Metsä

Metsä Fibre

Kemi bioproduct mill

Metsä Fibre's new bioproduct mill in Kemi

OUR STATE-OF-THE ART BIOPRODUCT MILL

Located in Finland, the Kemi bioproduct mill is our latest bioproduct mill. Sustainability has been taken into consideration in everything from the consumption of water and energy to the efficient utilisation of wood raw materials.

Our Kemi bioproduct mill is based on Metsä Fibre's unique bioproduct mill concept. In addition to pulp, it manufactures also several other bioproducts, produces significantly more bioelectricity than a traditional pulp mill, and operates without any fossil fuels.

Kemi bioproduct mill key figures

FOSSIL FUEL USE
0%

BIOCHEMICALS PRODUCTION CAPACITY
80,000 tonnes annually

PULP PRODUCTION CAPACITY

SOFTWOOD 1,020,000 tonnes annually

HARDWOOD 300,000 tonnes annually

UNBLEACHED PULP 180,000 tonnes annually*

*owned by Metsä Board

RENEWABLE ELECTRICITY* PRODUCTION CAPACITY
2,000 GWh annually

*Produced with bioenergy

ELECTRICITY SELF-SUFFICIENCY RATE
250%

The mill uses advanced techniques to reach new levels of environmental, energy and material efficiency.

PULP PRODUCT PORTFOLIO

Our wide pulp product portfolio is developed in close collaboration with our customers to ensure our offering meets their requirements for fibre characteristics and specific paper properties. The Kemi bioproduct mill serves Asian, European and North American markets.

FRONTRUNNER IN THE BIOECONOMY

Metsä Fibre is a leading producer of bioproducts, biochemicals and bioenergy. We are the world's largest producer of softwood market pulp and a significant operator in sawn timber production. We are a frontrunner in the responsible bioeconomy, utilising renewable wood from sustainably managed Nordic forests.

Read more

Metsä Fibre →

Kemi bioproduct mill →

Sustainable operations

Kemi bioproduct mill is world-class in environmental performance and energy efficiency and the mill was constructed using the best available techniques (BAT) or even more advanced techniques.

The mill needs no fossil fuels for its operations and will meet the most demanding environmental norms and technical requirements far into the future.

WOOD RAW MATERIAL

Kemi bioproduct mill uses softwood and hardwood as its raw material. All of the wood we use comes from sustainably managed Nordic forests and we always know its origin. Forests are always regenerated after felling, and Metsä Group uses domestic tree species and seedlings in forest regeneration. We work to protect the diversity of forest nature in many ways.

CERTIFIED AND TRACEABLE

Our supply chains are transparent, and the wood raw material used at the Kemi bioproduct mill is fully traceable. 94 per cent of the wood we use is certified by the PEFC (Licence Code PEFC/02-33-21) or the FSC® (Licence Code FSC-C002102).

SUPERIOR ENVIRONMENTAL EFFICIENCY
Our unique bioproduct mill concept significantly reduces the environmental impact of pulp production. Kemi bioproduct mill is an important part of Metsä Group's 2030 sustainability targets. These include fossil fuel-free production, more efficient water use, and increasingly efficient utilisation of production side streams.

World-class energy, material and environmental efficiency

The mill's closed chemical cycle allows water and chemicals to be efficiently recycled and reused. This considerably reduces the mill's purchases of chemicals and the need to transport them by rail and road, leading to lower logistics emissions.

Thanks to its closed cooling water cycle, the mill's water consumption is very low. The cooling water towers minimise water intake and thermal stress on waterbodies. They ensure the mill does not affect ice conditions off the coast of Kemi, which is a popular recreational area.

Learn more

Virtual bioproduct mill tour →

Sustainability in Metsä Fibre →

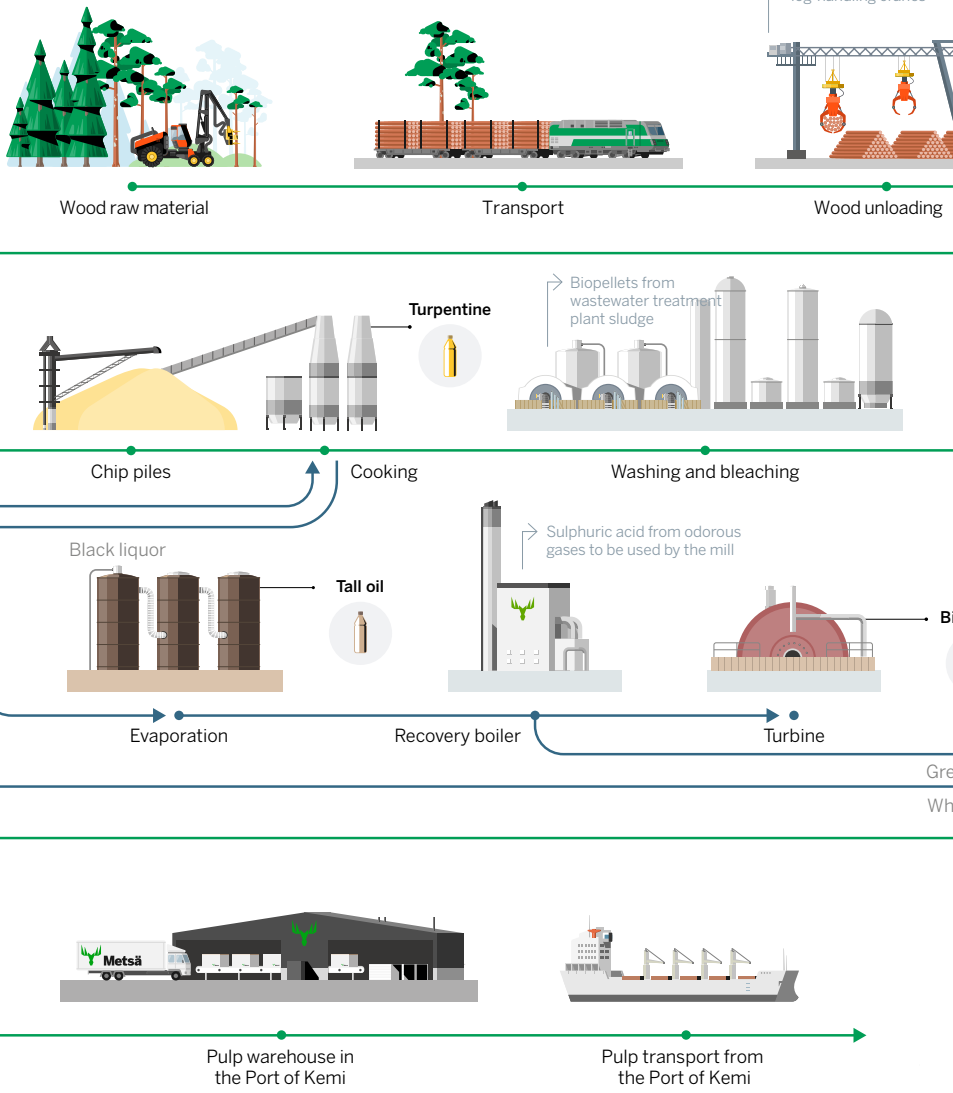
RENEWABLE ENERGY FROM SIDE STREAMS
A significant share of all the renewable energy produced in Finland is generated in pulp production, when black liquor, consisting of wood and cooking chemicals, is combusted. This process converts the cooking chemicals into a reusable form.

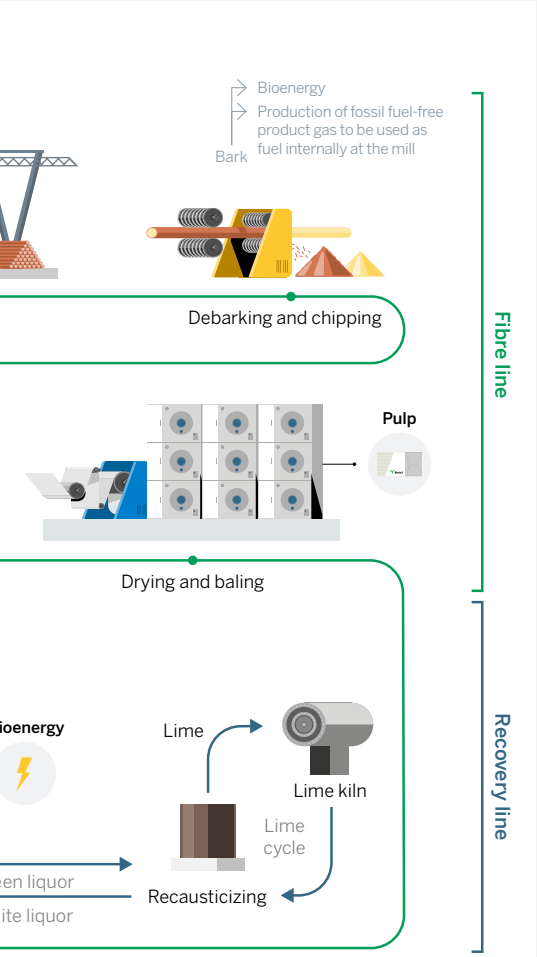
Our bioproduct mill generates 2.5 times the amount of renewable electricity it consumes annually, and does not use any fossil fuels in its pulp production. The mill produces 2,000 GWh of bioenergy from its side streams. In addition to our own production, the renewable energy we generate is supplied as electricity to the grid and as district heat to nearby communities.

In addition, wood bark is gasified and used to replace heavy fuel oil in the lime kiln. And the mill's odorous gases are converted into sulphuric acid that we use in tall oil production.

Our increasing, environmentally efficient production makes us an even stronger partner for our customers' sustainable growth.

Pulp production at Kemi bioproduct mill





The world's most **efficient** bioproduct mill

At the heart of the bioproduct mill is the world's most efficient pulp mill, which uses wood raw material to the last chip. Pulp production side streams are utilised efficiently in the production of other bioproducts and bioenergy.

Read more

- New bioproduct mill uses technology that exceeds standards →
- Pulp production at Metsä Fibre →
- Our unique bioproduct mill concept →

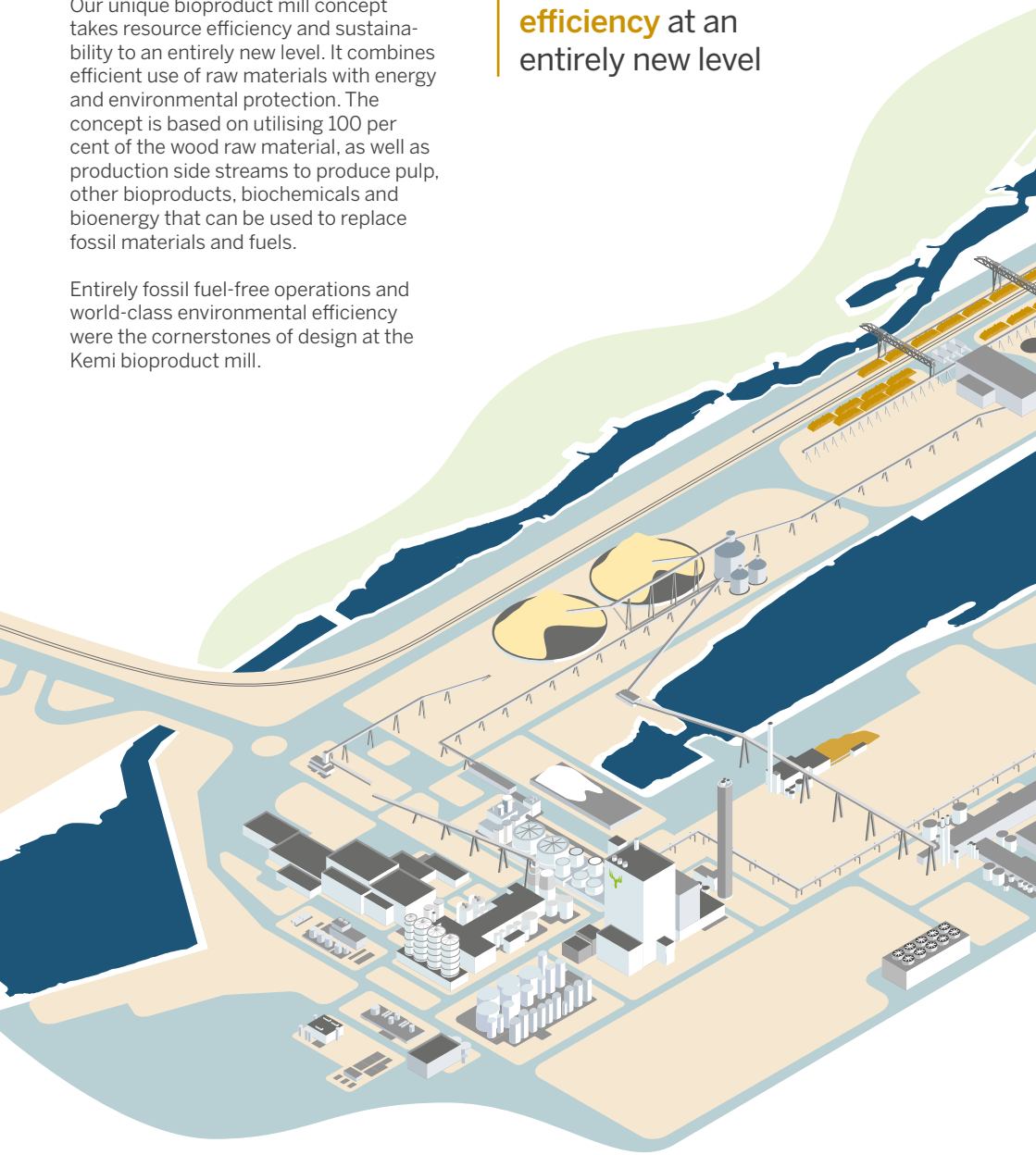
More than just a pulp mill

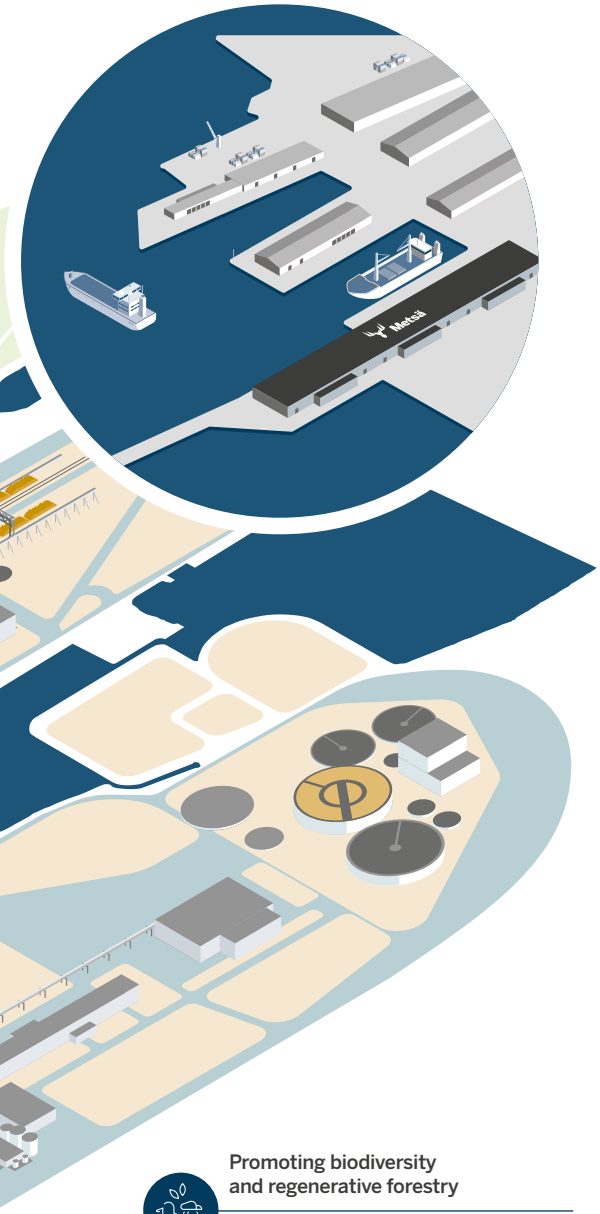
OUR BIOPRODUCT MILL CONCEPT

Our unique bioproduct mill concept takes resource efficiency and sustainability to an entirely new level. It combines efficient use of raw materials with energy and environmental protection. The concept is based on utilising 100 per cent of the wood raw material, as well as production side streams to produce pulp, other bioproducts, biochemicals and bioenergy that can be used to replace fossil materials and fuels.

Entirely fossil fuel-free operations and world-class environmental efficiency were the cornerstones of design at the Kemi bioproduct mill.

Resource efficiency at an entirely new level





Outstanding environmental efficiency

- 0% fossil fuels
- 100% utilisation of the wood raw material
- 250% self-sufficiency in electricity
- Closed chemical cycle
- Closed cooling water cycle
- In-house sulphuric acid plant

Transport from mill to the port warehouse

- Export operations are centralised at the Port of Kemi, 15 km away
- Pulp units are unloaded automatically from trucks into the 37,000 m² warehouse
- Vessels are loaded with electric forklifts and an electrically operated port crane
- The port operates at full capacity around the year

Wood processing with the latest technology

- Autonomous woodyard cranes utilise artificial intelligence and machine vision
- Electrification enables silent and fossil fuel-free woodyard operations
- Unloading a train takes 2 hours, and unloading a truck takes 9–12 minutes

Efficient wood raw material logistics

- 9 trains and 180 trucks a day transport wood to the mill
- 94% of our wood raw material is PEFC or FSC® certified
- All the wood we use is fully traceable

Automated outbound logistics

- Automatic loading of finished pulp units
- Bio-diesel trucks transport pulp to the Port of Kemi 24/7

Promoting biodiversity and regenerative forestry

- Pilot project to boost biodiversity in an industrial environment
- Over 12 hectares of meadows and sunlit habitats will be added to the Kemi mill area
- Metsä Group is committed to regenerative forest management, aiming at boosting economic growth and natural assets side by side

Pulp and other bioproducts

The Kemi bioproduct mill produces bioproducts including pulp, biochemicals like Crude Tall Oil (Metsä CTO) and Crude Sulphate Turpentine (Metsä CST). It also generates product gas and sulphuric acid, biopellets and biogas, lime and ash.

Our Metsä Pine softwood pulp (NBSK) is commonly used in the production of paper, paperboard and tissue products. Our Metsä Birch hardwood pulp (BHKP) is mainly used in paperboard and specialty paper, as well as coated and uncoated papers and tissue.

With our bioproduct mill concept, we partner with companies located close to the mill, to form an industrial ecosystem that enables side-products to be utilised and processed nearby and on-site. Metsä Group's goal is to fully utilise production side streams by 2030 and to run production that does not generate any landfill waste.

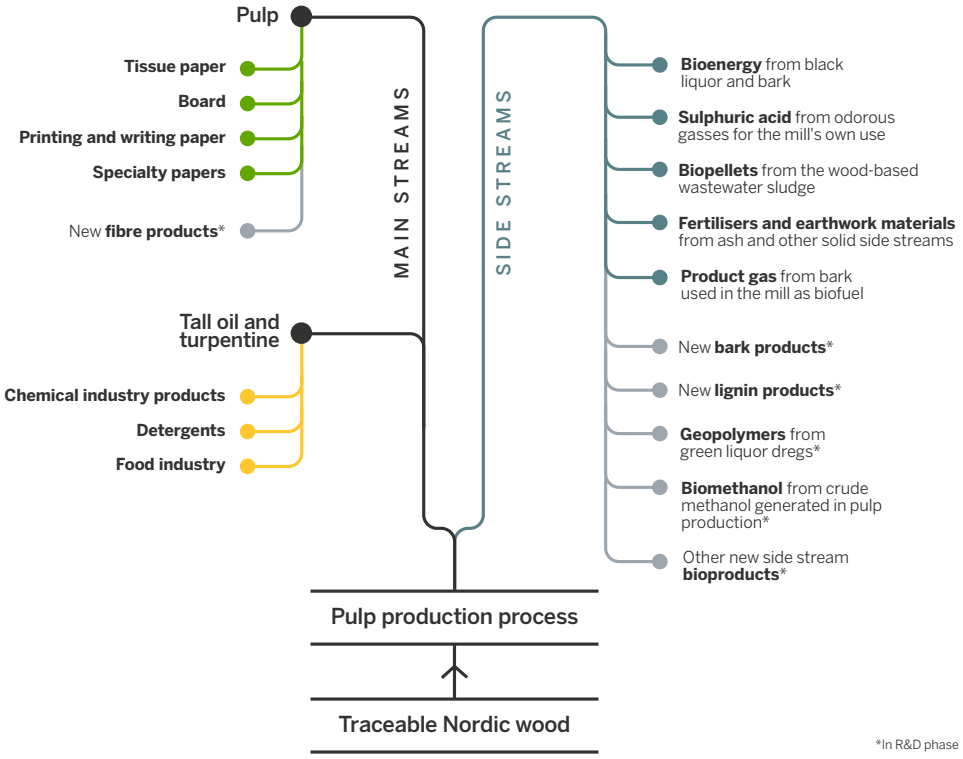
BIOCHEMICALS
Metsä Fibre is one of the world's leading producers of wood-based biochemicals.

Metsä Crude Tall Oil (CTO)
Metsä Crude Tall Oil (CTO) produced in Kemi is typically utilised as a raw material in the production of a wide range of end-uses from adhesives, paints, rubbers and inks to biofuels. CTO is also used as a binder in cement and asphalt.

Metsä Crude Sulphate Turpentine (CST)
Metsä Crude Sulphate Turpentine (CST) is produced in Kemi and is a compound, which in its numerous further processing states is typically found as aroma chemicals in fragrances and cosmetics as well as in industrial and household cleaners.

Kemi bioproduct mill

PRODUCTS FROM MAIN AND SIDE STREAMS



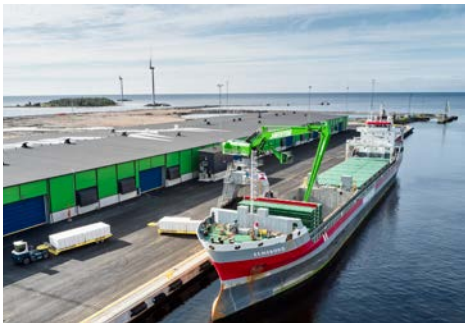
*In R&D phase

Read more

Our unique bioproduct mill concept →

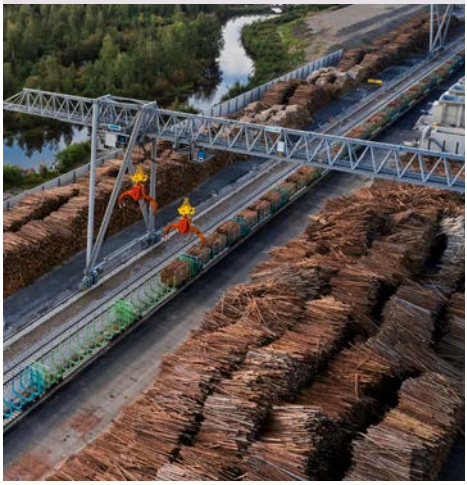
Biochemicals →

Reliable pulp logistics



Safe and efficient logistics from the forest to the mill, and from there to the customer is vital for reliable operations. The wood raw material is transported to the Kemi bioproduct mill mainly by electric trains. An entirely new logistics channel has been built for trains and trucks at the mill. Timber trucks use a one-way route to avoid encounters between vehicles, and there are no crossings between road and rail traffic.

CUTTING-EDGE WOOD PROCESSING TECHNOLOGY
In the woodyard, electric autonomous overhead cranes use artificial intelligence and machine vision to unload the wood quickly and independently. The cranes enable quiet and fossil fuel-free woodyard operations.



AUTOMATED OUTBOUND LOGISTICS
The ready pulp units are automatically loaded into specially structured biodiesel-powered trucks designed for the bioproduct mill's needs. These trucks transport the pulp units to the Port of Kemi around the clock, every day of the week. There, pulp units are automatically unloaded from trucks and transferred into our new 37,000 m² product warehouse.

Despite its northern location, the Port of Kemi operates at full capacity around the year. With a channel depth of 12 metres, the port enables efficient sea transport with large general cargo vessels, which are loaded using electric forklifts and an electrically operated port crane.

From Kemi, Metsä pulp is shipped to our customers in Asia, Europe and North America. Our premium pulp is suitable as raw material for paperboards, paper products and tissue papers.

> **2/3** of the mill's wood is transported by rail

Read more

Reducing logistics emissions →

Building a bioeconomy ecosystem

A STARTING POINT FOR FUTURE DEVELOPMENTS

The new bioproduct mill in Kemi will create an industrial ecosystem that is a platform for new partnerships and new bioproducts, which will be developed in the coming decades. Our partner network includes higher education and research institutions, as well as innovative companies that produce various bioproducts from pulp or the side streams of pulp production.

These partners play an important role in our efforts to use raw material and side streams in the best possible way, and we welcome other potential partners to join the network. As R&D progresses, future innovations will increasingly emerge thanks to collaboration throughout the ecosystem between our different partners.

The bioproduct mill business model is based on efficient partnerships. As is already happening in Äänekoski, also in Kemi the surrounding network of companies will produce various bioproducts from pulp or the side streams of pulp production.

The business ecosystem creates jobs and increases the supply to the growing market for wood-based bioproducts. Renewable wood raw material and innovative solutions offer answers to future global challenges, such as climate change, population growth and resource scarcity.

Future innovations will increasingly emerge from collaboration between different partners such as higher education and research institutions, and companies in various fields. The bioproduct mill enables the ecosystem's future expansion and development.

OPPORTUNITIES FROM INNOVATION

At Metsä Fibre, we continuously research ways to get more value from wood, pulp and side streams. Our bioproduct mill concept gives us the opportunity to develop and expand our product range further with entirely new bioproducts.

Partnerships for a sustainable future

Safety and responsibility

One of our key strengths is our ability to manage the entire wood raw material value chain, from forest to mill. We know the origin of the wood we use, and all our raw materials come from controlled or certified, sustainably managed forests.

Product safety is an essential part of our operations. We monitor all aspects of production to ensure the safety and quality of our products and the traceability of raw materials. The fresh fibre pulp we produce is pure and suitable for use in food-contact products.

We believe that a safe workplace is a fundamental right. Our goal is to ensure that every Metsä Fibre employee and those working for our partner companies return home safely every day. All employees, contractors and partners working at our mills go through safety training, and they must complete and submit risk assessments and safety plans before starting work. We require compliance with laws and collective agreements throughout our subcontracting chain and we work proactively to combat the grey economy.

Ensuring **safety and quality**

We invest in the continuous development of our employees' professional skills through both on-the-job learning and training, and we offer summer jobs to dozens of young people annually, as well as several apprenticeship positions. In our work, we pay special attention to safety at work, responsibility and sustainability.

Promoting biodiversity and regenerative forestry

Impact on the society

Metsä Fibre is an important taxpayer and employer, both directly and indirectly. Kemi bioproduct mill employs approximately 2.500 people in its entire direct value chain in Finland, of which about 1.500 are totally new jobs. The mill itself employs 250 persons at the mill site and the entire mills' area employs about 500 people.

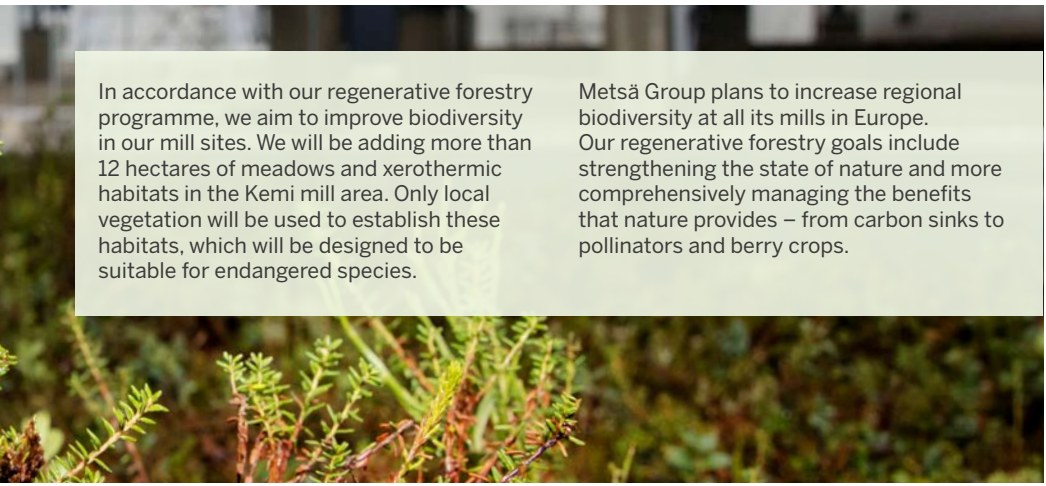
We co-operate closely with local stakeholders, and annually support initiatives promoting the wellbeing of children and young people. We actively participate in various events related to our branch of industry, as well as in career and recruitment events, and regularly organise visits for stakeholders.

IMPORTANT CONTRIBUTIONS

The mill is also a major renewable energy producer in Finland. It produces 2,000 GWh of renewable electricity per year.

Kemi bioproduct increases the annual value of Finland's exports by approximately EUR 0.5 billion, and the positive annual income effect in Finland from wood sales and domestic purchases is also approximately EUR 0.5 billion.

In the Kemi bioproduct mill, we produce sustainable high-quality pulp that is renewable, recyclable and safe. Pulp can be used to replace fossil raw materials in a variety of products. The biochemicals we extract from high-quality Nordic wood are used to replace fossil-based products in many industrial processes.



In accordance with our regenerative forestry programme, we aim to improve biodiversity in our mill sites. We will be adding more than 12 hectares of meadows and xerothermic habitats in the Kemi mill area. Only local vegetation will be used to establish these habitats, which will be designed to be suitable for endangered species.

Metsä Group plans to increase regional biodiversity at all its mills in Europe. Our regenerative forestry goals include strengthening the state of nature and more comprehensively managing the benefits that nature provides – from carbon sinks to pollinators and berry crops.

Growth, with a future

METSÄ FIBRE
Tehdastie 94 B
94200 Kemi, Finland

Kemi bioproduct mill website

Kemi bioproduct mill virtual tour