



METSÄ FIBRE
Annual review 2023



TOWARDS SUSTAINABLE EXCELLENCE

Metsä Fibre is a leading producer of bioproducts, biochemicals and bioenergy. We are the world's biggest producer of softwood market pulp and a major producer of sawn timber.

We want to be our customers' first choice and the most profitable producer of bioproducts for sustainable growth. We advance bioeconomy and circular economy by efficiently and sustainably processing northern wood into first-class products which can be used to replace fossil materials.

We aim at sustainable excellence with industrial efficiency, selected long-term customers and new solutions promoting sustainability. Metsä Fibre is part of Metsä Group.

Review of Metsä Fibre's year 2023 by CEO Ismo Nousiainen

The market situation was challenging in 2023, and this was also reflected in our result. Nevertheless, we continued to systematically develop our operations and strengthen our market position in both the pulp and sawn timber businesses. Sustainability has become increasingly important in our operations, and its role will continue to increase. This made it particularly satisfying that we again received the highest level of recognition from EcoVadis for our sustainability work.

Our 2023 sales were EUR 2,499 million, and our operating result was EUR 128 million. The sales and



operating result decreased from the previous year, mainly due to lower sales prices and volumes for pulp and the increased price of wood raw material.

Global market pulp deliveries increased from the previous year, with growth focusing mainly on hardwood pulp. Global softwood pulp deliveries increased marginally. Pulp deliveries to Asia increased, while those to Europe and North America decreased. Throughout the year, the demand for sawn timber was lower than usual in all markets.

Towards sustainable excellence

Population growth, urbanisation, climate change, loss of biodiversity, and digitalisation are the strongest megatrends of the 2020s. Their impact can also be seen in Metsä Fibre's strategy and day-to-day operations, as well as in our customers' business.

In accordance with our strategy, we aim for sustainable excellence through industrial efficiency, long-term customer relationships and new solutions promoting sustainability.

We want to leave a better world for future generations. **We are therefore actively seeking sustainable solutions for** mitigating climate change and promoting the circular economy. We are developing new bioproducts to replace products made from fossil-based raw materials and continue to strengthen our bioproduct mill concept to make full use of our production side streams. Meanwhile, we are continuing our efforts to continuously

improve the environmental performance of our mills. We use Nordic wood from sustainably managed forests and pay increasing attention to biodiversity in wood supply. We are committed to all our production units operating fully free of fossil fuels by 2030.

As efficiency is a requirement for our sustainable growth, **we seek industrial efficiency** to ensure our competitiveness continues to improve. We use every part of wood for valuable products and also support our customers' industrial efficiency with our products and services. We are systematically renewing our production units using cutting-edge technology and ensure the reliable operations and environmental efficiency of our mills. The new Kemi bioproduct mill that came online in 2023 is a forerunner in material, energy and environmental efficiency. The new mill offers us additional pulp capacity and promotes the achievement of our sustainability targets. We continue to develop new bioproducts and production technology to ensure our high quality and competitiveness and create wellbeing across Finland.

We are actively developing our operations and products with our customers. **We are committed to long-term customer relationships** and their continuous development. We believe that lasting cooperation ensures the best results for both parties. We want to serve our customers by supplying premium sustainably produced pulp and sawn timber and by providing professional technical customer service. Our increasing production capacity will enable us to support our customers' growth also in the future.





A strong foundation for future growth

Metsä Fibre celebrated its 50th anniversary in 2023. Over the decades, the company has been developed systematically, following a long-term approach.

We will further strengthen our position as the world's leading pulp supplier and a major producer of sawn timber, biochemicals and bioenergy. We operate energy-efficiently, producing renewable energy in excess of our own needs, and continue to improve our energy efficiency. However, we do not focus only on our own industrial efficiency, but also provide products and services that help our customers develop their industrial efficiency. We believe this will help us jointly enhance the operations of the value chain as a whole.

As our customers' business grows, they need more and more softwood market pulp to convert their products. Meanwhile, the environmental awareness of our customers and their customers continues to increase. The markets demand sustainable operations, which is a positive thing to a sustainable operator like us.

Our latest mill investment, the Kemi bioproduct mill, started up in the third quarter of 2023. The mill annually produces 1.5 million tonnes of pulp, a variety of bioproducts, and renewable electricity significantly exceeding its own needs – without using any fossil fuels. The new mill increases our production capacity and improves our environmental performance.

An extremely resource-efficient pulp mill and the full use of wood raw material and production side streams lie at the core of the bioproduct mill

concept. The mill's business model is based on an efficient partner network, in which new products are upgraded in cooperation with various parties. The ecosystem is home to businesses of various sizes and at various stages of development, which specialise in sectors such as biomaterials and bioenergy. In 2023, we concluded a cooperation agreement with ANDRITZ on designing a demo plant for a modified lignin product on the Äänekoski bioproduct mill site. This is a good example of partnerships that further strengthen our bioproduct concept.

Solutions to global challenges

Nordic wood is a premium renewable resource and the core of our business. We create sustainable growth from renewable wood raw material, and our products offer sustainable solutions to global challenges.

Pulp is a raw material that offers considerable potential in replacing fossil-based raw materials and other materials. In the pulp markets, demand is driven by hygiene products, paperboards and specialty papers. In turn, demand for sawn timber is boosted by the increasing use of wood products in construction, where they offer long-term carbon storage and contribute to climate change mitigation. The biochemicals and bioenergy we produce further strengthen our role as a provider of renewable solutions.

It is important for us to be able to secure reliable customer deliveries in all situations. We have built a new logistics concept at the Kemi bioproduct mill and have also fine-tuned the logistics solutions of our other production units.

In the last two years, we have expanded our operations in the North American market. In addition to logistics, we have been building customer cooperation, and this work is ongoing.

In line with our vision, we want to be the most profitable producer of bioproducts generating sustainable growth. Profitability ensures that we have the required resources to invest in new technologies and develop new products, processes and solutions. Profitability supports the sustainability of our operations, and sustainable operations generate profitability.

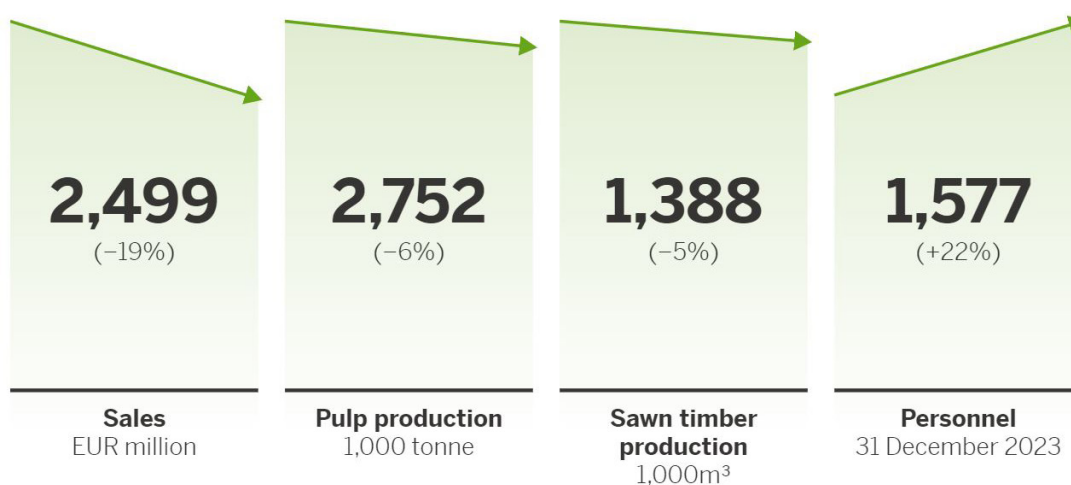
Our operations are long-term in nature. In our investments, we look several decades ahead. We are a strong company and can operate reliably in all market situations.

I want to thank our employees, customers and partners for their great collaboration in 2023!

Ismo Nousiainen
CEO
Metsä Fibre



2023 key figures



2023 highlights



Kemi bioproduct mill came into operation

The largest investment of the forest industry in Finland – the new Kemi bioproduct mill – came into operation as planned on Wednesday 20 September 2023. The operations started department by department and pulp deliveries from the new mill to customers started in October 2023. The Kemi bioproduct mill produces 1.5 million tonnes of softwood and hardwood pulp annually. For example tall oil and turpentine, as well as two terawatt hours of renewable electricity per year, which accounts for approximately 2.5 per cent of Finland's total electricity production.

[Read more](#)



Metsä Fibre awarded for sustainability work

Metsä Fibre was awarded again a Platinum level rating by EcoVadis for the company's corporate social responsibility. Metsä Fibre's score to a record level 85/100 places the company among the top 1 percent of companies assessed by EcoVadis in the manufacture of pulp, paper and paperboard industry. Metsä Fibre scored particularly high (90/100 points) on environmental topics. The methodology and criteria used by EcoVadis are in line with international Corporate Social Responsibility (CSR) standards.

[Read more](#)



Planning a lignin product demonstration plant

Metsä Fibre is planning to build a demonstration plant for a modified lignin product in cooperation with ANDRITZ. The aim is to develop the process to separate lignin from black liquor in pulp production and to further process it for new end-uses. The demonstration plant would have a capacity of about two tonnes per day and would be located within Äänekoski bioproduct mill. The high-performance bio-dispersant products produced in the demonstration plant could be used, for example, as bio-based concrete and gypsum water reducer used in construction markets.

[Read more](#)



Lappeenranta sawmill is Metsä Group's safest mill

Metsä Fibre's Lappeenranta sawmill was selected as Metsä Group's safest mill of 2022. In total 34 Metsä's production sites in 7 countries were evaluated. The selection criteria for the safest mill were the accident frequency rate (TRIF) of own personnel, the accident rates (TRI) of external partners and the activity in proactive safety work.

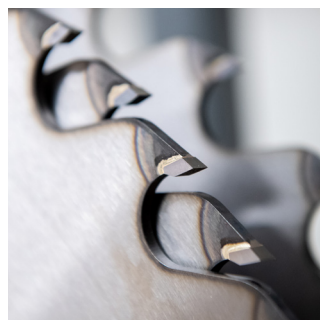
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Pulp production achieves excellent results for its environmental footprint

Metsä Fibre achieved excellent results in terms of sustainability and environmental efficiency in a study conducted by the Fraunhofer Institute for Microstructure of Materials and Systems, Germany. The study comprehensively examined the environmental footprint of Äänekoski bioproduct mill pulp production. The Äänekoski bioproduct mill was compared with average values of pulp mills in Europe and Latin America.

[Read more](#)



Future Sawmill concept awarded as a Quality Innovation

The Future Sawmill concept developed by Metsä Fibre won the Business Innovation Series of the Quality Innovation Competition organised by Excellence Finland. The Future Sawmill concept improves the efficiency of sawn timber production, occupational safety, production operating model and product quality management.

[Read more](#)

FINANCE

In 2023, we delivered 2.7 million tonnes of pulp and 1.4 million cubic metres of sawn timber to our customers. We are the world's leading producer of bleached softwood market pulp and a major producer of sawn softwood. We aim to strengthen our position further in both the pulp and sawn timber business.

Key figures

	2023	2022	2021	2020	2019
Sales EUR million	2,499	3,071	2,628	1,826	2,236
Comparable operating result EUR million	128	894	648	4	249
Investments EUR million	686	1,066	647	132	63
Return on capital employed %	4	35	33	0.2	12
Equity ratio %	45	60	61	55	57
Net gearing ratio %	53	25	13	15	10

Read more about Metsä Fibre's year 2023 in CEO Ismo Nousiainen's review.

You can find the development of our key indicators over a five-year period from the page 28.

Production

We are the world's leading producer of bleached softwood market pulp. Our pulp mills are located in Joutseno, Kemi, Rauma and Äänekoski, Finland. Their combined annual pulp production capacity is 4.0 million tonnes.

For more information on the personnel of our pulp mills and sawmills, please see the Personnel section of this review.

We are one of the leading sawn timber producers in Europe. Our sawmills are located in Lappeenranta, Merikarvia, Rauma, Renko and Vilppula, Finland. Their combined annual sawn timber production capacity is 2.1 million cubic metres of sawn softwood.

For more information on our environmental performance, please visit the Sustainability section of this review.

Pulp production (1000 tonne)	2023	2022	2021	2020	2019
Joutseno	537	603	650	574	638
Kemi	491	583	596	570	566
Rauma	602	580	598	541	600
Äänekoski	1,121	1,169	1,156	1,134	1,143
Total	2,752	2,935	3,000	2,819	2,948

Sawn timber production (1000 m ³)	2023	2022*	2021	2020	2019
Lappeenranta	210	226	219	206	238
Merikarvia	188	209	197	179	214
Rauma **	297	40	—	—	—
Renko	247	286	286	257	290
Vilppula	447	540	505	488	491
Total	1,388	1,460	1,710	1,593	1,741

*) Sawing operations in Kyrö ended in August 2022

*) The operations of the Svir sawmill in Russia were run down in March 2022

**) Continuous sawn timber production began in Rauma on 30.9.2022

Sales

Pulp sales

We manufacture softwood and hardwood pulp. The end products of softwood pulp have excellent strength properties, while hardwood pulp improves the surface properties of products.

Most of the pulp we produce is used in Finland and Asia. Market pulp accounts for almost 80 per cent of the pulp deliveries. The main market area of our market pulp is APAC (Asia-Pacific).

All pulp grades in the Metsä range are certified and meet the purity criteria for products that come into contact with food, for example. The most important end uses of Metsä pulp are paperboards, tissue papers, printing papers and speciality products.

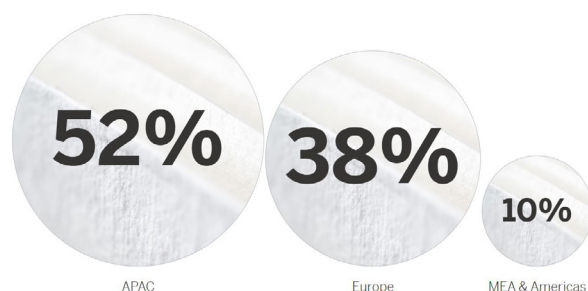
We develop our pulp grades in close collaboration with our customers to ensure that our products meet their requirements for the properties of the fibre and paper. Our pulp selection is complemented by our diverse expert services, which allow us to support our customers' processed and business operations.



End use of Metsä pulp 2023



Pulp sales volumes by market areas, % 2023



Sawn timber sales

We produce premium sawn timber from northern pine and spruce, and serve customers around the world.

Our most important export markets for sawn timber are Europe, Asia and the Middle East. We export some 90% of our spruce sawn timber and some 85% of our pine sawn timber.

Our sawn timber is delivered mainly to distributors for use in living and joinery, construction and furniture industries as well as in packaging. Our efficient production lines combined with our strong know-how ensure a high-quality, smooth and even sawn surfaces, precise dimensions and excellent drying results.



Spruce sawn timber



Pine sawn timber

End use of sawn timber 2023



Living and joinery



Construction industry



Packaging



Furniture industry

Sawn timber sales volumes by market areas, % 2023



Europe



APAC



MEA & Americas

Other bioproduct sales

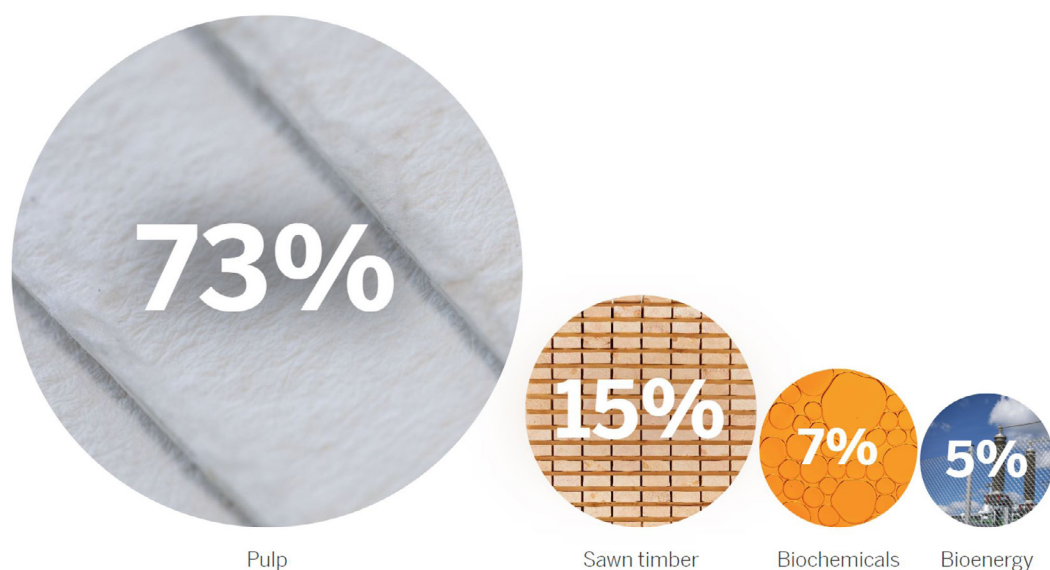
Metsä Fibre is a leading producer in the world market of chemicals derived from northern wood. We produce crude tall oil and crude turpentine as well as bioenergy as a by-product of pulp production.

- **Crude tall oil** is used as a raw material in the production of adhesives, rubbers and inks as well as pharmaceuticals and biofuels. It is also used as a binding agent in cement and asphalt.
- **Crude turpentine** is a compound used, in a processed form, in fragrances, cosmetics, paint, varnish and solvents, and in household and industrial detergents.

- We supply **bioenergy** in the form of district heat to local communities and electricity to the grid.

We have made a commitment to utilise our wood raw material as efficiently and diversely as possible. The material side streams accumulating from the main production of pulp offer a wide range of possibilities for the development and conversion of innovative bioproducts.

The share of bioproducts of our sales in 2023



Read more



Kemi will lead the way far into the future

Kemi bioproduct mill has been built on the experiences and insights gained from Äänekoski bioproduct mill, and thus further developing the Metsä Fibre's unique bioproduct mill concept. The concept uses world-class technology to minimise the environmental impact of operations.

[Read more](#)



Five sawmills, five strengths

Metsä Fibre's sawmills are renowned worldwide for their premium sawn timber. Behind the high-quality end-product are the excellent Nordic wood raw material, resource efficient production facilities, reliable logistics, and the world-class professionals working at the sawmills.

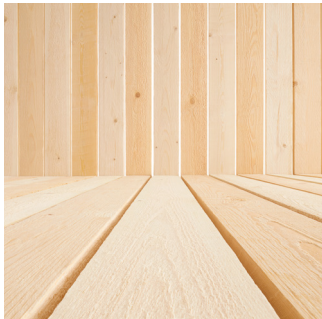
[Read more](#)



Get to know Kemi bioproduct mill

On our website you will find a virtual bioproduct mill that enables you to explore our energy efficient production process, advanced closed chemical cycle, and AI-based equipment. You can also visit the Port of Kemi and learn about our environmentally efficient production, operating completely without fossil fuels.

[Read more](#)



Sawn timber customers more satisfied than ever

In the customer survey, carried out in spring 2023, Metsä Fibre's sawn timber customers gave very positive feedback for quality, stock management and reliability. According to the survey, the satisfaction of our sawn timber customers is higher than ever. Customer surveys provide valuable feedback that helps us improve operations even more.

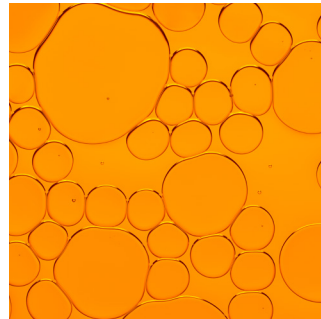
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Pulp customers appreciate quality

According to Metsä Fibre's annual customer survey, the pulp customers still appreciate the quality of our pulp, the sustainability of our supply chain and our service. The survey was carried out in all our market areas. Our customers are confident that we will do what we promise at all the stages of the supply chain. Customer satisfaction has stayed consistently high over the years.

[Read more](#)



More biochemicals for growing demand

The use of crude tall oil and crude turpentine, generated in connection with pulp production, is increasing sharply.

Growth in global demand is driven by two things. First, the use of fossil raw materials must be reduced, so many sectors of industry need more renewable and recyclable bio-based raw materials. Second, crude tall oil (CTO) and crude sulphate turpentine (CST) are extremely versatile raw materials for the chemical industry and can be refined into a variety of products.

[Read more](#)

SUSTAINABILITY

Our commitment for sustainable development and responsibility guide all our operations. We use Nordic wood from sustainably managed forests and make products that can replace fossil-based raw materials and other materials in a resource-efficient manner. We ensure environmental, energy and materials efficiency as well as the high quality of our products, and we aim for sustainable excellence through continuous improvement.

Our operations support the achievement of the UN's Sustainable Development Goals.



Sustainable Development Goals 2030

Metsä Group's strategic sustainable development goals for 2030 create a path towards a climate-neutral society. Metsä Fibre plays an important role in achieving these goals.

Learn more about our sustainability objectives.

	Target 2030	Status 2023	Progress	SDGs
E – Environment				
1. Safeguarding biodiversity and the ecological sustainability of forest use				
Retention trees at regeneration felling sites, % *	100	96,0	→	SDG: 13, 15
High biodiversity stumps at felling sites, % *	100	92,0	→	SDG: 13, 15
Thinned young stands with spruce as the only tree species, % *	0	26,0	↘	SDG: 13, 15
Measures to increase biodiversity, number *	10000	816,0	→	SDG: 13, 15
2. Climate change mitigation and the reduction of emissions				
Improvement of the energy efficiency index from the 2018 level, points. Read more	+10	-	↘	SDG: 7, 12, 13
Fossil-based carbon dioxide emissions (Scope 1 + Scope 2, market-based), tonnes. Read more	0	159510	↗	SDG: 12, 13
Share of fossil free raw materials and packaging materials of dry weight, %. Read more	100	-100	→	SDG: 9, 12
The amount of forest regeneration and young stand management from the 2018 level, % *	+30	+14	↗	SDG: 13, 15
The amount of forest fertilisation from the 2018 level, % *	+50	-26	↘	SDG: 13, 15
Share of continuous cover forestry in peatland forest regeneration, % *	+30	+17	↗	SDG: 13, 15
The amount of carbon stored in wood products from the 2018 level, %	+30	-24	↘	SDG: 12, 13
3. Efficient use of resources and sustainability of production				
Reduction of process water use per tonne of production from the 2018 level, %. Read more	-35	-4%	→	SDG: 6, 12
Process waste sent to landfills, tonnes. Read more	0	14924	↗	SDG: 12
S – Social				
4. Respecting everyone and doing the right thing				
Anonymous recruitment for open recruitment, %. Read more	100	79,0	↗	SDG: 5, 8
Women in management positions, %	>30	19,0	→	SDG: 5, 8
5. Promoting safety and wellbeing at work				
Total Recordable Incident Frequency (TRIF), company personnel	0	8,9	↘	SDG: 8
Job satisfaction among personnel	AAA	A+	→	SDG: 5, 8
G – Governance				
6. Innovation and open-minded cooperation and 7. The societal significance of a forest-based bioeconomy				
Implementation of ethics barometer measures, %	100	97,0	→	SDG: 5, 8
Traceability of raw materials, share of total purchasing, %	100	95,0	→	SDG: 9, 12
Share of certified wood, %	>90	95,0	↗	SDG: 15
Suppliers' commitment to the Code of Conduct, share of total purchasing, %	100	99,0	↗	SDG: 8, 12
Supplier evaluations and audits for key suppliers, %	100	66,0	↗	SDG: 8, 12
Shared sustainability target with our partner suppliers, %	100	100,0	↗	SDG: 12, 13

The targets will be achieved by the end of 2030. For example, the use of fossil fuels will be discontinued by 31 December 2030.

* This is a Metsä Group-level measure.

Progress in 2023 from the previous year.

↗ = above the target (significant progress)

→ = at the target (progress as planned)

↘ = below the target (no progress or decreased performance)

In 2023, we received again EcoVadis' highest platinum level recognition for our work on sustainability. With this result, we are among the top one per cent of pulp, paper and paperboard manufacturers assessed by EcoVadis.



Use of wood

All of the wood we use is traceable and comes from certified or controlled forests. This allows us to ensure the legality of the wood supply as well as the acceptability and sustainability of the supply chain. A tracing system allows us to trace the origin of the wood we purchase all the way up to an individual felling site.

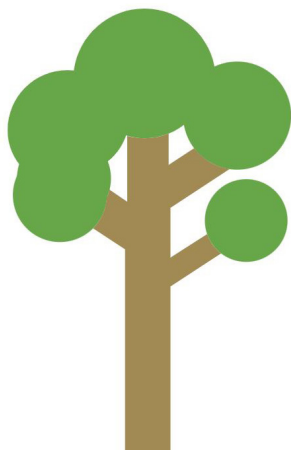
The northern wood used by Metsä Fibre is bought from sustainably managed forests in areas where the forests grow more than they are used. 95% of the wood used by Metsä Fibre is certified – an excellent figure in our line of business.

Forest regeneration is always part of sustainable forest management, and we require environmental values to be considered in all forestry measures. A forest is always regenerated after a felling, and Metsä Group uses domestic tree species and seedlings in forest regeneration. The diversity of forest nature is also protected in many ways.

We use every part of the tree in the best possible way to create the most value. We use logs at sawmills, and produce pulp and other bioproducts from pulp wood and sawmill chips. Branches and treetops are used to produce bioenergy.

	2023	2022	2021	2020	2019
Total wood consumption million m ³	18	18	19	18	19
Share of certified wood %	95	91	90	90	90

We utilize wood 100 %



Bark, branches and treetop
For renewable energy

Pulpwood
For pulp and other bioproducts

Log wood
For sawn timber and other wood products

Environmental performance

Emissions into water

Our sustainability goals include decreasing the use of process water per product tonne throughout Metsä Group by 35% by 2030. To achieve this goal, we engage in long-term and systematic work in line with the principles of continuous improvement.

The steady operation and good usability of production units as well as scheduled preventive maintenance and maintenance shutdowns play a key role

in increasing the efficiency of water use. We use and recycle water as efficiently as possible within our processes and actively look for new targets where the water flow can continue to be improved.

The sawmills' production processes generate nominal volumes of wastewater, which is treated in municipal wastewater treatment plants.

	Process water volume 1,000 m ³	Total suspended solids t	Chemical oxygen demand (COD) t	Biological oxygen demand (BOD) t	Phosphorus P t	Nitrogen N t	AOX t
Joutseno	14,022	719	5,792	91	7	84	78
Kemi	15,935	742	6,800	157	4	74	59
Rauma	13,026	192	9,999	91	2	47	78
Äänekoski	18,775	175	7,794	161	4	74	123
Total	61,758	1,827	30,385	499	17	280	339
2022	66,086	1,830	31,124	484	23	341	358

You can find more information on the five-year trend of the environmental performance indicators on page 28 of the report.

Definitions of the terms can be found on page 34 of this report.

Emissions into air

Our sustainability goals include fossil-free mills by 2030. Even today, most of the fuels used in our production are bio-based, and the majority of them are production side streams. Among the materials we use as energy are bark, black liquor produced in pulp production and sawdust from sawdust sawn timber production.

By utilising the side streams generated in the process as extensively as possible, we improve the resource, energy and environmental efficiency of our production facilities.

Pulp mills	Sulphur dioxide (as SO ₂) t	NOX (as NO ₂) t	CO ₂ from fossil sources Scope 1	CO ₂ from fossil sources Scope 2	CO ₂ from biomass 1,000 t	Particles t	TRS (as S) t
Joutseno	158	891	24	0	1,288	69	9
Kemi	32	787	45	0	1,442	93	12
Rauma	17	779	67	0	1,367	123	11
Äänekoski	9	1,605	0	0	2,958	36	7
Energy Unit*	31	124	21	0	209	1	0
Total	247	4,185	157	0	7,264	323	40
2022	365	4,994	192	0	7,584	411	51

*) The energy production unit (formerly Äänevoima Oy) produces energy for the Äänekoski integrated mill and district heating for the town of Äänekoski. The unit was incorporated into Metsä Fibre in 2019.

Sawmills	Sulphur dioxide (as SO ₂) t	NOX (as NO ₂) t	CO ₂ from fossil sources Scope 1	CO ₂ from fossil sources Scope 2	CO ₂ from biomass 1,000 t	TRS (as S) t
Lappeenranta	0	48	0	0	26	0
Merikarvia	0	18	1	0	22	0
Rauma	0	0	0	0	0	0
Renko	1	12	1	0	27	0
Vilppula	15	38	1	0	82	0
Total	16	116	2	0	157	0
2022	17	142	3	0	183	0

Total	Sulphur dioxide (as SO ₂) t	NOX (as NO ₂) t	CO ₂ from fossil sources Scope 1	CO ₂ from fossil sources Scope 2	CO ₂ from biomass 1,000 t	Particles t	TRS (as S) t
Company total	264	4,302	160	0	7,421	356	40
2022	382	5,137	195	1,019	7,768	448	52

Waste

Our goal is to fully utilise production side streams by 2030 and to run production that does not generate any landfill waste. A very large proportion of production side streams can already be used as various by-products and energy. The green liquor dregs generated in the pulp process are currently the only fraction that cannot be fully utilised. Green liquor dregs are used on earthworks sites

to replace virgin raw materials such as crushed rock and gravel in field structures to save natural resources. Another potential use for green liquor dregs is in geopolymers used to replace materials like concrete. We are actively seeking other purposes for green liquor dregs, and related research projects are underway.

Pulp mills	Landfill waste t	Hazardous waste t	Utilised side-streams and waste t
Joutseno	7,677	32	79,702
Kemi	4,314	69	45,084
Rauma	2,925	43	16,596
Äänekoski	208	59	93,175
Total	15,125	203	234,557
2022	29,313	192	

Sawmills	Landfill waste t	Hazardous waste t	Utilised side-streams and waste t
Lappeenranta	0	7	2,282
Merikarvia	0	2	557
Rauma	0	30	7,197
Renko	0	15	2,833
Vilppula	0	7	6,618
Total	0	60	19,487
2022	21	21	

Total	Landfill waste t	Hazardous waste t	Utilised side-streams and waste t
Company total	15,125	263	254,044
2022	29,334	214	232,226

Energy

The self-sufficiency rate of Metsä Fibre's mills in terms of electrical energy totals 159%, and we are a significant producer of bioelectricity. In 2023, Metsä Fibre accounted for 7.6% of the electricity produced from renewable energy sources in Finland. In addition to our own production, we produce bioenergy for the grid as electricity and as district heat for nearby communities.

Alongside increasing the share of bioenergy, we are focusing on energy efficiency and the replacement of fossil fuels by renewable fuels. Improving the energy efficiency of our production units is a key part of our investments in production.

Pulp mills	Wood based fuel use GWh	Fossil fuel use GWh	Purchased electricity GWh	Purchased heat GWh	Electricity self-sufficiency %
Joutseno	3,253	119	-186	-26	156
Kemi	3,642	155	20	-354	95
Rauma	3,451	233	-180	-138	145
Äänekoski	7,469	0	-711	-272	208
Energy Unit*	529	67	18	-392	
Total	18,343	574	-1,040	-1,182	159
2022	19,154	706	-1,335	-1,334	176

Sawmills	Wood based fuel use GWh	Fossil fuel use GWh	Purchased electricity GWh	Purchased heat GWh
Lappeenranta	66	0	15	0
Merikarvia	55	2	14	-9
Rauma	0	0	36	82
Renko	68	2	7	0
Vilppula	207	4	14	-64
Total	396	8	87	8
2022	461	11	80	-63

Total	Wood based fuel use GWh	Fossil fuel use GWh	Purchased electricity GWh	Purchased heat GWh	Energy efficiency index year 2018 = 100
Company total	18,740	583	-953	-1,174	101.1
2022	19,615	717	-1,256	-1,397	101.3

Metsä Fibre annual review 2023

An independent external assurance has been performed for the data in the tables as part of Metsä Group's Sustainability Report.

Continuous improvement

The development of environmental performance is long-term work

Metsä Fibre is committed to promoting sustainability, carbon neutrality and resource efficiency through its operations. Clean water, the circular economy and action against climate change are areas to which we want to contribute with solutions.

The goals annually specified in the mills' action plans and the measures to achieve them develop our operations in line with Metsä Fibre's 2030 sustainability objectives. The key objectives are related to reducing fossil carbon dioxide emissions, improving energy efficiency and reducing the volume of process water and landfill waste.

Working systematically towards our 2030 sustainability targets

Metsä Fibre has set itself ambitious targets for reducing the use of process water in its production. The development measures carried out to date are steering performance in the direction sought, and the volume of process water per tonne of pulp produced decreased in 2023 for the third consecutive year. The key measures to reduce process water have involved improving the management of water balance between department interfaces and making increasingly efficient use of secondary water fractions. The efficient use of process water at the Kemi bioproduct mill will further reduce the total volume of process water.

The goal is to make full use of production side streams to reduce the volume of landfill waste to

zero by 2030. Green liquor dregs are the most significant single fraction still ending up in landfills. For a long time, we have studied the composition of green liquor dregs and alternative uses with our partners, and the first practical applications can now be found in earthworks. However, in 2023, we successfully reduced the volume of process waste disposed in landfills per tonne of pulp produced in accordance with our goal. Our development work aimed at identifying new applications continues.

All Metsä Group aims for fossil free mills by 2030, and we are now moving systematically towards this objective. Biofuels already account for the bulk of fuel used in Metsä Fibre's production, and the new Kemi bioproduct mill is carrying the company steadily towards its target of fossil free operations.

Proactive environmental work as part of daily operations

To minimise the environmental impacts of our operations, we carry out active, preventive environmental work daily. Reliable process and emissions measurements lay the foundation for daily production control and environmental performance monitoring.

To ensure the reliability of our measuring devices and analysers, hundreds of analyses and quality assurance measurements are carried out by laboratories at our plants. In addition, external experts conduct comprehensive surveys of the impacts on waterbodies, air quality and noise at our mill locations. Along with measurements, the field tours and environmental observations made by our personnel play an important role because they enable us to react to any deviations as early as possible.

In 2023, seventeen deviations from the limits specified in the environmental permit were detected in the company's operations. In Joutseno, the deviations were related to the processing of mild odorous gases and the amount of suspended solids in wastewater. In Rauma, the deviations concerned the lime kiln's particle concentration and the sulphur dioxide emissions from the recovery boiler. During the start-up of the Kemi bioproduct mill, deviations were recorded in emissions to both water and air. Not a single breach of permit limits occurred at the Äänekoski mill in 2023.

Cooperation with stakeholders and partners

We engage in active development cooperation with various parties such as equipment suppliers, research institutions and partner companies. Future solutions call for broad expertise, cooperation spanning different business areas, and cooperation networks involving various operators. Sustainability and the continuous improvement of our operations create added value to society and a competitive advantage to our customers.



Read more



Environmental sustainability guides all our operations

Metsä Fibre's operations are based on the sustainable use of raw materials and resource-efficient production. All individuals, groups and production units have their own sustainability targets that promote the company level targets. In turn, each target has specific indicators used to monitor progress.

[Read more](#)



Appropriate operating methods improve wellbeing and safety at work

Metsä Fibre's social sustainability targets include operating ethically as well as promoting wellbeing and safety at work. Metsä For All vision specifies the focal areas and targets of development related to social sustainability. Among the key principles are equality and gender equity, diversity and inclusion.

[Read more](#)



Sustainable business across the value chain

Metsä Group's values and Code of Conduct also guide Metsä Fibre's operations. In addition to complying with applicable legislation, we are committed to sustainability in our own operations and partner relationships throughout the value chain.

[Read more](#)



Sawn timber sequesters carbon throughout its life-cycle

The high-quality and sustainable sawn timber we produce is used to a particularly high degree in end uses where the carbon remains sequestered in the wood for a period spanning decades or even a century. Such end uses include various wood construction solutions and furniture.

[Read more](#)



Continuous work for the environment

Environmental impact monitoring is an important part of the activities of Metsä Fibre's mills. Work is carried out in close cooperation with expert companies and authorities. Regular training for employees ensures that environmental matters remain part of daily routines.

[Read more](#)



Nature management is part of forest management

Every forest owner can nurture the nature values of their forest and safeguard its vitality in changing climate conditions. The Finnish forests are homes to many species, around 20,000 by some estimates. In commercial forests their habitats are created and also protected through nature management, which is a crucial part of forest management.

[Read more](#)

PERSONNEL

Our operations aim for sustainable excellence. Its achievement requires first-rate safety at work and our goal is indeed zero accidents in all our locations. At Metsä Fibre, safety is part of our professional skills, and proactive safety work is part of our everyday operations. 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 as well as apprenticeship training for several people every year.

Metsä Fibre employs 1,577 professionals. We are also a significant employer indirectly, as each job in the Finnish forest industry indirectly creates three other jobs.

Metsä Fibre is a leading producer of bioproducts and bioenergy. We produce pulp and other bioproducts as well as bioenergy at four mills in Finland. We produce sawn timber products at five sawmills in Finland.

Joutseno pulp mill

- 177 employees
- Capacity
 - 690,000 t bleached softwood pulp
 - 30,000 t biochemicals
 - 780 GWh renewable electricity
- Share of certified wood 95%
- Electricity self-sufficiency 180%

Rauma pulp mill

- 165 employees
- Capacity
 - 650,000 t bleached softwood pulp
 - 25,000 t biochemicals
 - 600 GWh renewable electricity
- Share of certified wood 91%
- Electricity self-sufficiency 180%

Lappeenranta sawmill

- 70 employees
- Capacity 250,000 m³ pine sawn timber
- Share of certified wood 100%

Merikarvia sawmill

- 71 employees
- Capacity 220,000 m³ pine sawn timber
- Share of certified wood 100%

Rauma sawmill

- 89 employees
- Capacity 750,000 m³ pine sawn timber
- Share of certified wood 100%

Renko sawmill

- 72 employees
- Capacity 320,000 m³ spruce sawn timber
- Share of certified wood 100%

Vilppula sawmill

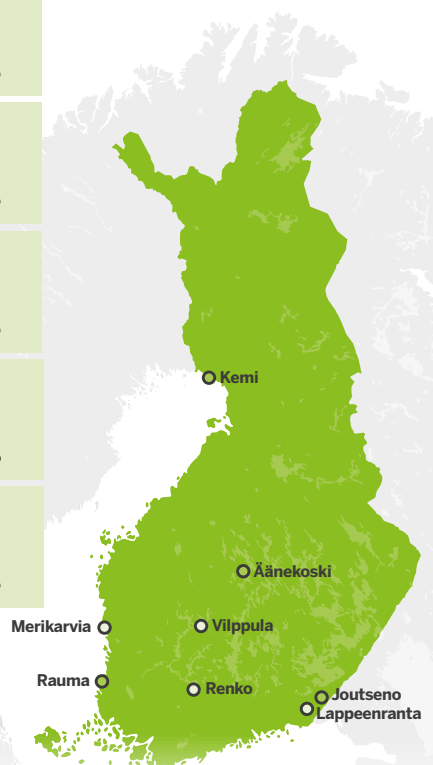
- 97 employees
- Capacity 535,000 m³ spruce sawn timber
- Share of certified wood 100%

Kemi pulp mill

- 328 employees
- Capacity
 - 1.02 million t bleached softwood pulp
 - 300,000 t hardwood pulp
 - 180,000 t unbleached pulp
 - 80,000 t biochemicals
 - 2,000 GWh renewable energy
- Share of certified wood 98%
- Electricity self-sufficiency 250%

Äänekoski bioproduct mill

- 253 employees
- Capacity
 - 800,000 t bleached softwood pulp
 - 500,000 t hardwood pulp
 - 50,000 t biochemicals
 - 1800 GWh renewable electricity
- Share of certified wood 95%
- Electricity self-sufficiency 240%





Safety and wellbeing at work

Occupational safety

Safety is our top priority in everything we do, and everyone at Metsä Fibre has the right to a safe workplace. Our goal is zero accidents and we want to make sure that every Metsä Fibre employee and every employee of our partners heads home healthy. Safety is an essential part of our professional skills.

Key aspects of safety management include proactive safety work, risk identification and assessment, addressing unsafe working methods, and the entire personnel's commitment. Examples of daily proactive safety work include regular toolbox meetings and safety inspections at our mills and sawmills, as well as actively implemented safety observations. We report and investigate all accidents at work and also share the lessons learned from the inspections with our other mills in order to avoid similar accidents in the future.

We engage in long-term efforts to improve safety at work and require occupational safety skills from our suppliers and partners as well. We familiarise each of our employees and partner companies working in our mills with safe working methods, and working in the mill area requires a safety orientation.

Wellbeing at work

Continuous improvement. This creates opportunities to increase skills and find new strengths. As an employer, we are guided by a number of policies and our Code of Conduct, and we require every Metsä Fibre employee to comply with it.

For us, excellent management is inspiring, goal-oriented, demanding and fair. Everyone has a right to an annual performance and development appraisal. We support employee development by providing on-the-job learning, training courses and work cycles.

Promoting and maintaining wellbeing at work and working capacity is based on proactive action. We have at our disposal early support, work capacity assessments and a model with a personal work capacity plan.

In 2023, we conducted a personnel survey measuring the work community's readiness to implement the company strategy and identifying the key development areas. Based on a regular personnel survey, development measures are set for identified development areas, and we systematically monitor the implementation of these.

Sustainable and responsible business culture

In 2022, Metsä Group carried out the second ethics barometer survey investigating how personnel feel that the company's Code of Conduct is implemented in practice.

A responsible corporate culture, measured with the ethics barometer, is one of Metsä Group's strategic 2030 sustainability targets. The goal is to implement all the development actions that have been set based on the ethics barometer results. The ethics barometer and personnel survey are carried out in alternate years.

LTA1 Lost-time accident frequency rate	2023	2022	2021	2020	2019
Sawmills	12.3	5.2	7.5	10.3	14.8
Pulp mills	5.2	3.7	9.2	4.8	4.7
Metsä Fibre total	7	3.9	7.6	6.6	8.7

	2023	2022	2021	2020	2019
TRIF total recordable incident frequency per million worked hours	8.9	5.2	10.2	8.4	20.2
Sickness absenteeism % of theoretical working time	4.1	5.2	4	3.7	4.1
Work accident absenteeism % of theoretical working time	0.1	0.2	0.2	0.2	0.2



People in Metsä Fibre

We at Metsä Fibre are proud of our heritage and strong industry expertise. We work in the forefront of the forest industry and focus on developing sustainable solutions for the future. We work together to implement Metsä Fibre strategy for sustainable excellence.

The high quality of our products is based on the extensive expertise of our employees. We invest in the continuous development of our employees'

professional skills through both on-the-job learning and training. Each one of us is focused on developing, producing and delivering products and services that meet our customers' needs.

Our work is guided by our values: reliability, cooperation, responsible profitability and renewal. We develop our operations in cooperation with our stakeholders.



*) The ethics barometer is carried out every second year with the personnel survey.

Read more



Safety comes first during the mill's maintenance shutdown

The annual maintenance shutdown is an important part of the mill's production process. It helps ensure the efficiency, safety and reliability of equipment and systems in the long run. During the annual maintenance shutdown, the number of workers on the mill site is multiplied, and close attention is paid to work safety, both in preparation and in the actual execution of the work.

[Read more](#)



Kemi bioproduct mill is an outstanding example of competence

Success in a large construction project calls for competent employees and smooth cooperation among a variety of parties and partners. Production at the new Kemi bioproduct mill began in the third quarter of 2023 but personnel training, involving employees at the current Kemi pulp mill, started already in the spring of 2021. It was intended to secure the smooth deployment of the new mill and the controlled shutdown of the old one.

[Read more](#)



Operators complete the quality at Rauma sawmill

Rauma sawmill, operating round the clock is run by professional operators who monitor and fine-tune production throughout every shift to ensure the premium quality of Rauma's sawn timber. The premium quality of sawn timber is important for the operators. It is a question of professional pride. "We aim to make such good sawn timber that we would buy it for ourselves," says operator Arbo Lauri.

[Read more](#)



Forests are part of Finnish family history

Finns have a unique relationship with the forest. Forest owners see it as a valuable treasure that they want to look after and protect for future generations. Many people also feel that the forest plays an important part in family history. Many of Metsä Fibre's employees are also forest owners.

[Read more](#)



Successful solutions make the project manager happy

Ossi Puromäki, who was the project manager responsible for the project services of the Kemi bioproduct mill project, is pleased that his team was able to succeed in inspecting deliveries and managing tasks related to project logistics in a challenging global situation.

[Read more](#)



Technical service face to face

Technical customer service interacts directly with sawn timber customers and provides a faster response to customer feedback. Previously, Technical Customer Service Manager Victoria Eklund worked as a production engineer at Renko sawmill. This technical background is useful in her role as a go-between for sawmills and customers.

[Read more](#)

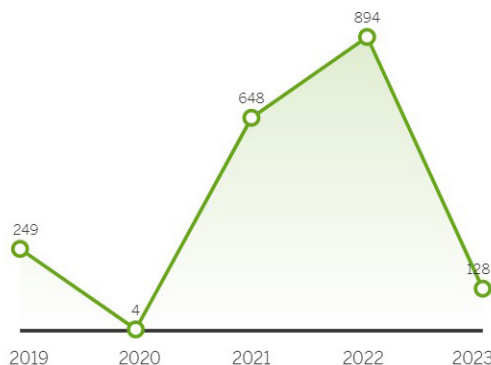
Five-year trend of key indicators

Finance

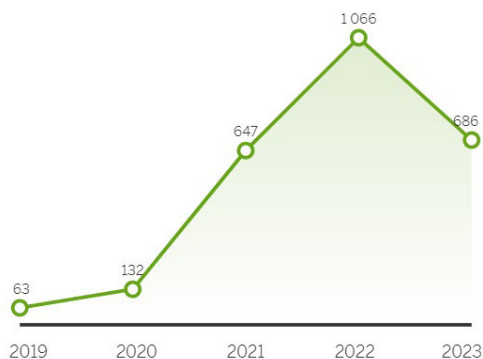
Sales (EUR million)



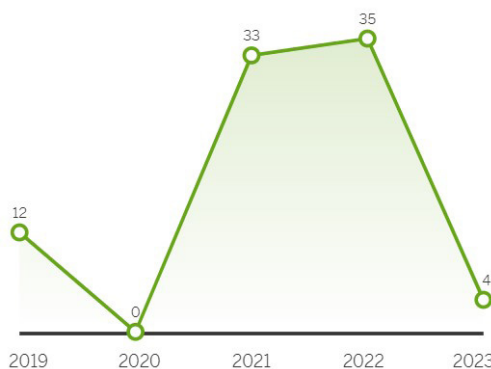
Comparable operating result (EUR million)



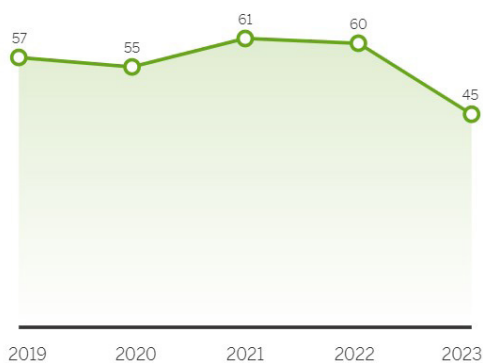
Investments (EUR million)



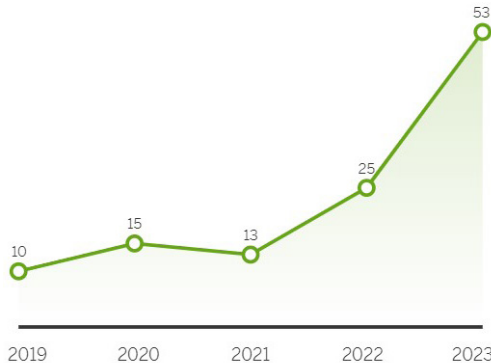
Return on capital employed %



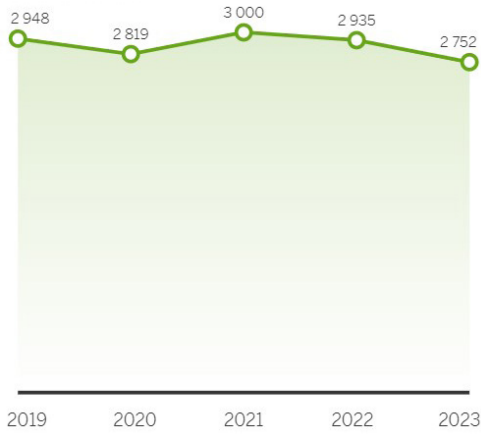
Equity ratio %



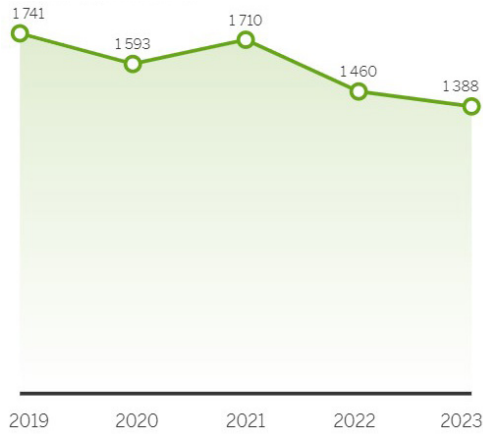
Net gearing ratio %



Pulp production (1,000 tonne)

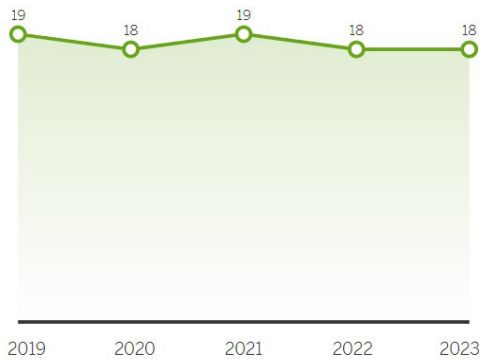


Sawn timber production (1,000m³)

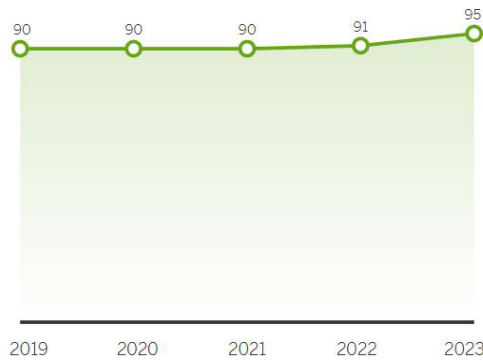


Sustainability

Total wood consumption (million m³)

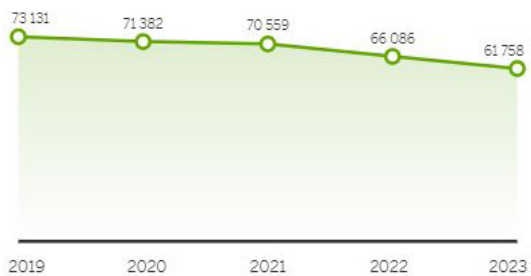


Share of certified wood (%)

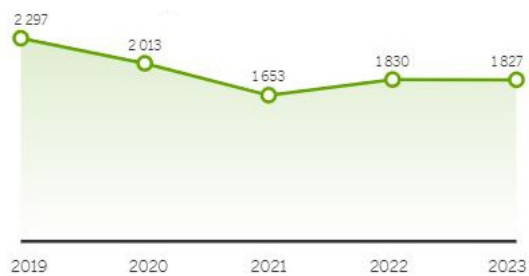


Emissions into water

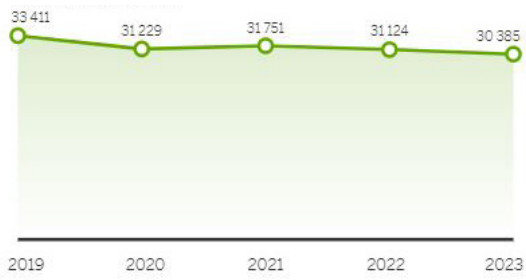
Process water volume (1,000 m³)



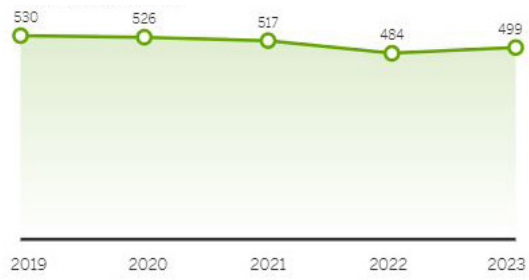
Total suspended solids (t)



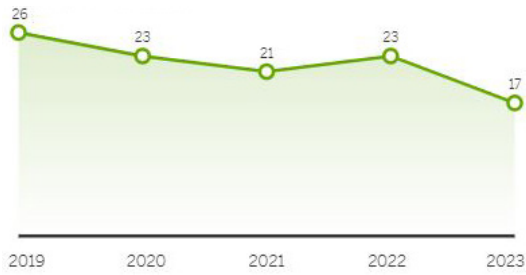
Chemical oxygen demand COD (t)



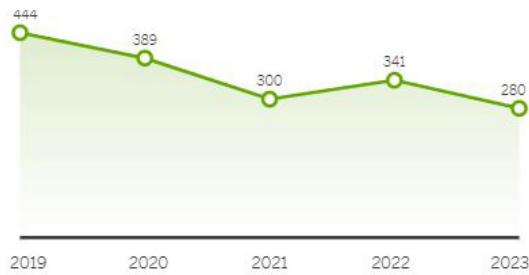
Biological oxygen demand BOD (t)



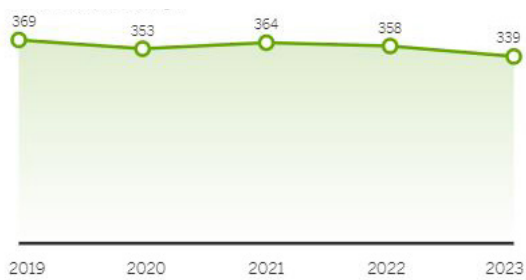
Phosphorus P (t)



Nitrogen N (t)

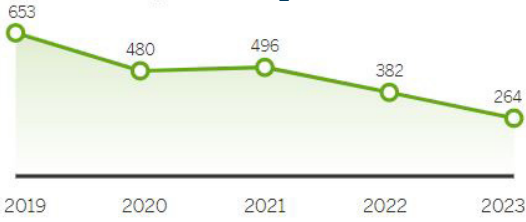


AOX (t)



Emissions into air

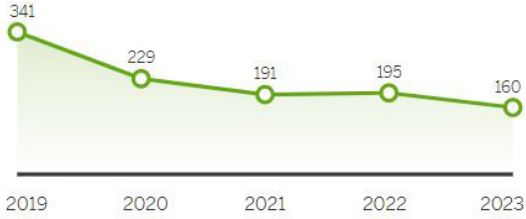
Sulphur dioxide SO₂ (t)



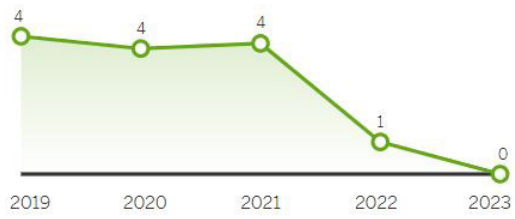
NO_x NO₂ (t)



CO₂ from fossil sources, Scope 1 (1,000 t)



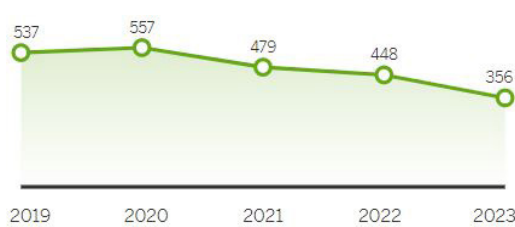
CO₂ from fossil sources, Scope 2 (1,000 t)



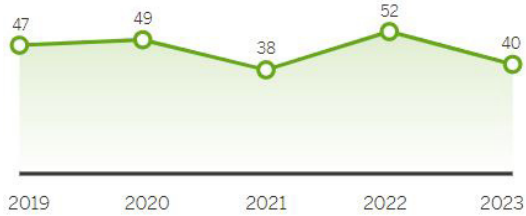
CO₂ from biomass (1,000 t) TRS S (t)



Particles (t)

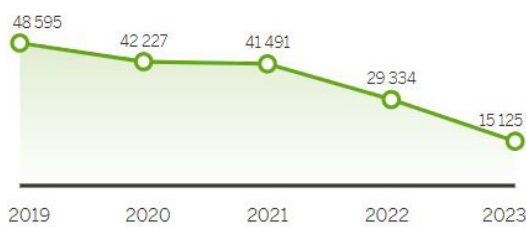


TRS S (t)



Waste

Landfill waste (t)



Hazardous waste (t)



Utilised side-streams and waste (t)



Energy

Wood based fuel use (GWh)



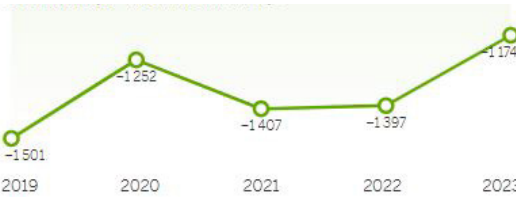
Fossil fuel use (GWh)



Purchased electricity (GWh)



Purchased heat (GWh)

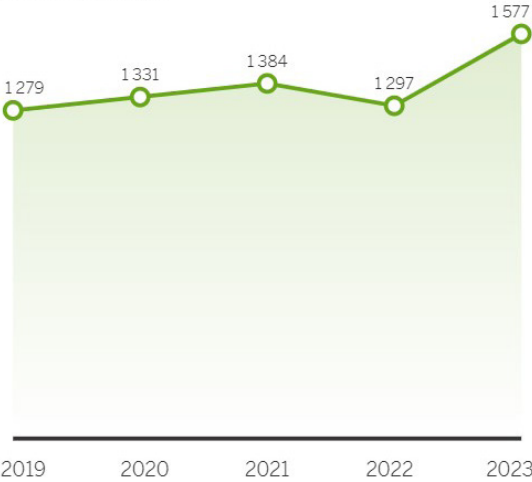


Energy efficiency index, year 2018 = 100



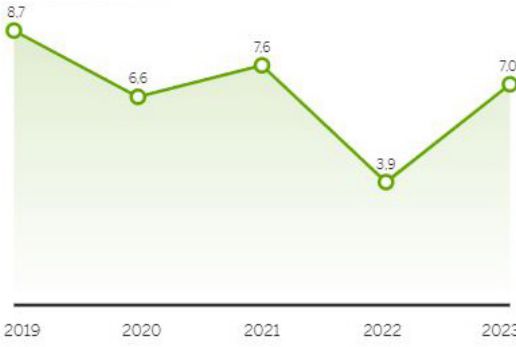
Personnel

Personnel



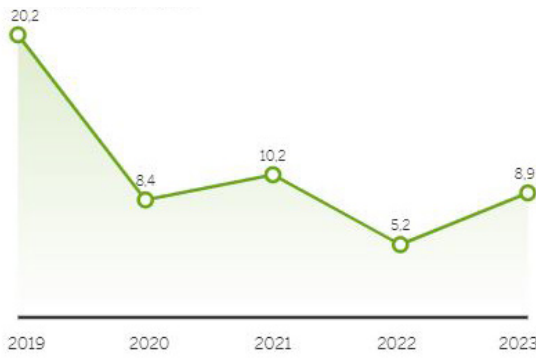
LTA1

Lost-time accident frequency rate



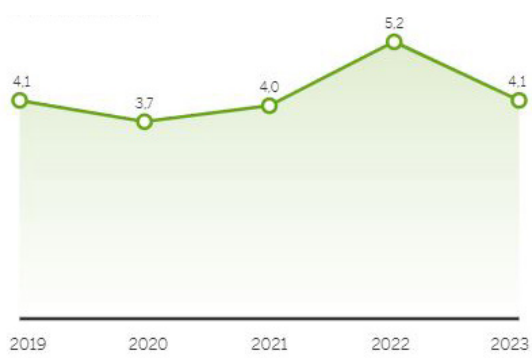
TRIF

Total recordable incident frequency per million worked hours



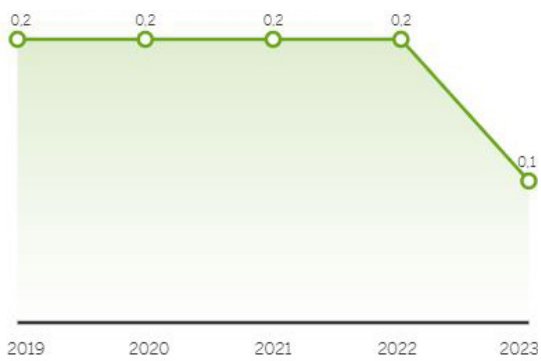
Sickness absenteeism

(% of theoretical working time)



Work accident absenteeism

(% of theoretical working time)



Glossary

AOX

AOX derives from chlorine dioxide bleaching and it describes the organic chlorine compounds bound to biological compounds.

Biological oxygen demand BOD

The volume of oxygen consumed by the degradation of wastewater in the waterways. The BOD figure provides an idea of how much wastewaters contain easily degradable biological materials.

Chemical oxygen demand COD

A value used to monitor the quality of treated wastewater and its organic load on waterways. The COD describes the combined volume of both quickly and slowly degradable biological materials in the wastewater.

CO₂ biofuel

Carbon dioxide emissions are produced during the combustion of biofuels, such as wood-based fuels.

CO₂ fossil-based

Fossil-based carbon dioxide emissions are produced during the combustion of fossil fuels, such as heavy fuel oil.

Nitrogen (N)

The nutrient inputs of waterways, which have an impact on their eutrophication.

NO_x NO₂

Nitrogen oxides produced during combustion which have an impact on air quality.

Particles

Combustion-derived particles which have an impact on air quality.

Phosphorus P

The nutrient inputs of waterways, which have an impact on their eutrophication.

Sulphur dioxide SO₂

Compounds produced during combustion which have an impact on air quality.

TRS S

Reduced sulphur compounds generated in pulp production which may cause odour nuisance during a disturbance. In a normal situation, the compounds are recovered and treated.



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