Metsä Group’s Bioproduct mill

The largest biorefinery in Europe

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Metsä Fibre Oy (part of Metsä Group)
Leading player in selected businesses

We focus on products and services with promising growth prospects and in which we have strong competence and a competitive edge.
Metsä Group – Operations and sales

35 production units in 7 European countries.

**Comparable operating result**
EUR million

- 2012: 256
- 2013: 343
- 2014: 418
- 2015: 537
- 2016: 439

**Breakdown of Sales**

- **AMERICAS**
  - Production: 7%
  - Sales company: 77%

- **EMEA**
  - Production: 16%

- **APAC**
  - Production: 16%
  - Sales company: 16%
Pre-requisites relevant for the forest-based industry

The wood raw material must be:
• truly sustainable (cf. role of forests as CO₂ sinks)
• certified
• traceable

The forest must also generate other services like:
• recreational space for humans
• habitat for animals, including biodiversity

Economic factors:
• price and availability of wood
• global demand of wood-based products
Timber log demand is critical for wood procurement

Forest-based industry in Finland
Severe global challenges

**Today**

- We are consuming more than one planet can provide
- Climate change

**Future**

- As the population and standard of living are increasing, we will need even more food, energy, water and materials in the future
Sustainable development

Environment

Growth of carbon stock, certificates & traceability of wood

Minimise local environmental footprint

Society

First value-added-products, then bioenergy

Bioproduct mill runs on renewable energy only

Economic

New circular economy concepts

Living in industrial ecosystems

Bioproduct mill – The planning base 2/2
Finland: The stock of wood continues to grow

- Current tree stock in Finland is about 2.5 billion m$^3$ (in 1971, the tree stock was about 1.5 billion m$^3$)
- Current annual tree (stem) growth: 110 Mm$^3$
- "Loss" of stem wood in 2016: 86 Mm$^3$
- Stem wood out of the forest 2016: 70 Mm$^3$
  - Saw and pulp mills: 62 Mm$^3$
  - Energy: 8 Mm$^3$
  - Sustainability level in terms of wood growth is 81 Mm$^3$

Figure 3. Carbon stock of biomass (trees plus ground vegetation), carbon stock of trees alone and annual changes in the carbon stock of biomass in Finland’s forests between 1922 and 2004.

Forest industry’s biggest investment in Finland

- In the city of Äänekoski, located in Central Finland
- EUR 1.2 billion investment
- Annual pulp production 1.3 million tonnes (old mill 0.5)
  - In addition integrated production of additional bioproducts
- Use of wood 6.5 million m³ annually (old mill 2.4)
- 2,500 direct jobs in the whole value chain in Finland (old mill 1,000)
- Main markets for the pulp: Europe and Asia
  - Sales will increase especially in China
- A unique business ecosystem will be developed at the Äänekoski industry site
- The mill was started up in Mid-August 2017
New circular economy concepts

- New biofuel
- Biocomposites
- Textile fibre
- Fertiliser, earth work material, etc.

New bioproducts

- Sulphuric acid
- Biogas and biofuel pellet
- Added-value product

Blue font = commercial since decades
Dark green box = have reached commercial phase
Yellow box = still in development phase
Light green box = partly at commercial phase
Local business ecosystem in Äänekoski is already today quite comprehensive.

How to develop the ecosystem further by means of circular and bioeconomy?
## Potential products and partners in the future

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<thead>
<tr>
<th>OPERATOR</th>
<th>PRODUCT/SERVICE</th>
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<tbody>
<tr>
<td>Metsä Wood</td>
<td>Veneer</td>
</tr>
<tr>
<td>EcoEnergy SF</td>
<td>CO₂</td>
</tr>
<tr>
<td>Unknown</td>
<td>Lignin product</td>
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https://www.youtube.com/watch?v=9RW49gRG9KI
Make the most of Metsä