



METSÄ FIBRE
Annual review 2022



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 2022 by CEO Ismo Nousiainen

2022 was successful for us in every respect: our financial result was excellent, we managed to ensure reliable customer deliveries even in challenging conditions, and we systematically advanced our investment projects in Kemi and Rauma and implemented long-term continuous improvement in all our operations.

Our sales were EUR 3,1 billion and our operating result was EUR 894 million, accounting for 29% of sales. The sales and operating result increased mainly due to higher pulp sales prices, while the strengthening of the US dollar against the euro also boosted sales and



result. We invested more than EUR 1 billion during the year, ensuring the efficiency and competitiveness of our production facilities in the future as well.

Our efforts to improve the quality of our operations were recognised in the EFQM Quality Award competition, where we won the Outstanding Achievement for Future Focus award and were the first Finnish company to achieve the EFQM Global Award 7 Diamonds rating. We also received the highest level of recognition for our sustainability work from EcoVadis, an international sustainability assessment body.

Towards sustainable excellence

Population growth, urbanisation, loss of biodiversity, climate change and digitalisation are megatrends that have been affecting the forest industry for some time. In recent years, their importance and impact on our operating environment and our customers' businesses have increased.

Updated in 2022, our strategy has taken account of the changes in the business environment. Our objectives are incorporated in three strategic projects.

We seek **industrial efficiency** to ensure that our competitiveness continues to improve. We also support our customers' industrial efficiency through the products and services we offer. We are systematically modernising our production units, using the latest technologies. We also ensure our mills' operational reliability and environmental efficiency. Our new pine sawmill in Rauma, which commenced operations in 2022, uses the latest technology and digitalisation and represents a major leap forward for the entire industry. When completed, the new Kemi bioproduct mill will be the most efficient wood processing plant in the northern hemisphere, giving us more pulp capacity and helping us achieve our sustainability goals.

We value **long-term customer relationships** and their continuous development. We believe that long-term cooperation produces the best results for both parties. We want to serve our customers by supplying high quality, responsibly produced pulp and sawn timber and providing expert technical customer service. Our growing production capacity will enable us to support our customers' growth in the years to come.

We are seeking **sustainable solutions** for mitigating climate change and promoting the circular economy. We are developing new bioproducts to replace products made from fossil raw materials and further strengthen our bioproduct mill concept to fully utilise production side streams. At the same time, we are continuing to work to continuously improve our mills' environmental performance. We use Nordic wood from sustainably managed forests, and our wood sourcing takes biodiversity into account. We are committed to fossil free production by 2030.

A strong foundation for future growth

We will further strengthen our position as the world's leading pulp supplier and a major producer of sawn timber. The new Rauma pine sawmill started operations at the end of the third quarter of 2022 and will reach full capacity during 2023. The Kemi bioproduct mill project is progressing according to plan, with the new mill starting up in the third quarter of 2023. It will reach full capacity in 2024. When both the Kemi bioproduct mill and the Rauma sawmill reach full capacity, our production capacity will increase to 4.1 million tonnes of pulp and 2.1 million cubic metres of sawn timber. These investments and our continuous improvement approach will increase our production capacity and improve our environmental performance.

In addition to pulp and sawn timber, our product portfolio includes biochemicals and bioenergy, and we are engaged in long-term research and development to expand our product portfolio with new bioproducts in the future. In 2022, we strengthened our unique bioproduct mill concept by entering into a long-term cooperation agreement with Veolia to refine raw methanol from the pulp production process at the Äänekoski bioproduct mill into commercial biomethanol.

We are also a major energy producer. We already produce 11% of Finland's total renewable energy, and our energy production capacity will increase with the Kemi bioproduct mill. This means that our company plays an important role in Finland's energy security.

Solutions to global challenges

Northern wood is a first-class renewable resource and the core of our business. We create sustainable

growth from renewable wood raw material, and our products provide sustainable solutions to global challenges. As a raw material, pulp has significant potential to replace fossil raw materials. In the pulp market, growth in demand is driven by tissue papers, the hygiene sector, the board and packaging sector, and the end-users of speciality paper. Demand for sawn timber is also firm, as wood products that serve as long-term carbon storage play an important role in mitigating climate change.

We aim to be our customers' preferred partner. This is an ambitious goal that requires the continuous

improvement of our operations. I believe this goal can be achieved through strong long-term cooperation with our customers and partners.

I want to thank our employees, customers and partners for their great collaboration in 2022!



Ismo Nousiainen
CEO
Metsä Fibre Oy

2022 key figures



*) Metsä Fibre's personnel increased on 1 January 2023 when the company included the maintenance operations of its production units in its own organisation. With the arrangement, a total of approximately 350 people moved through a transfer of business from Botnia Mill Service to Metsä Fibre's service.

2022 highlights



Rauma sawmill inaugurated

The new Rauma pine sawmill was inaugurated on 10 October 2022 by Finland's Prime Minister Sanna Marin with Ilkka Hämmälä, Metsä Group's President and CEO, and Jussi Linnaranta, Chair of the Board of Directors of Metsäliitto Cooperative. With a value of EUR 260 million, the Rauma pine sawmill is the largest ever sawmill investment in Finland. The continuous production was launched on 30 September 2022, and the new sawmill has an annual production capacity of 750,000 cubic metres of pine sawn timber.



Kemi bioproduct mill project progressing

Metsä Fibre's Kemi bioproduct mill project is progressing as planned. The value of the investment is EUR 2.02 billion and it is the largest investment ever made by the Finnish forest industry in Finland. The mill will be started-up as planned at the third quarter of 2023. The Kemi bioproduct mill will produce some 1.5 million tonnes of softwood and hardwood pulp per year, as well as many other bioproducts.



Metsä Fibre awarded for its 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 82/100 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, and scored higher than in previous years on all other sections.



Joining maintenance operations to our own organisation

Metsä Fibre took over the maintenance operations of its production units as part of its own organisation. Related to the arrangement, Botnia Mill Service personnel who worked at Metsä Fibre's pulp mills, the Rauma sawmill, and administration and support functions (approximately 350 people in total) transferred to the service of Metsä Fibre starting from 1 January 2023 through a transfer of business.



Partnership with Veolia further strengthens our bioproduct mill concept

Metsä Fibre and Veolia signed a long-term partnership agreement on the refining of crude methanol generated in pulp production at the Åänekoski bioproduct mill into commercial biomethanol. As part of this cooperation, Veolia has decided to invest in the construction of a crude methanol refinery in connection with Åänekoski bioproduct mill.



Metsä Fibre recognised with an international award for future-focused work

Metsä Fibre got again recognition in the international EFQM Excellence Award competition where the company achieved EFQM Global Award 2022 7 Diamonds rating and was awarded the Outstanding Achievement for Future Focus recognition. Metsä Fibre received special praise from the EFQM assessors for a strong focus on the future and the outstanding ability to combine long-term vision and strategy with the daily operations in the short term as well.

FINANCE

In 2022, we delivered 2.9 million tonnes of pulp and 1.5 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

Key figures	2022	2021	2020	2019	2018
Sales EUR million	3,071	2,628	1,826	2,236	2,469
Comparable operating result EUR million	894	648	4	249	669
Investments EUR million	1,066	647	132	63	62
Return on capital employed %	35	33	0.2	12	35
Equity ratio %	60	61	55	57	55
Net gearing ratio %	25	13	15	10	1

Read more about Metsä Fibre's year 2022 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

Our pulp mills are located in Joutseno, Kemi, Rauma and Äänekoski. Their combined annual pulp production capacity is 3.3 million tonnes, and we are the world's leading producer of bleached softwood market pulp.

Our sawmills in Finland are located in Lappeenranta, Merikarvia, Rauma, Renko and Vilppula. The start-up of the Rauma sawmill at the end of the third quarter increased our combined annual production capacity for sawn timber to 2.1 million cubic metres of sawn softwood.

Pulp production (1000 tonne)	2022	2021	2020	2019	2018
Joutseno	603	650	574	638	675
Kemi	583	596	570	566	593
Rauma	580	598	541	600	557
Äänekoski	1,169	1,156	1,134	1,143	1,148
Total	2,935	3,000	2,819	2,948	2,973

Sawn timber production (1000 m ³)	2022	2021	2020	2019	2018*
Kyrö **	118	221	196	221	228
Lappeenranta	226	219	206	238	243
Merikarvia	209	197	179	214	220
Rauma ***	40	—	—	—	—
Renko	286	286	257	290	308
Vilppula	540	505	488	491	510
Metsä Svir ****	40	282	268	288	281
Total	1,460	1,710	1,593	1,741	1,819

*) Eskola sawmill was part of Metsä Fibre until 7/2018

***) Sawing operations in Kyrö ended in August 2022

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

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

Sales

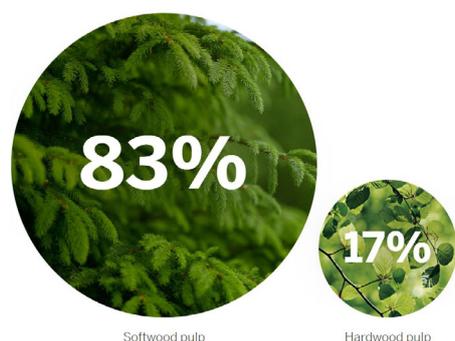
Pulp sales

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 approximately 70 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.

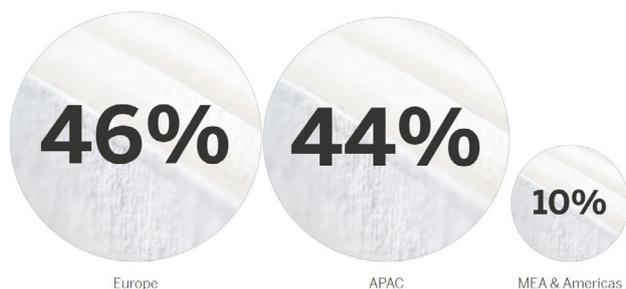
We develop our pulp grades in close collaboration with our customers to ensure that our products meet their requirements for the properties of the fibre and paper. Our pulp selection is complemented by our diverse expert services, which allow us to support our customers' processed and business operations.



End use of Metsä pulp



Pulp sales volumes by market areas, %



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 80% of our pine sawn timber.

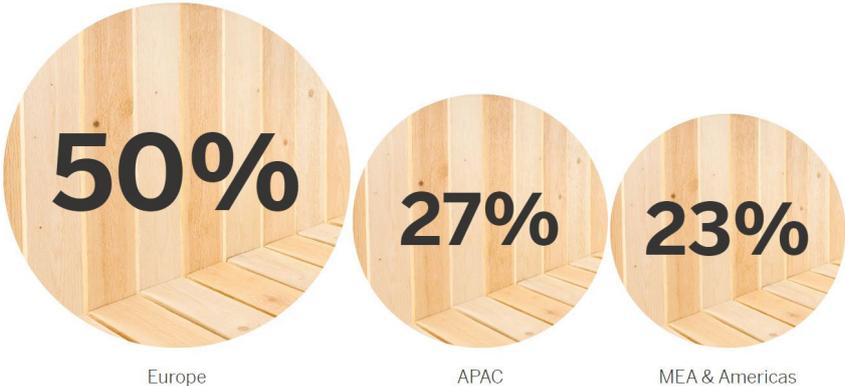
Our sawn timber is delivered mainly to distributors for use in living and joinery, construction and furniture industries as well as in packaging. Our efficient production lines combined with our strong know-how ensure a high-quality, smooth and even sawn surfaces, precise dimensions and excellent drying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



End use of sawn timber



Sawn timber sales volumes by market areas, %



Other bioproduct sales

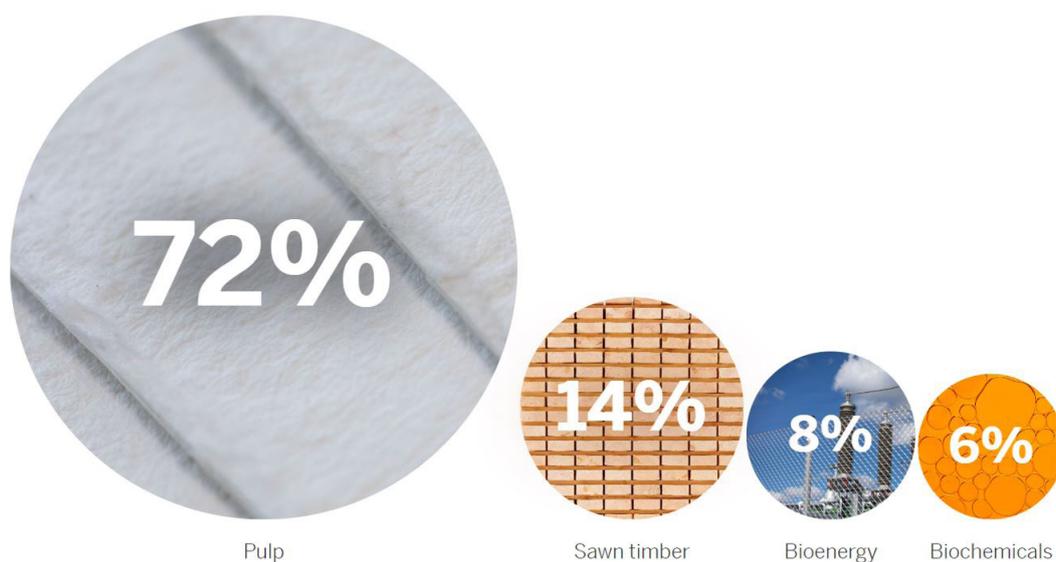
Metsä Fibre is a leading producer in the world market of chemicals derived from northern wood. We produce crude tall oil and crude turpentine as well as bioenergy as a by-product of pulp production.

- **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 2022



Read more



The world's most modern sawmill in every way

Metsä Fibre's new pine sawmill in Rauma boasts state-of-the-art technology and unparalleled efficiency. As the most advanced sawmill in the world and Finland's largest-ever sawmill investment, it creates benefits for the entire sawmill industry.



Industrial ecosystem around Äänekoski bioproduct mill

The industrial ecosystem created around the Äänekoski bioproduct mill is an essential part of Metsä Fibre's unique bioproduct mill concept. The partner network operating around the mill is using the pulp produced by Metsä Fibre or side streams of its pulp production.



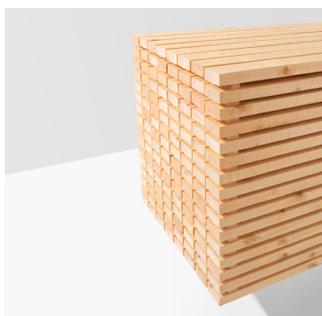
Wood is ideal for interiors

Wood is mounting an unprecedented comeback - it is a trending material in furniture and interior finishing. From designer brands to Do It Yourself (DIY) home renovators, it is suddenly everywhere, and suppliers need to keep up.



Megatrends continue to drive pulp demand

Although economic uncertainty is casting a shadow on the market, the underlying megatrends will continue to boost long-term demand for multi-purpose, responsibly produced pulp.



Price of sawn timber settling at a new normal

Sawn timber prices traditionally fluctuate with business conditions, but the record fluctuations in sawn timber prices in 2021 have shown that predicting the future in global markets is becoming increasingly difficult.



We need a wood-based circular economy more than ever

The circular economy offers a new foundation for sustainable business and addresses both climate change and biodiversity loss. The goal is to keep materials in the cycle for as long as possible, minimise emissions and waste, and make sure nature can renew itself.

SUSTAINABILITY

Sustainable development and responsibility are an integral part of 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	Status	Actions	UN Sustainable Development Goals
Forest			
Carbon sequestered in forests Increasing the amount of carbon sequestered in forests by +30 per cent from 2018 level.		This is a sustainability objective for the entire Metsä Group and a sustainability measure at Metsä Forest.	 
Carbon sequestered in products Increasing the amount of carbon sequestered in products by +30 per cent from 2018 level.		Rauma pine sawmill increases our sawn timber production capacity.	  
Biodiversity of forest nature Safeguarding the biodiversity of forest nature, increasing the amount of decaying wood.		This is a sustainability objective for the entire Metsä Group and a sustainability measure at Metsä Forest.	 
Climate and the environment			
Fossil free mills Fossil CO2 emissions 0, share of fossil free fuels 100%.	2019: 96% 2020: 96% 2021: 97% 2022: 96%	<ul style="list-style-type: none"> New Kemi bioproduct mill. New Rauma sawmill and the utilisation of the Rauma pulp mill's side streams in energy production. Fossil free support fuels for the Joutseno and Rauma mills. Fossil free fuels for thermal power stations. 	   
Resource-efficient production Full utilisation of solid production side streams.	2019: 75% 2020: 83% 2021: 85% 2022: 89%	Identifying new applications for green liquor dregs generated as a side stream of pulp production.	  
Resource-efficient production Enhancing the use of process water at pulp mills by 25 per cent per product tonne (m³/t) in 2018–2030.	2018: 23.3 m³/t 2019: 24.8 m³/t 2020: 25.3 m³/t 2021: 23.5 m³/t 2022: 22.5 m³/t	<ul style="list-style-type: none"> New Kemi bioproduct mill. Mill-specific action plans, their implementation and updating. 	 
Sustainable choices			
Fossil free raw materials Share of fossil free raw materials 100%.	2022: Metsä Fibre 99.99% Pulp: 100% Sawn timber: 99.99%	Replacing sawn timber wraps with fossil free alternatives.	 
Sustainable supply chain All our suppliers operate according to the set environmental, social and economic sustainability requirements (Supplier Code of Conduct).	2019: 92% 2020: 95% 2021: 97% 2022: 98%	The sustainability of suppliers is ensured by committing them to the Supplier Code of Conduct, and by evaluating and auditing them.	  
Sustainable supply chain Full traceability of raw materials.	2019: 95% 2020: 96% 2021: 96% 2022: 98% (wood raw material 100%)	The traceability of raw materials and the countries of production will be reviewed with producers in connection with product safety surveys.	  
Safety and wellbeing			
Safe and accident-free work environment Accident rate (LTA1) 0.	2019: LTA1 8.7 2020: LTA1 6.6 2021: LTA1 7.6 2022: LTA1 3.9	<ul style="list-style-type: none"> Active and systematic proactive safety work involving all employees. Metsä Group's safety management principles and processes that make the management of safety at work within the Group more consistent. Close safety cooperation with service providers and other partners. 	 
Responsible corporate culture Ethics index resulting from the ethics barometer 100%.	2022: 83.4%*	Analysing the results of the ethics barometer conducted every two years with the personnel and using the results in operational development.	

In 2022, 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.

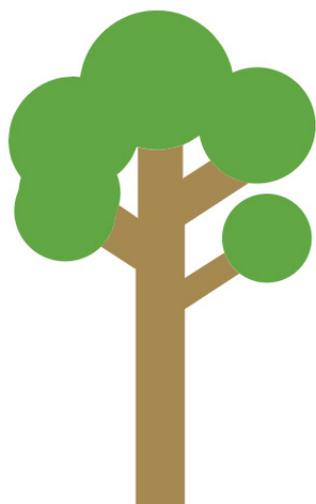
The northern wood used by Metsä Fibre is bought from sustainably managed forests in areas where the forests grow more than they are used. 91% of the wood used by Metsä Fibre is certified – an excellent figure in our line of business.

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.

	2022	2021	2020	2019	2018
Total wood consumption million m ³	18	19	18	19	19
Share of certified wood %	91	90	90	90	92

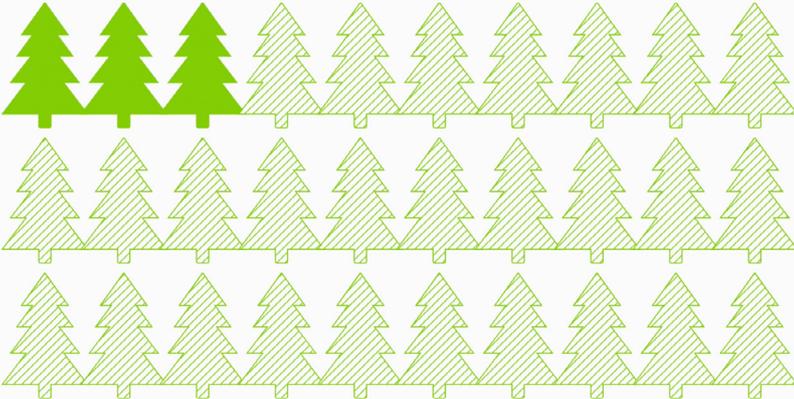
We utilize wood 100%



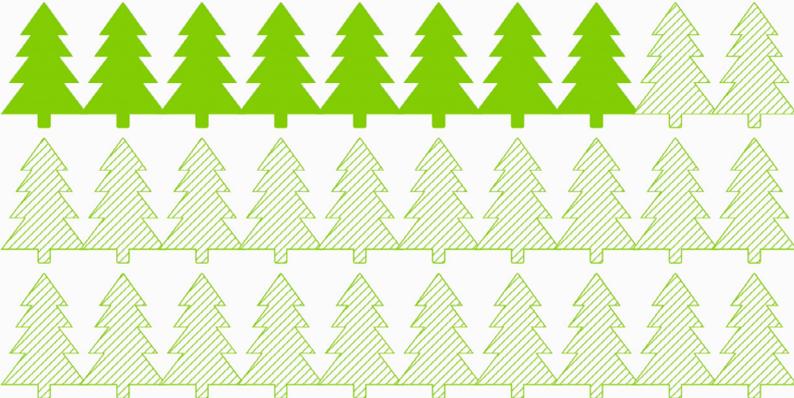
- 15 %**
Bark, branches and treetop
For renewable energy
- 25 %**
Pulpwood
For pulp and other bioproducts
- 60 %**
Log wood
For sawn timber and other wood products

Forest certification

Around **10%** of the world's forests are certified



Only **25%** of the (industrially) recoverable forest assets are certified



90% of the wood used by the Metsä Fibre's production units comes from certified forests



Environmental performance

Emissions into water

Our sustainability goals include decreasing the use of process water per product tonne throughout Metsä Group by 25% 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	15,303	1,017	7,236	143	9	96	93
Kemi	16,788	443	7,115	106	4	110	54
Rauma	13,947	202	9,141	97	4	57	82
Äänekoski	20,048	168	7,633	137	6	80	130
Total	66,086	1,830	31,124	484	23	341	358
2021	70,559	1,653	31,751	517	21	300	364

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 33 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 1,000 t	CO ₂ from biomass 1,000 t	Particles t	TRS (as S) t
Joutseno	233	1,039	31	1,483	119	7
Kemi	42	1,104	68	1,436	120	21
Rauma	23	892	64	1,338	136	17
Äänekoski	2	1,831	0	3,103	36	7
Energy Unit*	65	129	29	225	1	0
Total	365	4,994	192	7,584	411	51
2021	475	5,181	187	7,680	382	38

*) The energy production unit (formerly Äänevoima Oy) produces energy for the Äänekoski integrated mill (excluding the bioproduct 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 1,000 t	CO ₂ from biomass 1,000 t	Particles t
Kyrö	0	0	0	6	0
Lappeenranta	0	52	0	29	5
Merikarvia	0	19	1	23	13
Rauma	0	0	0	0	0
Renko	1	14	1	31	5
Vilppula	16	41	1	87	12
Metsä Svir	0	16	0	7	1
Total	17	142	3	183	35
2021	21	185	4	208	58

Total	Sulphur dioxide (as SO ₂) t	NOX (as NO ₂) t	CO ₂ from fossil sources 1,000 t	CO ₂ from biomass 1,000 t	Particles t	TRS (as S) t
Company total	382	5,137	195	7,768	448	52
2021	496	5,366	191	7,887	479	38

Waste

Our goal is to utilise production side streams fully by 2030 and to achieve a state in which our production will not generate landfill waste. Already, an extremely large portion of production side streams can be put to use as various by-products and energy.

At the moment, the green liquor dregs generated in the pulp process is the only category for which there is not yet a clear use. We are actively looking for applications in which it could be used and the topic is also the subject of research projects.

Pulp mills	Landfill waste t	Hazardous waste t
Joutseno	10,076	74
Kemi	8,977	25
Rauma	7	38
Äänekoski	10,254	55
Total	29,313	192
2021	41,446	462

Sawmills	Landfill waste t	Hazardous waste t
Kyrö	0	0
Lappeenranta	0	3
Merikarvia	18	0
Rauma	0	0
Renko	0	16
Vilppula	0	2
Metsä Svir	3	0
Total	21	21
2021	45	17

Total	Landfill waste t	Hazardous waste t
Company total	29,334	214
2021	41,491	479

Energy

The self-sufficiency rate of Metsä Fibre's mills in terms of electrical energy totals 176 %, and we are a significant producer of bioelectricity. In 2022, Metsä Fibre accounted for 8.4% of the electricity produced from renewable energy sources in Finland, and 11% of renewable energy. 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	3,745	154	-237	-43	164
Kemi	3,627	236	-150	-438	142
Rauma	3,378	226	-196	-129	153
Äänekoski	7,837	0	-772	-220	212
Energy Unit*	567	90	20	-504	
Total	19,154	706	-1,335	-1,334	176
2021	19,393	663	-920	-1,407	151

Sawmills	Wood based fuel use GWh	Fossil fuel use GWh	Purchased electricity GWh	Purchased heat GWh
Kyrö	15	1	8	0
Lappeenranta	74	0	17	0
Merikarvia	57	2	16	-9
Rauma	0	0	6	13
Renko	77	3	10	0
Vilppula	220	5	20	-66
Metsä Svir	18	0	3	0
Total	461	11	80	-63
2021	524	15	80	-70

Total	Wood based fuel use GWh	Fossil fuel use GWh	Purchased electricity GWh	Purchased heat GWh
Company total	19,615	717	-1,256	-1,397
2021	19,917	678	-839	-1,407

[Metsä Fibre annual review 2022](#)

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

The continuous development

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 concern the reduction of fossil carbon dioxide emissions and the volume of process water and landfill waste.

Working systematically towards our 2030 objectives

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 2022 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 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. Together with our partners, we have studied the composition of green liquor dregs and alternative uses for a long time, but have not yet made a

breakthrough in new purposes. However, in 2022, we successfully reduced the volume of process waste disposed in landfills per tonne of pulp produced in accordance with our goal. Some of the green liquor dregs were reused in earthworks to replace virgin materials. 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 challenges in the availability of natural gas in 2022 further highlighted the need to move away from fossil fuels. This gave rise to surveys of replacement fuels and their availability, needs for technical changes and related procedures involving the authorities. At the Joutseno pulp mill, measures were taken to give up natural gas. The construction of the new Kemi bioproduct mill is also propelling Metsä Fibre towards its objective of fossil free operations.

Proactive environmental work as part of daily operations

We carry out active, preventive environmental work daily to minimise our environmental impacts. 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. In addition to 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 2022, nine departures from the limits specified in the environmental permit were detected in the company's operations. In Äänekoski, the exceptions concerned the processing of mild odorous gases, the concentration of odour released into the atmosphere from the biogas plant, and the release of water. In Kemi, the limit was exceeded for nitrogen oxides and for total chlorine content released into the air from the chlorine dioxide plant. In Joutseno, the processing of mild odorous gases did not meet the treatment rate specified in the permit, and the limit for total chlorine content released into the air from the chlorine dioxide plant was exceeded. The permit limit was also exceeded for solids and phosphorus in Joutseno.

In 2022, a new HSEQ system was deployed at all our pulp mills and sawmills for entries concerning proactive environmental work, for example. The new system enables increasingly detailed entries and analyses.

Cooperation with stakeholders and partners

We collaborate actively and openly with various stakeholders. In connection with the Kemi bioproduct mill project, we have organised several stakeholder meetings and events open to the public at which we have described the project's progress and the new mill.

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



Metsä Fibre promotes traffic safety for children

Metsä Fibre promotes traffic safety of primary school children in its production unit locations, in the form of an annual traffic safety campaign.



Stakeholder collaboration to promote responsible wood sourcing

Metsä Fibre, Ahlstrom-Munksjö and 3M, with the help of Earthworm Foundation, continue their close collaboration in responsible wood sourcing. The partnership, which started in 2019, has mainly focused on responsible wood sourcing in the value chain from forests to end-products.



Pulp mills' energy self-sufficiency enables fossil-free future

A significant share of all renewable energy produced in Finland is generated in connection with pulp production when the black liquor formed from wood material and cooking chemicals is combusted in the recovery boiler.



Aiming for zero accidents

Metsä Fibre, like the whole of Metsä Group, has the target of preventing all accidents. Safety is the most important part of professional skills at Metsä Fibre. We want to ensure that every Metsä Fibre employee and the employees of our partners are able to return from work healthy.



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.



Nemus Futurum presents sustainable forest management

Metsä Group's forest visitor centre Nemus Futurum uses augmented reality to showcase Finnish forests and sustainable forest management.

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 1,630 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 <ul style="list-style-type: none"> • 172 employees • Capacity 690,000 t bleached softwood pulp • Share of certified wood 91 % • Electricity self-sufficiency 164 % 	Lappeenranta sawmill <ul style="list-style-type: none"> • 66 employees • Capacity 250,000 m³ pine sawn timber • Share of certified wood 97 % 	Renko sawmill <ul style="list-style-type: none"> • 69 employees • Capacity 320,000 m³ spruce sawn timber • Share of certified wood 96 %
Kemi pulp mill <ul style="list-style-type: none"> • 250 employees • Capacity 620,000 t bleached softwood and hardwood pulp • Share of certified wood 95 % • Electricity self-sufficiency 142 % 	Merikarvia sawmill <ul style="list-style-type: none"> • 66 employees • Capacity 220,000 m³ pine sawn timber • Share of certified wood 97 % 	Vilppula sawmill <ul style="list-style-type: none"> • 98 employees • Capacity 535,000 m³ spruce sawn timber • Share of certified wood 96 %
Rauma pulp mill <ul style="list-style-type: none"> • 155 employees • Capacity 650,000 t bleached softwood pulp • Share of certified wood 83 % • Electricity self-sufficiency 153 % 	Rauma sawmill <ul style="list-style-type: none"> • 90 employees • Capacity 750,000 m³ pine sawn timber • Share of certified wood 100 % 	* The operations of the Svir sawmill in Russia have been suspended. ** Numbers of personnel on 1 January 2023
Äänekoski bioproduct mill <ul style="list-style-type: none"> • 242 employees • Capacity 1.3 million t bleached softwood and hardwood pulp • Share of certified wood 91 % • Electricity self-sufficiency 212 % 		





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 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 2021, 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.

Sustainable business culture, which the ethics barometer measures, is one of Metsä Group's strategic

sustainability goals for 2030. The target set for the ethical index resulting from use of the barometer is 100% by 2030. The result of the 2022 survey was 83.4 per cent for Metsä Fibre. The ethics barometer is carried out every second year in connection with the personnel study.

LTA1 Lost-time accident frequency rate	2022	2021	2020	2019	2018
Sawmills	5.2	7.5	10.3	14.8	7.2
Pulp mills	3.7	9.2	4.8	4.7	5.9
Metsä Fibre total	3.9	7.6	6.6	8.7	5.9

	2022	2021	2020	2019	2018
TRIF total recordable incident frequency per million worked hours	5.2	10.2	8.4	20.2	17.1
Sickness absenteeism % of theoretical working time	5.2	4	3.7	4.1	3.7
Work accident absenteeism % of theoretical working time	0.2	0.2	0.2	0.2	0.1



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. We aim for a strong, innovative culture with a winning attitude, and we do it all while paying close attention to safety, responsibility and sustainability.

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



*) Metsä Fibre's personnel increased on 1 January 2023 when the company included the maintenance operations of its production units in its own organisation. With the arrangement, a total of approximately 350 people moved through a transfer of business from Botnia Mill Service to Metsä Fibre's service.

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

Read more



Production planning with the confidence coming from long experience

Timo Tuomela has worked in production planning for 20 years. In early 2022, he transferred from Metsä Fibre's Merikarvia sawmill to Rauma, where he plans the sawmill's production of 750,000 cubic metres. His interest in wood has remained strong from decade to decade.



Pulp expert in Singapore

Mikael Engman works as a Metsä Fibre Technical Customer Service Manager in Southeast Asia. He has long and varied experience from the pulp industry. Engman helps Metsä Fibre's Asian customers obtain maximum benefit from Finnish pulp.



Experienced support for newcomers

Jari Hyvönen has nearly 30 years' experience of the panel and sawmill industry. In his present job as Project Engineer, he supports Rauma sawmill operators in on-the-job learning and in completing a formal degree.



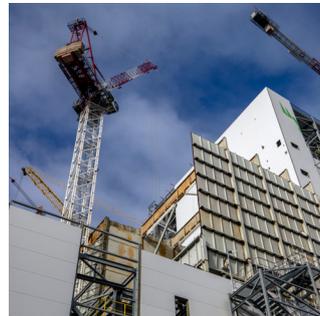
Mill speed is planned together

Metsä Fibre mills hold a daily morning meeting to get an overview of the situation at the mill. The morning meeting is attended by a large number of employees and some partners. The meetings play an important role in mill management.



Ensuring safety is a common effort

Jenni Veijola, Safety Manager for the Kemi bioproduct mill project, highlights the significance of cooperation in creating a safe site for everyone. A safe and properly planned site operates efficiently.



Communication is important

Pasi Pulkkinen, VP Logistics and Senior Project Manager at the bioproduct mill being constructed in Kemi, is looking forward to the project's highlight – the mill's actual start-up.

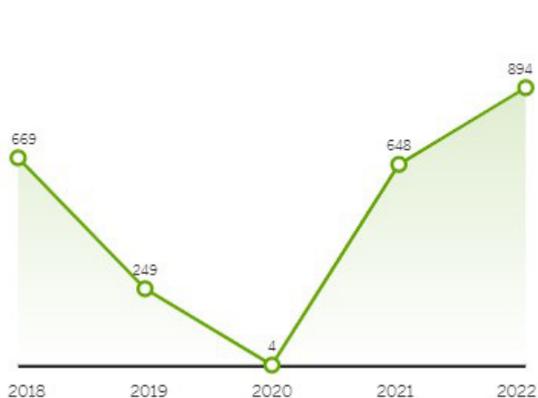
Five-year trend of key indicators

Finance

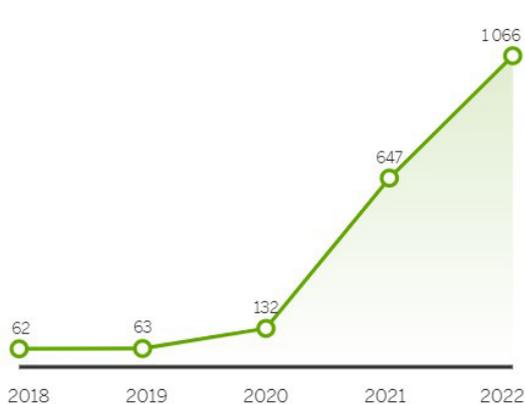
Sales (EUR million)



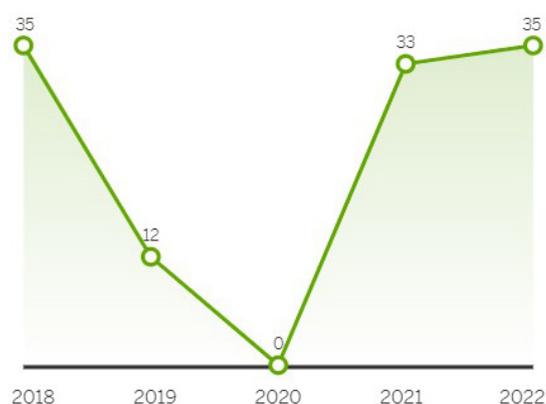
Comparable operating result (EUR million)



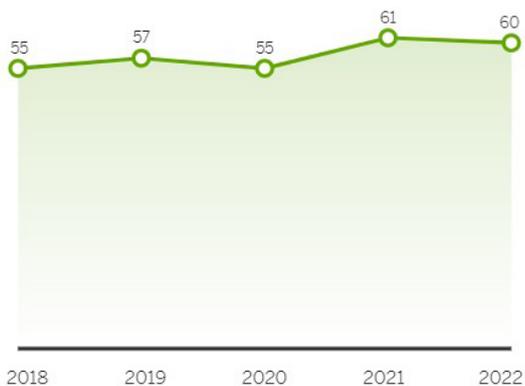
Investments (EUR million)



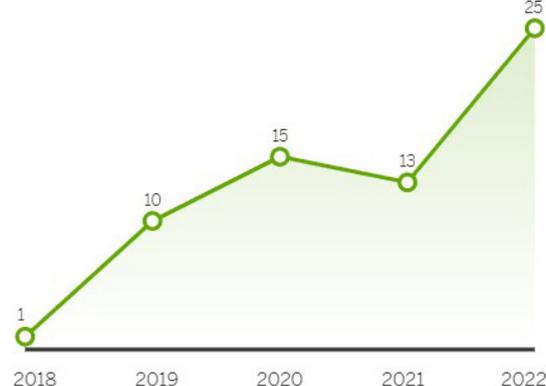
Return on capital employed %



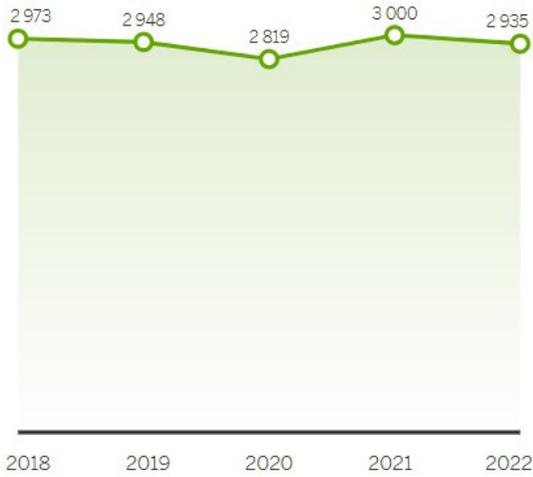
Equity ratio %



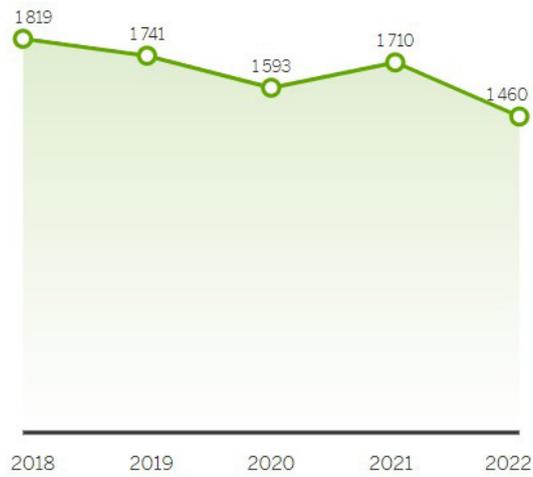
Net gearing ratio %



Pulp production (1,000 tonne)

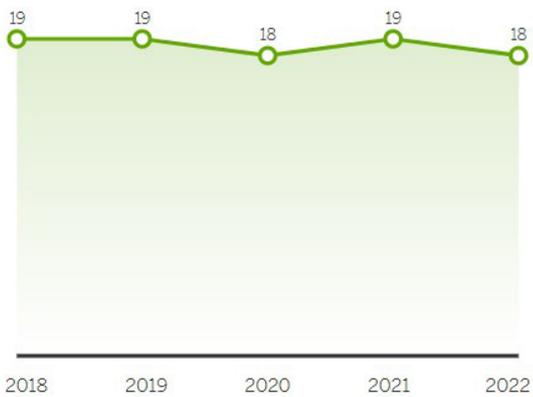


Sawn timber production (1,000m³)

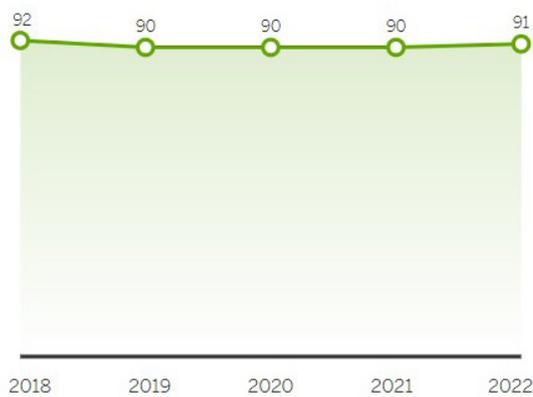


Sustainability

Total wood consumption (million m³)

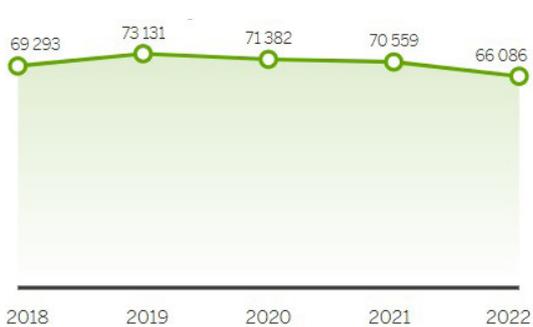


Share of certified wood (%)



Emissions into water

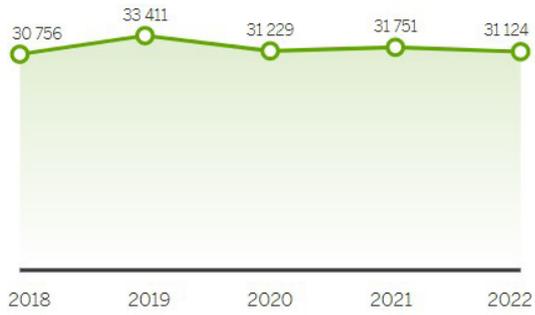
Process water volume (1,000 m³)



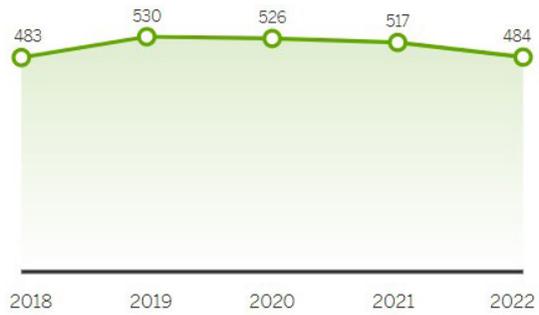
Total suspended solids (t)



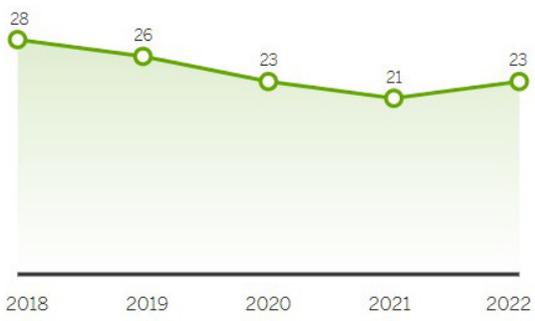
Chemical oxygen demand COD (t)



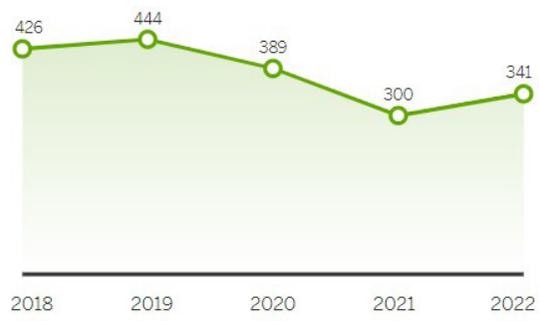
Biological oxygen demand BOD (t)



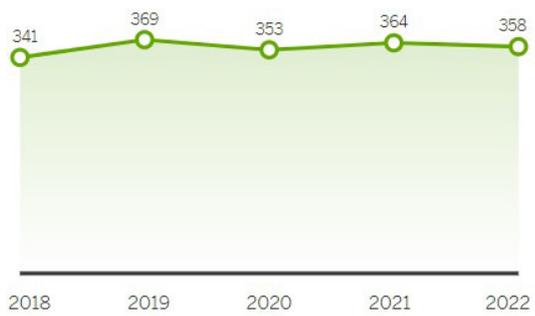
Phosphorus P (t)



Nitrogen N (t)

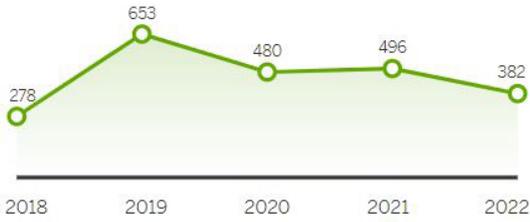


AOX (t)

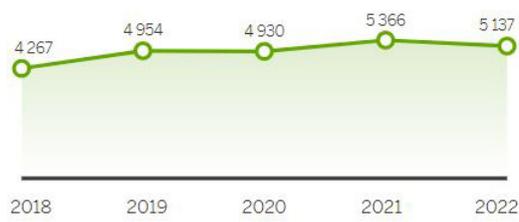


Emissions into air

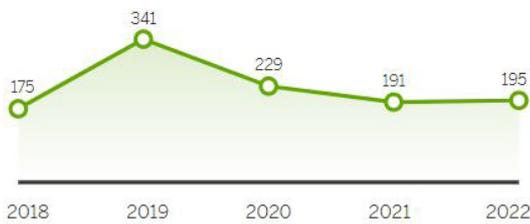
Sulphur dioxide SO₂ (t)



NO_x NO₂ (t)



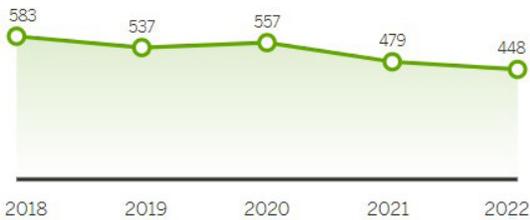
CO₂ from fossil sources (1,000 t)



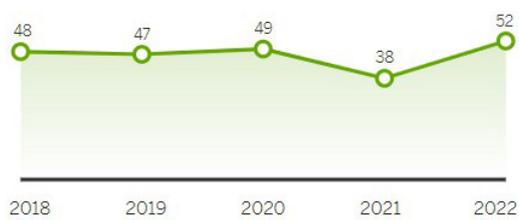
CO₂ from biomass (1,000 t) TRS S (t)



Particles (t)

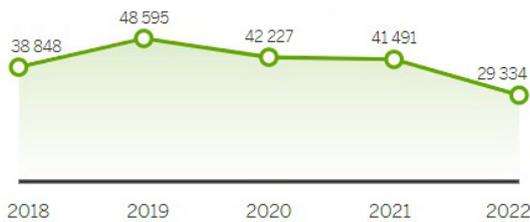


TRS S (t)

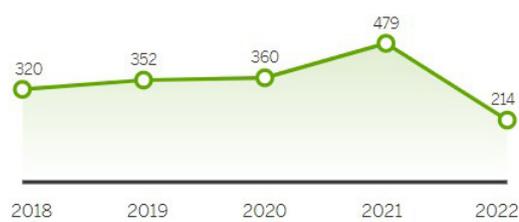


Waste

Landfill waste (t)

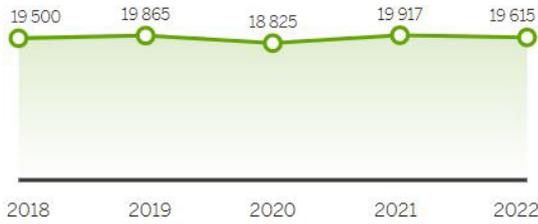


Hazardous waste (t)

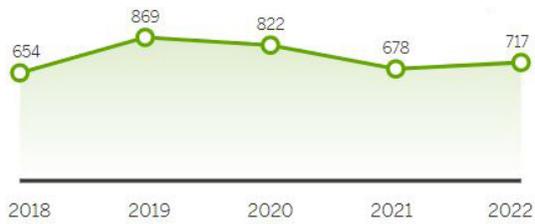


Energy

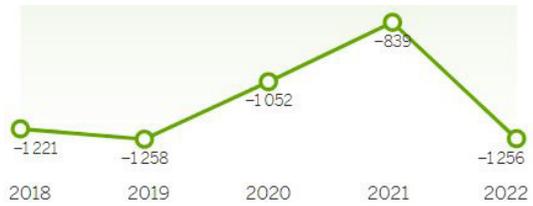
Wood based fuel use (GWh)



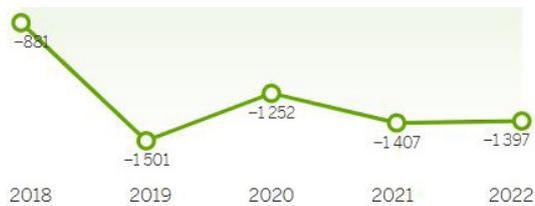
Fossil fuel use (GWh)



Purchased electricity (GWh)



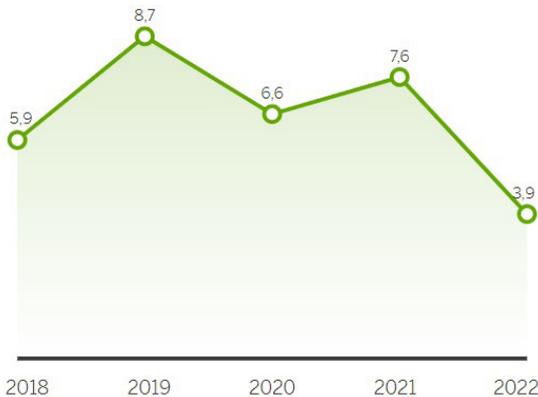
Purchased heat (GWh)



Personnel

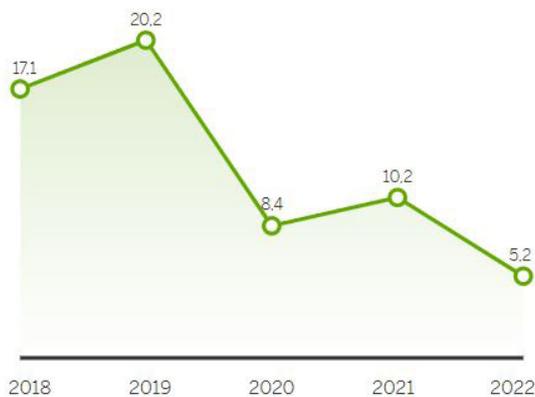
LTAI

Lost-time accident frequency rate



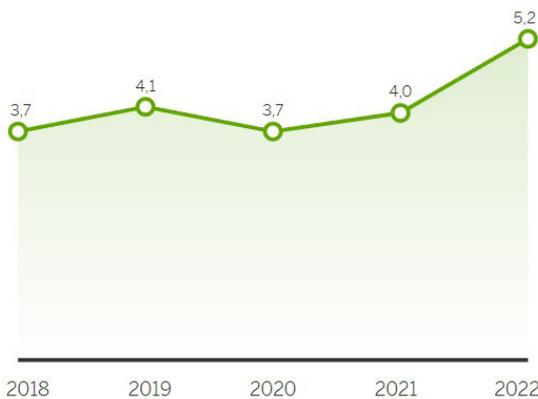
TRIF

Total recordable incident frequency per million worked hours



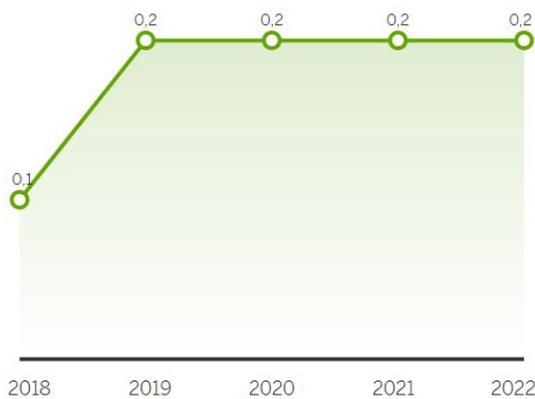
Sickness absenteeism

(% 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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