

5.7 BEUR

57%

6.0 BEUR

60%

6.3 BEUR

63%

6.6 BEUR

66%

6.9 BEUR

69%

7.2 BEUR

72%

7.5 BEUR

75%

7.8 BEUR

78%

8.1 BEUR

81%

8.4 BEUR

84%

8.7 BEUR

87%

9.0 BEUR

90%

9.3 BEUR

93%

9.6 BEUR

96%

9.9 BEUR

99%

10.2 BEUR

100%

Other

Market growth

Position

2016-2030 for recycled board: Europe 3.7%, North America 4.2%, Latin America 4.3%, China 5.2%, Rest of Asia 3.6%

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Market growth

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#6 in Europe in LPB, FSB and CUK

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5.1 BEUR

40%

1.3 BEUR

13%

1.6 BEUR

16%

2.6 BEUR

25%
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

Swedish forests
1 150 000 ha of productive forest land in Sweden

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

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

A balanced market in pulp supports our growth

Hardwood and softwood average capacity growth (Mt/year)

- 1.4 Mt/y (90% ratios)
- 0.56 Mt/y

2007–2017

2018–2022

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

Hardwood 2.0Mt

Softwood 0.8Mt

Cash cost by country

Cumulative capacity, thousand tonnes

Pulp (softwood and hardwood) delivered cost

Pulp demand 2018–2022: +1.3 Mt/year (2.5% CAGR)
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.

### 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.

### Annual maintenance

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Mill(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3 2019</td>
<td>Beihai and Imatra mills</td>
</tr>
<tr>
<td></td>
<td>Heinola and Ostroleka kraft (m3)</td>
</tr>
<tr>
<td></td>
<td>Enocell Mill</td>
</tr>
<tr>
<td></td>
<td>Veitsiluoto Mill</td>
</tr>
<tr>
<td>Q3 2018</td>
<td>Imatra and Ingerois mills</td>
</tr>
<tr>
<td></td>
<td>Ostrolea Mill</td>
</tr>
<tr>
<td></td>
<td>Sunila Mill</td>
</tr>
<tr>
<td></td>
<td>Veitsiluoto Mill</td>
</tr>
</tbody>
</table>
Our portfolio is further strengthened with integrated forest assets

<table>
<thead>
<tr>
<th></th>
<th>Sales 2018 EUR and % of group’s sales</th>
<th>Market growth</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</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% in 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%; Fastest growth in tissue (4%)</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 and #1 in CLT</td>
</tr>
<tr>
<td>Paper</td>
<td>3.1 BEUR 29%</td>
<td>Declining 3–5% annually</td>
<td>#2 in Europe</td>
</tr>
<tr>
<td>Forest</td>
<td>0.75 BEUR* 7%</td>
<td>Annual growth of 4%, increased harvesting potential by 10–15% in our Swedish forests</td>
<td>#2 biological assets in the world</td>
</tr>
</tbody>
</table>

* Only external sales
Our road to success in the bioeconomy

Introducing new products and services

Addressing attractive end-use segments

Delivering sustainable profitable growth

Generating superior ROCE

Stora Enso

THE RENEWABLE MATERIALS COMPANY
Our transformation strategy continues…

…delivering sustainable profitable growth

**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.

**Strategic growth investments**

- Capex at or below depreciation and depletion* over the business cycle.

**Dividend**

- To distribute 50% of EPS over the cycle. 2015–2018 CAGR 14%

**Cash flow from operations**

**Sustainable profitable growth**

- Business and CAPEX driven by ROCE

**Strong balance sheet**

- Net debt to operational EBITDA target reduced from 3x to <2x

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

**Awarded as Finland’s most startup-friendly company**

- TRÄ Group - innovative digital services for wooden buildings
- Husqvarna’s most innovative supplier
- Sustainable RFID tag technology, ECO™ by Stora Enso
- Piloting MFC films
- Lineo™
- Sulapac - renewable and biodegradable straws
- TreeToTextile partnership

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

**Profitable growth**

**Asset transformation**

**Innovation & customer focus**
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
# Development of strategic targets

## Group strategic targets

<table>
<thead>
<tr>
<th></th>
<th>Q2 18</th>
<th>Q2 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividend</td>
<td>0.41*</td>
<td>0.50*</td>
</tr>
<tr>
<td>To distribute 50% of EPS over the cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth**</td>
<td>5.4% (YoY)</td>
<td>-0.9% (YoY)</td>
</tr>
<tr>
<td>To grow faster than the relevant market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net debt to operational EBITDA</td>
<td>&lt;2.0x</td>
<td>1.3</td>
</tr>
<tr>
<td>Fixed costs to sales</td>
<td>23.5%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Net debt to equity</td>
<td>40%</td>
<td>59%</td>
</tr>
<tr>
<td>Operational ROCE</td>
<td>15.5%</td>
<td>11.3%</td>
</tr>
</tbody>
</table>

## Divisional strategic targets

<table>
<thead>
<tr>
<th></th>
<th>Q2 18</th>
<th>Q2 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
<td>13.1%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Operational ROOC &gt; 20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packaging Solutions</td>
<td>25.6%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Operational ROOC &gt; 20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomaterials</td>
<td>18.6%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Operational ROOC &gt; 15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood Products</td>
<td>31.7%</td>
<td>20.3%</td>
</tr>
<tr>
<td>Operational ROOC &gt; 20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>5.7%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Cash flow after investing activities to sales &gt; 7%</td>
<td></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>
<tr>
<td><strong>Grade</strong></td>
<td><strong>Capacity 1 000 t</strong></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. 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.
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.
Our business is a net contributor to prevent global warming
13 Mt CO$_2$ = 325 MEUR per year

Substitution is our key competitive advantage

<table>
<thead>
<tr>
<th>2018</th>
<th>Mt CO$_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forests</td>
<td>+ 3**</td>
</tr>
<tr>
<td>Value Chain</td>
<td>- 11</td>
</tr>
<tr>
<td>Substitution</td>
<td>+ 21</td>
</tr>
<tr>
<td><strong>Total climate benefit</strong></td>
<td><strong>+ 13</strong>*</td>
</tr>
</tbody>
</table>

*of CO$_2$e per year. Source: internal calculations, value chain emissions fully adopted to the GHG protocol including Scopes 1, 2 and 3
According to the current estimates. Data year 2018 ** Accounted as an average between 2008-2018.
Controlling 30% of wood supply and a #1 Nordic position are competitive advantages

We control ~30% of our wood raw material consumption (million m³ sub)

Central Europe, China, Uruguay and Brazil are integrated to business divisions.

Supply from own sources based on ownership  Long-term supply contracts  Purchased  Sold externally
Wood supply substantially strengthened after Bergvik deal
Total biological asset value in balance sheet ~ 3.6 BEUR

**Swedish forests**
1 388 000 ha of forest land
Fair value: 2.6 BEUR (30 June 2019)

**Tornator**
Stora Enso’s share 250 000 ha in Finland, 24 000 ha in Estonia and 5 000 ha in Romania
Fair value: 595 MEUR (31 Dec 2018)

**Veracel plantations, Brazil**
Stora Enso’s share 112 000 ha of forest land
Fair value: 75 MEUR (31 Dec 2018)

**Montes del Plata, Uruguay**
Stora Enso’s share 126 000 ha of forest land
Fair value: 199 MEUR (31 Dec 2018)

**Guangxi, Southern China (leased)**
82 000 ha of forest land
Fair value: 166 MEUR (31 Dec 2018)

In addition:
- Laos: trial plantation, 3 100 ha (leased land)
- Russia: 369 500 ha (long-term harvesting rights)

In addition land book value totals 543 MEUR in the balance sheet as at 30 June 2019.
Direct ownership of Swedish forests improves our optionality in wood supply…

- **Enhances integrated value chain** by increasing harvesting volumes by 10–15%

- **Secures availability** and reasonably priced wood for the Swedish mills
  - Fibre 34% of all costs
  - Covering 70% of wood supply needs of our mills middle Sweden

- **Gives tactical flexibility** in wood supply

- **Delivers additional synergies** in wood supply in the form of reduced administration costs

- Long-term wood supply contract was about to end

- **Increases control** of the asset
  - More efficient and sustainable operations
  - Improved forest growth, harvesting and value
...with attractive valuation

<table>
<thead>
<tr>
<th>Indirect ownership*</th>
<th>Hectares</th>
<th>Price per ha (EUR)</th>
<th>Value (BEUR)***</th>
</tr>
</thead>
<tbody>
<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 of 49.79% Bergvik Skog
** AMF Pensionsförsäkring AB, LRF Konsult
*** Land and biological assets
Forest assets both appreciate and are renewable - reflected in lower funding cost

**To direct ownership**
From indirect holdings of 1.1 million hectares to direct ownership of 1.4 million hectares.

**Net debt impact**
Expected to be appr. 1 BEUR once all steps are concluded.

**Green bond**
Financed with dedicated green bonds (SEK 6 billion) for sustainable forest management. Largest corporate green bond in SEK.

**Attractive green bond pricing**
- 2.5 years: 3 months Stibor + 0.85%
- 5 years: 3 months Stibor + 1.45%
- 5 years: Fixed 1.875%

**Bilateral financing**
In Q2/19 issuance of SEK 1 billion (in green bond format) and SEK 1.5 billion bilateral loans.
Increasing transparency through our new Forest division...

• Non-operational fair value changes of biological assets reflect changes made to valuation assumptions and parameters, usually during the annual valuation process
  − Continue to be reported as earlier and excluded from Operational EBIT, but included at Operating result (IFRS).

• Operational fair value changes of biological assets containing all other fair value changes, mainly due to inflation and differences in actual harvesting levels compared to harvesting plan
  − To be reported in Operational EBITDA

• Silviculture cost (i.e. for planting seedlings) of Forest division and plantations in Biomaterials and Consumer board are to be reported in Operational EBIT (below Operational EBITDA)
  − Stora Enso will reclassify Nordic silviculture costs of the Forest division from Operational EBITDA to Operational EBIT
  − Silviculture costs for plantations continue to be reported in Operational EBIT (below Operational EBITDA)
...with over 50 MEUR higher EBITDA annually

Key figures

<table>
<thead>
<tr>
<th>MEUR</th>
<th>Illustration Forest H1/2019</th>
<th>Illustration Group H1/2019</th>
<th>Group as reported H1/2019</th>
<th>Illustration Forest 2018</th>
<th>Illustration Group 2018</th>
<th>Group as reported 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>1 245</td>
<td>5 242</td>
<td>5 242</td>
<td>2 285</td>
<td>10 486</td>
<td>10 486</td>
</tr>
<tr>
<td>External Sales</td>
<td>433</td>
<td>5 242</td>
<td>5 242</td>
<td>754</td>
<td>10 486</td>
<td>10 486</td>
</tr>
<tr>
<td>Internal Sales</td>
<td>811</td>
<td>-</td>
<td>-</td>
<td>1 530</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Operational EBITDA</td>
<td>60</td>
<td>935</td>
<td>907</td>
<td>127</td>
<td>1 931</td>
<td>1 878</td>
</tr>
<tr>
<td>Operational EBIT</td>
<td>39</td>
<td>629</td>
<td>610</td>
<td>93</td>
<td>1 357</td>
<td>1 325</td>
</tr>
<tr>
<td>Operational EBITDA margin</td>
<td>4.8%</td>
<td>17.8%</td>
<td>17.3%</td>
<td>5.6%</td>
<td>18.4%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Operational EBIT margin</td>
<td>3.2%</td>
<td>12.0%</td>
<td>11.6%</td>
<td>4.1%</td>
<td>12.9%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Operational return on operating capital (ROOC) or Capital employed (ROCE)</td>
<td>2.1%</td>
<td>12.9%</td>
<td>12.5%</td>
<td>3.0%</td>
<td>15.1%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Operating capital / Capital Employed</td>
<td>3 722</td>
<td>10 696</td>
<td>10 696</td>
<td>3 137</td>
<td>9 235</td>
<td>8 824</td>
</tr>
</tbody>
</table>

- Forest division segment reporting will begin 1 January 2020
- Restated historical figures to be published in Q1/2020
Oulu paper mill is converting to packaging board
Reducing our paper capacity by 20%

- 450 000 t/a high-quality virgin-fibre-based kraftliner
- 530 000 t/a unbleached softwood pulp
- Expected to meet Packaging Solutions division’s operational target of 20%
- Oulu Mill’s EBITDA margin expected to improve by 15–20 percentage points
- 350 MEUR investment in 2019–2022
- Production on the converted machine to start by the end of 2020

Source: Pöyry, Risi, ICCA, Stora Enso analysis
Note: * Excluding paper and Barcelona Mill.

Q2/19 net debt impacted by restructuring of Bergvik Skog and adoption of IFRS 16
Financial performance - divisions
Sales, EBITDA margins, EBIT margins and ROOC

23 September 2019

Stora Enso
Our formula for success continues to deliver results

- Sustainable profitable growth 6–8%*
- Strong cash flow generation
- Capex ~3.4 BEUR**
- Dividend ~50% of EPS
- Net debt to operational EBITDA <2.0x
- Debt to equity <60%

* Excluding Paper  ** Next five years
Total CAGR potential of 6–8% per year

Sales in Q2 2019

CAGR potential 2019–2024 (excluding paper)

- Consumer Board: 2–4 %/a
- Packaging Solutions: 7–8 %/a
- Biomaterials: 3–5 %/a
- Wood Products: 6–8 %/a
- TOTAL (excl. Paper): 6–8 %/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
Our target is 25% of sales from new products and services

<table>
<thead>
<tr>
<th>BIO-BARRIERS AND FILMS</th>
<th>REPLACING PE-FILMS IN CUPS</th>
<th>POUCHES FOR LOW TO MEDIUM SHELF LIFE</th>
<th>LIDS</th>
<th>REPLACING ALUMINIUM FOIL</th>
<th>POUCHES WITH HIGH BARRIER PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1" alt="Image" /></td>
<td><img src="image2" alt="Image" /></td>
<td><img src="image3" alt="Image" /></td>
<td><img src="image4" alt="Image" /></td>
<td><img src="image5" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BIOCOMPOSITES</th>
<th>STRAWS</th>
<th>CAPS, CLOSURES &amp; PACKAGING COMPONENTS</th>
<th>RIGID CONTAINERS</th>
<th>TRAYS</th>
<th>CAPS WITH HINGES</th>
<th>TUBES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image6" alt="Image" /></td>
<td><img src="image7" alt="Image" /></td>
<td><img src="image8" alt="Image" /></td>
<td><img src="image9" alt="Image" /></td>
<td><img src="image10" alt="Image" /></td>
<td><img src="image11" alt="Image" /></td>
</tr>
</tbody>
</table>

**Source:** SmithersPira, internal analysis
Geographical exposure – Consumer Board

- **Production Facilities**
  - Sweden: Skoghall Mill
  - Finland: Imatra Mill
  - Finland: Ingerois Mill
  - China: Beihai Mill

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

- **Grade**
  - Consumer Board: 3,360 t

*Stora Enso*
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>2018</td>
<td>7.8</td>
<td>11.9</td>
</tr>
<tr>
<td>2020</td>
<td>8.5</td>
<td>13.4</td>
</tr>
<tr>
<td>2025</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)

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: 10%  
Other consumer goods: 5%

PAPER BOARD’S SHARE OF TOTAL PACKAGING

SEGMENT GROWTH (p.a. – 2022)

Food & Dairy: +2.3%  
Beverages: +2.6%  
Healthcare & Cosmetics: +2.8%

Source: SmithersPira, Euromonitor

Industrial and transport packaging

23 September 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.

Market share per product vs. competitors

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 t</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

Sales
Q218: 329 MEUR (-4%)
Q219: 316 MEUR

Operational EBIT
Q218: 57 MEUR (-32%)
Q219: 39 MEUR

<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>&gt; 20%</td>
<td>25.6%</td>
</tr>
</tbody>
</table>
Geographical exposure – Packaging Solutions

Production Facilities

- Sweden
  - Jönköping
  - Skene
  - Vikingstad

- Estonia
  - Tallinn

- Latvia
  - Riga

- Lithuania
  - Kaunas

- Poland
  - Lodz
  - Mosina
  - Ostroleka
  - Tychy

- Finland
  - Heinola
  - Kristinankaupunki
  - Lahti
  - Varkaus

- Russia
  - Arzamas
  - Balabanovo
  - Lukhovitsy

- China
  - Dongguan
  - Beijing
  - Shanghai
  - Guangzhou

Sales

- Sweden
- Finland
- Russia
- China
We have strong market position and growth in our home packaging markets

Europe

<table>
<thead>
<tr>
<th>Region</th>
<th>Market Share</th>
<th>CAGR 2016–2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordics</td>
<td>0.7 BEUR</td>
<td>0–1%</td>
</tr>
<tr>
<td>Poland &amp; Baltics</td>
<td>1.5 BEUR</td>
<td>3–5%</td>
</tr>
<tr>
<td>Russia</td>
<td>1.7 BEUR</td>
<td>3%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Region</th>
<th>Market Share</th>
<th>CAGR 2016–2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordics</td>
<td>62%*</td>
<td></td>
</tr>
<tr>
<td>Poland &amp; Baltics</td>
<td>85%*</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>107%*</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>20%*</td>
<td></td>
</tr>
</tbody>
</table>

Corrugated packaging

Corrugated & consumer packaging

Source: Stora Enso analysis
Note: CAGR 2016–2026
* Relative market share, measured as a share of largest competitor
**Strong position and growth in our home box markets**

### Key box segments:
- **Food**
- **Retail**
- **Industrial goods**
- **E-commerce**
- **Consumer electronics**

### Key box markets:

<table>
<thead>
<tr>
<th>Region</th>
<th>Box Sales (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

---

Stora Enso

23 September 2019
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

23 September 2019
Stora Enso
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

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

<table>
<thead>
<tr>
<th>Divisional strategic target</th>
<th>Q2/18</th>
<th>Q2/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomaterials</td>
<td>Operational ROOC &gt; 15%</td>
<td>18.6%</td>
</tr>
</tbody>
</table>
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
- **Skutskär**: Capacity: 540kt/a
- **Enocell**: Capacity: 490kt/a
- **Sunila**: Capacity: 375kt/a

Shared Ownership (50%)  
Stora Enso Biomaterials' Mills
Demand for all pulp grades is growing by 2%

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

Carton board
48 Mt market, growing 2.0%/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 (hardwood & softwood) demand grows 2% CAGR by 2023**

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand, Mt/a</th>
<th>2018</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>59</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Market balance, %</td>
<td>89</td>
<td>94*</td>
</tr>
</tbody>
</table>

*) without UPM new mill

**Pulp average capacity growth**

- 2007-2018: + 1.6 Mt/y (90% operating ratios)
- 2019-2024: + 1.0 Mt/y (confirmed projects, incl. UPM new mill)

Source: 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)

Source: Hawkins Wright (April 2018)

Softwood 0.8Mt  Hardwood 2.0Mt

Cash cost by country

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% (+200 million people)

**Growing middle class**
- 70%
- 5 trillion (private consumption in USD)
- 9.6 trillion

**Changing lifestyles**
- 60% (safe sanitation services)
- 90%

**Eco awareness**
- 70% (+200 million people)

- Ban on imported recovered fibre
- From 14 kg to 21 kg per capita consumption

- +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

Target 2020

Softwood

Hardwood

Fluff/dissolving

29%

45%

26%

42%

15%

43%
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
This building grows back in 17 minutes.

We can cut construction emissions by up to 75% using renewable materials.

Geologen Trummen Strand
Växjö, Sweden
The wood used removed 5 700 tonnes of CO$_2$ from the atmosphere.

..and it equals 40 million car kilometres.
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
- **Number of countries**: 21
- **Sales to countries**: Czech, Poland, Germany, Netherlands
- **Grade**: Sawn goods (5.6 Mm³), Further processing (2.7 Mm³), CLT (205 000 m³), LVL (75 000 m³), Pellets (495 000 t)
- **Capacity**: EUR 1.6 billion
- **Volume**: 5.6 Mm³

*Stora Enso*
Getting the right log is critical for profitability in Wood Products

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

Demand flow

Material flow
Buildings of the future will be cheaper and more sustainable

Our solutions offer:

- Up to 70% faster construction time
- Up to 80% fewer truck deliveries on site
- Carbon emissions cut by up to 75% using wood
- Faster, safer and quieter construction
- Healthier indoor climate
- Good thermal resistance and insulating properties
The development of biocomposites will generate further growth. This is the first time a truly cost-competitive material compared to general purpose plastics is being offered.

- Revenue creation from a 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 target to grow profitable 6–8% p.a. through innovative wood-based solutions

Building Components and Solutions

Competitive Classic Planed

Biocomposites

+300–400 MEUR

+100–150 MEUR

+up to 200 MEUR

We target to increase the new products and services from 4% to 15% of sales by 2024
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

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<tr>
<th>Divisional strategic target</th>
<th>Q2/18</th>
<th>Q2/19</th>
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<tbody>
<tr>
<td>Paper Cash flow after investing activities to sales &gt;7%</td>
<td>5.7%</td>
<td>6.6%</td>
</tr>
</tbody>
</table>
### Paper worldwide

<table>
<thead>
<tr>
<th>Grade</th>
<th>Capacity</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*
Since 2013 we have transformed our Paper business

-17% Paper demand in Europe  
-33% Our production capacity  
-21% Our deliveries  
-82% Our accidents  
+20% Customer satisfaction*

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

Change 2013–Q3/2018
*) 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
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 phanol replacement
- Carbon fibre
- Bio-based carbons for energy storage
- Biocomposites
- Reduction of fossil raw materials in adhesives
- Sports and leisure, wind energy, automotive, aviation
- Anode material for batteries, activated carbon for double layer capacitors
- 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

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

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

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

**Liquid packaging MFC**
- Source reduction

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

- 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%

DuraSense™
by Stora Enso

Target market
4.5 Mt
1-5 years
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

Radio-Frequency Identification (RFID)
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

<table>
<thead>
<tr>
<th>ENTERPRISE APPLICATIONS</th>
<th>Asset Management</th>
<th>Track &amp; Trace</th>
<th>Data Analytics</th>
<th>Integrations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>![Asset Management Icon]</td>
<td>![Track &amp; Trace Icon]</td>
<td>![Data Analytics Icon]</td>
<td>ERP, MES, PDM, CRM</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CLOUD PLATFORM</th>
<th>Data Integration</th>
<th>Data Collection</th>
<th>Data Processing</th>
<th>Data Analytics</th>
<th>Open data and management Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intelligent Packaging Cloud data platform (Microsoft Azure)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>READER INFRASTRUCTURE</th>
<th>RFID Gate</th>
<th>RFID Cabinet</th>
<th>RFID Forklift</th>
<th>RFID Station</th>
<th>RFID Tunnel</th>
<th>RFID Truck Gate</th>
<th>Handhelds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>![RFID Gate Icon]</td>
<td>![RFID Cabinet Icon]</td>
<td>![RFID Forklift Icon]</td>
<td>![RFID Station Icon]</td>
<td>![RFID Tunnel Icon]</td>
<td>![RFID Truck Gate Icon]</td>
<td>![Handhelds Icon]</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>TAG &amp; INTEGRATION</th>
<th>Tags Design &amp; Performance</th>
<th>Tag Manufacturing &amp; Converting</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>![Tags Design &amp; Performance Icons]</td>
<td>![Tag Manufacturing &amp; Converting Icons]</td>
<td>![Integration Icons]</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Bracket</th>
<th>Bobbin</th>
<th>Bumper</th>
<th>Tail</th>
<th>Stripe</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Conventional</th>
<th>Sustainable ECO RFID Tech</th>
<th>Hammer solution</th>
</tr>
</thead>
</table>

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

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

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

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

Available in several tag designs
Digitizing Supply Chains for better visibility

1. Automated inventory management with RFID-gates that auto-register which RFID-tagged items enter the warehouse at inbound and leave the warehouse at outbound.
2. Automated counting and scanning as RFID reader scans contents of box with RFID-tagged items, useful in receiving and picking.
3. Automated cycle count with handheld RFID-reader (or even a drone with an RFID-reader) performs cycle count of items in floor storage.
4. Forklifts with RFID-scanners enable sensing of pick/put-away locations quality controls that correct packages are picked.
5. Stock location management with RFID readers on shelves sense which RFID-tagged items are placed on the shelves.
6. Shipping QC with RFID-reader gate verifies that correct RFID-tagged packages are loaded on the truck avoiding incorrect shipments.
7. Dispatch navigation with RFID-readers in the ceiling identify items in the dispatch area and lights guide workers to correct boxes.
8. Packaging validation with RFID-reader in pack stations verifies content of package being built – verifies pack completion and warns if line items are missing.
9. Stock location management with RFID readers on shelves.
10. Smart container with RFID-readers at the door that register which RFID-tagged items enter and leave the container.
11. RFID-reader in trunk of van keeps automated inventory count and tracks RFID-tagged equipment.
12. Anti-tamper protection of goods with sealed tag and/or unique code to identify genuine product.
13. Returns management with RFID tags also on return flow from customers or other warehouses to enable full integration with other use cases.

SUPPLIER
WAREHOUSE GLOBAL
WAREHOUSE REGIONAL
WAREHOUSE LOCAL
SERVICE VAN
CONSIGNMENT STOCK
Automated storage area
Returns management
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

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

“All items in every store tagged.”

Macy’s Inc. to Begin Item-Level Tagging in 850 Stores

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

Macy’s to RFID-Tag 100 Percent of Items

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

By Mark Robert

Tags: Apparel, Retail, RFID Journal, Source: Chain

Retail, e-commerce

Warehouse, manufacturing

Customer engagement

Supply chain

Internet of Things

Technology Enablement & Deployment

Supply Chain Performance Measurement & Analytics

The future of Customer Service and Collaboration

Digital Logistics Strategy

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.”
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

- 5 300 pallets/year
- 180 containers/year
- 190 000 kg CO₂/year

+ 37% capacity fill
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

Market size; 3Mt for Phenol replacement
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
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=3El9hlp_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
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
Cost structure 2018

% of costs

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

23 September 2019
Stora Enso
Capex raised temporarily above depreciation… – financed through cash flow and divestments

Capex estimate for 2019 and 2020 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>
<th>Operational ROOC</th>
<th>Cash flow after capex to sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Board</td>
<td>&gt; 20%</td>
<td>&gt; 7%</td>
</tr>
<tr>
<td>Packaging Solutions</td>
<td>&gt; 20%</td>
<td></td>
</tr>
<tr>
<td>Biomaterials</td>
<td>&gt; 15%</td>
<td></td>
</tr>
<tr>
<td>Wood Products</td>
<td>&gt; 20%</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td></td>
<td></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.
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 in 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
<table>
<thead>
<tr>
<th>Rank</th>
<th>Shareholder Description</th>
<th>Shares (A)</th>
<th>Shares (R)</th>
<th>% of Shares</th>
<th>% of Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solidium Oyj*</td>
<td>62,655,036</td>
<td>21,792,540</td>
<td>11</td>
<td>27.3</td>
</tr>
<tr>
<td>2</td>
<td>FAM AB**</td>
<td>63,123,386</td>
<td>17,000,000</td>
<td>10</td>
<td>27.3</td>
</tr>
<tr>
<td>3</td>
<td>Social Insurance Institution of Finland (KELA)</td>
<td>23,825,086</td>
<td>973,982</td>
<td>3</td>
<td>10.1</td>
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<tr>
<td>4</td>
<td>Varma Mutual Pension Insurance Company</td>
<td>8,513,018</td>
<td>1,140,874</td>
<td>1</td>
<td>3.6</td>
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<tr>
<td>5</td>
<td>Ilmarinen Mutual Pension Company</td>
<td>3,153,488</td>
<td>18,846,477</td>
<td>3</td>
<td>2.1</td>
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<tr>
<td>6</td>
<td>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>
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<tr>
<td>7</td>
<td>Erik Johan Ljungberg's Education Foundation</td>
<td>1,780,540</td>
<td>2,336,224</td>
<td>1</td>
<td>0.8</td>
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<td>8</td>
<td>Swedbank Robur Funds</td>
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<td>15,366,517</td>
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<td>9</td>
<td>Elo Mutual Pension Insurance Company</td>
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<td>8,369,000</td>
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<tr>
<td>10</td>
<td>Bergslaget's Healthcare Foundation</td>
<td>626,269</td>
<td>1,609,483</td>
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<td>11</td>
<td>AFA Insurance</td>
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<td>12</td>
<td>The State Pension Fund</td>
<td>0</td>
<td>5,613,755</td>
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<tr>
<td>13</td>
<td>Lannebo Funds</td>
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<td>5,605,000</td>
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<tr>
<td>14</td>
<td>Nordea Investment Fund</td>
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<td>5,569,847</td>
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<tr>
<td>15</td>
<td>Keva (Local Government Pensions Institution)</td>
<td>0</td>
<td>5,251,101</td>
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<tr>
<td>16</td>
<td>Investment Fund OP Suomi</td>
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<td>4,340,000</td>
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<tr>
<td>17</td>
<td>Unionen (Swedish trade union)</td>
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<td>3,782,750</td>
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<td>0.2</td>
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<tr>
<td>18</td>
<td>SEB Investment Management</td>
<td>0</td>
<td>3,236,441</td>
<td>0</td>
<td>0.1</td>
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<td>19</td>
<td>Schweizerische Nationalbank</td>
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<td>2,773,676</td>
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<tr>
<td>20</td>
<td>The Society of Swedish Literature in Finland</td>
<td>0</td>
<td>2,050,000</td>
<td>0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

20 largest total: 168,502,843 A shares, 133,839,757 R shares, 39% of shares, 76.4% of votes.

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

Stora Enso
Board of Directors

Jorma Eloranta  
since April 2016  
Chairman

Hans Stråberg  
since April 2009  
Vice chairman

Elisabet Fleuriot  
since April 2013

Mikko Helander  
since March 2019

Christiane Kuehne  
since April 2017

Hock Goh  
since April 2012

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 “Prima” 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 suppliers) 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.

- **Sustainable Brand Index**: Stora Enso was ranked “Industry Leader 2016” 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:

<table>
<thead>
<tr>
<th>Ticker Symbol</th>
<th>SEOAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUSIP</td>
<td>86210M106</td>
</tr>
<tr>
<td>Ratio</td>
<td>1 ADR : 1 Ordinary Shares</td>
</tr>
<tr>
<td>ADR depositary</td>
<td>Citibank</td>
</tr>
</tbody>
</table>

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

Please contact the Citibank's dedicated ADR broker desks:

<table>
<thead>
<tr>
<th>Scott Pollak (New York)</th>
<th>Mike Woods (London)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel: +1 212 723 5676</td>
<td>Tel: +44 20 7500 2030</td>
</tr>
<tr>
<td>Email: <a href="mailto:scott.h.pollak@citi.com">scott.h.pollak@citi.com</a></td>
<td>Email: <a href="mailto:michael.woods@citi.com">michael.woods@citi.com</a></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th></th>
<th>Q2 2018</th>
<th>Sales prices and mix</th>
<th>Volume</th>
<th>Fibre</th>
<th>Other variable and fixed costs</th>
<th>Depreciation</th>
<th>Profit protection programme</th>
<th>Associates</th>
<th>Q2 2019</th>
<th>Costs related to Bergvik Skog</th>
</tr>
</thead>
<tbody>
<tr>
<td>327</td>
<td>-32</td>
<td>12.3%</td>
<td>-16</td>
<td>-16</td>
<td>-5</td>
<td>-5</td>
<td>45</td>
<td>-13</td>
<td>287</td>
<td>11.0%</td>
</tr>
<tr>
<td></td>
<td>256</td>
<td>11.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>
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>MEUR</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></td>
<td></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

23 September 2019
Stora Enso
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 kraft mills</td>
<td>Ostrołęka 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>
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