Biotuotetehdas – case Metsä Fibre

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Metsä Group comprises five business areas.
1. Metsä Forest
2. Metsä Wood
3. Metsä Fibre
4. Metsä Board
5. Metsä Tissue
The business ecosystem is already there.

Global trends enable further development of this ecosystem (i.e., growth of the bioeconomy).

A healthy business ecosystem comprises both large companies, as well as SMEs.

An ecosystem creates competitiveness on global scale.
Metsä Fibre Äänekoski industry park
Forest industry’s **biggest investment** in Finland, ever

- EUR 1.2 billion investment (investment decision made in April, 2015)
- A ‘bioproduct mill’
- Annual pulp production 1.3 million tonnes (currently 0.5)
  - Softwood pulp 0.8 and hardwood pulp 0.5 million tonnes
- Use of wood 6.5 million m³ annually (currently 2.4)
- About 2,500 direct jobs in the whole value chain in Finland (currently 1,000)
- Main markets for the pulp: Europe and Asia
  - Sales will increase especially in China
- Further development of the business ecosystem linked to the Äänekoski site
- The mill will be ramped up during the third quarter of 2017
**Stronger market position**

- Global demand for softwood pulp grows globally
  - Growth is strongest in China

- The efficiency and cost competitiveness of the new mill are top in class
  - Location is logistically ideal for wood supply
  - Metsä Board’s paperboard mill located in the same integrate
  - New technological solutions increase efficiency and improve environmental performance

- New bioproducts and bioenergy strengthen pulp production’s competitiveness

Source: Metsä Fibre, PPPC, Pöyry Management Consulting Oy
China has emerged as a totally new market

World Paper Grade Market Pulp¹ Shipments by Region (Est.)
(000’s tonnes & Average Annual Growth Rate: 2004-2014)

Sources: PPPC, Company Info, B McClay & Associates Inc. estimates
¹ All chemical and mechanical grades
The demand for softwood market pulp increases especially in China

<table>
<thead>
<tr>
<th>Demand for softwood market pulp</th>
<th>Printing and office papers</th>
<th>Tissue</th>
<th>Paperboard</th>
<th>Specialty products</th>
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</thead>
<tbody>
<tr>
<td>Whole world</td>
<td>35%</td>
<td>35%</td>
<td>10%</td>
<td>20%</td>
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<td>Europe</td>
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<td>China and the rest of Asia</td>
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<td>North America</td>
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The use of domestic wood can be increased sustainably
Wood supply can be managed sustainably

- The mill will increase the use of fibre wood by 4 million m³ (+10%)
  - The increase will be mainly softwood
  - Sustainable increase for softwood fibre is 7 million m³
  - Wood can be sourced mainly from Finland
  - Over 90 per cent of wood is certified

- Requires that
  - Wood supply from privately owned forests increases clearly in line with the growing demand
  - Wood import stays at least on the current level

- Wood supply is secured by
  - Metsäliitto Cooperative’s wide, solid owner base
  - Metsä Group’s strong wood products industry
  - Central location of Äänekoski
Striving for **competitiveness**

Technical age and capacity of softwood pulp capacity globally in 2014

The size of the circle represents allocated grade capacity.

Source: Pöyry Management Consulting Oy
Top-of the world **competitiveness**

**Bioproduct mill will strengthen Metsä Fibre’s market position**

The size of the circle represents allocated grade capacity

* Metsä Fibre’s capacity including the new bioproduct mill. Competitors’ capacity based on the situation in 2014.

Source: Pöyry Management Consulting Oy
Äänekoski bioproduct mill – including only the typical products of a modern pulp mill

- Estimated sales volumes of the Äänekoski bioproduct mill:
  - 1.3 million t/a pulp
  - 550 GWh/a solid biofuel, i.e. bark (excluding 650 GWh/a for own use)
  - 46,000 t/a tall oil
  - 3,200 t/a turpentine
  - 1,050 GWh/a bio-electricity (excluding 750 GWh/a for own use)
  - 640 GWh/a process steam and district heat
Energy related sub-concepts

Sub-concept 4
Gasification of bark. Energy efficient lime kiln fired with three biofuels

Sub-concept 3
High Power recovery boiler

Sub-concept 2
Directing the EOP filtrate to recovery. Digester Evaporator

Sub-concept 1
Maximising energy efficiency

Maximising biopower output and fossil energy free
Metsä Fibre’s development paths towards new bioproducts
Investment decisions already made (April 2015); Gasifier purchased

- New biofuels from bark, dust and energy wood
- Biocomposites
- New textile fibres
- Sulphuric acid and methanol
- Biogas and solid biofuel
- Fertiliser and earth work material
Äänekoski bioproduct mill starting Q3/2017