



StoraEnso

FiberTech 2026

Metsäbiojalostamo- sellutehdas Suomessa 2035 Käytännön kehityssuuntia

Janne Vehmaa

20/8/2026

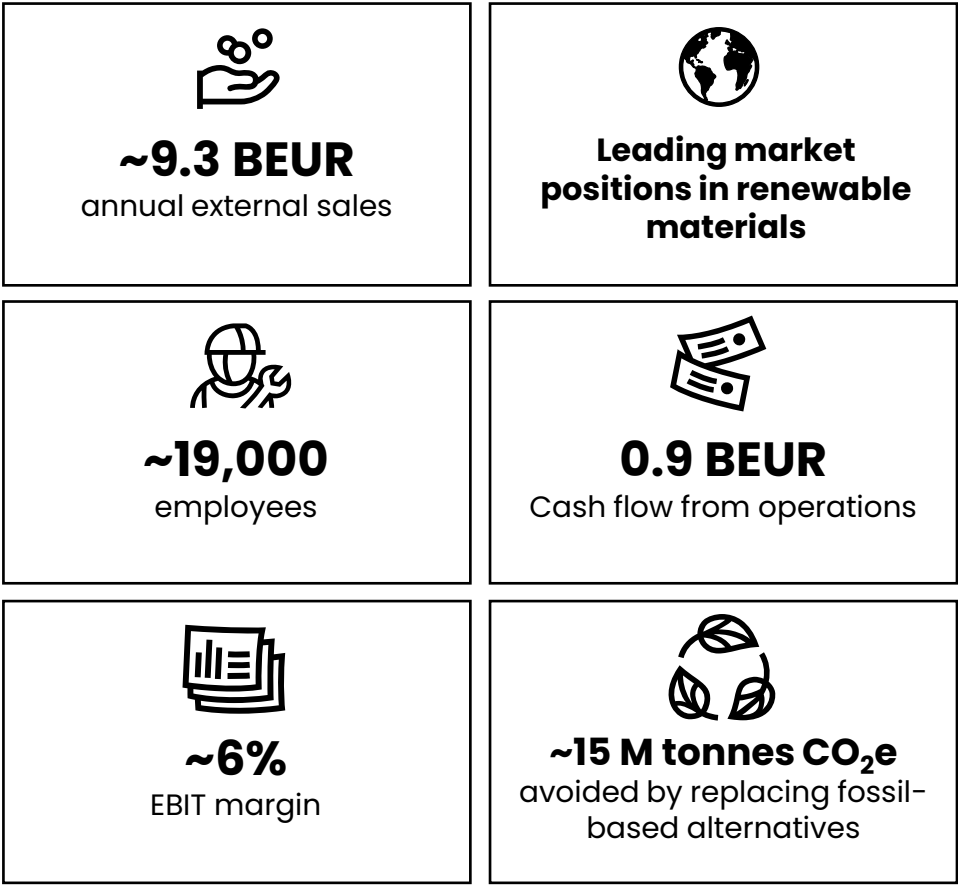
The renewable materials company

Global leading renewable materials company addressing sustainability megatrends



StoraEnso

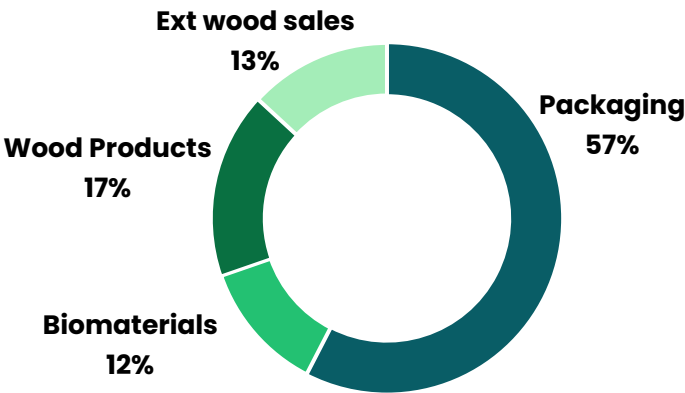
Key figures¹



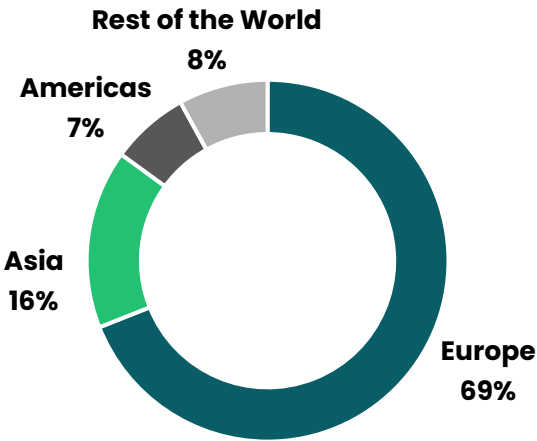
Diversified sales

Sales split, 2025 (%)

By segment



By geography



1. Based on 2025 Group Financials

We have a competitive portfolio of renewable solutions, with strong focus on packaging



StoraEnso



Renewable packaging

industry-leading portfolio of renewable, high-performance packaging to replace plastics where it matters and address regulatory and consumer demands



Wood products

wood-based solutions that help the building sector decarbonise construction



Biomaterials

supplying high-quality pulp and driving the growth of bio-based innovations

Main technology changes for 35 years

Examples, Fiberline



StoraEnso

- Plant size, pulp mill unit size from 1600 to 8000 adt/d
- TCF and ECF pulp applications
- Two stage oxygen delignification and short bleaching sequences
- High-capacity continuous cooking applications
- Washing and washer unit operation phenomena
- Ozone bleaching technology
- Reinforcement pulp manufacturing technology
- Short retention time bleaching
- Screening technology development, many small items
- Cooking chemistry and alkali profile control, process improvement
- Euca pulping development
- Closed water circulation mills
- Hexa removal and light ECF bleaching applications
- Modern dissolving pulp manufacturing
- High kappa pulp development
- Automation and control system development (common)

Lot of new things but inside the 'same' mill structure
Minor influence on final product

Main technology trends for 35 years



StoraEnso

Examples, Recovery

- Plant size
 - Evaporation to high solid content
 - More evaporation steps
 - Evaporator condensate cleaning
 - High energy recovery boilers
 - Salt removal system as standard solution
 - High temperature WBL to evaporation
 - Gasifier in lime kiln
 - Odor gas handling
 - Methanol recovery
-
- Pulp mill produce twice as much electric power than it consume

Main changes in R&D structure, from domestic structure to international practice



StoraEnso

- Most of the KCL operations sold to VTT, No such common institute any more
- LUT, JU, OU had pulp related programs, but then programs has been focused differently.
- SHOK programs, Efftech, Forest Cluster, Clic
- Now Finceres, Veturi etc.
- New players in field like Xamk, Savonia, piloting facilities
- Tekes to Business Finland, continuous development in funding and programs
- Aalto University role from all level R&D and technology unit to more scientific biomaterial research unit.
- International co-operation
- EU funding

R&D, from common interest to company strategy



StoraEnso

Pulp manufacturing serve the paper industry

Very common efficiency topics

- Environment
- Bleaching efficiency
- Energy efficiency

Entering Euca market

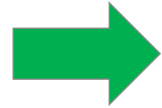
Maximized fiber performance and quality

Pulp mill water consumption

Technology leadership from N.A. to Europe and S.A.

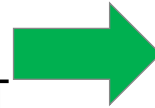
In Finland some room to work together because the global competitors

Company own R&D facility development



2010

KCL was
Sold to VTT



More specialised product portfolio

More players to solve efficiency issues;
Brazilian, Chilean and Asian companies

Global environmental standards and solutions

Company own role in R&D and product development

Company specific product development

Resource efficiency and sustainability

Home market-oriented companies:
China, Japan, USA

Forest industry today



StoraEnso

- In Finland and Scandinavia, we have the forest, and that will be refined to products in future
- Big market areas South America, Southeast Asia, and China has taken the high-volume Pulp and Paper market
- Operating the mills is like to play the videogame, same basic operational skills are available for all mills
- In Europe the special paper and packages are growing
- In new market situation the focus is not on the biggest production unit; specialized products needs smaller units
- Products and production will become more customer focus
- Product development need to be fast and concentrated
- Each company generates the business concept based on their own strategy.



2006 to 2026



StoraEnso

~5 pulp mills are closed

- 2 pulp mills has changed the production to another grade
- About 10 paper mills are closed
 - Some of the mills has been started with new product
- Many mills were in good technical condition not in the end-of-life cycle

Not exact numbers but provide an idea how much changes has happened.

How difficult it was to see the future 20 years ago.



Most probably we do not see the future sharper than 20 years ago

How industrial environment is changed



StoraEnso

	Mills	Products and demand	Energy
Development	Pulp mill size 1000 t/d 1993 8000 t/d 2025	1993–2025 Products mainly printing and writing papers and board made from bleached pulp Very traditional pulp quality demand	1993–2020 Pulp mills has significant role in power market
Today	Scandinavian mills can not be the biggest in the world any more	More specialized packing products, pulp for tissue, Brown pulp and brown pulp products, fluff, dissolving	1993–2025 More green energy in grid CO2 and climate change Emission trade
Challenge and future obligations	Technologies for totally new products • MCC • Textile fibers • Recycled textiles	Pulp mill side products Lignin, methanol, Sulfuric acid, sugars	Burning the biomaterial as energy source? Can it continue

WOOD cost

Some main trends and challenges



StoraEnso

N.A.

Market is saturated
Very few projects during the years
Growth in package products and fluff

S.A.

Many mega projects during last 25 years
Main local players
Suzano, Arauco, CMPC, Klabin
Some foreign companies also
Leading player in BHK market

Europe

No growth in paper market
Lot of investment to NBSK Due the China
NBSK situation is not clear
Pulp demand for package solutions still grows

Africa

No significant activity
Next focus?

China

Lot of new capacity
Capacity increase is higher than demand in China
Both HW and SW lines
Market failure

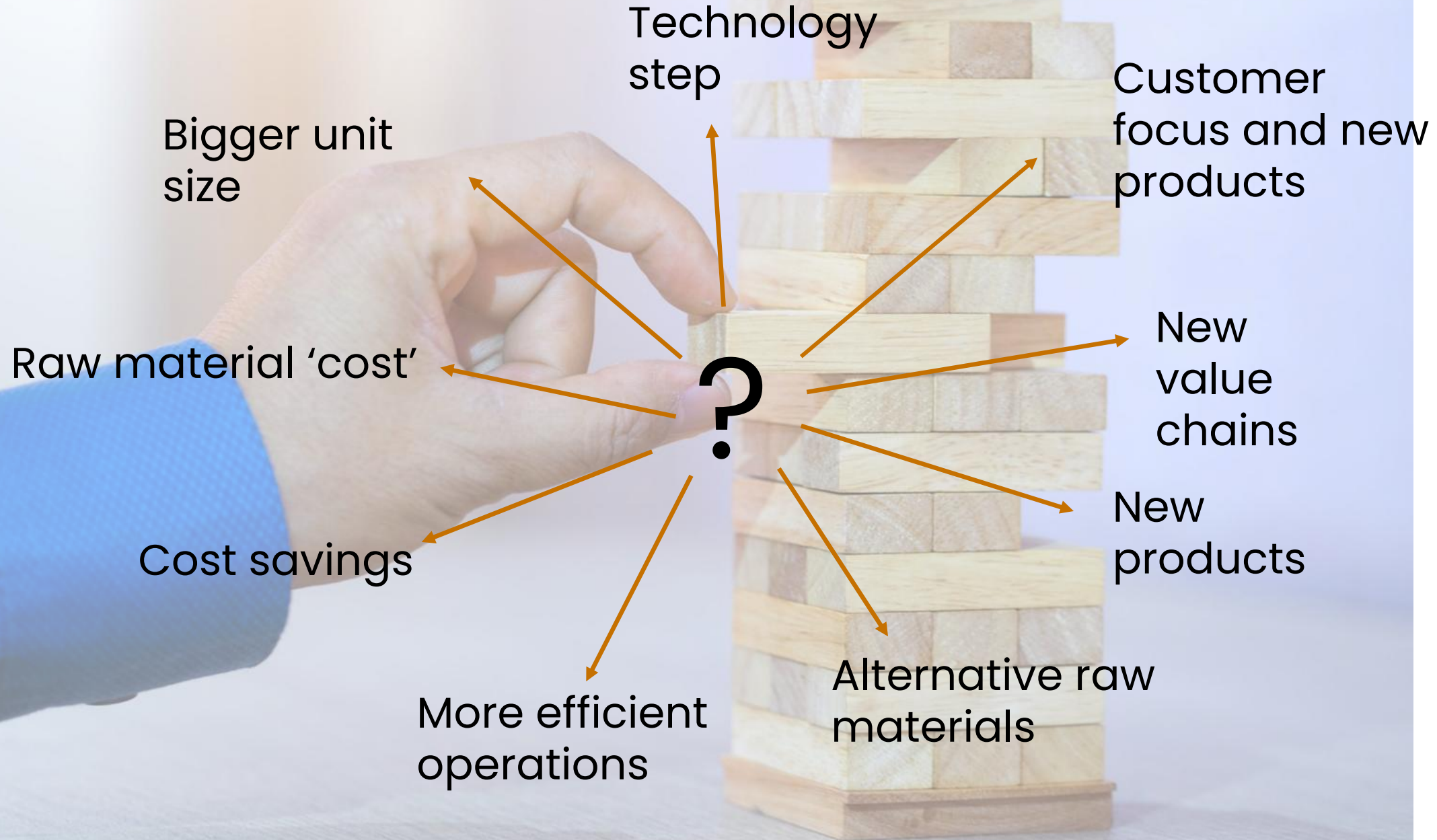
S. East Asia

Two major players, Sinar Mass and RGE
Lot of investment during last decade
Lot of market pulp to Asian market

Opportunities



StoraEnso



How to consider successful R&D



StoraEnso

- **R&D is investment, can be considered as high-risk projects**
- **Science is important, but final focus should be high value products and low hanging fruits**
- **In pulp mill environment, it is possible to calculate the significant savings for project, but there can be dozen of similar improvements in list also. How my project is different?**
- **Project can be 'my baby' put others might see it differently.**
- **Political decisions and state supported projects, sensitive approach for capex intensity industry**

Traditions in organizations



StoraEnso

- They influence company react to business
- They influence how individuals act and react to business
- They can be stronger than the company strategies sometimes
- Many people do not recognize that they make the decisions based on very strong traditions
- For individuals it can be playground where working is safe and predictable
- In the end only the traditions lead the decisions
- Solid and organization structure, line organization
- Organization do not provide challenges any more

How to navigate to future



Find the synergy between research organizations

Learn to use multiple financing sources; EU money etc.

Aigle decision culture

Work towards WIN-WIN situation

Use best professionals to prepare the project

Communicate with the interest groups

Navigate the global megatrends and be there first

Make difference

Create the vertical consortia, recognize the value chain

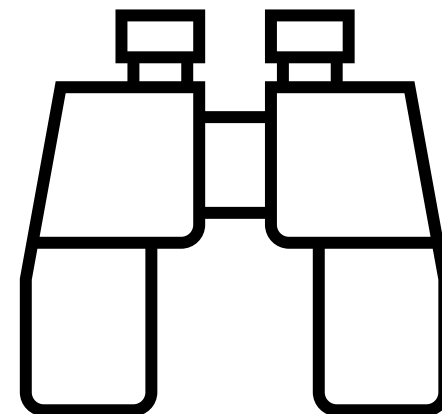
Work with passion

Concentrate your own job and keep your promises

Every good project is generating the next one, recognize the opportunities

Act, do not react

It is difficult to forecast the future, but it is possible to make the future





StoraEnso

Thank You!