



Metsä Group
Sustainability Report 2021



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Sustainability objectives

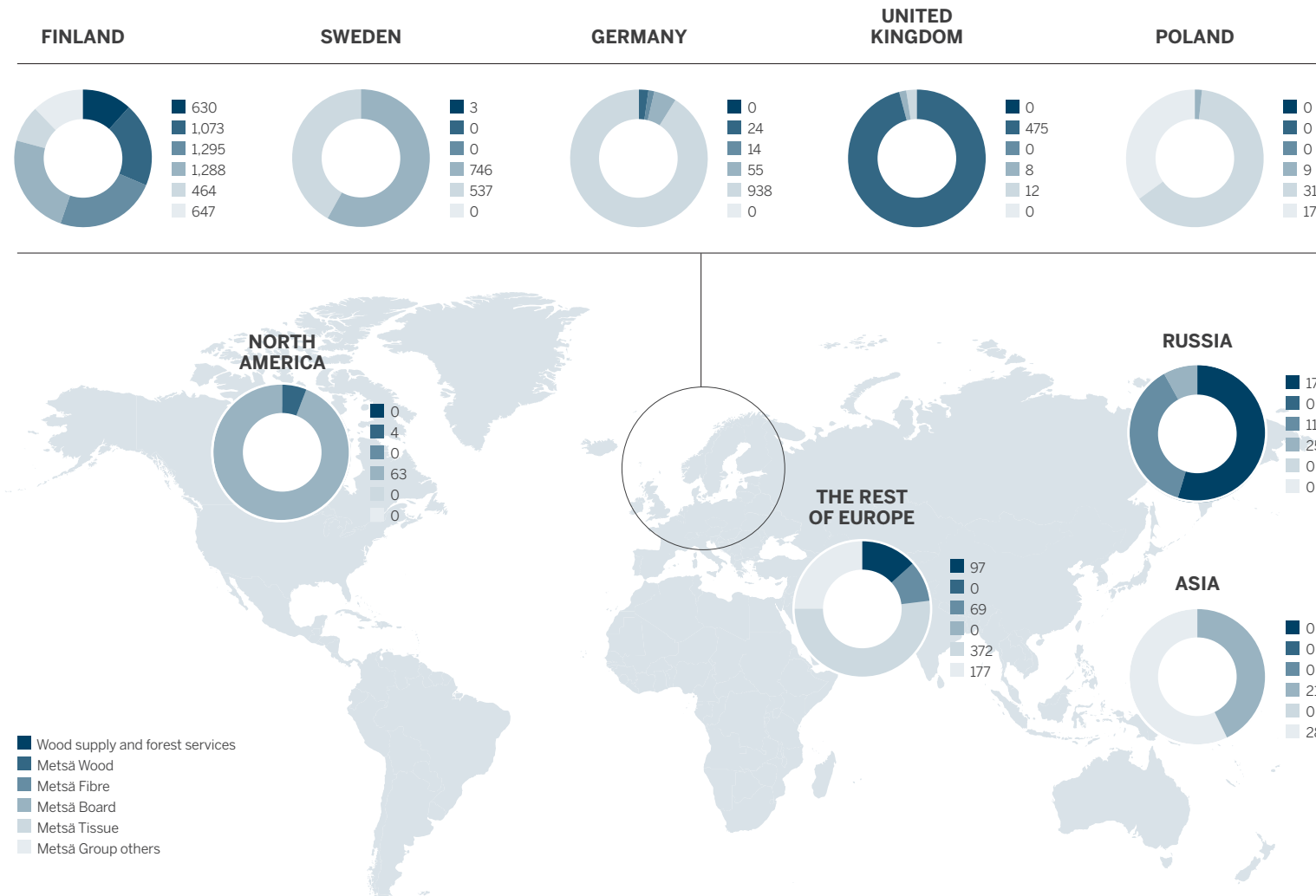
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Sustainable growth from Metsä

Our professionals around the world 2021



We are a Finnish forest industry company that operates on the international market. Our products are made of the world's best renewable raw material, northern wood, which we use sustainably and efficiently. We operate in around in 30 countries and have production units in eight. We employ 9,500 professionals representing a variety of fields. Together we achieve first-class results. You can find more details about our business areas and production units at the end of this report.

METSÄ GROUP		The parent company Metsäliitto Cooperative is composed of nearly 100,000 Finnish forest owners.		Sales EUR 6.0 billion	Personnel 9,500
WOOD SUPPLY AND FOREST SERVICES	METSÄ WOOD Wood products	METSÄ FIBRE Pulp and sawn timber	METSÄ BOARD Paperboard	METSÄ TISSUE Tissue and greaseproof papers	
OWNERSHIP Metsäliitto Cooperative 100%	Metsäliitto Cooperative 100%	Metsäliitto Cooperative 50.1% Metsä Board 24.9% Itochu Corporation 25.0%	Metsäliitto Cooperative 48% (67% of votes) The company is listed on Nasdaq Helsinki	Metsäliitto Cooperative 100%	

METSÄ SPRING Innovation company

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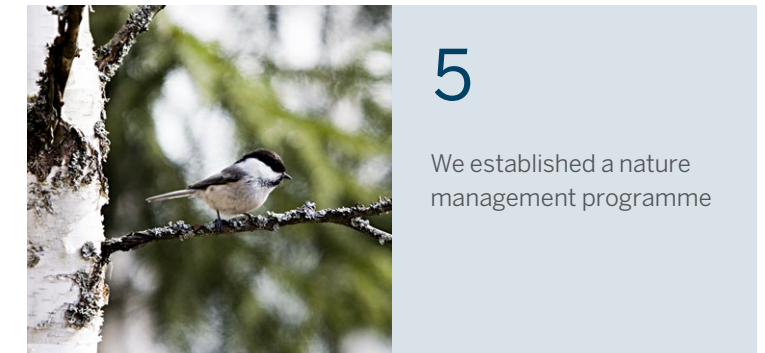
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We established a nature management programme

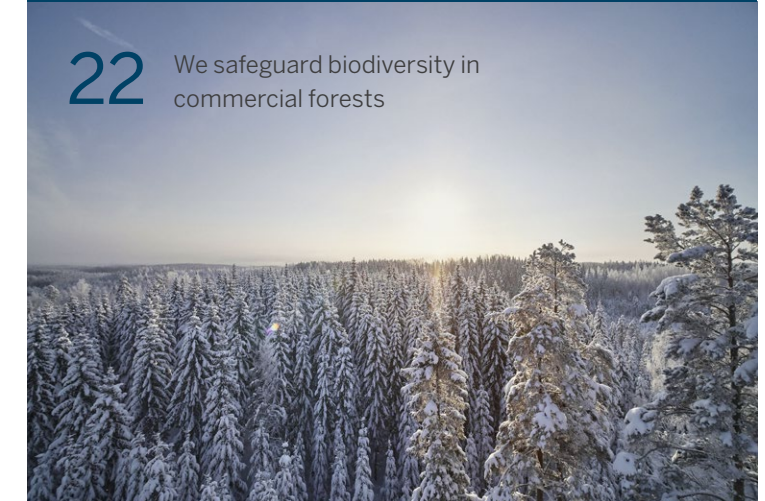
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Professionals put safety first



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We safeguard biodiversity in commercial forests



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Towards fossil free production



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Wood is the solution to many future challenges.

Climate change concerns us all. We are building the future based on natural resources. We take care of nature and people responsibly, expand industry sustainably, and replace fossil-based products with renewable ones.

This report provides you with a closer look at sustainability in Metsä Group.

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Highlights in 2021

■ **The past year was a good one for Metsä Group despite the coronavirus pandemic. We have made sizeable investments and taken steps towards our goals extending to 2030. Important themes in 2021 included biodiversity, becoming fossil free and the circular economy, to which we pay increasing attention in our operations.**

We invest in the future in Finland and Sweden

Metsä Fibre made an investment decision on the construction of a new bioproduct mill in Kemi, Finland. In addition to pulp, the bioproduct mill will produce a variety of other bioproducts and generate bio-based electrical energy entirely without fossil fuels. The value of the investment is EUR 1.85 billion. It is the biggest investment ever made in Finland by the Finnish forest industry.

The construction of Metsä Fibre's sawmill in the Rauma mill area also progressed according to plan. Once completed in 2022, the sawmill itself will employ approximately 100 people.

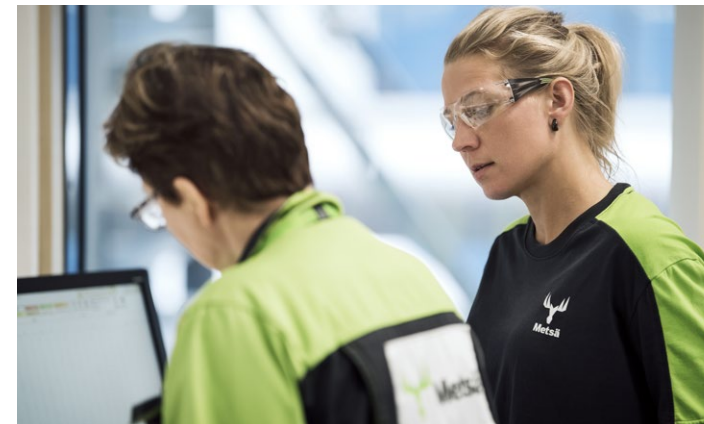
Metsä Board has made an investment decision to increase the annual folding boxboard capacity by 200,000 tonnes at its Husum integrated mill in Sweden. The renewal of Metsä Board's Husum pulp mill progressed in 2021. The first phase of the project will be completed 2022, when the new recovery boiler and turbine will be started. Metsä Board also initiated a development programme at the Kemi paperboard mill to increase the mill's capacity and enhance the use of energy and water.



Recognition for our sustainability work

Metsä Fibre, Metsä Board and Metsä Tissue achieved the highest, Platinum-level recognition in EcoVadis's sustainability and social responsibility evaluation.

Metsä Board was included on the A List in the mitigation of climate change, as well as in the sustainable use of water resources and forests – all three of the CDP's environmental themes. Globally, only 14 companies out of 12,000 were included on all three of these A Lists.



Career paths to Metsä

We hired nearly 1,000 summer employees in Finland in 2021. Most of the interviews and inductions were carried out with the help of remote connections.

In December, Metsä Group opened applications for its apprenticeship training programme beginning in January 2022. The programme covers 50 apprenticeships at our production units across Finland.

A jackpot in quality awards

Metsä Board won both the Finnish Circular Economy Award and the Finnish Quality Award in the Laatukeskus Excellence Finland assessment. The jury stated that the operations of Metsä Board were clearly outlined, with a systematic approach to defining the company's direction, implementing its strategy and monitoring and reporting on its performance.

In the Quality Innovation Award competition, Metsä Spring's Kuura textile fibre was nominated the innovation with the greatest potential. Among other things, the assessment emphasised the product's novelty, usability and customer orientation.

We have established a nature management programme

"Safeguarding biodiversity is one of our strategic sustainability objectives. We want to play a role in improving the state of nature in Finland outside commercial forests. Our nature management investments, which will amount to millions of euros during the programme in 2021–2030, have no financial return expectations."

– **Ilkka Hämmälä, President and CEO of Metsä Group**



Better Metsä for all of us

The new Metsä For All vision defines the kind of workplace Metsä Group aspires to be. We are committed to developing a culture of diversity and equality in which everyone has the opportunity to succeed in their career and be an equal member of the workplace community.



Recommending nature management for herb-rich forests

Although herb-rich forests account for only 1–2% of Finnish forests by area, they are home to approximately 45% of threatened forest-dwelling species.

In 2021, we began training our personnel to advise our owner-members on the management of herb-rich forests.

The cooperative creates a strong foundation for sustainable operations

■ **Our ownership base and business structure differentiates us from our competitors. The cooperative's owner-members provide us with access to substantial volumes of premium wood raw material, which creates a solid basis for our operations and development. We are actively looking for opportunities to grow profitably and sustainably, and to create value for all our stakeholders through our operations.**

Resources

People and partnerships

- Approximately 9,500 employees in 28 countries
- 171 apprentices and trainees
- Active cooperation with local communities and educational institutions

Raw materials and supply chain

- Nearly 100,000 owner-members in the cooperative guarantee the availability of wood
- The owner-members hold roughly half of Finland's private forests (i.e. some 5.2 million ha)
- 35.3 million m³ wood procured
- 80% of the wood we use comes from Finland, and 20% from elsewhere in Northern Europe
- The wood we use is entirely traceable, and 88% of the wood is certified
- Each part of the wood is used efficiently and for the most valuable purpose
- In addition to wood procurement, more than EUR 3 billion in other raw material purchases from around 400 suppliers

Operations

- 35 production units in 8 countries
- 35 TWh total energy consumption
- 20.5 m³/produced tonnes water intaken

Economic capital

- Total liquidity EUR 3,126 million
- Equity ratio 61.1%
- Net gearing ratio -3.8%
- Capital employed EUR 5,978 million
- Investments EUR 994 million
- Research and development EUR 29.1 million

Business model

Purpose

Advancing bioeconomy and circular economy by efficiently processing northern wood into first-class products

Vision

To be the preferred partner in developing sustainable business

Values

Reliability	Cooperation
Renewal	Responsible profitability

Key figures

Metsä Group

- Sales EUR 6,017 million
- Comparable operating result EUR 914 million
- Comparable ROCE 16.2 %

Wood Supply and Forest Services

Sales EUR 2,023 million

Metsä Wood

Sales EUR 580 million

Metsä Fibre

Sales EUR 2,628 million

Metsä Board

Sales EUR 2,084 million

Metsä Tissue

Sales EUR 947 million

Outputs

Sustainable products and services

- Extensive, sustainable forest management services for forest owners
- We plant an average of four seedlings for every tree harvested in regeneration fellings and in 2021 we delivered 34 million seedlings to forest owners in Finland
- Wood products store carbon throughout their lives
- The raw materials used in our products processed from northern wood are 99.6% fossil-free
- Pulp is used to make recyclable papers and paperboards for the needs of the world's population
- Fresh fibre paperboard is a safe choice for food packaging
- Tissue and greaseproof papers make everyday life easier and improve hygiene
- We produce more than 15% of Finland's renewable energy
- Deliveries to 110 countries

Emissions and waste

- 90% of the fuels used in our production are renewable
- 99% of the water we use is returned to the waterways after purification
- All raw materials utilised efficiently: 93% of our production side streams are used as materials or energy
- Our emissions into the air include 1,153,000 tonnes of fossil-based carbon dioxide emissions (Scopes 1 and 2)

Impacts

Environmental impact

- We use wood from forests that grow more than they are used
- We safeguard nature's biodiversity
- We reduce the fossil-based carbon dioxide emissions and water consumption
- We promote the circular economy using side streams efficiently and producing recyclable products

Social impact

- EUR 680 million paid as wages, salaries and benefits to employees worldwide
- We create approximately 15,000 jobs indirectly in Finland. The impact is realised especially in rural areas
- 92% of our employees have a permanent contract, serving on average 15 years, and their engagement rate is 96.5%
- 96% of our suppliers are committed to our Supplier Code of Conduct

Economic impact

- EUR 623 million to Finnish forest owners from wood sales
- EUR 409 million to Finnish harvesting, transport and forest management entrepreneurs
- EUR 80 million proposed profit distribution to Metsäliitto Cooperative's owner-members (to be confirmed at the Metsäliitto Cooperative's Representative Council in April 2022)
- The value of exports from our Finnish mills is EUR 3.6 billion, equivalent to nearly 5% of Finnish exports
- We paid a total of EUR 159.7 million in corporate and property taxes, 112.7 million in Finland, 19 million in Sweden and 28 million in other countries

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Sustainability management at Metsä Group

Our strategy is built on sustainability, it is part of everything we do. Its foundation is built on our daily operations. Metsä Group is committed to a sustainable future.

objectives set by the company and ensures that they are met. Risks and their development are reported to the Audit Committee of the cooperative's Board of Directors on a regular basis. The most known significant risks and uncertainties are described in the Board of Directors' report.

Change happens with daily activities

Sustainability is part of everything we do. Our sustainability strategic objectives are reviewed quarterly by Metsä Group's Sustainability Management Team. The team consists of the business areas representatives and function heads in charge of sustainability matters. It ensures that the work towards the objectives progresses as planned, taking corrective action when necessary. The management team is supported by sustainability experts in Metsä Group's Sustainability Network. The network convenes once a month, driving the practical sustainability projects forward.

Objectives for 2030

We have set ourselves ambitious strategic sustainability objectives for 2030. These objectives, which cover our entire value chain and material topics, are divided into four themes: well-being; forests and wood; climate and environment; and sustainable products. We have defined indicators for each of these themes, and the results are disclosed in this report. In 2022, sustainability will be included in the annual personal goals of every Metsä Group employee.

Sustainable governance and management

Metsä Group's parent company Metsäliitto Cooperative is owned by nearly 100,000 Finnish forest owners. The cooperative's Board of Directors is the highest governing body managing the Group's sustainability. The Board approves and is responsible for Metsä Group's sustainability objectives. Sustainability matters related to well-being fall under the purview of the Board of Directors' HR Committee and for some aspects, the Audit Committee. The Board is provided with reports on the progress made in strategic sustainability objectives quarterly.

The management method is evaluated as part of the general management practices. The objectives and operating principles are updated in case there are any changes in the business environment, for example, ones that may warrant a reaction.

Risk management is an essential aspect of our normal business planning and management. It is part of daily decision making, the monitoring of operations and internal control, and it promotes the

METSÄ GROUP'S SUSTAINABILITY GOVERNANCE MODEL

Metsäliitto Cooperative Board of Directors	Metsä Group's President and CEO	Metsä Group's business areas' Boards of Directors or Metsäliitto Cooperative Board of Directors	The heads of Metsä Group's business areas	The owner of Metsä Group's sustainability process, SVP
Approves Metsä Group's sustainability objectives and is responsible for the achievement of the objectives within Metsä Group.	Presents the sustainability targets to Metsäliitto Cooperative Board of Directors and is responsible for the implementation of the approved objectives. Approves the Sustainability Report. Decides on sustainability commitments.	Approves each business area's own sustainability objectives and is responsible for their realisation within the business units.	Are responsible for the achievement of the sustainability objectives of their respective business areas.	Is responsible for monitoring and reporting on Metsä Group's sustainability objectives. Prepares sustainability initiatives with the process's management team, the process director and a network of experts.

The progress of the sustainability objectives is monitored on a quarterly basis

An active part of society

We are the only international forest industry company with a cooperative structure, and our social impact concerns various stakeholders. We want to be a fair and open neighbour to society around us and work closely with our stakeholders.

We actively participate in international, European and national industry and trade organisations. We are a trusted counterpart for industry associations, legislators and policymakers. A list of main memberships of third-party organisations is on page 49 of this report. We follow global activities closely and attempt to respond to the issues and challenges raised by our stakeholders.

Our key stakeholders

- Own personnel
- Local communities
- The cooperative's owner-members and other forest owners
- Owners
- Associations and NGOs
- Customers and consumers
- Business networks
- Media
- Authorities, legislators and political decision makers
- Investors and analysts
- Research organisations, universities and schools
- Subcontractors and suppliers

You can find more information about our stakeholder work on our website at metsagroup.com

Material sustainability themes

- Safety at work
- Supporting local livelihoods and society
- Sustainable forest management
- Resource efficiency
- Renewable energy
- Emissions into air and water
- Water use
- Circular economy and new bioproducts
- Sustainable supply chain
- Innovations
- Product safety



"The key to success is long-term and sustainable operations. We stand behind what we say and do. That's why it is important that sustainability is part of everyone's daily work," says **Ilkka Hämmälä**, President and CEO.

International transparency is the key to sustainability

In addition to laws and regulations, we are committed to international commitments that guide our operations. Metsä Group has been committed to Global Compact and the initiative's ten principles concerning human rights, labour rights, environment and anti-corruption since 2003. Our sustainability objectives support the UN's Sustainable Development Goals to which we can most contribute.

The content of our annual Sustainability Report covers extensive ground. We report on our operations widely in accordance with the Global Reporting Initiative (GRI), as applicable to our operations.



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Our strategic sustainability 2030 objectives

■ The foundation of our sustainability work consists of four themes covering all our operations. With our strong commitment to our strategic sustainability 2030 objectives, we are paving the way to a climate neutral society and responsible corporate culture.



The UN's global Sustainable Development Goals (SDGs) guide our day-to-day activities. Read more on our website metsagroup.com



Well-being




<p>100% Responsible corporate culture</p>	<p>0 Accidents</p>
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Sustainable products




<p>100% Fossil free products & packaging materials</p>	<p>100% Traceable raw materials</p>	<p>100% Sustainable suppliers</p>
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Forests and wood



<p>+30% Carbon bound to forests & products vs. 2018</p>	<p>100% Safeguarding biodiversity Regeneration harvesting sites have retention trees</p>	<p>90% Harvesting sites have biodiversity stumps</p>
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Climate and environment



<p>0 Fossil CO₂ emissions (own production)</p>	<p>-25% Process water per product tonne vs. 2018</p>	<p>100% Side streams utilised</p>
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It's great to be at work

WELL-BEING

Our goals are zero accidents at work, the well-being of our personnel, and 100% ethical corporate culture by 2030.

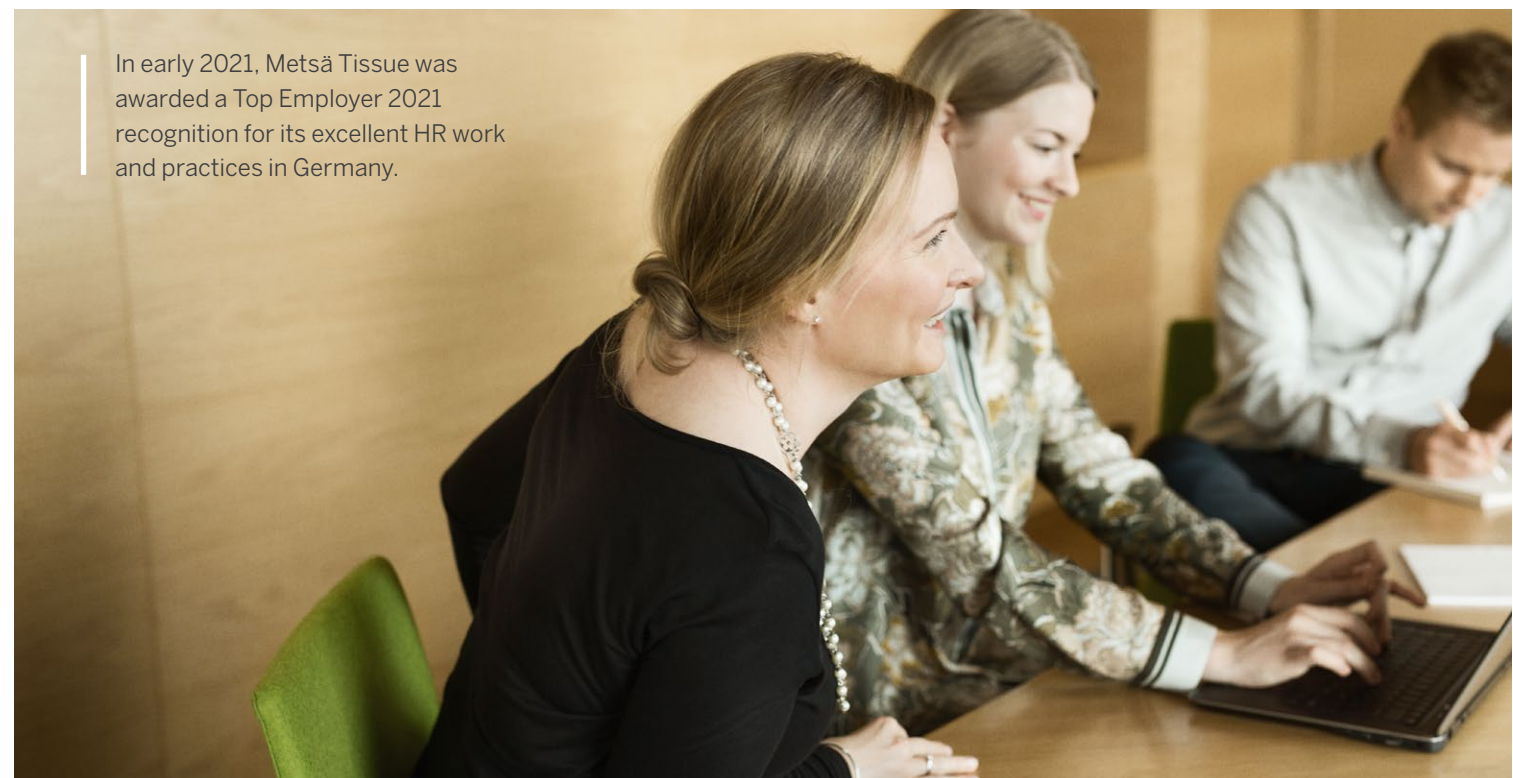
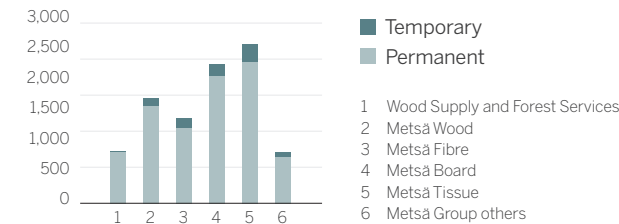
Undisrupted work despite the coronavirus pandemic

During the coronavirus pandemic, our personnel has been committed to our health and safety working methods. Thanks to instructions, mass testing and proactive measures, we have been able to carry out business operations, large-scale investment projects and annual maintenance shutdowns safely and without disruptions. The remote working recommendation has been in place throughout the pandemic, and travel has been allowed only with special permission. Our employees have been provided with regular updates on the effects of the pandemic by their manager, and guidance has been available on our intranet. Our extensive digital services have also enabled safe dealings with forest owners.

Targeted recruiting and apprenticeships

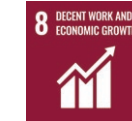
The number of our employees did not change significantly during the reporting year. The employee turnover rate was 6.8% in 2021. We hired 787 permanent and 1,283 fixed-term employees. For example, we recruited 10 production engineers for our induction programme and 11 new forest specialists for forest services. We also selected some 50 apprentices amongst nearly 1,000 applications, to be trained as operators at our Finnish mills. We maintained a good level in Universum's student and professional surveys and in a T-Media's stakeholder survey. We ranked fifth in the student survey's natural sciences area, which was

NUMBER OF EMPLOYEES AND EMPLOYMENT TYPE 2021
by business area



In early 2021, Metsä Tissue was awarded a Top Employer 2021 recognition for its excellent HR work and practices in Germany.

Related UN Sustainable Development Goal



the best ranking in our industry. In the field of technology, we were ranked among the twenty most attractive employers. Our employees also see Metsä Group as a good workplace based on the renewed personnel survey.

Strengthening skills and competence daily

Our goal is to ensure that Metsä Group has a uniform harmonised approach to managing work ability. This includes a standardised

way to monitor absences, early intervention model, and preventive drug and intoxicant policy. To support work ability, we compiled a Well-being website which contains podcasts and guidance to help maintain personal well-being during the coronavirus pandemic.

Based on skills and competence surveys, we have given focused training to our employees. We have organised virtual coaching sessions and increased the selection of online courses. We have invested in job satisfaction by encouraging our employees to try job rotation and clarifying the rotation related ground rules.

KEY PERSONNEL FIGURES, Metsä Group in total

	2021	2020	2019	2018	2017
Number of employees ¹⁾	9,533	9,213	9,265	9,310	9,126
Share of permanent employees, %	91.2	92.1	91.9	91.9	92.7
Share of full-time employees, %	96.4	97	97	96	97
Average age	44.5	44.7	44.8	44.7	44.9
Average years served	15.1	15.8	16.3	16.0	16.4
Training hours	101,905	76,476	123,756		
Employee turnover rate, % ²⁾	6.8	6.2	8.3	6.5	6.8
Share of men and women, % ³⁾	77/23	77/23	78/22	77/23	77/23
Share of women in management, % ⁽³⁾	20.0	21.6	19.2	21.8	16.1
Share of women in executive management (VP, SVP, EVP, CEO), %	22.0	19.6	-	-	-

KEY PERSONNEL FIGURES, by business area

	Wood Supply and Forest Services	Metsä Wood	Metsä Fibre	Metsä Board	Metsä Tissue	Group Services
Number of employees ¹⁾	852	1,659	1,384	2,389 ⁵⁾	2,480	769
Share of permanent employees, %	97.5	92.7	87.8	91.9	89.3	91.9
Share of full-time employees, %	98.3	96.5	97.1	96.6	95.7	94.2
Average age	45.2	43.6	43.7	46.1	44.4	42.8
Average years served	14.4	13.2	14.8	17.8	16.2	9.7
Training hours	12,832	7,873	32,149	27,830 ⁵⁾	9,005	12,214
Employee turnover rate, % ²⁾	6.0	10.8	7.2	5.2	6.0	5.5
Share of men and women, % ³⁾	79/21	77/23	84/16	78/22	81/19	48/52
Share of women in management, % ³⁾	25	50	15.4	25	8.3	13.3 ⁴⁾
Share of women in executive management (VP, SVP, EVP, CEO), %	11.1	22.7	15.4	16.1	13.3	33.3
Summer employees	67	131	183	271	157	19
Employees within the scope of collective agreements, %	63	73.5	74	72.2 ⁵⁾	89.7	15.6
Number of people recruited	68	240	115	107	163	105
Number of employees affected by restructuring of business and cooperation negotiations	14	77	0	135 ⁵⁾	32	97
Number of employees made redundant caused by restructuring of business and cooperation negotiations	1	0	0	1 ⁵⁾	9	0
Number of employees temporarily laid off caused by restructuring of business and cooperation negotiations	5	295	0	0 ⁵⁾	0	0

¹⁾ Full-time equivalent (FTE) on 31 Dec 2021. ²⁾ The figure includes redundancies caused by restructuring of business. ³⁾ Management includes Board of Directors, Executive Management Team and business areas' management teams. ⁴⁾ Metsä Group's Management Team 5) Incl. Hangö Stevedoring

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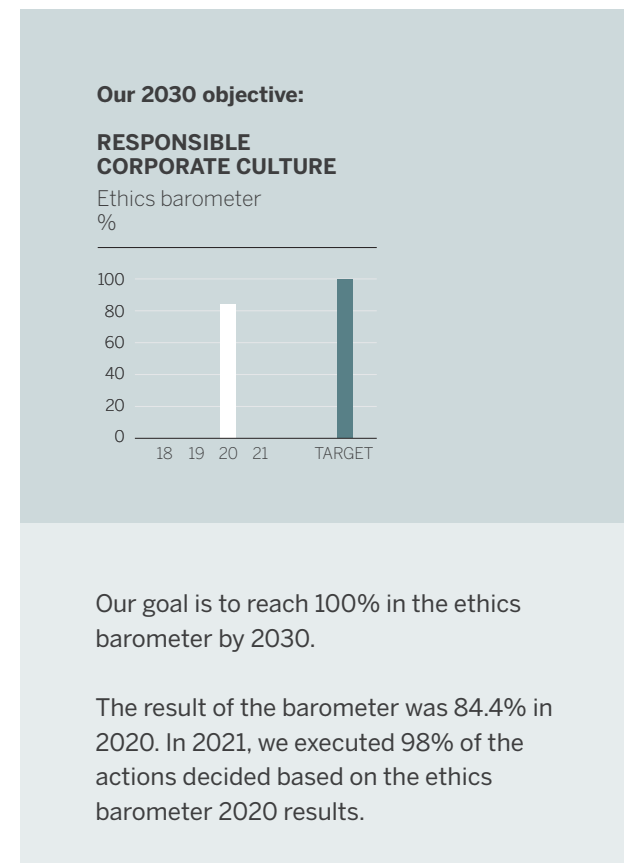
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ETHICS BAROMETER 2020 actions, %	implemented in 2021
Wood Supply and Forest Services	100
Metsä Wood	100
Metsä Fibre	100
Metsä Board	100
Metsä Tissue	90.6
Group Services	94.1
Metsä Group total	98

We aim for a responsible corporate culture that is fair for everyone

It is important for us to ensure that our values are visible in the everyday life of every employee, and that we treat each other respectfully. We are committed to developing a responsible corporate culture in which diversity, equality and inclusion are better realised. By doing so, we can provide our employees with a better workplace. We conduct our personnel survey and the survey measuring responsible corporate culture (the ethics barometer) in alternate years.

The journey continues towards increasingly ethical operations

We conducted our first ethics barometer in 2020. The ethics index, measuring the result of the barometer, was at a good level of 84.4% (the target is 100). Ethics are important to our personnel, and Metsä Group was seen to operate ethically. We initiated several development actions in 2021 aiming to correct the shortcomings which emerged in the results of the barometer. Of these actions, 98% were completed during 2021. We organised in-depth training on the Code of Conduct for all managers and the human resources unit. The objective of the training was to deepen the participants' know-how on ethics and provide them with tools for developing their own thinking at work. A total of 1,012 people took part in this training in 2021.

We also provided the entire personnel with an opportunity to rehearse the principles of whistleblowing, the Compliance and Ethics channel, other reporting channels and the related investigation processes. Our goal is to decrease the threshold for reporting shortcomings and to ensure that any shortcomings brought up are addressed.

The development of a responsible corporate culture is not a project, but an evolving part of our daily work. The next ethics barometer will be conducted in 2022, and the subsequent development actions will be determined based on the barometer's results.

Regular training on the Code of Conduct

In our Code of Conduct, updated in 2019, we committed to corporate responsibility and a culture of "doing the right thing", such as respecting human rights, as well as improving anti-corruption and anti-bribery measures. We provide our personnel with regular training on the key contents of our Code of Conduct. By the end of 2021, 98% of our personnel had completed our e-learning Code of Conduct course.

A low threshold for eliminating observed misconduct

We encourage our personnel and stakeholders to be open about ethically challenging situations and to report any misconduct. Any observations made can be reported to the employee's own manager, the local management, HR, the Compliance Committee or through Metsä Group's Compliance and Ethics channel, which is available to our personnel and stakeholders.

Reports submitted through the Compliance and Ethics channel can be made in ten different languages, and the channel is technically hosted by an external service provider. The reports can be submitted anonymously. We are committed to protecting the privacy of whistleblowers, and we do not accept any countermeasures against those who have reported their concerns in good faith. No such countermeasures were brought to our attention in 2021.

We investigate all misconduct and ethical concerns brought to our attention

All violations and suspected infringements brought to the company's attention through the Compliance and Ethics channel or in some other way are investigated. The investigations are steered by the Compliance Committee, composed of the directors in charge of Metsä Group's legal affairs, compliance and internal auditing. The committee is tasked with monitoring that the consequences of the investigations are consistently applied in cases of equal gravity, and that the corrective actions are sufficient.

Any illegal activities are reported to the authorities. We ensure that the changes required by the EU Directive on the protection of whistleblowers are implemented in our Compliance and Ethics channel and the internal investigation of reported cases.

In 2021, there were a total of 55 (52) non-compliance investigations. The non-compliance cases are divided into the following categories: fraud or other criminal behaviour; corruption and bribery; competition law; conflicts of interest; general personnel

NON-COMPLIANCE INVESTIGATIONS 2021

Wood Supply and Forest Services	5
Metsä Wood	12
Metsä Fibre	9
Metsä Board	10
Metsä Tissue	13
Group Services	6
Metsä Group total	55

matters; discrimination; privacy and information security; safety at work; the environment; breaches of the Supplier Code of Conduct; and other reports. During the year, we investigated cases related to all the above-mentioned categories. We did not receive any confirmed cases of bribery or corruption. None of the cases concerned the use of child labour or other human rights violations, except for some allegations of discrimination and personal injury resulting in accidents at work. Some of the cases investigated led to a notification to the authorities, some proceeded to court, and the rest were processed in internal investigations.

In October 2021, the European Commission launched an investigation into subsidiary Metsä Fibre as part of a wider EU level antitrust investigation of companies active in the pulp sector. The investigation initiated by the Commission does not mean that Metsä Fibre is guilty of anticompetitive practices and is not in itself a sign of the investigation's outcome. Metsä Fibre is cooperating fully with the authorities in the investigation.

SUSTAINABILITY E-LEARNING COURSES 2021 participation, %

	Code of Conduct ¹⁾	Sustainability	Equality ²⁾
Wood Supply and Forest Services	99	73	97
Metsä Wood	98	78	94
Metsä Fibre	99	69	95
Metsä Board	99	83	97
Metsä Tissue	96	52	91
Group Services	98	75	91
Metsä Group total	98	70	94

¹⁾ Incl. Hangö Stevedoring (Metsä Board), Mäntän Energia (Metsä Tissue), Kumpunimen Voima (Metsä Wood) and Silva Shipping (Metsä Fibre)

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Our vision for diversity, equality and inclusion

We are committed to developing a culture of equality in which everyone has the opportunity to succeed in working life and feel fully included in the workplace community. Ensuring equal opportunities, regardless of a person's personal characteristics (such as gender, age, sexual orientation, disability or ethnic or national origin) is an integral part of our operations.

We are advancing diversity, equality and inclusion with the Metsä For All vision, published in 2021, and will measure our progress through respective targets set. We encourage our entire personnel to develop their own thinking, and the company and the entire forest sector to respond to future needs.

Women accounted for 22% (19.6) of our management in 2021. 94% (69) of our employees have completed the online training on diversity, equality and inclusion aimed at the entire personnel. In addition, 263 people participated in more advanced training on the subject in 2021.

Human rights as part of a responsible corporate culture

We respect human rights in everything we do. We are aware that we can further the realisation of human rights through our own actions. We do not condone violations in any form, and we are committed to ensuring that our operations do not result in negative human rights impacts. We are committed to correcting any shortcomings brought to light and take corrective measures where required.

We cover human rights issues in both the Code of Conduct and equality training for our personnel, and in the Know Your Business Partner training for sourcing and sales organisations.

The Supplier Code of Conduct sets requirements for our suppliers' human rights responsibilities. In 2021, 96% of our purchases were covered by these requirements. We evaluate and verify our suppliers' responsibility with background checks, audits, visits and through the suppliers' self-evaluations.

An independent study on how 78 Finnish companies performed in human rights work compared to the United Nations Guiding

The 2021–2023 focus areas of the Metsä For All vision and examples of development measures

EQUALITY AND GENDER EQUALITY	DIVERSITY	INCLUSION AND CULTURAL CHANGE
<ul style="list-style-type: none"> • Increasing the percentage of women at different organisational levels • Ensuring equal pay • Gender-neutral occupational titles 	<ul style="list-style-type: none"> • Recruitment practices that support diversity, including anonymous recruiting • Ensuring international know-how within the organisation 	<ul style="list-style-type: none"> • Developing our personnel's awareness and know-how • Supporting cultural change through communication • Improving work-life balance

Our journey towards the Metsä For All vision



REMUNERATION DATA 2021¹⁾

compensation per production country	Finland	Germany	Slovakia	United Kingdom	Poland	Russia	Sweden
Ratio of annual total compensation for organisation's highest paid individuals (highest 1%) to median annual total compensation	4.4	3.1	3.3	3.5	5.5	5.1	3.4
Ratio of percentage increase of highest individual salaries (highest 1%) to average percentage increase	1.7	1.8	2.0	0.6	-0.1	0.4	0.0
Ratio of annual total compensation of women to men, based on comparable average job grades index	0.9	0.9	0.8	0.9	1.0	0.8	0.9

¹⁾ Including 32% of the whole personnel, 90% of white-collar personnel

Principles on Business and Human Rights (UNGP) was published in 2021. Metsä Group was one of the companies subject to a more extensive evaluation of its human rights performance. Our results in the fulfilment of our responsibilities were average compared to the other companies evaluated. Clear development targets were identified for both practical measures and their public communication. We continue to improve our human rights related work and minimize human rights associated risks. No confirmed cases of human rights violations related to our operations were brought to our attention in 2021.

We know our business partners

We are committed to responsibility in our own operations, and we also require responsibility from our partners. To ensure the responsibility of both new and existing suppliers, customers and other partners, we exercise due diligence and perform background checks (third-party due diligence) as part of the Know Your Business Partner process.

Knowing the background of business partners helps us operate according to regulations and manage risks related to trade sanctions, corruption, money laundering, human rights and cases involving irregularities. Learn more about ensuring the responsibility of suppliers on page 38.

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Safety is a skill

At Metsä Group, professionals put safety first. We monitor and manage safety at work throughout the organisation. We want to be sure that every person at Metsä Group works in a safe environment. Our safety practices are the same for our partners, service providers and other stakeholders.

We aim to avoid hazardous situations and accidents

Our safety leadership focuses on preventive hazard and risk identification. We induct everyone working at Metsä Group in the key risks of their working environment and train them to operate safely during their daily tasks. Everyone carries out a personal risk assessment before they start working if needed.

During 2021, we implemented a number of safety standards that are applicable to all personnel in our operations. The standards harmonise operating methods and create a safe framework for working across Metsä Group. Safety practices such as Permit to Work and LoTo (lockout/tagout) ensure a safe work environment with a risk assessment, through work planning and following common safety rules for work execution. The safety standard support leadership and supervision. Their importance is emphasised in daily operations from work order to completed work assignment.

We do not accept unsafe ways of working. We always instruct to operate in accordance with our safety guidelines. Everyone working at Metsä Group is entitled and obligated to address unsafe ways of working and to correct hazardous operating methods and conditions.

In 2021, more than 46,000 health, safety and environment observations were made.

Our long-term goal is an accident-free work environment and zero accidents

We actively report safety observations, conduct safety walks and learn from incidents. We investigate all accidents and hazardous situations, and the results of the investigations always lead to corrective or preventive action. This helps us to avoid any recurrence of accidents or hazardous situations. We share experiences, lessons learned and best practices between business areas and mills. In 2021, we paid a total of EUR 90,000 in corporate fines for two work safety offences in 2017 and 2018.

Measured safety

The Total Recordable Injury Frequency (TRIF), which describes the frequency of all recordable accidents at work, is one of our key performance indicators for personal safety. TRIF is a commonly used safety indicator in the industrial sector, and it provides us with comparable data on the level of personal safety at different operators.

We calculate the TRIF rate as follows: number of recordable injuries multiplied by a million working hours, divided by the hours worked. In 2021, our own personnel's TRIF was 8.1 (8.7). The current level of the TRIF rate among the forest industry's top performers is 5.0.

Safety must be earned every day

We are all responsible for our own safety and that of others. We are committed to complying with safety requirements and to developing Metsä Group's safety processes, standards and work instructions. We are committed to this work with all our employees and actively monitor the implementation and systematic development of our safety work.

We have to work hard if we want to achieve our target: zero accidents (TRIF 0) by 2030. Our long-term work focuses on reducing high safety risks and the number of accidents. Our results are promising, and we are heading in the right direction, as TRIF has been systematically reduced over the years.

SAFETY AND WELL-BEING DATA, Metsä Group in total	2021	2020	2019	2018	2017
Sickness absenteeism, % ¹⁾	4.2	4.0	4.4	4.0	3.9
Work accident absenteeism, % ¹⁾	0.08	0.14	0.14	0.10	0.10
Accident rate LTA1F ²⁾	5.4	5.1	5.9	6.4	5.9
Registered occupational diseases, no. of cases	4	5	6	2	4
Work related fatalities, no. of cases	0	0	1 ³⁾	2	2 ⁴⁾
TRIF ⁵⁾	8.1	8.7	17	19.8	-
LTA severity rate ⁶⁾	12.6	21.3	20.0	-	-
High consequence injuries ⁷⁾	1	1	-	-	-

¹⁾ % of theoretical work time

²⁾ LTA1 = Accidents at work resulting in at least one day of sick leave, excluding the day of the accident.

³⁾ External employee

⁴⁾ One fatal commuting accident and one fatal accident to an external service provider

⁵⁾ TRIF is reported from 2018. 2020 is not totally comparable to previous years, due to updated instructions on reporting TRIF

⁶⁾ LTA severity rate is reported from 1.1.2019 on

⁷⁾ High consequence injuries is reported from 2020

KEY FIGURES ON SAFETY by business area	Wood Supply and Forest Services		Metsä Wood		Metsä Fibre		Metsä Board		Metsä Tissue	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Sickness absenteeism, % ¹⁾	1.6	1.6	4.1	4.0	4	3.7	4.1	3.9	5.7	5.3
Work accident absenteeism, % ¹⁾	0.01	0.03	0.07	0.18	0.19	0.17	0.08	0.15	0.07	0.16
Accident rate LTA1F ²⁾	2	2	8.8	9.9	7.6	6.5	7	5.7	3.1	3.4
Registered occupational diseases, no. of cases	0	0	2	2	0	0	2	3	0	0
Work related fatalities, no. of cases	0	0	0	0	0	0	0	0	0	0
TRIF ⁵⁾	6.0	6.8	12.5	15.5	10.2	8.3	9.8	8.4	5	7.7
LTA severity rate ⁶⁾	6.3	15.7	8.0	13.8	11.7	12.0	12.3	9.2	23.8	63.5
High consequence injuries ³⁾	0	0	0	0	0	0	1	0	0	1

¹⁾ % of theoretical work time

²⁾ LTA1 = Accidents at work resulting in at least one day of sick leave, excluding the day of the accident.

³⁾ High consequence injuries is reported from 2020

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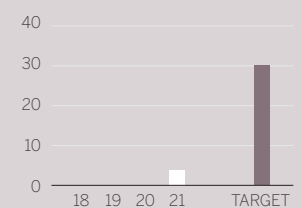
Biodiversity calls for action

FORESTS AND WOOD

■ **Our 2030 objectives are increasing the amount of carbon bound to forests and stored in our products, and safeguarding the biodiversity of forests.**

Our 2030 objective:
THE AMOUNT OF CARBON BOUND IN FORESTS

Regeneration area and young stand management, %



Our goal is to increase the amount of carbon bound in forests by 30% compared to 2018. This will be done by increasing areas of reforestation and management of young stands.

In 2021, we increased the amount of areas of reforestation and management of young stands by 3.8% (0). Our forest services actively promoted young stand management and increased the managed area. The reforestation area was slightly below the 2018 baseline.

Strong know-how in peatland management and emission reductions

A quarter of Finland's forests grow on peatland and approximately tenth of the wood we purchase comes from peatland. We focused our personnel's training in 2020 and 2021 on peatland forestry. In total, we have trained around 420 of our specialists to consider climate and water issues in light of the latest studies on peatlands.

By maintaining a sufficient volume of evaporating trees, we can protect the carbon storage of peat and reduce the greenhouse gas emissions resulting from the decomposition of peat. Additionally, the load on waterways decreases with less need for ditching.



Forests bind carbon dioxide as they grow

A forest is both a carbon sink and a carbon storage. That is why forests play an important role in climate change mitigation. Carbon dioxide is bound to forests and stored in products made from wood. It is our responsibility to reforest and manage of forests and ensure their vitality and ability to bind carbon dioxide over generations of trees. We source the wood we use primarily from our owner-members' forests.

Well-managed forests are a carbon sink

We use two indicators to measure the amount of carbon dioxide bound in the forests:

1. The regeneration area of a newly established forest in hectares
2. The management of young stands and young forests in hectares

The newly established forest area is the area of post-harvesting forest regeneration and reforestation. The faster and better the reforestation begins, the sooner the forest begins to bind carbon from the atmosphere. We use cultured seeds and seedlings of our domestic tree species. Bred trees grow 10–30% better than naturally generated trees. Cultured seeds and seedlings accounts for 94% of our regeneration material.

Young stand management ensures that stands remain vital, and growth is focused on the best trees. These trees are used as logs and pulpwood and manufactured into bioproducts that store carbon dioxide and replace fossil-based materials. Propely conducted young stand management increases the yield of log wood.

Related UN Sustainable Development Goals



Our wood products store carbon for a long time

Sustainable materials for construction

Our renewable wood raw material from sustainably managed northern forests stores carbon for decades. Our wood products – such as Kerto® LVL, plywood and sawn timber – are material-efficient and carbon-storing construction materials. Use of these materials generates only a small amount of waste.

Our wood products are ideal for hybrid construction and for use in conjunction with other materials. Hybrid construction enables the sustainable and efficient use of different construction materials.

The design of a hybrid wall element in cooperation with our partners was one of our greatest achievements in 2021. The innovation combines Kerto LVL and concrete. Hybrid construction increases the amount of wood in structures, thereby promoting sustainable construction. This joint development helps the construction industry to become more sustainable.

More capacity for increasing carbon storages

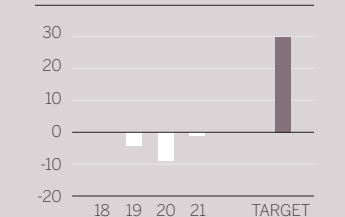
The demand for sustainable wood products continues to grow. We invest in new production units to increase production capacity. This helps us to produce a greater number of long-life, sustainable and carbon-storing products.

Our newest pine sawmill will start up in Rauma during the third quarter of 2022. It is the largest sawmill investment in Finland and will produce 750,000 m³ of pine sawn timber a year. The sawmill will be a forerunner in technology and efficiency. It is in the same mill area as Rauma pulp mill which helps us to reach our sustainability objectives. The synergies of the integrated mills will support energy production, side stream utilisation, logistics and services. The new sawmill enables the entire mill integrate to be fossil free in the future.

We are also planning to invest in a new Kerto LVL mill in Äänekoski. The project would be implemented in phases during 2022–2026. The new mill's annual production capacity would be around 150,000 m³. This means approximately 50% increase in our current Kerto LVL capacity. The mill is planned to be a world-class production unit in technology and efficiency.

Our 2030 objective:

THE AMOUNT OF CARBON STORED IN PRODUCTS
%



We aim to increase the amount of carbon stored in long-lived products by 30% compared to 2018.

In 2021 our products stored slightly more carbon -1.2% (-8,9) compared to previous year. Our new production units will increase the volume of long-life carbon-storing products.



Hybrid elements are being used in the construction of Metsä Fibre's Rauma sawmill.

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Working towards a sustainable future with sustainable forest management

We want to advance sustainable forestry and to be a forerunner in ecological sustainability. Metsä Group has its own ecological sustainability programme, implemented in our Wood Supply and Forest Services. The most important goals of the programme are the strengthening of forest growth and carbon storage, the protection of biodiversity in forest nature and the improvement of water protection in forest work. As part of the programme, in 2021 we decided to recommend the benefits of primarily nature management for herb-rich forests to forest owners.

Finland is part of the boreal forest zone, with vast forest reserves. With forests covering 75% of its land area, Finland

is the most forested European country. Given that the state of Finland's forests has been monitored since the 1920s, we know our forests well.

Thanks to sustainable management, our forests have grown more than they are used for decades now, and there has been a 1.7-fold increase in their volume of wood over the past hundred years. The annual growth is greater than the annual drain, which is why Finnish forests are a carbon sink. Our forestry does not cause deforestation.

For further information on the programme, go to our website at metsagroup.com.

We promote forest certification in all our operations

In 2021, we procured 35.3 million m³ (32.7) of wood, of which 26.1 (24.6) was used at our own mills.

Of the wood we used in 2021, 88.2% (88) was certified according to the international forest certification systems PEFC (Programme for the Endorsement of Forest Certification, PEFC/02-31-03) or FSC® (Forest Stewardship Council®, FSC-C014476). This percentage is excellent for our industry.

The wood we use is also traceable, and comes from certified forests or forests that meet the requirements of controlled origin. We are actively involved in the development of forest certification, both nationally and internationally.

In 2021, we conducted a total of 117 (130) audits of our wood suppliers in the countries wood is sourced from. The audits ensure that the delivered wood meets our environmental and sustainability requirements. We also conduct systematic internal quality, environmental, safety and wood origin audits and controls.

WOOD PROCUREMENT BY COUNTRY 2021
%



SHARE OF CERTIFIED WOOD BY BUSINESS AREA 2021, %

Metsä Wood	90
Metsä Fibre	90
Metsä Board	83
Metsä Tissue	90*
Metsä Group total	88

* Certified pulp



95,000 hectares of diverse forests are under protection

On our own initiative, we are protecting forest sites for biodiversity in Podporozhye, Leningrad Oblast, in Russia. In 2021, we made a joint declaration with the Finnish Association for Nature Conservation (FANC), the Komarov Botanical Institute and some Russian nature conservation associations on the voluntary protection of the forests until an official protection status is secured for the area.

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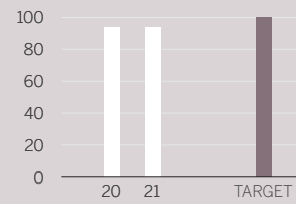
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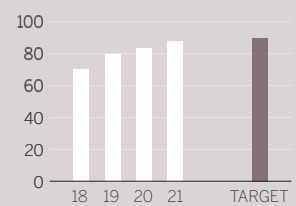
Our 2030 objectives:

SAFEGUARDING BIODIVERSITY

Retention trees at regeneration sites, %



High biodiversity stumps in harvesting sites, %



Our aim is to leave retention trees in all our regeneration harvesting sites and to create four high biodiversity stumps per hectare in 90% of our thinning and regeneration harvesting sites by 2030.

In 2021, the retention tree count remained same, at 94% (94). Active marketing increased the number of forest owners' voluntary actions to leave high biodiversity stumps in their forests, 88% (84).

Retention trees provide habitats for many species

Retention trees, decaying wood and protective thickets safeguard the biodiversity of commercial forests, are part of the forest certification criteria and maintain landscape values. Retention trees are usually left in bigger groups, and their undergrowth is left in place to serve as a protective thicket.

Retention trees have two main purposes: to ensure that forests have trees of various ages, and over time, they turn into sturdy decaying wood.

If possible, a group of retention trees is located in an area with other nature values such as decaying wood, a buffer zone for a waterway or valuable habitat. An untouched group of retention trees also functions as a protective thicket.

Hundreds of decaying wood stumps are created in Finnish forests daily – totalling hundreds of thousands in a few years.

High biodiversity stumps are tree trunks cut at a height of a few metres

High biodiversity stumps accelerate the increase of standing decaying trees in forests. A standing high biodiversity stump has varying moisture conditions at different heights along the trunk. It provides a diverse habitat for species that favour decaying trees. As a high biodiversity stump decays, it provides woodpeckers and tits a place to excavate nesting holes.

The making of high biodiversity stumps is voluntary for forest owners, and it is agreed on during the wood trades.

We are participating in two researches gathering more data on biodiversity stumps' benefits for various species. The first set of results will be available early in 2022.

We safeguard biodiversity in commercial forests

Metsä Group's professionals and our harvesting partners ensure that the biodiversity of the forest is always taken into account. Daily forest and nature management has a significant impact on safeguarding and improving biodiversity. In commercial forests, biodiversity is enhanced by preserving and increasing important features.

1. Protective thicket

Protective thickets are left in forests at all stages of forest management. Dense plant populations composed of trees and bushes offer protection and nutrition for animals.

2. Buffer zone

A buffer zone with a minimum width of five metres is located on the shore. Its vegetation prevents nutrient runoffs. The buffer zone soil stays intact.

3. Decaying wood

All fallen and standing decaying wood is left in the forest to provide habitats for species that prefer dead trees.

4. High biodiversity stumps

The making of high biodiversity stumps is suggested to forest owners with every wood trade. A decaying high biodiversity stump provides habitats for species that live in dying standing trees.

5. Groups of retention trees and individual retention trees

During felling retention trees are left to provide a forest with trees of various ages and with decaying wood.

6. Nature habitat

A distinguished area for example a brook, wetland or herb-rich forest, which characteristic features are preserved and safeguarded.



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Working towards a climate neutral future

CLIMATE AND ENVIRONMENT

Our 2030 climate and environmental objectives are: fossil free mills, the full use of production side streams and a 25% increase in the efficiency of process water use.

We produced over 15% of the renewable energy in Finland.

Our environmental management is based on our environmental policy, the principles of environmental management and the certified ISO 14001 management system. They guide us to operate in accordance with our environmental permits, minimise our environmental impact and reduce emissions.

The authorities monitor our mills' compliance with the environmental permits. We engage in open and transparent dialogue on our environmental impact and its minimisation with the authorities, raw material suppliers, customers, local people and other stakeholders.

Our mills increase material efficiency

Following circular economy principles, we use natural resources as sustainably and efficiently as possible and reduce the volume of waste. We improve recovery processes continuously to avoid loss in our production. The consumption of raw materials has declined thanks to investments and process development. Our ongoing and future projects ensure similar development in the future.



Related UN Sustainable Development Goals



Material streams

We use raw materials, energy and water as efficiently as possible. We work to minimize the environmental impacts and to continuously improve our performance. The majority of our operations are run with renewable energy.

Inbound material streams

	Wood-based raw materials
	Wood, 1,000 m ³ 25,850 (24,557)
	Purchased pulp, 1,000 dry tonnes 93 (92)
	Recovered paper, 1,000 t 335 (407)
	Other raw materials 1,000 t
	Process chemicals 49 (49)
	Coatings, binders and pigments 322 (313)
	Packaging material 130 (116)
	Purchased energy TWh
	Fossil fuels 2.7 (2.7)
	Wood based fuels 1.2 (1.1)
	Electricity 2.7 (2.8)
	Heat 0.56 (0.50)
	Water intake 1,000 m³
	Surface water 407,986 (392,147)
	Groundwater 961 (951)

Outbound material streams

	Products
	Pulp, 1,000 t 4,362 (4,190)
	Mechanical wood products
	1,000 m ³ 2,605 (2,367)
	Paperboard, 1,000 t 1,920 (1,842)
	Tissue paper, 1,000 t 542 (560)
	Greaseproof paper, 1,000 t 55 (54)
	Other bioproducts (tall oil and turpentine)
	1,000 t 139 (107)
	Utilized by-products, 1,000 t 242 (258)
	Produced wood based renewable energy TWh
	Produced bioenergy used
	in own production 25 (24)
	Sold bioenergy 3.1 (2.8)
	Waste 1,000 t
	Utilised waste 421 (436)
	Landfill waste 50 (54)
	Hazardous waste 3.2 (2.2)
	Emissions to air 1,000 t
	Biogenic carbon, CO ₂ 9,916 (9,551)
	Fossil-based carbon, CO ₂ (Scope 1+2 market based) 1,153 (1,171)
	Nitrogen oxides, NO ₂ 7.0 (6.5)
	Sulphur, SO ₂ 0.74 (0.94)
	Particles 0.79 (0.95)
	Discharges to water
	Waste water flow, 1,000 m ³ 145,884 (148,000)
	Chemical oxygen demand (COD), t 43,330 (43,361)
	Biological oxygen demand (BOD), t 1,443 (1,123)
	Phosphorus (P), t 53 (48)
	Nitrogen (N), t 601 (618)
	Total suspended solids, t 3,340 (3,483)
	Absorbable organic halogen (AOX), t 401 (405)

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Our 2030 objective:
FOSSIL FREE MILLS
Fossil-based carbon dioxide emissions (CO₂) 1,000 t

Year	Fossil-based CO ₂ emissions (1,000 t)
18	~700
19	~700
20	~650
21	~650
TARGET	0

Our aim is to use only biobased fuels in our production and thereby generate zero fossil-based carbon dioxide (CO₂) emissions by 2030.

In 2021, fossil-based carbon dioxide emissions (Scope 1) from our mills were 652,000 tonnes (676,000). Emissions reduced as a result of systematic work. For example, we stopped using peat in many of our mills.

Towards zero fossil-based emissions

Energy is a key resource for the forest industry. Our aim is to use renewable fuels to lower fossil-based carbon dioxide emissions into the atmosphere and to end the use of fossil fuels altogether by 2030. Material efficiency is connected to energy and water use. Improving these processes reduces the emissions and environmental impact of our production.

Our fossil-based carbon dioxide emissions from the consumption of purchased electricity and heat (Scope 2) were 501,282 tonnes (494,000), calculated market-based and 463,986 tonnes (608,000), calculated location-based. Emissions of fossil-based carbon dioxide (Scopes 1 and 2) have declined by 22% (17) per tonne produced compared to 2018.

Wood-based renewable energy

In 2021, 87% (86) of our production was run with renewable energy (Scopes 1 and 2). The share of bio-based fuels was 90% (90) (Scope 1). The used renewable biofuels mainly consist of wood-based production side streams, as well as harvesting residue. Our total energy consumption in 2021 was 35 TWh (35). The wood-based renewable fuel production was 26 TWh (27), of which 25 TWh (24) was used in our own processes. We have increased the proportion of renewable energy in recent years with a bark gasification technique and by reducing the use of peat.

The surplus of wood-based fuels from mill processes and forestry, such as bark and branches, is sold to external partners. In some cases, it makes sense to sell our waste to power plants operating near our mills for another use. In 2021, we sold 3 TWh of wood-based fuel, which when replacing fossil-based fuels saved CO₂ emissions of up to 0.8 (0.7) million tonnes.



Fossil free objectives progress: The peat in Metsä Board Kyro board mill's energy production has been replaced with renewable energy.

Performance through renewable energy

We have made significant investments in production development in recent years. Sustainability and the use of renewable energy are taken into account in all our investments. To achieve our goal of fossil free mills by 2030, we focus on:

- improving energy efficiency
- new technology and electrification
- the use of bio-based fuels

To achieve our objectives, we utilise new technology and the best practices in our industry. By improving energy efficiency, we also generate significant financial savings. We monitor the development in our mills' energy efficiency with an energy efficiency index. It is calculated as a ratio between all the electricity, heat and fuel used by production to the volume of production. Our goal is to reduce the index by 10 units by 2030.

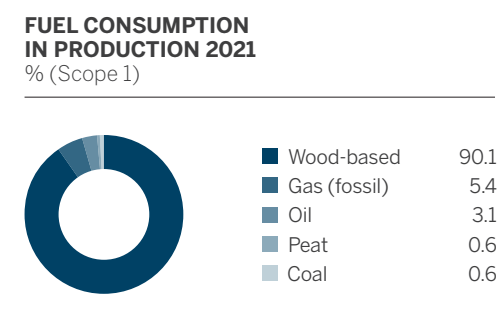
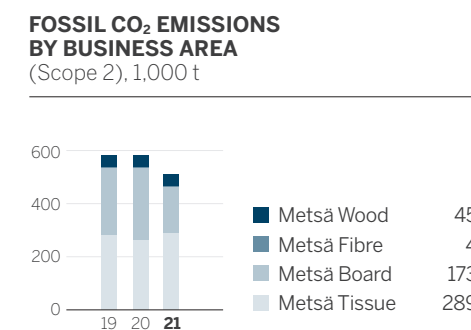
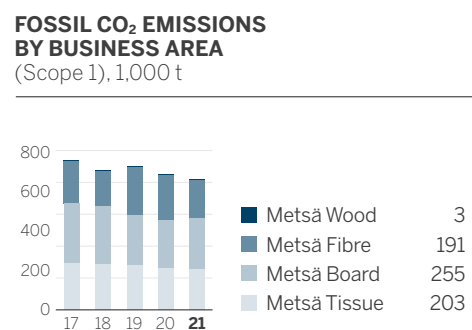
In 2021, the index declined to 99.8 (101), due to the implementation of systematic projects improving the energy efficiency of our

production. We completed 23 projects in 2021. The amount was low because of the coronavirus pandemic.

We improve energy efficiency

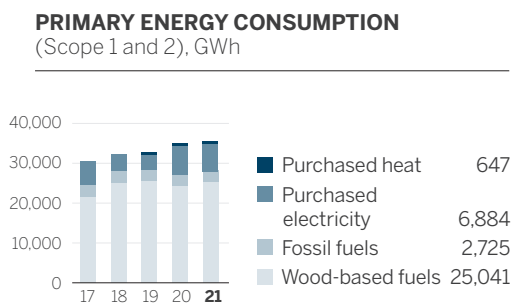
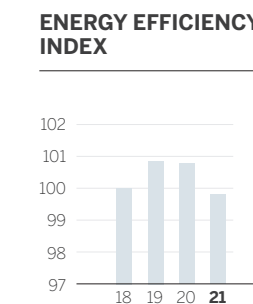
Reducing the use of process water requires less pumping and heating and it improves energy efficiency. Nevertheless, the northern location of our production units has an effect on heating, particularly in winter.

In all our projects, we follow the principles of continuous improvement to increase energy efficiency with new technology. We monitor the development of energy efficiency and report on it in accordance with the ISO 50001 standard and national requirements. We have participated in the Energy Efficiency Agreements since 2017.



SHARE OF BIOFUELS OF THE FUELS USED IN PRODUCTION 2021
% (Scope 1)

Metsä Wood	97
Metsä Fibre	97
Metsä Board	80
Metsä Tissue	19
Metsä Group total	90



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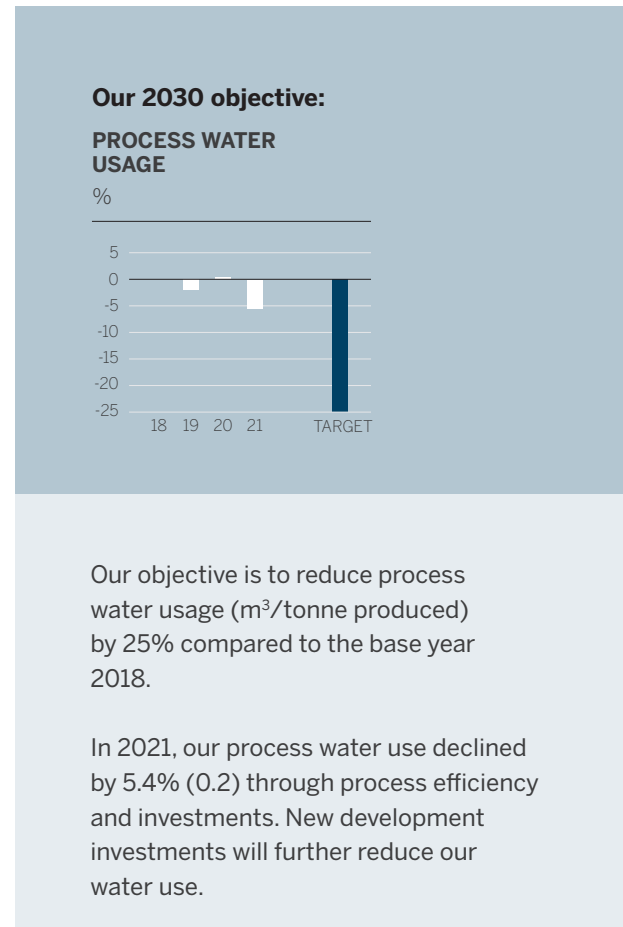
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Efficient use of process water is progressing

Water is an essential resource for the forest industry. Optimising water use in production and treating wastewater efficiently are both guiding principles of our water management. Process water use is a key indicator of our environmental performance. We have set mill and company-specific targets for it.

Production processes account for half our water usage

Our production units are mainly located in the Nordic area, where freshwater resources are abundant. Over 99% of the water we use is surface water, with minimal quantities of ground water used.

Roughly half the water is used in the production process, and the other half directed for cooling purposes. The cooling water circulates in a separate system and does not need to be treated. The cooling water returned to the waterways only increases the water's heat stress.

The process water is returned to the waterways after careful treatment. The reduction in water use also has a positive impact on the operations of the wastewater treatment plant. Our operations do not, in principle, influence on other parties' access or rights to use water.



Emissions into the air and water continue to decline

The main sources of our emissions into the air originate from pulp mills and power plants. The primary emissions into air are carbon dioxide (CO₂), sulphur dioxide (SO₂), nitrogen oxide (NO_x) and particles. In addition, small amounts of total reduced sulphur (TRS) are emitted from pulp mills.

Efficient control of combustion processes and the purification of flue gases reduce emissions into the air, even though our production increases. Our emissions into the air causing acidification (SO₂, NO_x) increased by 6.4% from 2020. Emissions of particles declined by 16.7%, and sulphur compounds (TRS) by 23%. We participate in regional air quality monitoring in several mill regions.

Our wastewater discharges consist of nutrients (phosphorus and nitrogen), organic substances (measured as chemical oxygen demand COD and biological oxygen demand BOD), and suspended solids. The wastewater of pulp production also contains organic chlorine compounds (AOX), sodium and sulphates. Our emissions into waterways have continued to decline as a result of both the reduction of water use and increasingly efficient processes.

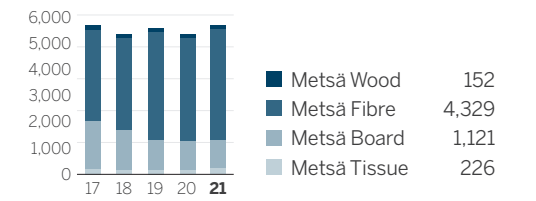
More than 99% of the water we use is surface water.

Deviating emissions reported immediately to the authorities and other stakeholders

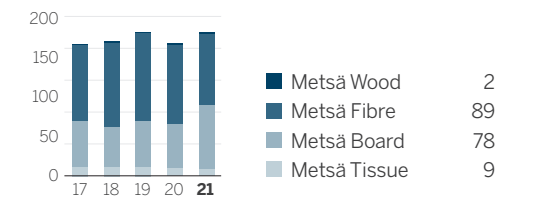
Deviating emissions are reported immediately to the authorities and other stakeholders. We analyse any disruptions and exceptional situations, and determine corrective actions to prevent their recurrence. All environmental permit violations are detailed on page 49 of this report.

The state of waterbodies surrounding the production units and their fish stock is carefully monitored. Emissions to the water in the pulp and paper industry have fallen considerably since the 1980s, mainly due to reduced organic stress and smaller volumes of suspended solids. Our neighbouring water are used primarily for recreational purposes. We also cooperate to improve our mills' neighbouring waterbodies by stocking and monitoring fish stocks.

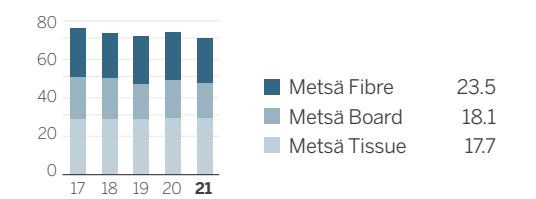
ACIDIFICATION BY BUSINESS AREA
SO₂, equivalent tonnes



EUTROPHICATION BY BUSINESS AREA
P, equivalent tonnes



PROCESS WATER USAGE
m³/t



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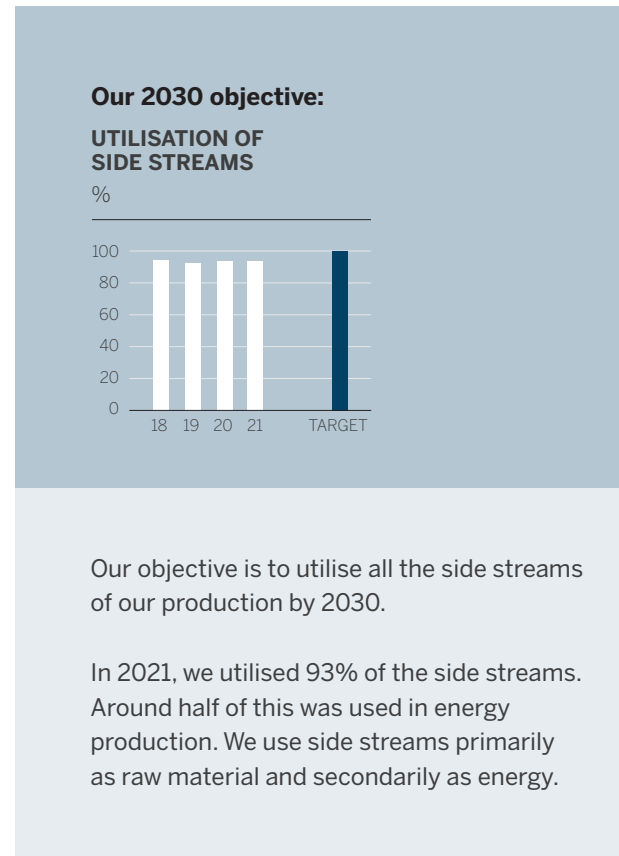
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Aiming for the full utilisation of production side streams

Side streams account for some 5% of all our production. Our side streams – such as wood-based waste and by-products, sludge, ashes and calcium fractions – are used in soil improvement and landscaping, fertilisers, a variety of chemical industry applications, and in energy production.

Nutrients return to forests

The amount of side streams used as fertiliser and soil improvement has grown continuously. Returning nutrients to plants improves biological cycle and nutrient reserves. The recycling of phosphorus-containing nutrients is important given that it is a limited, non-renewable natural resource. Most of the nutrients circulating in forest industry processes end up in the ash generated in energy production. We support the use of this ash as fertiliser. We also enhance the use of biomass (deinking sludge) as a soil improvement material.

Some of the side streams are categorised as by-products

In Finland, our side streams classified as by-products include the calcium fractions and ashes directed to fertiliser use, as well as the sandy bark used in landscaping. A by-product classification defined in the Waste Act is applied for in connection with an environmental permit process. Since 2016, we have increased the proportion of our by-products out of all our side streams to approximately 35%.

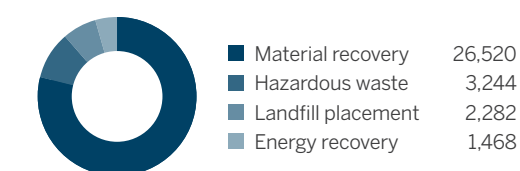
Our biggest waste fractions are green liquor dregs and ash, which cannot be used as fertiliser and is therefore classified as waste. However, in 2021, we were able to utilise approximately 70% of this ash. The volume of process waste directed to landfills decreased by 9% compared to 2020.

The green liquor dregs generated in pulp production are our most challenging waste fraction, for which we are actively seeking new applications by, for example, participating in studies on the subject. Green liquor dregs are a fraction generated in the chemical recovery of the pulp mill. So far, there has been no established use for them. Green liquor dregs make up about 80% of our process waste sent to landfills. An example of utilising green liquor dregs is a test field constructed at the Äänekoski bioproduct mill in 2021. Green liquor dregs and ash are used in the structure of the test field. We will measure the environmental impact of the green liquor dregs and the structure's durability until the summer of 2022.



We use the bark from wood processing in our own energy production. Sandy bark is unsuitable for energy use. It can be used as a surface layer in landscaping or as raw material in soil production.

WASTE 2021
total approximately 30,000 tonnes other than process waste included in side streams



WASTE FOR UTILISATION AND OTHER DISPOSAL 2021
process waste, %



WASTE FOR UTILISATION AND OTHER DISPOSAL 2021
waste other than process waste %



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Bioproduct mills are an example of the circular economy

The circular economy combines financial and environmental objectives, creating new business opportunities. The objective of our bioproduct mill concept is to process 100% of wood raw material and production side streams into pulp and other bioproducts. We can thus replace fossil-based materials and fossil fuels. A bioproduct mill forms an industrial ecosystem, in which production units in close proximity can use each other's products or side streams.

Due to this, we can use the side streams of our pulp production as valuable biochemicals, bio-based energy and other bioproducts. Approximately 10% of our pulp mills' sales are already derived from other bioproducts like tall oil and turpentine. New bioproducts being developed include pulp-based textile fibres and 3D fibre products. We are exploring several new processes and product paths that will materialise in phases. Substances processed from wood are already used as biocomposites for the electronics industry and raw materials for paints, tyres, cosmetics, fertilisers and many more.

Cooperation helps to achieve our sustainability objectives

We are actively seeking partners to develop circular economy innovations that will utilise our side streams, support our product development and improve the efficiency of our supply chain. Within Metsä Group, we share best practices, research results and ideas,



We also actively develop recyclability throughout a product's life-cycle. We have several internal working groups focusing on waste and by-products. Working with our partners and in networks is a key part of our circular economy work.

The future is in new bio-based products

Our innovation company Metsä Spring is developing wood-based innovations that provide sustainable alternatives to fossil-based or otherwise environmentally problematic products. For example, we are developing a pulp-based textile fibre, Kuura, in cooperation with ITOCHU Corporation. In a life-cycle analysis, it proved to be a more sustainable alternative than viscose, lyocell, cotton or polyester. Kuura, manufactured in a demo plant, has also achieved the best – Green Shirt – ranking in the environmental organisation Canopy's sustainability assessment. The basis for this ranking is a risk-free and transparent supply chain and traceable raw materials.

We are also starting up a demo plant in which we will develop new wood-based 3D fibre packaging in cooperation with Valmet. The goal for this material is to replace disposable plastics in food and food packaging products.

Metsä Spring invests in promising start-up companies

In addition to its textile fibre and 3D packaging projects, Metsä Spring supports the commercialisation of wood-based innovations by investing in early-phase start-up companies. During 2021, Metsä Spring invested in Montinutra, which uses spruce sawdust, and in Innmost, which uses birch bark. Both these companies separate various wood-based substances from side streams for the purposes of cosmetics and various technical applications. Metsä Spring's previous investments include Woodio, which makes waterproof wood composites, introducing wood as an alternative material for bathroom furniture.

Metsä Board's dispersion-coated barrier paperboard helps brand owners reduce the use of plastic and make their packaging recyclable. In 2021, Metsä Board and a Finnish start-up company, The Paper Lid Company, launched a fully recyclable paperboard lid suitable for paperboard cups.

We produce first-class products from northern wood

In a circular economy, fewer natural resources create more. We use trees from forests that grow more than they are used and use all parts of the tree. For example, sturdy logs, the most valuable parts of trees, are used for wood products for the construction industry. The thinner sections of tree trunks and younger trees harvested from thinning sites are the main raw material for pulp and for paperboard and tissue paper products. The bark and branches are used in the production of renewable energy.

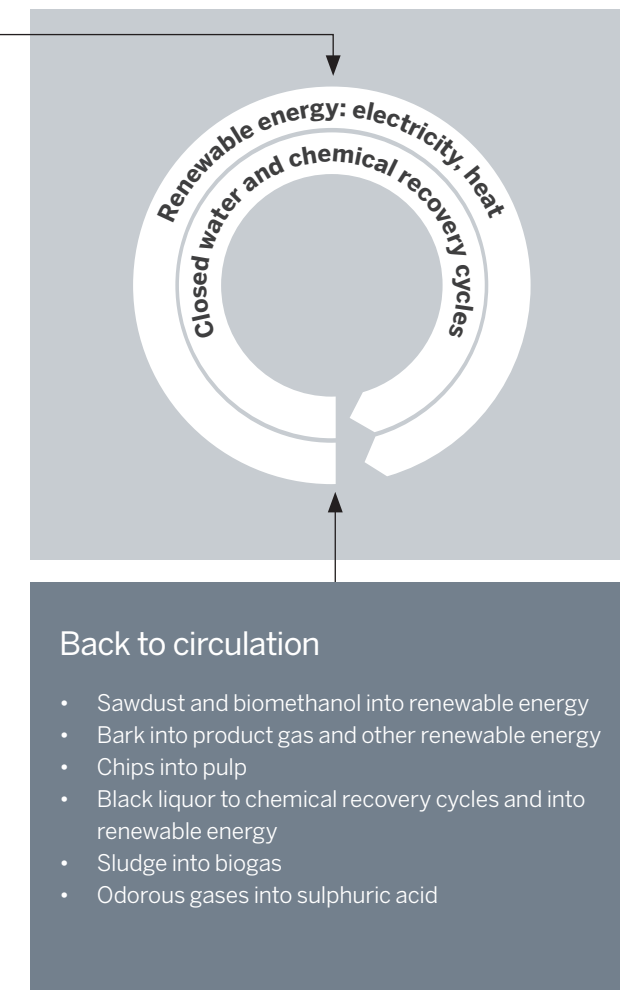
We follow the same principles of the circular economy in all our production (sawmills, bioproduct mills, engineered wood product mill, paperboard mills, tissue and greaseproof paper mills).

Production side streams are also increasingly used in novel bioproducts such as biocomposites and as a raw material for cosmetics. The use of side streams is researched and developed with our partners. The production of geopolymers from the green liquor dregs of pulp production is the new promising development projects.

Wood raw material from a regeneration harvesting



Bioeconomy and circular economy at our mills



Metsä Group's sustainable products

From pulpwood

Pulp

- Paperboard
- Tissue and greaseproof papers
- Textile fibres*
- 3D fibre packaging*

Other bioproducts

- Renewable energy: electricity and heat
- Tall oil and turpentine
- Fertilisers and soil improvement materials
- Biogas
- Biomethanol*

From wood logs

Sawn timber

Kerto® LVL

Plywood

*New products in developmental stages.

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Sustainability throughout the supply chain

SUSTAINABLE PRODUCTS

Our 2030 objectives for sustainable products are: our products or their packaging materials do not contain fossil oil-based raw materials; we only work with partners who meet our sustainability requirements, and we aim to achieve full traceability of raw materials and packaging.

Our 2030 objective: FOSSIL FREE RAW MATERIALS

Year	Percentage (%)
18	99.6
19	99.6
20	99.6
21	99.6
TARGET	100

Our objective is that by 2030, we will not use fossil oil-based raw materials or packaging materials in our products.

In 2021, we used 99.6% (99.6) of raw materials and packaging materials that do not contain fossil oil. We continue to seek suitable bio-based replacements for the rest.

Our external purchases, excluding wood supply, totalled more than EUR 3 billion in 2021, and we cooperated with about 15,000 suppliers. Our suppliers are primarily European, and we aim to make our purchases from local suppliers. In 2021, we purchased 89% (85) of products and services from countries in which we have production units. Our sourcing from high-risk countries is minor, at only 2.8% of spend.

Metsä Group's Sourcing and Logistics unit employs more than 100 professionals and the SVP, Sourcing and Logistics, is a member of Metsä Group's Sustainability Management Team. The team sets the targets for the supply chain's sustainability and draws up the plans for the way forward.

We explore alternatives to replace fossil-oil based materials

Our products made from renewable materials can replace various fossil-based materials and steer consumption in a more sustainable direction.

The wood we use is an entirely renewable resource and comes from sustainably managed forests. Most of the raw materials we use meet our objective of being independent of fossil-oil based materials. Environmental aspects are taken into account when searching for alternative materials.

The following lists the key fossil-oil based raw materials we seek to replace:

- Latex, plastic coatings and hydrophobic sizing agents used in paperboard production
- Converting and wet strength glues used in tissue paper production
- Phenolic resins and plywood coatings used in the manufacturing of wood products
- Plastic wrappings of end products

The research and development team and the raw materials sourcing team cooperate when seeking and evaluating alternative raw materials. An alternative has been sought for many of them, and replacement products have been found for some.

However, there are challenges in replacing fossil oil-based raw materials with fossil free raw materials. One example is latex, which is used to enable good printing quality, provide stiffness and toughness in paperboard converting to form boxes and other products. We encourage our suppliers to actively develop their product offering to support this fossil free objective. We aim to provide more innovative and sustainable wood-based alternatives, for example, for the textile industry.

Related UN Sustainable Development Goals



Ensuring traceability of raw materials

To ensure the sustainability of our supply chain, we want to know the origin of the raw materials and packaging materials used in manufacturing our products. Our main raw material is wood, which is entirely traceable, and 88.2% (88) comes from certified forests. We also know the origin of the pulp we purchase externally. Wood and pulp account for over over 70% of our raw material spend.

We have developed the traceability of other raw materials, including process, basic and coating chemicals, as well as recovered paper and packaging materials. We are typically aware of their origin, and we invest in the systematic collection of this information.

Our suppliers are expected to disclose the manufacturing locations of our chemical raw materials and packaging materials in product safety questionnaires. Recovered paper is normally collected from the country, or neighboring country where it is purchased. Our target is to identify the collection country.

Currently, our focus currently is to trace the origin of manufacture of the raw materials we purchase, but in the future we plan to extend the analyses further into the supply chain. Currently, not all our suppliers disclose this information in product safety questionnaires. The obligation to report this data has been added to our updated Supplier Code of Conduct. We aim to use the collected traceability information in sustainability risk analyses, and target supplier background checks, assessments and audits to suppliers in risk countries.

Our 2030 objective: TRACEABILITY OF RAW MATERIALS

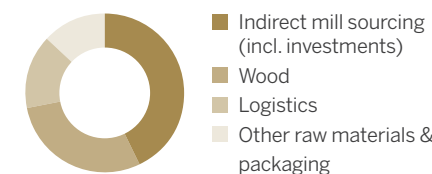
Year	Percentage (%)
18	88.2
19	88.2
20	88.2
21	88.2
TARGET	100

Our objective is full traceability of the origin of our raw materials and packaging materials by 2030.

The traceability of the raw materials we use continued to improve. In 2021, it was 92.2% (91.4), due to more detailed questionnaires.

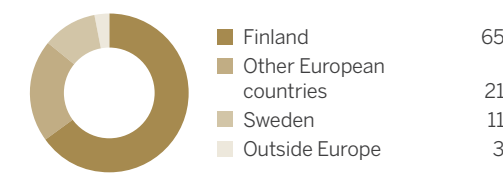
ALL PURCHASES 2021

% of materials and services purchased



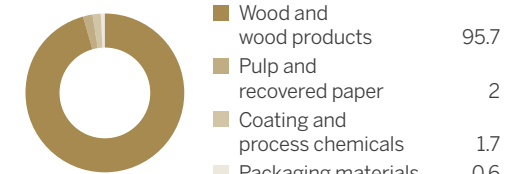
PURCHASES BY SUPPLIERS' COUNTRY 2021

%



RAW MATERIALS 2021

by weight, % dry tonnes



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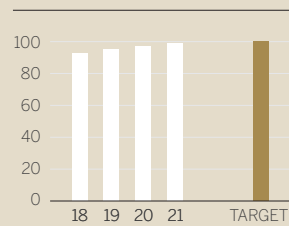
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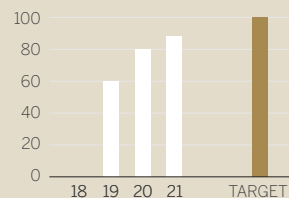
Our 2030 objectives:

SUSTAINABLE SUPPLY CHAIN

Suppliers' commitment to the Supplier Code of Conduct, %



Compliance evaluation passed, %*



Sustainability evaluation passed, %*

Our objective is a sustainable supply chain evaluated according to the coverage of the Supplier Code of Conduct, compliance and sustainability assessment.

In 2021, we adopted the updated Supplier Code of Conduct, and 96% (94) of our purchases were made from committed suppliers. Purchases from suppliers whose backgrounds were evaluated to meet our requirements increased to 88% (78). Suppliers whose sustainability assessment was passed represented 45% (47) of our spend.

Supplier sustainability as part of our sourcing process

We require all our suppliers to commit to the Metsä Group Supplier Code of Conduct or a supplier's own equivalent code. Many of our purchase agreements further contain other separate sustainability requirements related to occupational health and safety or product safety, for example.

We have developed our sourcing processes to ensure that all our partners operate in accordance with our requirements for environmental, social and economic responsibility. We currently rely on risk analyses, background checks, and supplier assessments and audits to ensure sustainability. We also discuss sustainability issues with our key suppliers, provide development suggestions and monitor their realisation.

We check our partners' backgrounds

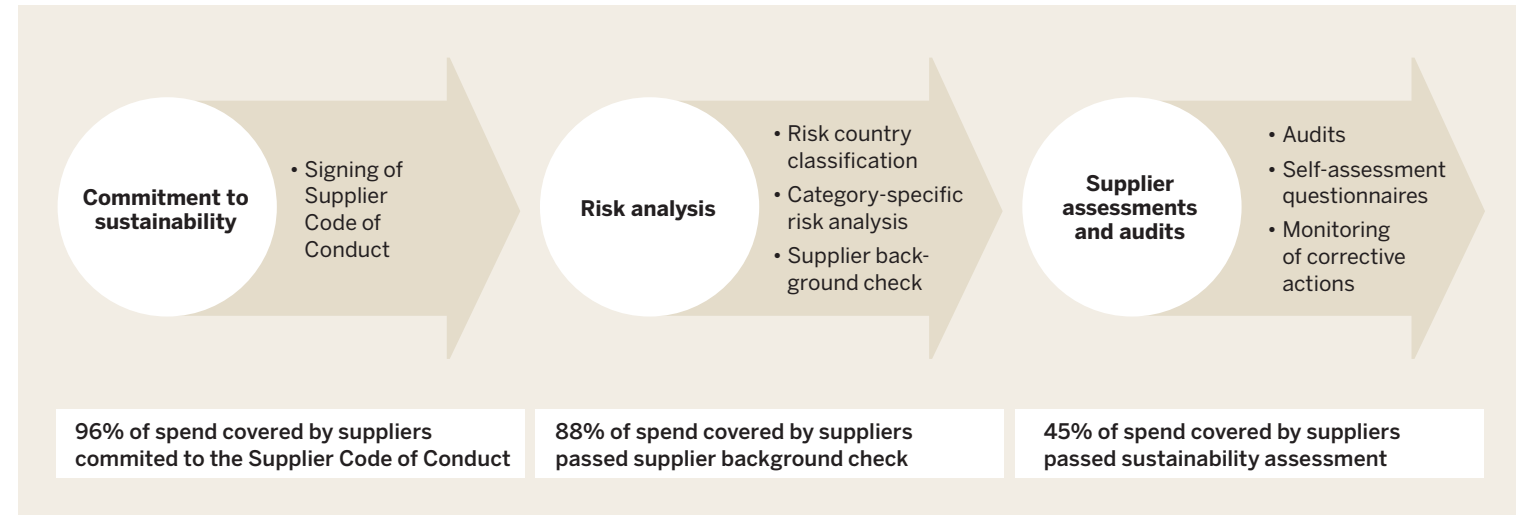
We evaluate our suppliers' sustainability risks by analysing sourcing category-specific risks and by employing risk country ratings. These analyses are part of the renewed sourcing category segmentation and supplier classification. We have identified that the chief adverse impacts in the supply chain are mainly related to environmental impact, work and product safety, as well as fair labour practices.

We carry out supplier background checks as part of tendering and negotiation processes with the aim of ensuring that the supplier companies and their ownership or management do not break any laws or regulations and are not subject to any trade sanctions (third-party due diligence). The results of these checks are monitored continuously. In 2021, 88% (78) of our purchases were made from suppliers whose backgrounds had been checked. These checks uncovered a few deviations related to sanctions and suspected criminal activities. The purchases made from these suppliers were minor, and the cases led to the severing of cooperation. We are continuously expanding the performance of background checks and intend to automate the background checks of new suppliers during year 2022.

The safety of our products starts with the safety of the raw materials, and product safety is of paramount importance, particularly when products come into direct contact with food. With the aid of the background checks, we ensure that by using the raw materials provided by our suppliers, our products meet both the legal requirements to which they are subject and our own strict product safety requirements.

*The calculation method has been changed, and the figures have been adjusted retrospectively. Percentages now include purchases from suppliers who have passed compliance or sustainability assessment. In the past, we reported only done compliance and sustainability assessment without further evaluation.

Ensuring suppliers' sustainability in 2021



Supplier assessments and audits ensure sustainability

We assess supplier sustainability through self-assessment surveys and on-site audits. We also utilise external supplier assessments, such as Ecovadis assessments and HSEQ Cluster audits.

Due to coronavirus pandemic restrictions, our procurement and logistics staff did not conduct any supplier audits in 2021 (2020: 20). An external party audited 29 (13) of our suppliers with a particular focus on quality, environmental and social responsibility aspects. In 2021, we made a number of recommendations, but no significant deviations were identified in the assessments and audits. We have a separate process to address sustainability deviations. These figures and activities do not include audits of our wood procurement. These are described in the Forests and wood section on page 23.

The Supplier Code of Conduct defines the minimum sustainability requirements.

In 2021, we introduced revised supplier assessment questionnaires and piloted supplier audits following the new process. Auditors were also trained. Occupational health and safety, and environmental issues are taken into account more comprehensively in our assessments, audits and when selecting suppliers to be assessed. We have also trained our auditors to detect risks related to social responsibility, such as forced labour and labour exploitation. 77% of our procurement staff completed our own sustainability training during 2021.

More detailed assessments are targeted at the highest risk suppliers

In 2021, 45% (47) of our purchases came from suppliers who passed our risk-based sustainability evaluation. Approximately 0.7% of our spend was from suppliers expected to improve their sustainability practices.

Certain ethical and sustainability issues are difficult to assess through questionnaires and audits. Our ethics reporting channel is also open to our suppliers to report misconduct and concerns. This helps us to identify potential liability risks throughout the supply chain. The low-threshold anonymous reporting channel makes it possible to bring even serious risks to our attention. Often, the most serious sustainability risks are not related to our suppliers, but to our suppliers' suppliers and even further down the supply chain.

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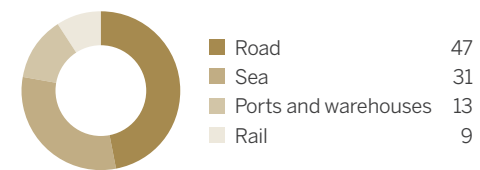
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Mitigating climate change in the supply chain

To mitigate climate change, we encourage our suppliers to set ambitious emission reduction targets. This is also accounted for in supplier assessments and audits, as

LOGISTICS MODES 2021

Share of total logistics by spend, %



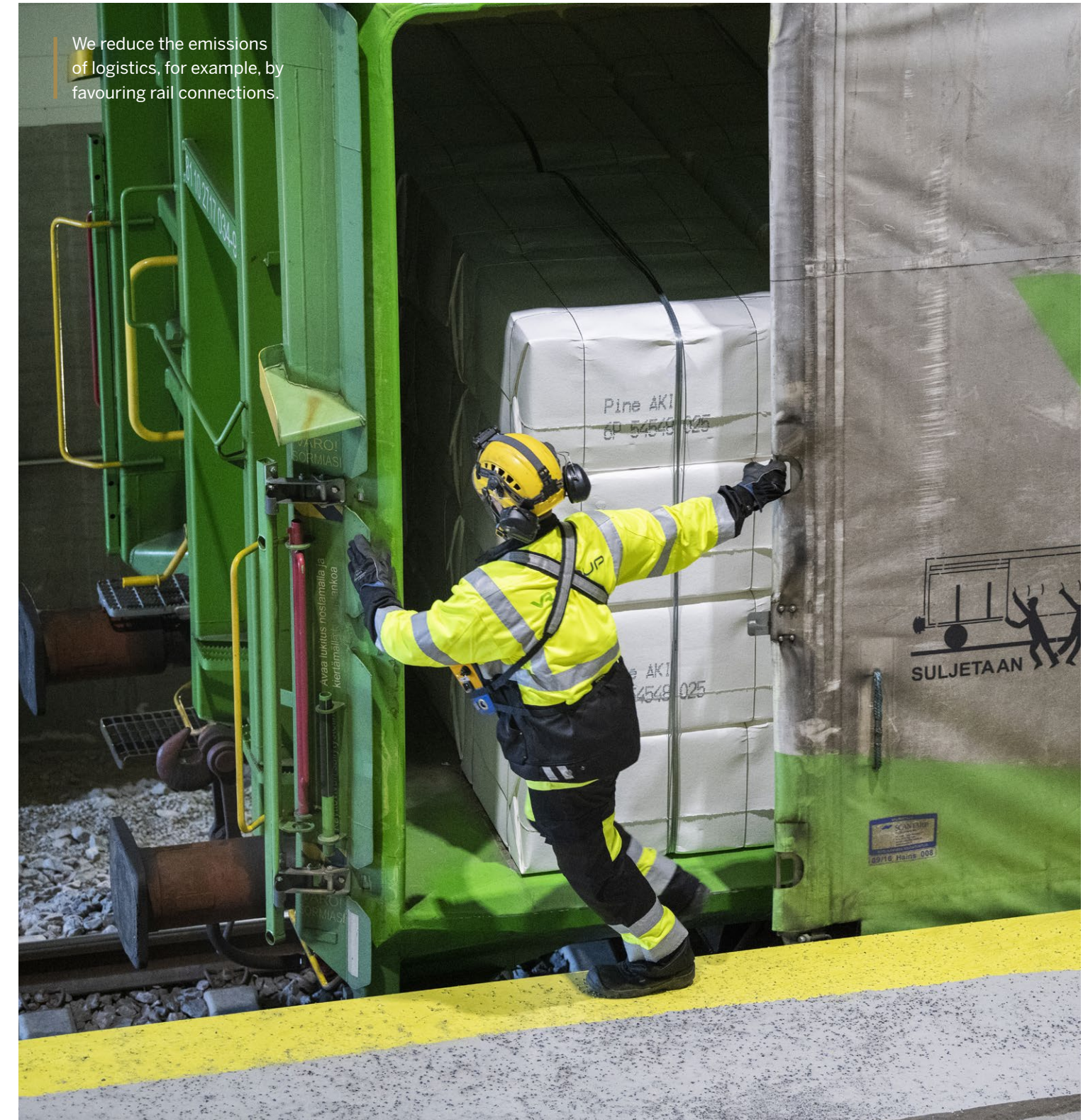
well as in the updated Supplier Code of Conduct. We engage our suppliers in dialogue and increase our own understanding of the emissions generated by the products and services we purchase. This provides a better picture of our indirect climate impact.

We aim to reduce logistics emissions with more efficient route planning, by minimising transport distances, optimising payloads and by favouring rail connections on the selected routes. When planning the concept for mill-to-port transportation in the Kemi bioproduct mill and Rauma sawmill investment projects, we have paid specific attention to environmental impacts of the selected transportation mode. The finished goods from these mills will be transported to ports with vehicles using fossil free fuels, and maximising the transport unit sizes.

We will continue to study the supply chain's emissions in 2022. We also intend to pay increasing attention to our suppliers' sustainability performance in selected tendering processes, adopt a new auditing model on a larger scale and develop the supplier audits conducted in risk countries.

Focus on sustainable subcontracting in investments

The sustainability of the subcontracting chain in the construction projects of the Kemi bioproduct mill and Rauma sawmill is ensured proactively. We employ a model that aims to combat the grey economy. The model allows us to ensure that the subcontracting chain complies with laws and collective agreements, and that taxes and obligations are taken care of appropriately. We check the backgrounds of the subcontractors during the tendering phase. We also conduct regular on-site inspections and checks. The model, created in cooperation with consultants, includes mandatory training for subcontractors, the monitoring of the subcontracting chain and regular briefing sessions. We also inform people working on our projects of their rights. In addition, they have at their disposal a separate anonymous channel for reporting any irregularities.



We reduce the emissions of logistics, for example, by favouring rail connections.

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Taxonomy

The EU taxonomy, in force since the beginning of 2022, is a classification system for the financial market, which was set up with EU Regulation 2020/852 and provides a list of economic activities that are sustainable for the climate and the environment. The goal of the classification system is to steer capital towards sustainable investments to ensure that the EU can achieve its ambitious emissions reduction targets. Technical screening criteria and limit values will be established for different types of economic activities to help determine the sustainability of such activities.

According to the European Commission, the taxonomy is under continuous development. The Commission has stated that it will prioritise the establishment of criteria for such economic activities that offer the greatest potential contribution to the climate and the environment. Metsä Group's core business and sustainable products do not yet fall under the scope of the taxonomy's screening criteria. As a result, taxonomy-eligible business so far only accounts for a minor share of our sales. Our main businesses include wood supply and forest services, wood products, pulp, paperboard, and tissue and greaseproof papers. Of these, only wood supply and forest services, as well as production-related water intake, water purification, energy production and waste management, fall under the scope of the environmental objectives defined to date. As of this date, the company does not know when and to what extent its main businesses may be brought under the scope of the taxonomy.

Metsä Group's key objectives include mitigating climate change and adapting business operations to a low-carbon future. We aim

for fully fossil free production and products by the end of 2030. Our operations, which comply with the principles of the circular economy, promote sustainable forestry and resource-efficient processes, and reduce the amount of waste and emissions, retaining materials in the cycle for as long as possible. We manufacture products that replace products made of fossil raw materials, use renewable raw material, and our products are recyclable.

Reporting taxonomy-eligible activities

The taxonomy specifies six different environmental objectives, based on which activities are assessed. These objectives are: (a) climate change mitigation; (b) climate change adaptation; (c) the sustainable use and protection of water and marine resources; (d) the transition to a circular economy; (e) pollution prevention and control; and (f) the protection and restoration of biodiversity and ecosystems.

In accordance with the implementation provisions of taxonomy, Metsä Group will for the financial year 2021 report the proportion of the company's taxonomy-eligible business in relation to the first two environmental objectives – that is, climate change mitigation and climate change adaptation. We report on three ratios, namely sales, capital expenditure and operational expenditure, regarding our taxonomy-eligible operations. As of the 2022 financial year, we will report both our taxonomy-eligible and our taxonomy-aligned business operations. Reporting will be carried out as part of the disclosure of non-financial information referred to in the EU

Metsä Group's taxonomy-eligible operations in 2021	Sales %	Capital expenditure %	Operational expenditure %
TAXONOMY-ELIGIBLE OPERATIONS			
1.3. Forest management	6.6	0.2	0.5
4.9. Transmission and distribution of electricity	0.0	1.3	0.4
4.20. Cogeneration of heat/cool and power from bioenergy	1.0	28.3	17.7
4.24. Production of heat/cool from bioenergy	0.2	0.1	2.1
5.1. Construction, extension and operation of water collection, treatment and supply systems	0.0	0.7	0.7
5.3. Construction, extension and operation of waste water collection, treatment and supply systems	0.0	1.7	1.3
5.5. Collection and transport of non-hazardous waste in source segregated fractions	0.0	0.0	5.0
5.6. Anaerobic digestion of sewage sludge	0.0	0.4	0.8
TAXONOMY-ELIGIBLE ACTIVITIES, TOTAL	7.8	32.7	28.4
TAXONOMY-NON-ELIGIBLE ACTIVITIES	92.2	67.3	71.6

Directive 2014/94, as implemented by Chapter 3a of the Finnish Accounting Act (1336/1997).

Principles for calculating the proportion of taxonomy-eligible activities

Sales

Under sales from taxonomy-eligible activities, Metsä Group discloses sales from products and services related to these activities, which is included in Metsä Group's reported sales. The output of taxonomy-eligible activities is used nearly entirely internally in Metsä Group's own operations, and the activities generate hardly any reportable sales. The largest proportion of sales from taxonomy-eligible activities is reported under category 1.3. Forest management, the sales of which include the wood flows of the Group's own procurement, as well as forest management services to external customers.

Capital expenditure

Capital expenditure includes the increase in tangible and intangible fixed assets over the financial period, including property recorded based on long-term rental agreements.

The bulk of capital expenditure related to taxonomy-eligible activities comes from the investments related to the construction of Metsä Fibre's Kemi bioproduct mill under categories 4.20., 4.9., 5.1. and 5.3. Category 4.20. Cogeneration of heat/cool and power from bioenergy also includes investments in the renewal of the recovery boiler and turbine at Metsä Board's Husum pulp mill. Category 5.1. Construction, extension and operation of water collection, treatment and supply systems also includes the development investment in the water purification system at Metsä Tissue's Raubach mill.

Category 5.6. Anaerobic digestion of sewage sludge includes the investments related to the enhancement of the digestion plant at Metsä Fibre's Äänekoski bioproduct mill.

Operational expenditure

Operational expenditure includes the recorded R&D expenses and the maintenance costs for production units and facilities, as well as the costs of waste treatment and short-term rental agreements. The reported expenditure includes both external service costs and the wages, including indirect employee costs, of the company's own personnel responsible for the listed activities.

The recovery of chemicals and heat at pulp mills (category 4.20.) accounts for the most significant proportion of taxonomy-eligible operational expenditure.

Taxes

Metsä Group contributes to society through taxes, too. In addition to paid corporate income taxes and property taxes, Metsä Group's operations generate various other taxes and tax-like payments. Some are directly paid by the company, like employer's social security payments. Some are collected by Metsä Group on behalf of the government, like employees' payroll taxes.

In addition, fuels and electricity used for production activities include indirect taxes. Considering all directly and indirectly generated taxes and tax-like payments arising from Metsä Group's operations, our economic contribution to society is material.

Metsä Group is committed to following international transfer pricing guidelines and local tax laws and regulations all of its operating countries. The majority of Metsä Group's production and other operations are located in Finland, so most of the taxes are paid in Finland.

Metsä Group's cooperation with tax authorities is transparent and active. For example, Metsä Group started enhanced cooperation with the Finnish Tax Administration during 2021.

Tax issues are managed by Metsä Group's tax function and taxes are in the scope of Board of Directors' Audit Committee's regular follow-up.

Taxes	EUR million	
PAID CORPORATE INCOME TAXES AND PROPERTY TAXES		
	2021	2020
Finland	112.7	51.4
Sweden	19.0	6.0
Other countries	28.0	9.2

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Wood Supply and Forest Services

COUNTRY	ESTONIA	FINLAND	LATVIA	St.	Podporozhye	SWEDEN	Others	Total
				Petersburg	RUSSIA			
PERSONNEL								
Number of employees ¹⁾	29	610	39	17	152	3	0	852
TRIF	0	7.5	0	0	3.6	-	-	6
LTAIF ²⁾	0	2.8	0	0	0	-	-	2
Sickness absenteeism, % ³⁾	0.6	1.3	0.6	0.1	3.3	-	-	1.6
WOOD PROCUREMENT								
1 000 m ³	1,457	28,261	920	-	2,167 ⁴⁾	2,460	30	35,295
MANAGEMENT SYSTEM								
ISO 9001	x	x	x	x	x	x		
ISO 14001	x	x	x	x	x	x		
ISO 45001		x						
CHAIN OF CUSTODY								
PEFC	x	x	x	x	x	x		
FSC	x	x	x	x	x	x		

¹⁾ Full-time equivalent on 31 December 2021

²⁾ LTA1 = Accidents at work resulting in at least one day of sick leave, excluding the day of the accident.

³⁾ % of theoretical working time

⁴⁾ Includes all wood procurement from Russia

Metsä Wood

Mill	Pärnu	Lohja ⁴⁾	Punkaharju ⁴⁾	Suolahti ⁴⁾	Äänekoski	Boston	King's Lynn	Widnes	Others ⁵⁾	Total
COUNTRY	ESTONIA	FINLAND	FINLAND	FINLAND	FINLAND	UK	UK	UK		
PERSONNEL										
Number of employees ¹⁾	163	117	439	348	28	297	36	108	122	1,658
TRIF	20.9	48.2	8.6	13	20.9	6.7	13.2	4.5	-	12.5
LTAIF ²⁾	20.9	24.1	5.7	11.3	0	5	0	4.5	-	8.8
Sickness absenteeism, % ³⁾	6.7	3.7	5.9	3.9	3.2	2	3	4.4	-	4.1
PRODUCTION										
Wood products	plywood	Kerto® LVL	Kerto® LVL and plywood	plywood	veneer	further processing	further processing	further processing		
Production, 1 000 m ³	36,388	86,571	229,788	184,427	56,408	167,441	72,895	72,293		906,181
MANAGEMENT SYSTEM										
ISO 9001	x	x	x	x	x	x	x	x		
ISO 14001	x	x	x	x	x	x	x	x		
ISO 45001	x	x	x	x	x	x	x	x		
ISO 50001	x ⁶⁾	x	x	x	x					
CHAIN OF CUSTODY										
PEFC	x	x	x	x	x	x	x	x		
FSC	x	x	x	x	x	x	x	x		
EMISSIONS TO AIR, t										
Biogenic carbon (CO ₂)	0	39,026	86,142	104,269	0	0	0	0		229,438
Fossil carbon (CO ₂)	0	1,891	577	264	0	0	72	276		3,081
Sulphur (SO ₂)	0	0.98	2.0	0.090	0	0	0	0		3.1
Nitrogen oxides	0	15	94	103	0	0	0	0		212
Particles	0	2.2	2.4	43	0	0	0	0		47
DISCHARGES TO WATER, t										
Chemical oxygen demand (COD)	0	1.9	117	10	0.8	0	0	0		130
Biological oxygen demand (BOD)	0.0074	0.31	68	19	0.0067	0	0	0		87
Total phosphorus	0.00037	0.0055	0.040	0.071	0.00033	0	0	0		0.12
Total nitrogen	0	0.041	0.2	0.18	0	0	0	0		0.42
Total suspended solids	0.0074	0.33	2.2	1.9	0.0067	0	0	0		4.4
WATER USE, 1 000 m ³										
Water sourcing	15	128	287	1,247	20	0	5.9	0		1,703
Waste water flow	8.9	63	50	42	8	0	0	0		172
WASTE AND SIDE STREAMS, t										
Utilised by-products and waste	0	616	1,738	1,327	78	883	304	269		5,215
Landfill waste	65	0	0	0	0	0	0	0		65
Hazardous waste	241	173	345	171	0.21	1.0	0	1.0		931

¹⁾ Full-time equivalent on 31 December 2021

²⁾ LTA1 = Accidents at work resulting in at least one day of sick leave, excluding the day of the accident.

³⁾ % of theoretical working time

⁴⁾ Emissions, water use and wastes: Lohja includes 51% of Lohjan Biolämpö, Punkaharju ja Suolahti includes 100% power plants' emissions.

⁵⁾ Includes personnel from sales operations and management. Personnel figures of Others are included in Metsä Wood's total figures.

⁶⁾ Pärnu ISO 50001 certification audit in 2022

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Metsä Fibre

Mill	Joutseno	Kemi	Rauma	Äänekoski	Kyrö	Lappeenranta	Merikarvia	Renko	Vilppula	Svir	Others	Total
COUNTRY	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	RUSSIA		
PERSONNEL												
Number of employees ¹⁾	135	175	122	190	74	69	74	77	101	115	252	1,384
TRIF	12.2	10.4	9.4	12.1	22	15.7	7.4	14.3	16.4	4.7	-	10.2
LTAIF ²⁾	12.2	6.9	9.4	12.1	14.7	15.7	0	14.3	0	4.7	-	7.6
Sickness absenteeism, % ³⁾	3.9	4.6	4.9	3.6	3.5	4.5	7.6	5.7	5.5	2.8	-	4
PRODUCTION												
Chemical pulp (1 000 t)	650	596	598	1,156								3,000
Sawn timber (1 000 m ³)					221	219	197	286	505	282		1,699
MANAGEMENT SYSTEM												
ISO 9001	x	x	x	x	x	x	x	x	x	x		
ISO 14001	x	x	x	x	x	x	x	x		x		
ISO 50001	x	x	x	x	x	x	x	x	x	x		
ISO 45001	x	x	x	x	x	x	x	x	x	x		
ISO 22000	x	x	x	x								
CHAIN OF CUSTODY												
PEFC	x	x	x	x	x	x	x	x	x	x		
FSC	x	x	x	x	x	x	x	x	x	x		
EMISSIONS TO AIR, t												
Biogenic carbon (CO ₂)	1,600,340	1,453,857	1,362,630	3,262,889	25,933	26,621	22,804	26,621	84,697	20,831		7,887,224
Fossil carbon (CO ₂)	16,120	65,971	69,705	34,827	837	44	428	486	2,224	0		190,642
Sulphur (SO ₂) ⁴⁾	326	112	38	77	3.3	0.0035	0.038	1.0	16	0.25		573
Nitrogen oxides	1,056	1,294	1,117	1,714	22	50	19	14	41	40		5,366
Particles	123	70	196	32	22	3.6	13	6	12	2.0		479
Total reduced sulphur (TRS)	5.0	19	9.0	5.5	0	0	0	0	0	0		38
DISCHARGES TO WATER, t												
Adsorbable organic halogen (AOX)	92	66	74	122	0	0	0	0	0	0		355
Chemical oxygen demand (COD)	6,887	7,671	9,653	7,540	0.36	0.090	0.32	0.20	0.65	7.7		31,760
Biological oxygen demand (BOD)	134	125	100	147	0.0061	0.0015	0.0053	0.0033	0.011	0.67		507
Total phosphorus	7.6	4.3	3.3	5.7	0.00030	0.000075	0.00026	0.00017	0.00054	0		21
Total nitrogen	87	93	57	63	0	0	0	0	0	0		300
Total suspended solids	732	409	195	317	0.0061	0.0015	0.0053	0.0033	0.011	2.9		1,656
WATER USE, 1 000 m³												
Water sourcing	77,888	38,566	19,895	142,235	15	2.3	11	37	108	112		278,869
Waste water flow	17,637	18,006	18,987	21,259	7.3	1.8	6.3	4.0	13	358		76,271
WASTE AND SIDE STREAMS, t												
Utilised by-products and waste	73,080	43,389	12,482	73,558	67	4,567	650	2,216	85	10,436		220,530
Landfill waste	10,415	11,936	14,153	4,941	0	0	40	0	0	4.6		41,491
Hazardous waste	205	49	61	148	1.6	0.63	7.5	5.2	1.3	0.36		479

¹⁾ Full-time equivalent on 31 December 2021

²⁾ LTA1 = Accidents at work resulting in at least one day of sick leave, excluding the day of the accident.

³⁾ % of theoretical working time

⁴⁾ SO₂ calculation contains also TRS (Joutseno, Kemi, Rauma and Äänekoski)

For the Kyrö, Merikarvia and Lappeenranta sawmills, the load discharged to the water body is the calculated load from urban water.

Metsä Board

Mill	Joutseno	Kaskinen	Kemi	Kyro	Simpele	Tako	Äänekoski	Husum	Others ⁴⁾	Total
COUNTRY	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	FINLAND	SWEDEN		
PERSONNEL										
Number of employees ¹⁾	58	84	121	161	266	201	193	671	634	2,389
TRIF	31.6	13.7	4.8	10.8	14.8	14	12	6	-	9.8
LTAIF ²⁾	10.5	13.7	0	10.8	10.6	5.6	9	3.4	-	7
Sickness absenteeism, % ³⁾	4.6	2.9	4.6	2.9	3.9	5.8	4.8	4.1	-	4.1
PRODUCTION										
Chemical pulp and CTMP (1 000 t)	351	388	-	-	-	-	-	623		1,362
Paperboard (1 000 m ³)	-	-	421	190	297	214	242	556		1,920
MANAGEMENT SYSTEM										
ISO 9001	x	x	x	x	x	x	x	x		
ISO 14001	x	x	x	x	x	x	x	x		
ISO 50001	x	x	x	x	x	x	x	x		
ISO 45001	x	x	x	x	x	x	x	x		
ISO 22000/FSSC 22000	ISO 22000	ISO 22000	ISO 22000, FSSC 22000	ISO 22000, FSSC 22000	ISO 22000, FSSC 22000	ISO 22000	ISO 22000, FSSC 22000	ISO 22000, FSSC 22000		
CHAIN OF CUSTODY										
PEFC	x	x	x	x	x	x	x	x		
FSC	x	x	x	x	x	x	x	x		
EMISSIONS TO AIR, t										
Biogenic carbon (CO ₂)	0	176,464	0	0	172,473	0	0	1,363,701		1,712,639
Fossil carbon (CO ₂)	27,238	6,502	6,335	4,702	54,636	74,622	0	81,433		255,467
Sulphur (SO ₂) ⁵⁾	0	12	0	0	72	0.038	0	211		295
Nitrogen oxides (NO ₂)	14	95	2.7	2.3	147	46	0	872		1,180
Particles	10	11	0	0	1.3	0	0	205		228
Total reduced sulphur (TRS)	0	0	0	0	0	0	0	60		60
DISCHARGES TO WATER, t										
Adsorbable organic halogen (AOX)	0	0	0	0	0	0	0	47		47
Chemical oxygen demand (COD)	681	1,156	320	157	524	168	426	7,056		10,488
Biological oxygen demand (BOD)	4.4	59	37	14	89	56	190	309		758
Total phosphorus	0.25	2.5	1.4	0.41	2.2	1.2	0.27	21		29
Total nitrogen	2.9	22	23	15	13	0.77	6.9	184		268
Total suspended solids	25	223	110	58	93	33	72	931		1,544
WATER USE, 1 000 m³										
Water sourcing	6,142	16,656	10,405	4,140	27,506	3,520	5,002	41,724		115,095
Waste water flow	579	3,847	8,291	3,253	4,591	2,622	3,417	32,136		58,738
WASTE AND SIDE STREAMS, t										
Utilised by-products and waste	11,662	20,744	5,378	16,940	22,246	4,769	2,819	71,717		156,276
Landfill waste	0	4.7	328	3.7	0.050	0	0	0		337
Hazardous waste	27	35	1.6	1,028	65	80	15	306		1,558

¹⁾ Full-time equivalent on 31 December 2021

²⁾ LTA1 = Accidents at work resulting in at least one day of sick leave, excluding the day of the accident.

³⁾ % of theoretical working time

⁴⁾ Includes personnel from sales and logistics operations, management and subsidiaries. Production, emissions and waste originate from Äänevoima's production of energy sold for external use. Personnel figures of Others are included in Metsä Board's total figures.

⁵⁾ SO₂ calculation contains also TRS (Husum)

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Metsä Tissue

Mill	Mänttä ⁷⁾	Düren	Kreuzau	Raubach	Krapkowitz	Zilina	Katrinefors	Nyboholm ⁵⁾	Pauliström	Others ⁶⁾	Total
COUNTRY	FINLAND	GERMANY	GERMANY	GERMANY	POLAND	SLOVAKIA	SWEDEN	SWEDEN	SWEDEN	SWEDEN	
PERSONNEL											
Number of employees ¹⁾	438	145	450	269	289	305	345	-	168	71	2,480
TRIF	1.3	8.1	12.3	0	7.6	3.9	3.4	-	3.5	-	5
LTA1F ²⁾	1.3	4.1	8.2	0	3.8	1.9	3.4	-	0	-	3.1
Sickness absenteeism, % ³⁾	4.5	6.1	7.3	5.9	6.8	6.5	4.8	-	3.9	-	5.7
PRODUCTION, 1 000 t											
Tissuepaper	19.5	35.5	0	0	0	0	0	0	0		55
Greaseproof papers	91	0	138	60	49	70	76	30	27		542
MANAGEMENT SYSTEM											
ISO 9001	x	x	x	x	x	x	x	x	x		
ISO 14001	x	x	x	x	x	x ⁴⁾	x	x	x		
ISO 50001	x	x	x	x	x	x	x	x	x		
ISO 45001	x	x	x	x	x	x					
ISO 22000/BRC/IFS	ISO 22000	BRC. IFS	BRC. IFS	BRC. IFS	BRC	BRC					
CHAIN OF CUSTODY											
PEFC	x	x	x	x	x	x	x	x	x		
FSC	x	x	x	x	x	x	x	x	x		
EMISSIONS TO AIR, t											
Biogenic carbon (CO ₂)	0	0	0	0	0	0	58,648	16,962	11,246		86,856
Fossil carbon (CO ₂)	12,228	19,876	83,131	26,209	20,779	11,566	15,184	6,535	7,428		202,996
Sulphur (SO ₂)	0	0	62	0.011	2.1	0.057	3.7	0.75	0.56		69
Nitrogen oxides (NO _x)	6.2	11	86	16	13	10	39	18	25		224
Particles	0	0	0.24	0	26	0.47	1.2	0.95	7.5		36
DISCHARGES TO WATER, t											
Chemical oxygen demand (COD)	229	15	356	109	29	59	131	15	8		951
Biological oxygen demand (BOD)	25	3.2	21	5.8	2.7	7.7	17	3.0	5.2		91
Total phosphorus	0.50	0.16	1.1	0.29	0.30	0.39	0.24	0.031	0.062		3.0
Total nitrogen	15	0	0	0	6.4	0	9.0	1.0	0.98		33
Total suspended solids	50	3.2	21	5.8	3.6	7.7	36	3.2	5.3		136
WATER USE, 1 000 m³											
Water sourcing	3,267	781	3,530	709	705	800	2,521	638	328		13,281
Waste water flow	4,149	315	2,145	575	506	773	1,556	493	190		10,703
WASTE AND SIDE STREAMS, tn											
Utilised waste	46,259	688	90,978	37,550	37,380	30,407	34,489	1,338	1,788		280,877
Landfill waste	0	0	6,681	0	640	532	0	0	0		7,854
Hazardous waste	30	76	32	30	4.0	43	45	2.7	13		276

¹⁾ Full-time equivalent on 31 December 2021

²⁾ LTA1 = Accidents at work resulting in at least one day of sick leave, excluding the day of the accident.

³⁾ % of theoretical working time

⁴⁾ ISO 14001 standard includes the Energy Efficiency System (EES)

⁵⁾ Nyboholm mill's personnel figures are included in Pauliström mill's figures.

⁶⁾ Includes personnel of locations other than mill

⁷⁾ Includes all the personnel in Finland

Main memberships in third-party organisations

- National forest industry federations: Finnish Forest Industries Federation (FFIF)
- The Swedish Forest Industries and the German Pulp and Paper Association (VDP)
- Finnish Chamber of Commerce and International Chamber of Commerce (ICC)
- Confederation of European Paper Industries (CEPI) and 4evergreen alliance
- Business Europe's Corporate Advisory and Support Group
- Bio-based Industries Consortium (BIC)
- Programme for the Endorsement of Forest Certification (PEFC)
- Forest Stewardship Council (FSC)
- The Bioenergy Association of Finland
- Federation of the Finnish Woodworking Industries
- European Tissue Symposium (ETS)

Read more on our website metsagroup.com

Environmental permit limit violations

In the reporting year, there were no incidents at the mills that would have caused significant environmental impacts, and that would have been followed by claims, compensations or significant media coverage. In September, Metsä Board's Husum mill suffered an oil leak from the mill's oil burner. To minimise potential environmental damage, Metsä Board has supported the investigation of the incident and the clean-up of the oil from the sea and the shores with all necessary resources and maintained a dialogue with key stakeholders, including local residents and the authorities.

In addition, minor and momentary environmental permit violations with no perceptible environmental effects were reported at the Metsä Board Kyro, Simpele and Tako mills, as well as at Metsä Fibre Rauma and Äänekoski mills. All incidents that have caused violations of monthly, quarterly or annual permit limit values are detailed with a description and corrective actions in the table below. The authorities have been informed, and corrective actions have been taken in all cases.

Business area	Unit	Incident	Corrective actions
Metsä Wood	Punkaharju	Quarterly COD limit was exceeded in Q1, Q2 and Q4 2021.	Operating parameters optimising and development programme for the effluent plant.
Metsä Fibre	Rauma	Permit limit for chlorine content in bleaching vapour was too high.	New droplet separator.
Metsä Board	Kaskinen	Phosphorus monthly permit limit was exceeded in April because of solids loss. Sludge handling problems caused high sludge age.	Maintenance, sludge age control and nutrient dosage.
Metsä Board	Simpele	Monthly permit limit for COD and phosphorus emissions was exceeded in February. Phosphorous also in March and April. Problems with compressors, nutrient dosage and cold weather.	Nutrient dosage and operating parameter optimising. Maintenance.
Metsä Board	Simpele	Phosphorous permit limit was exceeded in November and December because of solids loss. The annual phosphorous limit was also exceeded.	Maintenance, sludge age control and nutrient dosage. Development programme for the effluent plant and multiple separate corrective actions.
Metsä Board	Kyro	Monthly permit limit of solid content was exceeded in December because of process disorder.	Optimal precaution

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Scope of the report

Metsä Group comprises Wood supply and forest services, Metsä Wood, Metsä Fibre, Metsä Board and Metsä Tissue. Our reporting covers the whole Group, including production, warehousing and sales units. Sustainability reporting follows the same principles of consolidation as our Financial Statements.

Metsä Group reports its sustainability performance at the Group, business area and product levels. The Sustainability Report 2021 has been prepared according to the Global Reporting Initiative (GRI) standards (2016 and 2018). We have selected the indicators most relevant to our operations, products and stakeholders, based on an assessment of the most significant sustainability issues for the company and its stakeholders.

The report covers major permit violations, claims, compensations and topics related to the Group that have gained public attention or may have caused a reputational risk in environmental or human resource management, or ethical business practices.

The Sustainability Report 2021 presents Metsä Group's approach to sustainability management and detailed performance indicators. The Group's subsidiaries Metsä Board and Metsä Fibre publish individual annual reports with brief presentations on sustainability work. The sustainability performance data in this report and claims based on the data have been externally assured by an independent third party, Mitopro Oy p. 52.

Measurement techniques for environmental data

The calculation coverage of the environmental parameters follows that of the financial accounting with the following amendments:

- Only material flows to and from industrial sites are included.
- Discharges to water through external wastewater treatment plants (typically municipal) are taken into account assuming an 85% reduction for COD. Emissions of BOD, phosphorus

and suspended solids are calculated according to the flow with the following residual concentrations: BOD 10 mg/l; total phosphorus 0.5 mg/l; and total suspended solids 10 mg/l. The total nitrogen emission is regarded as zero, because there is surplus nitrogen in municipal wastewaters, and the reduction of our BOD binds nitrogen to biomass, reducing the plant's total nitrogen emission.

- The emissions of external wastewaters treated at our wastewater treatment plants are excluded. The allocation of emissions between internal and external inflows is carried out assuming theoretical COD reductions for each inflow, which are then corrected according to the real COD reduction for the whole plant. Other emissions are allocated according to the flow.

Total energy consumption is expressed as primary fuel consumption. The fuel consumption of purchased electricity is calculated using a 40% efficiency factor for combustion energy production, 33% for nuclear energy and 100% for hydro, wind and solar energy. The total energy of purchased heat is determined according to actual fuel consumption.

Environmental impacts, acidification and eutrophication are calculated by multiplying impact-causing emissions by coefficients. Acidification is expressed as sulphur dioxide equivalents. The coefficient for sulphur dioxide (SO₂) is 1, and for nitrogen oxide (NOX) 0.7. Eutrophication is expressed as phosphorus equivalents. The coefficient for total phosphorus is 1; for BOD 0.0088; for total nitrogen 0.14; and for NOX 0.0041. The greenhouse effect only consists of carbon dioxide emissions and has a coefficient of 1. The biogenic CO₂ emission coefficient for wood-based fuels of 396 tonnes CO₂ /GWh has been used.

In unit-specific data, discharges from wastewater plants serving several mills are allocated to units using the methodology explained

above. Emissions from power plants are allocated to mills using the energy. In this allocation, the use of 1 MWh of electricity is twice the value compared to the use of 1 MWh of heat.

Waste volumes are reported, including moisture. The use of temporary waste storage before final disposal at some mills results in some variations to the waste figures, depending on how much waste is channelled to temporary storage, and how much is taken from there each year. Waste figures include volumes for final disposal (incl. material/energy recovery, landfill, and hazardous waste disposal). Part of this volume comes straight from the mill process, and a part is from the temporary storage. Waste volumes from mill process to temporary storage are not included.

CO₂ emissions in the Group are calculated for Scope 1 and Scope 2. Scope 1 CO₂ emissions cover emissions from the Group. Emissions from purchased heat and electricity together comprise Scope 2 emissions. Since 2020, Metsä Group started to calculate Scope 2 purchased electricity according to the GHG Protocol by using gross purchases. Scope 2 CO₂ emission calculation consists of two methods. The market-based method uses electricity supplier-specific emissions coefficients completed with the national residual mix emission coefficients for non-tracked purchased electricity. The location-based method uses the total supplier mix emission coefficients by country. Coefficients for total supplier mix and residual mix are taken from the AIB (Association of Issuing Bodies) European Residual Mixes report.

Techniques in measuring HR data

The data coverage follows that of the financial accounting with the following amendments:

- The coverage of the personnel data was 98%, except number of employees, safety and well-being key figures, training hours

and coverage of code of conduct, where Hangö Stevedoring is included, and the coverage is 100%

- The number of employees is reported as full-time equivalent (FTE). The sickness absenteeism % and work accident absenteeism % are calculated per theoretical working hours. The lost time accident frequency rate (LTA1F) includes all accidents at work that have resulted in at least one disability day. The LTA1F is calculated as: lost time accidents at work per million worked hours. Only accidents involving Metsä Group's personnel are included in the TRIF and LTA1F indicator.
- The share of women in management includes women on the Board of Directors, the Executive Management Team and the business area's management teams at the end of the year.
- New entries only include new permanent employees. Leavers only include permanent employees who left Metsä Group. Employee turnover includes all permanent leavers and redundancies as a result of the restructuring of the businesses, and is calculated against the average permanent head count. Calculation for retention rate is headcount. The retention rate is the headcount of permanent employees minus the voluntary turnover, divided by the headcount of permanent employees.

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To the Management and Stakeholders of Metsä Group

Independent assurance statement

Scope and Objectives

The Management of Metsäliitto Cooperative ("Metsä Group") commissioned us to perform a limited assurance engagement on the Metsä Group Sustainability Report 2021 ("the Report") for the reporting period 1st January to 31st December 2021. The assurance engagement was conducted in accordance with the AA1000 Assurance Standard (AA1000 AS v3, 2020), and as a type 2 engagement.

We have duly performed an independent external assurance, the objective of which was to evaluate:

- Metsä Group's adherence to the AA1000 Accountability Principles of inclusivity, materiality, responsiveness and impact;
- the reliability of performance information presented in the Report according to the Principles for defining report quality specified in the Global Reporting Initiative's GRI Standard 101 Foundation (2016); and
- the compliance with the GRI Standards in accordance criteria at the Comprehensive option.

Responsibilities

Metsä Group's Management is responsible for the preparation of the Report and the performance data and statements presented therein, which the President and CEO of Metsä Group has approved. Our responsibility as assurance providers is to express a conclusion based on our work performed. The criteria used for our assessment include the GRI Standards and Metsä Group's own internal reporting guidelines.

Assurance Provider's Independence and Competence

We have conducted our assessment as independent and impartial from the reporting organisation. We were not committed to any assignments for Metsä Group that would conflict with our independence, nor were we involved in the preparation of the Report. Our team consists of competent and experienced sustainability reporting experts, who have the necessary skills to perform an assurance process.

Basis of Our Opinion

Assurance providers are obliged to plan and perform the assurance process to ensure that they collect adequate evidence for the necessary conclusions to be drawn. The procedures selected depend on the assurance provider's judgement, including their assessment of the risk of material misstatement adhering to the reporting criteria.

- Our opinion is based on the following procedures performed:
- Interviews with three senior management representatives to gain an understanding of the major impacts, risks and opportunities related to Metsä Group's sustainability agenda;
 - Assessment of the procedures Metsä Group has in place to ensure the inclusivity of stakeholder engagement processes, the identification of material stakeholder expectations, the responsiveness to stakeholder concerns and the assessment of impacts;
 - Interviews with Metsä Group specialists responsible for sustainability performance data collection at Group-level and in selected sites;
 - Review of Group-level systems and procedures to generate, collect and report sustainability performance data for the Report;
 - Review of data sources, data generation and reporting procedures at Metsä Board Kyrö mill and Metsä Fibre Viippula sawmill in Finland and Metsä Tissue Kreuzau mill in Germany;
 - Reviewing data at source and following this through to the sustainability information presented in the Report;
 - Assessing whether the evidence, measurements, and scope of the performance data is prepared in accordance with the Criteria; and
 - Reviewing the Report and narrative accompanying the performance indicators in the Report with regard to the Criteria.

Inherent limitations

Our assurance relies on the premise that the data and information provided by Metsä Group to us as part of our review procedures have been provided in good faith. Because of the selective nature (sampling) and other inherent limitations of both procedures and systems of internal control, there remains the unavoidable risk that errors or irregularities may not have been detected. For instance, greenhouse gas (GHG) emissions calculations are subject to inherent limitations, given the nature and the methods used for determining such data. Finally, the selection of different but acceptable measurement techniques may result in materially different measurements.

Conclusions

Adherence to AA1000 Accountability Principles

- **Inclusivity:** Metsä Group has a stakeholder engagement process in place in order to understand stakeholder expectations, and it has committed to active stakeholder dialogue.
- **Materiality:** The material topics presented in the Report correspond to stakeholder interests and major economic, environmental and social impacts in Metsä Group's value chain.
- **Responsiveness:** Metsä Group has policies and procedures in place to respond to stakeholder's expectations.
- **Impact:** Metsä Group has identified impacts related to the material sustainability topics and it has committed to manage and disclose comprehensive and balanced information on these impacts.

Sustainability performance data

We have reviewed the basis of the sustainability information provided in the Report. Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Report is not fairly stated and has not been prepared, in all material respects, in accordance with the reporting criteria.

GRI in accordance criteria

The Report complies with the GRI Standards: Comprehensive option.

Observations and Recommendations

Based on our review, we present the following observations and recommendations, which do not affect the conclusions presented above.

- Metsä Group has made progress in the strategic 2030 sustainability objectives. In 2021 the efforts focused specifically to advance biodiversity, fossil free operations and circular economy. Also, a systematic work to build safety culture proceed. We recommend that Metsä Group continues the target-driven sustainability work and pays attention to safety of employees and contractors in all operations.
- Metsä Group continued dialogue on the sustainable use of forests. In 2021 active dialogue was conducted with different stakeholders and forest owners. We recommend that this dialogue will be further deepened to better understand different stakeholder views.
- Metsä Group continued work on the development of a responsible corporate culture. In 2021 actions defined based on the results of the previous ethics barometer were implemented and new awareness raising activities were conducted to highlight the importance of business ethics and ethical behavior at workplace. We recommend that Metsä Group continues efforts to develop responsible corporate culture.

Helsinki, Finland, 16th February 2022

Mikael Niskala
Independent
Sustainability Practitioner

Tomi Pajunen
Independent
Sustainability Practitioner

GRI content index

Metsä Group's Sustainability Report 2021 has been prepared according to the Global Reporting initiative (GRI) Standard. Material topics have been selected based on a materiality analysis. This table specifies where you will find more information on the GRI disclosures. Mitopro Oy has externally assured all indicators presented in the report. They have confirmed the report to comply with the Global Reporting Initiative Standards in accordance criteria at the Comprehensive level.

SR Sustainability Report | AR Annual Review

Standard and disclosure	References and comments	UN Global Compact
GRI 102 GENERAL DISCLOSURES		
GRI 102 Organisational profile		
102-1 Name of the organization	SR front cover inlet	
102-2 Activities, brands, products, and services	SR front cover inlet	
102-3 Location of headquarters	AR 26	
102-4 Location of operations	AR 31	
102-5 Ownership and legal form	SR front cover inlet	
102-6 Markets served	AR 31	
102-7 Scale of the organization	SR front cover inlet	
102-8 Information on employees and other workers	SR 12-19	UNGC P6
102-9 Supply chain	SR 36-41	
102-10 Significant changes to the organization and its supply chain	AR 77, SR 36-41	
102-11 Precautionary Principle or approach	AR 16-17, SR 8-9, 26-35	UNGC P7
102-12 External initiatives	SR 8-9	
102-13 Membership of associations	SR 49	
GRI 102 Strategy		
102-14 Statement from senior decision-maker	AR 4-5	
102-15 Key impacts, risks, and opportunities	AR 16-18	UNGC P7
GRI 102 Ethics and integrity		
102-16 Values, principles, standards, and norms of behavior	SR 12-19	
102-17 Mechanisms for advice and concerns about ethics	SR 15	
GRI 102 Governance		
102-18 Governance structure	AR 108-112	
102-19 Delegating authority	AR 108-112	
102-20 Executive-level responsibility for economic, environmental, and social topics	SR 8-9	
102-21 Consulting stakeholders on economic, environmental, and social topics	SR 8-9	
102-22 Composition of the highest governance body and its committees	AR 108-112	
102-23 Chair of the highest governance body	AR 108	
102-24 Nominating and selecting the highest governance body	AR 108-112	
102-25 Conflicts of interest	AR 108-114	
102-26 Role of highest governance body in setting purpose, values, and strategy	SR 8-9, AR 108-112	
102-27 Collective knowledge of highest governance body	AR 108-112	
102-28 Evaluating the highest governance body's performance	AR 108-112	
102-29 Identifying and managing economic, environmental, and social impacts	SR 8-9	
102-30 Effectiveness of risk management processes	SR 8-9	
102-31 Review of economic, environmental, and social topics	SR 8-9	
102-32 Highest governance body's role in sustainability reporting	SR 8-9	

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Standard and disclosure	References and comments	UN Global Compact
102-33 Communicating critical concerns	SR 14-15	
102-34 Nature and total number of critical concerns	SR 14-15	
102-35 Remuneration policies	metsagroup.com/en/Financials/governance-principles/Remuneration/Pages/default.aspx	
102-36 Process for determining remuneration	metsagroup.com/en/Financials/governance-principles/Remuneration/Pages/default.aspx	
102-37 Stakeholders involvement in remuneration	metsagroup.com/en/Financials/governance-principles/Remuneration/Pages/default.aspx	
102-38 Annual total compensation ratio	SR 17	
102-39 Percentage increase in annual total compensation ratio	SR 17	
GRI 102 Stakeholder engagement		
102-40 List of stakeholder groups	SR 8-9	
102-41 Collective bargaining agreements	SR 13	UNGC P3
102-42 Identifying and selecting stakeholders	metsagroup.com/en/Sustainability/sustainability-management/stakeholder-engagement/Pages/default.aspx	
102-43 Approach to stakeholder engagement	metsagroup.com/en/Sustainability/sustainability-management/stakeholder-engagement/Pages/default.aspx	
102-44 Key topics and concerns raised	SR 14-15	
GRI 102 Reporting practice		
102-45 Entities included in the consolidated financial statements	AR 73-74	
102-46 Defining report content and topic boundaries	SR 50-51	
102-47 List of material topics	SR 8-9	
102-48 Restatements of information	SR 38	
102-49 Changes in reporting	206-1 added	
102-50 Reporting period	1 Jan - 31 Dec 2021	
102-51 Date of most recent report	24 Feb 2021	
102-52 Reporting cycle	Annual	
102-53 Contact point for questions regarding the report	SR back cover inlet	
102-54 Claims of reporting in accordance with the GRI Standards	SR 53	
102-55 GRI content index	SR 53-56	
102-56 External assurance	SR 52	
GRI 103 Management approach		
103-1 Explanation of the material topic and its Boundary	SR 8-9	
103-2 The management approach and its components	SR 8-9	
103-3 Evaluation of the management approach	SR 8-9, AR 108-112	
GRI 200 ECONOMIC		
GRI 201 Economic performance		
201-1 Direct economic value generated and distributed	SR 6-7	
201-2 Financial implications and other risks and opportunities due to climate change	AR 12-14, 17	
201-3 Defined benefit plan obligations and other retirement plans	AR 33-34	
201-4 Financial assistance received from government	AR 32	
GRI 203 Indirect economic impacts		
203-1 Infrastructure investments and services supported	SR 4	
203-2 Significant indirect economic impacts	SR 6-7	
GRI 204 Procurement practices		
204-1 Proportion of spending on local suppliers	SR 36-37	
GRI 205 Anti-corruption		UNGC P10
205-1 Operations assessed for risks related to corruption	SR 15,17, 38-39, AR 16	
205-2 Communication and training about anti-corruption policies and procedures	SR 15,17, 38-39	
205-3 Confirmed incidents of corruption and actions taken	SR 15	
GRI 206 Anti-competitive behaviour		UNGC P10
206-1 Legal actions for anticompetitive behavior, anti-trust and monopoly practices	SR 15	

Standard and disclosure	References and comments	UN Global Compact
GRI 300 ENVIRONMENTAL		
GRI 301 Materials		
301-1 Materials used by weight or volume	SR 27-37	
301-2 Recycled input materials used	SR 27, 32-33	
301-3 Reclaimed products and their packaging materials	No reclaims 2021	
GRI 302 Energy		
302-1 Energy consumption within the organization	SR 28-29	
302-2 Energy consumption outside of the organization	No data available	
302-3 Energy intensity	SR 28-29	
302-4 Reduction of energy consumption	SR 28-29	
302-5 Reductions in energy requirements of products and services	Not applicable	
GRI 303 Water and effluents		
303-1 Interactions with water as a shared resource	SR 27, 30-31	
303-2 Management of water discharge related impacts	SR 30-31	
303-3 Water withdrawal	SR 27, 30-31, 44-48	
303-4 Water discharge	SR 27, 30-31, 44-48	
303-5 Water consumption	SR 27, 30-31, 44-48	
GRI 304 Biodiversity		
304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	SR 5, 20-25, metsagroup.com/en/Sustainability/sustainable-forestry/Pages/default.aspx	
304-2 Significant impacts of activities, products, and services on biodiversity	SR 5, 20-25, metsagroup.com/en/Sustainability/sustainable-forestry/Pages/default.aspx	
304-3 Habitats protected or restored	SR 5, 20-25, metsagroup.com/en/Sustainability/sustainable-forestry/Pages/default.aspx	
304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	metsaforest.com/fi/Vinkit-ja-faktat/Pages/Talousmes%C3%A4n-luonnonhoito.aspx	
GRI 305 Emissions		
305-1 Direct (Scope 1) GHG emissions	SR 27-28	
305-2 Energy indirect (Scope 2) GHG emissions	SR 27-28	
305-3 Other indirect (Scope 3) GHG emissions	No data available.	UNGC P8
305-4 GHG emissions intensity	SR 27-28	
305-5 Reduction of GHG emissions	SR 27-28	
305-6 Emissions of ozone-depleting substances (ODS)	Not applicable.	
305-7 Nitrogen oxides (NOX), sulphur oxides (SOX), and other significant air emissions	SR 27, 31, 44-48	
GRI 306 Waste		
306-1 Waste generation and significant waste-related impacts	SR 32-33	
306-2 Management of significant waste-related impacts	SR 32-33	
306-3 Waste generated	SR 27, 32-33, 44 -48	
306-4 Waste diverted from disposal	SR 32-33	
306-5 Waste directed to disposal	SR 32-33	
GRI 307 Environmental compliance		UNGC P8
307-1 Non-compliance with environmental laws and regulations	SR 49	
GRI 308 Supplier environmental assessment		
308-1 New suppliers that were screened using environmental criteria	SR 36-41	
308-2 Negative environmental impacts in the supply chain and actions taken	SR 36-41	
GRI 400 SOCIAL		
GRI 401 Employment		UNGC P6
401-1 New employee hires and employee turnover	SR 13	
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	All our employees have the same benefits	
401-3 Parental leave	GRI indicators are not reported. We comply with local agreements and legislation.	

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Standard and disclosure	References and comments	UN Global Compact
GRI 402 Labour/management relations		UNGC P2
402-1 Minimum notice periods regarding operational changes	We comply with local agreements and legislation.	
GRI 403 Occupational health and safety		
403-1 Occupational health and safety management system	SR 18-19, 44-48	
403-2 Hazard identification, risk assessment, and incident investigation	SR 18-19	
403-3 Occupational health services	metsagroup.com/en/careers/metsa-as-employer/wellbeing-and-safety/Pages/default.aspx	
403-4 Worker participation, consultation, and communication on occupational health and safety	SR 12-13, 18-19	
403-5 Worker training on occupational health and safety	SR 18-19	
403-6 Promotion of worker health	SR 12-13	
403-7 Prevention and mitigation of occupational health and safety	SR 12-13, 18-19	
403-8 Workers covered by an occupational health and safety management system	SR 18-19, 44-48	
403-9 Work-related injuries	SR 18-19, 44-48	
403-10 Work-related ill health	SR 18-19, 44-48	
GRI 404 Training and education		
404-1 Average hours of training per year per employee	SR 13	
404-2 Programs for upgrading employee skills and transition assistance programs	SR 12-17	
404-3 Percentage of employees receiving regular performance and career development reviews	All our employees	
GRI 405 Diversity and equal opportunity		UNGC P6
405-1 Diversity of governance bodies and employees	SR 12-17, AR 110	
405-2 Ratio of basic salary and remuneration of women to men	SR 14-17	
GRI 406 Non-discrimination		UNGC P6
406-1 Incidents of discrimination and corrective actions taken	SR 14-17	
GRI 412 Human rights assessment		UNGC P1, P2
412-1 Operations that have been subject to human rights reviews or impact assessments	SR 16-17, AR 15-16	
412-2 Employee training on human rights policies or procedures	SR 12-17	
412-3 Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	SR 38-39	
GRI 413 Local communities		UNGC P1
413-1 Operations with local community engagement, impact assessments, and development programs	SR 6-7, AR 112-113	
413-2 Operations with significant actual and potential negative impacts on local communities	SR 49	
GRI 414 Supplier social assessment		UNGC P2, P4, P5
414-1 New suppliers that were screened using social criteria	SR 36-41	
414-2 Negative social impacts in the supply chain and actions taken	SR 36-41	
GRI 415 Public policy		UNGC P10
415-1 Political contributions	None were made	
GRI 416 Customer health and safety		
416-1 Assessment of the health and safety impacts of product and service categories	metsagroup.com/en/Sustainability/product-safety/product-safety-starts-with-raw-materials/Pages/default.aspx	
416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	No incidents reported during 2021	
GRI 417 Marketing and labelling		
417-1 Requirements for product and service information and labeling	metsagroup.com/en/Sustainability/product-safety/product-safety-starts-with-raw-materials/Pages/default.aspx	
417-2 Incidents of non-compliance concerning product and service information and labeling	No incidents reported during 2021	
417-3 Incidents of non-compliance concerning marketing communications	No incidents reported during 2021	
GRI 418 Customer privacy		
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	No complains regarding breaches of customer privacy 2021	
GRI 419 Socioeconomic compliance		
419-1 Non-compliance with laws and regulations in the social and economic area	SR 19	

Metsä Group's annual reporting includes four parts: Metsä Group's Annual Review, Brochure and Sustainability Report, as well as Metsä Board's Annual Report and Sustainability Report. Each report is available in both Finnish and English.

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