

METSÄ GROUP

Sustainability Report **2019**



Metsä

Sustainable growth from Metsä

Metsä Group is a Finnish forest industry company that operates on the international market. We focus on wood supply and forest services, wood products, pulp, paperboards, tissue and greaseproof papers.

In 2019, Metsä Group's sales totalled EUR 5.5 billion and it employs approximately 9,300 people. The company has 36 production units in eight European countries.

METSÄ GROUP SALES* EUR 5.5 BILLION | PERSONNEL 9,300
RENEWABLE ENERGY 27.7 TWH

OWNED BY 103,000 FINNISH FOREST-OWNERS

METSÄ FOREST	METSÄ WOOD	METSÄ FIBRE	METSÄ BOARD**	METSÄ TISSUE
WOOD SUPPLY AND FOREST SERVICES	WOOD PRODUCTS	PULP AND SAWN TIMBER	PAPERBOARD	TISSUE AND GREASEPROOF PAPERS
Sales EUR 2.0 billion Personnel 840	Sales EUR 0.4 billion Personnel 1,500	Sales EUR 2.2 billion Personnel 1,300	Sales EUR 1.9 billion Personnel 2,400	Sales EUR 1.0 billion Personnel 2,700
Holding Metsäliitto Cooperative 100%	Holding Metsäliitto Cooperative 100%	Holding Metsäliitto Cooperative 50.1% Metsä Board 24.9% Itochu Corporation 25.0%	Holding Metsäliitto Cooperative 45.7% share of votes 66.3%	Holding Metsäliitto Cooperative 100%

METSÄ SPRING INNOVATION COMPANY

* Internal sales eliminated
** Listed on Nasdaq Helsinki

Contents

2	2019 in a nutshell
4	Review by the President and CEO
6	Strategy of profitable growth
8	Sustainability management
10	Metsä Group's strategic sustainability 2030 objectives
14	Our contribution to the UN Sustainable Development Goals
16	Circular bioeconomy through the value chain
20	Making more from less through research and development
21	Metsä Spring reshaping the forest-based bioeconomy
22	WE CREATE WELL-BEING
24	Business integrity
26	Creating value
28	Being part of the society
30	Participation in policy debates
32	Engaging employees
36	Safety and well-being of employees comes first
38	WE BRING THE FOREST TO YOU
40	The forest reserves of Europe and Finland are growing
44	Forest certification is proof of sustainable origin of wood
48	Promoting biodiversity every day
50	WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT
52	Material streams
54	Towards fossil free mills
56	Minimising emissions to air and water
58	WE OFFER SUSTAINABLE CHOICES
60	Improving supply chain sustainability
63	Towards fossil free raw materials
64	BUSINESS AREAS
66	Metsä Forest
70	Metsä Wood
74	Metsä Fibre
80	Metsä Board
88	Metsä Tissue
97	DATA AND ASSURANCE
97	Main memberships in third-party organisations
97	Environmental permit limit violations
98	Scope of the report
100	Independent assurance statement
101	GRI content index



Read more
p. 26

CREATING VALUE IN SOCIETY

Metsä Group is an important part of society and creates value locally, nationally and internationally. We strive to be a responsible and active member in the communities where we operate.



Read more
p. 48

PROMOTING BIODIVERSITY EVERY DAY

Consideration for nature values and biodiversity is an integral part of sustainable forest management measures and wood supply.



Read more
p. 56

MINIMISING EMISSIONS TO AIR AND WATER

Efficient control and mitigation of emissions to air and water are the cornerstones of managing the environmental impacts of production.

PUBLISHER

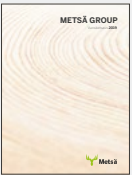
Metsä Group

These publications are available online at www.metsagroup.com.

Please email any feedback to communications@metsagroup.com or communicate it to us via social media [@MetsaGroup](https://twitter.com/MetsaGroup).



We are Metsä Group 2019 Brochure



Metsä Group 2019 Annual Review



Metsä Group 2019 Sustainability Report



Metsä Board 2019 Annual Report

2019

in a nutshell

HIGHLIGHTS



STRATEGIC SUSTAINABILITY 2030 OBJECTIVES WERE LAUNCHED

Metsä Group's strategic sustainability objectives for 2030 guide our path towards a climate neutral society. The objectives cover four themes: well-being, forest, environment and products and supply chain. We measure and report our progress transparently and regularly.



INVESTMENT PLAN WORTH EUR 2 BILLION

We launched an investment plan for a new bioproduct mill at Kemi, a new sawmill at Rauma in Finland and the first renewals at the Husum pulp mill in Sweden. The total value of these investments will amount to approximately EUR 2 billion during 2019–2023. The positive employment impact in the direct value chains would be roughly 2,000 jobs. In December 2019, the Rauma sawmill was granted an environmental permit.



OUR FOREST VISITOR CENTER NEMUS FUTURUM OPENED

Situated in the Kirkniemi area in Lohja, Finland, Nemus Futurum showcases the Finnish forests in a completely new way through cutting edge technology. Our guides introduce visitors to sustainable Finnish forest management, sustainable use of forests, forest nature and our bioproducts.

85%

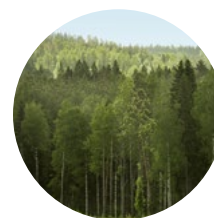
OF THE WOOD USED
WAS CERTIFIED

90%

OF FUELS USED IN PRODUCTION
WERE RENEWABLE
Scope 1

79%

OF FOREST OWNERS
CHOSE HIGH
BIODIVERSITY STUMPS



GREEN FINANCE FRAMEWORK WAS LAUNCHED

The Green Finance Framework integrates environment, sustainability and climate change mitigation to the Group's investments and related financing activities.

CHALLENGES



MILL SAFETY IS ALSO SAFETY FOR NEIGHBOURHOODS

Improved safety at our mills also means improved safety to many of our stakeholders. We manage and take precautionary actions to mitigate the risks related for example to traffic close to the mills, use of chemicals, emissions to water and air, product safety and fire safety. Still there are incidents, such as occasional oil or chemical spills, which means that continuous improvement is needed. It is our priority to focus on preventing risks and manage safety issues comprehensively to be a trusted neighbour and a reliable player in the society.



CONTINUOUSLY IMPROVING WORK SAFETY

One of our strategic sustainability 2030 objectives is to have an accident free work environment. In 2019, workplace safety improved in terms of lost time accident frequency (LTA1). The most serious setback was a fatal work accident at our Zilina production site in Slovakia. We continue our extensive work to prevent all workplace accidents and significantly improve work safety.

REVIEW

by the President and CEO

Metsä Group has an 85-year history as a builder of, and forerunner in, sustainable forestry and forest-based industry. During this time, we have grown into an important forest industry operator. The balanced consideration of all aspects of sustainability and their active developments are of key importance to us. Sustainable development plays a major role in the planning and implementation of Metsä Group's strategy.

In line with the Paris Agreement, we are committed to bearing our own responsibility in the mitigation and prevention of climate change throughout the value chain. We support the achievement of the UN's Sustainable Development Goals (SDGs) in many respects. To the development challenges set by society, we respond with our own work.

We live in a world of demanding international competition, and this is why maintaining financial sustainability requires the constant and long-term renewal of our business operations. From the perspective of society and the environment, the realisation of sustainability requires the company's financial standing to be sound. With respect to social sustainability, we recognise our impact on society and particularly our impact on the stakeholders close to the company, such as the forest owner-members of our parent company Metsäliitto Cooperative and the Group's personnel as well as the end users of our consumer products. This also includes ensuring responsible business practices in our supply chain.

Taking all of this into account, Metsä Group is in good shape to further invest in its competitiveness. In 2015–2018, we carried out an approximately EUR 2 billion investment programme. In 2019, we announced a new EUR 2 billion investment programme aimed at increasing sustainable bio-circular economy and welfare. The programme is currently in a pre-engineering phase. As part of this phase, we are pursuing a clear reduction in the use of fossil fuels and the creation of new jobs, particularly in rural areas.

OUR OPERATIONS ARE GUIDED BY AMBITIOUS SUSTAINABILITY OBJECTIVES

New and ambitious sustainability objectives have guided our operations from the beginning of 2019. The objectives extend up to 2030. Their achievement requires hard work and the creation of new solutions. With this effort, we want to both promote sustainable development, and to contribute to the required solutions. Our objectives cover the entire value chain from forest to customers – more carbon stored in forests and our products, the operation of mills entirely without fossil fuels and the provision of new fossil free materials to customers.

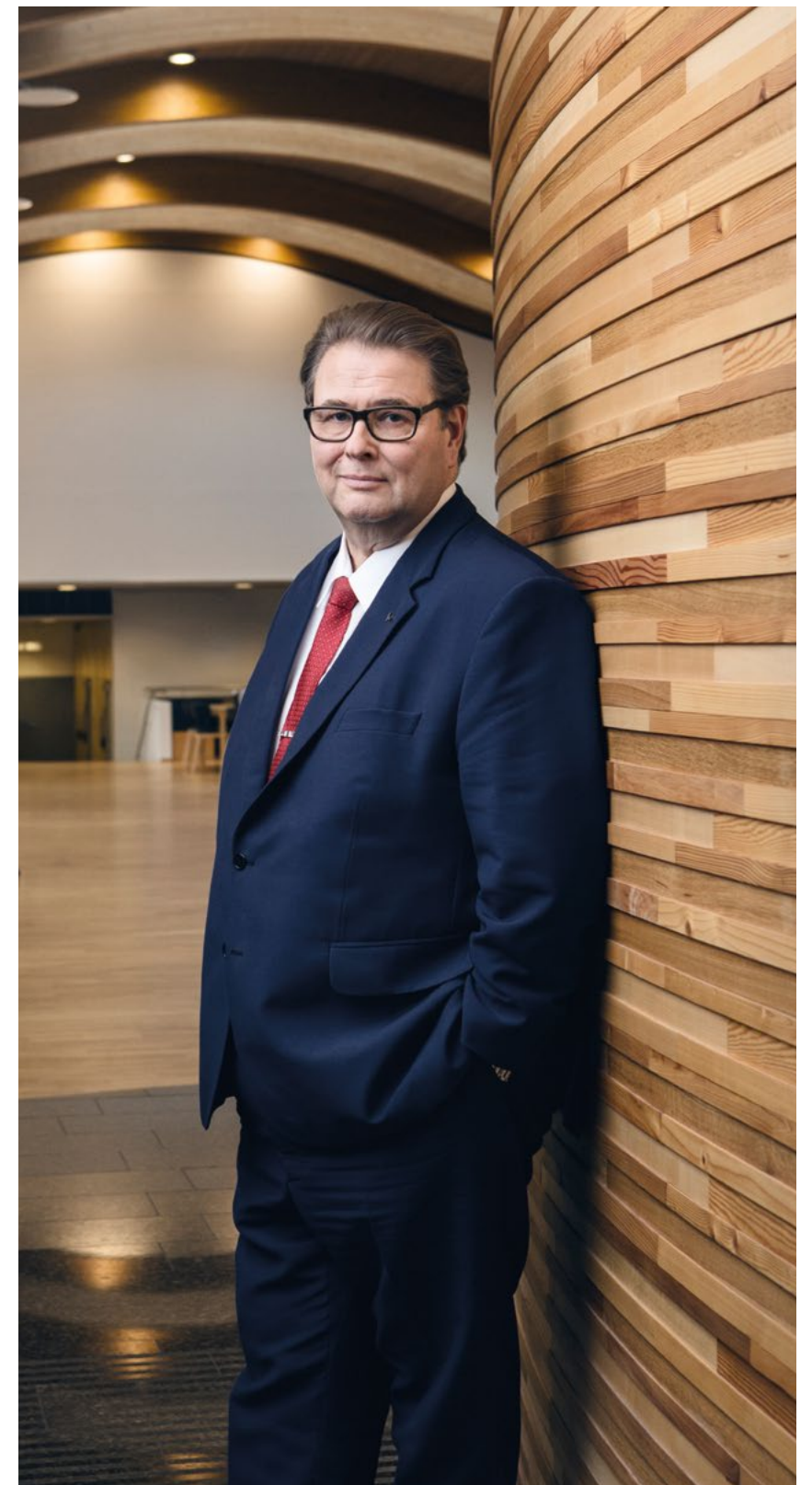
Renewal and the achievement of ambitious objectives require the continuous development of our way of working. It is important for us to operate efficiently on a common ethical basis. Our ethical foundation is our Code of Conduct, which we renewed in early 2019 and which we extensively trained our personnel during the year. Regarding internal development, safety at work is one of the most important issues. It is of primary importance that we are a safe workplace for every employee. We have carried out a lot of proactive work and developed our ways of working. In 2019, workplace safety improved in terms of lost time accident frequency (LTA1). Occupational accidents decreased slightly although we also had one fatal occupational accident. Our wide-ranging work to improve safety at work naturally continues, and our target is zero occupational accidents.

The work to improve our performance in sustainable development is never finished.

We also require our partners to improve sustainability in their business operations. The external evaluation of our work and achievements together with feedback are important. Metsä Fibre has participated in the global EFQM assessment and as a result of which received a significant sustainable development award in 2019. Metsä Board has once again been presented with the respected EcoVadis recognition. While awards and recognition naturally encourage us to continue our work, development feedback we receive is even more important. The work to improve our performance in sustainable development is never finished.

Espoo, Finland, 28 January 2020

Ilkka Härmä
President & CEO
Metsä Group



Strategy of PROFITABLE GROWTH

The world’s population is growing and competition for energy and natural resources is becoming tighter, which is why resources must be used more efficiently. As a forerunner of the bioeconomy, the changes in the operating environment create versatile opportunities for Metsä Group.

- 

More info on
our Business areas
pages 64–97
- 

More info on
circular economy
pages 16–19

Metsä Group is in a phase of strong, profitable growth. Our business is based on renewable raw materials and recyclable products, in which wood from northern, sustainably managed forests and our profound expertise provide a competitive advantage. We focus on wood supply and forest services, wood products, pulp, paperboard as well as tissue and greaseproof papers.

We develop our operations responsibly, always taking into account ecological, social and economic aspects. We improve the growth of forests, expand our industrial operations sustainably and contribute to the shift from fossil products to renewables. The way we see it, wood is the solution to many challenges in the future.

VISION
To be the preferred partner in developing sustainable business.

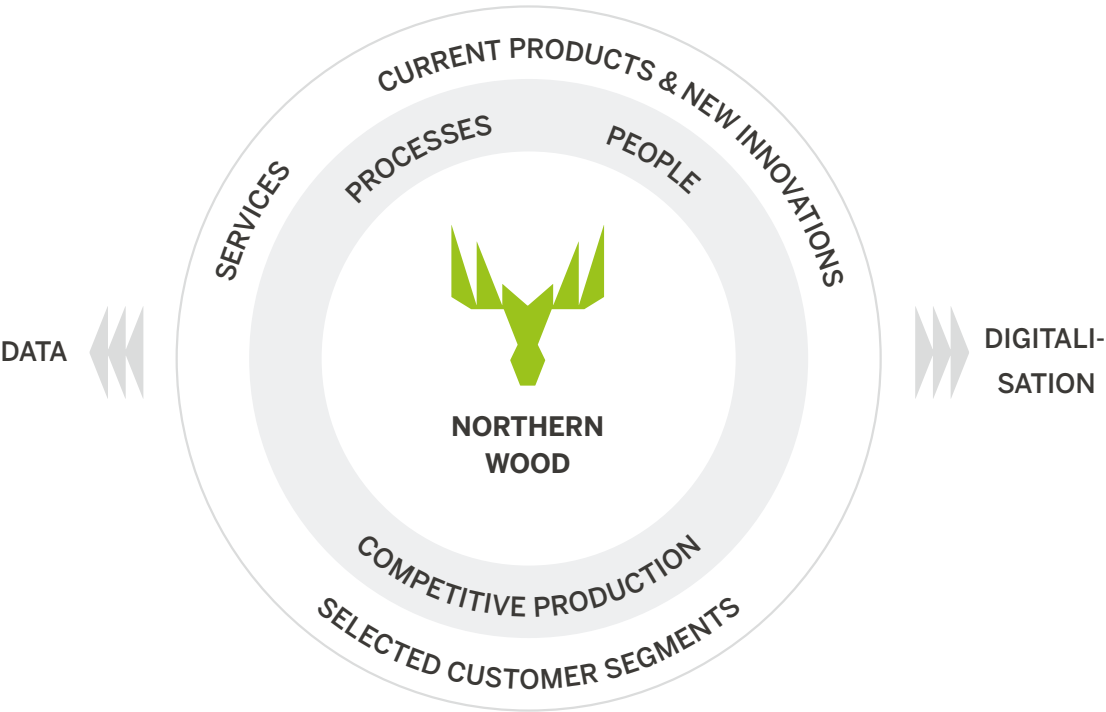
PURPOSE
Advancing bioeconomy and circular economy by efficiently processing northern wood into first-class products.

VALUES
Reliability

Cooperation

Renewal

Responsible profitability



NORTHERN WOOD

Climate change concerns us all, and our future must be based on the use of renewable resources. Northern wood is the world’s best renewable raw material and the core of our business. We ensure that the wood we use comes from sustainably managed forests. Forests, that grow more than they are used. Most of the wood we source comes from the forests of our Finnish owner-members’ forests.

PRODUCTS AND NEW INNOVATIONS

Our carbon storing and recyclable products made from renewable raw materials offer sustainable solutions for global challenges. Our markets are global. We aim to provide our customers with a first-class experience through close cooperation and with the best digital tools. We focus on market-based product development by expanding our current product portfolio and investing in new business opportunities through our innovation company Metsä Spring, for example.

COMPETITIVE PRODUCTION

As a result of systematic investments, our production units are cutting edge of the industry, be the measure environmental performance, energy efficiency or profitability. We invest in fossil free mills and resource efficiency. We develop our operations efficiently all business areas together as a unified Group.

PEOPLE

Our operations are based on continuous improvement, which gives our personnel the opportunity to increase their competence and discover new strengths. The majority of our personnel’s development is made up of on-the-job learning, which we support through job rotation and encouraging multiple skill sets. Good leadership is the cornerstone of our success.

SUSTAINABILITY

management

Metsäliitto Cooperative is a Finnish cooperative and Metsä Group’s parent company, owned by 103,000 forest-owner members. In Metsäliitto Cooperative, the highest administrative body to steer sustainability is the Board of Directors. The President & CEO is responsible for strategic sustainability in Metsä Group operations.

More info on sustainability 2030 objectives pages 10–13

More info on UN Sustainable Development Goals pages 14–15

The Metsäliitto Cooperative Board of Directors approves all group policies, long-term strategic objectives, targets and guidelines. Metsä Group’s President and CEO manages the Group’s operations in accordance with the law and the cooperative’s rules, as well as in accordance with the decisions and instructions of the Board of Directors and the other administrative bodies. The President and CEO is assisted by the Group’s Executive Management Team, which jointly oversees the implementation of strategy, in which sustainability is in a key role.

The importance of sustainability is rising due to the increasing, global discussion on climate change. To be able to operate in a future of tighter climate regulations, companies need to reliably demonstrate their long-term scenarios in which different climate change impacts shape both the operational as well as market environment. Metsä Group sees that climate change for example increases the growth of forests but at the same time also adds the risk of pests and storm damage. Regarding our production sites in northern Europe, the availability of water resources most likely will remain on a good level. The demand of wood-based, sustainably produced goods will increase and at the same time, companies are expected to provide reliable information about the sustainability of the value chain.

2030

STRATEGIC SUSTAINABILITY 2030 OBJECTIVES

Sustainability is in a core role in Metsä Group’s strategy which was announced in early 2019. It is central when developing our operations and in advancing bioeconomy and a circular economy by efficiently processing northern wood into first-class, carbon-storing and recyclable products.

In early 2019, we also renewed our long-term sustainability objectives, which we aim to achieve by 2030. The objectives support the UN Sustainable Development Goals to which we can most contribute. The 2030 sustainability objectives will help guide us in prioritising our sustainability related effort and work.

We are committed to increasing the role of forests as carbon sinks as well as to increasing the amount of carbon stored in products. To support the development of a low-carbon society, we invest in our mills to generate no fossil CO₂ emissions. To improve resource efficiency, we will continue the work to use energy and process water more efficiently. All the production side streams will be used for added-value products. We will continue to work towards fossil free raw materials for our products by 2030.

In our own operations, we further develop safety at work, as well as work towards an overall improved ethical atmosphere. Our suppliers operating in our supply chain are expected to share our sustainability expectations and to work towards improving their own practices, where needed.

Each objective is systematically followed, to drive sustainable future development. The ambitious level of sustainability objectives and actions has been risen to show our strong commitment to offering means and solutions for resolving global challenges. The objectives are operationalised by our various business areas and functions. They have created roadmaps to guide development in relevant objectives, as well as indicators to inform us of their progress. The Metsä Group Sustainability Process Management Team regularly monitors progress and ensures that we are on the right track.

Comprehensive sustainability management has strong roots in Metsä Group, which is an excellent starting point to achieving the new objectives. We have been a signatory of the UN Global Compact sustainability initiative since 2003 and support its ten principles regarding human rights, labour, environment and anti-corruption. We report our progress on an annual basis in this report. In addition to shared global sustainability goals and initiatives, the views and expectations of our primary stakeholders guide the path for our sustainability work. We also have defined UN Sustainable Development Goals (SDGs) to which we contribute the most through our operations.

INTEGRATED SUSTAINABILITY

We operate a model of sustainability management, which is based on the notion of strategic, operational, and cultural integration. Sustainability concerns everybody at Metsä Group and each of us plays a role in contributing to it. The process model attempts to ensure that all three dimensions of sustainability – economic, social, and ecological – are considered across our operations by default, and that they become an inherent part of planning and decision-making.

The path towards integrated sustainability, as described above, requires conscious effort. Various measures are ongoing to implement the model, such as the roadmaps that business areas and functions have developed to translate the 2030 objectives into tasks as part of daily work. A specific Sustainability Process Management Team assesses progress made towards our 2030 objectives. It consists of business area representatives and function heads who are responsible for ensuring that the sustainability objectives are implemented in the organisation and reporting back on progress, as well as Metsä Group’s VP, Sustainability, and the Sustainability Process owner, SVP, Corporate Affairs.

SUSTAINABILITY GOVERNANCE MODEL IN METSÄ GROUP

Governance body	Responsibilities
Metsäliitto Cooperative Board of Directors	is the highest management body approving policies and long-term strategic objectives for sustainability.
Metsä Group CEO and President	is the highest representative of the company to give the Group’s commitment to sustainability and its strategic significance.
Metsä Group Executive Management Team	prepares initiatives to the Board of Directors and decides of topics elaborated from the sustainability process management team.
Metsä Group Sustainability Process Management Team	consists of the business area representatives and function heads that are responsible for ensuring that the sustainability targets are implemented in the organisation, as well as reporting back on the progress.
Sustainability	is implemented through the business areas’ and functions’ processes and annual plans to daily actions.



METSÄ GROUP’S MATERIAL TOPICS:

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

Phrasing of the material topics has been updated to correspond Metsä Group’s current terminology.

METSÄ GROUP'S

strategic sustainability 2030 objectives

Sustainability is part of everything we do. The foundation of our sustainability work consists of four themes covering all our operations. With the strong commitment to our new strategic sustainability 2030 objectives we are building a path to a climate neutral society. Our sustainability work supports reaching the global Sustainable Development Goals (SDGs) set by the United Nations.

SUPPORTING THE UN SUSTAINABLE DEVELOPMENT GOALS



2030

In this report this symbol is used to indicate the themes that are linked with our strategic sustainability 2030 objectives.



2030

ON OUR WAY TOWARDS
THE STRATEGIC SUSTAINABILITY 2030 OBJECTIVES

WE CREATE WELL-BEING

Metsä Group’s operations create value, both economic and social, to stakeholders at a local, national and international level. We strive to be a responsible and active member in the communities where we operate. We value our employees and invest in their professional development, well-being and safety.



Target	Progress	Comment
Responsible corporate culture Ethics barometer: 100%	The ethics barometer is in progress and will be launched during 2020.	In 2019 ethical corporate culture has been supported by renewing our Code of Conduct. 95% of Metsä Group’s personnel went through training for the new Code of Conduct. The ethics barometer will be strongly linked with the Code of Conduct.
Accident free work environment Lost time accident rate (LTA1): 0	During 2019 there were 154 accidents that required min. one day absence from work. LTA1 was 5.9. There was one fatal accident at our Zilina production site in Slovakia.	We are continuing our extensive work to prevent all work accidents and improve safety. Key steps towards an accident free work environment are proactive safety work, recognising risks, intervention when unsafe work is detected and highlighting the significance of evaluating personal risks.

WE BRING THE FOREST TO YOU

Metsä Group’s main raw material, wood, comes from sustainably managed northern forests where growth exceeds use. We always know the origin of the wood we procure and ensure sustainable forest management with forest certification. We safeguard biodiversity of forests by various means.



Target	Progress	Comment
Increasing the amount of carbon stored in forests and products Area of regeneration and management of young stands: +30% vs. 2018 Amount of carbon stored in products (t): +30% vs. 2018	+0% –4.3%	Our sustainable forest management supports the strong growth of forests. We invest in long-lasting wood products that store carbon for a long time. In 2019 the production of sawn timber and wood products decreased.
Safeguarding biodiversity: Increasing the amount of decayed wood (high biodiversity stumps in 90% of thinnings and regeneration logging sites and retention trees in all regeneration logging sites)	In 2019, high biodiversity stumps were left in over 79% of thinnings and regeneration logging sites. Retention trees where left at 94% of all regeneration logging sites.	From 2020 onwards, forest owners are encouraged to leave four high biodiversity stumps per hectare. Increasing the amount of decayed wood is an important measure in safeguarding biodiversity.

WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT

Metsä Group strives to operate as resource wisely as possible and minimise the impacts on the environment. Each part of the wood is utilised to the most valuable purpose. We optimise the use of all resources needed for production. Our target by 2030 is that our mills use no fossil fuels and cause no fossil CO₂ emissions (Scope 1) and that all production side streams are utilised.



Target	Progress	Comment
Fossil free mills Fossil CO ₂ emissions: 0 tonnes	Currently 90% of the fuels used in production are bio-based, and mostly from production side streams. In 2019 the amount of fossil CO ₂ emissions was 717 000 tonnes.	We have made a roadmap to operate with no fossil fuels by 2030. The roadmap consists of investment plans and continuous development actions in operations.
Resource efficient production Utilisation of side streams: 100% Process water use per product tonne (m ³ /t): –25% vs. 2018	Currently we utilise 92% of the production side streams. In 2019, process water use per product tonne has decreased 2% compared to the level of 2018.	We are constantly looking for ways to utilise our side streams even better through partnerships and R&D. We are continuously investing in increasing the environmental efficiency of our production.

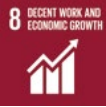
WE OFFER SUSTAINABLE CHOICES

Metsä Group’s products made from renewable raw materials help to reduce dependence on fossil resources and offer sustainable choices for everyday life. We want to ensure that our suppliers follow our high ethical standards. We are working towards not using any fossil oil based raw materials or packaging materials.



Target	Progress	Comment
Fossil free raw materials Share of fossil free raw materials and packaging materials: 100%	In the end of 2019, 99.7% of our raw materials and packaging materials were fossil free. Our target in our contribution towards a low carbon society is that by 2030 we will not be using any fossil oil-based raw materials.	We are looking for fossil free solutions to replace for example oil-based latex used in paperboard and phenol-based glues used in wood products.
Sustainable supply chain Sustainable suppliers: 100% Traceability of raw materials: 100%	By the end of 2019, 93% of our purchases were covered by our Supplier Code of Conduct. The sustainability of suppliers is managed and followed also through risk analyses, audits and self-assessments. 89% of our raw materials were traceable.	The Supplier Code of Conduct covers matters related with e.g. corruption, child labor and human rights violations. Our main raw material, wood is 100% traceable. We will work towards ensuring that we know the origin of all our raw materials.

OUR CONTRIBUTION TO THE UN SUSTAINABLE DEVELOPMENT GOALS

SDG	Description of most relevant targets		How Metsä Group contributes to reaching the goals	Sections where we describe our work
	6.3	Improve water quality, wastewater treatment and safe reuse	We clean the water we use with the best methods available. Cooling water circulates in closed loops.	Minimising emissions to water Sustainable forest management
	6.4	Increase water use efficiency and ensure freshwater supplies	Our target is to decrease the use of process water by 25% by 2030. We operate in water rich areas and we do not impair any other parties' access to water.	
	6.6	Protect and restore water-related ecosystems	Sustainable forest management recognises the important role of forests in hydrological circulations.	
	7.2	Increase global percentage of renewable energy	We produce over 15% of Finland's renewable energy. The majority of our operations is run with renewable energy. Realised and planned investments play a key role in increasing the share of renewable energy in society.	Creating value Fossil free mills Investments
	7.3	Double the improvement in energy efficiency	We focus on further improving energy efficiency in our operations.	
	8.1	Sustainable economic growth	We employ over 9,000 people directly. Indirect employment is estimated to be three times more. The majority of welfare that Metsä Group creates goes to rural areas. 5% of Finland's export value comes from Metsä Group mills. We annually pay wages over 600 million euros. In addition, we buy wood and harvesting and logistics services to a value of close to 1 billion euros.	Creating value Resource efficiency Business integrity Safety
	8.2	Diversify, innovate, and upgrade for economic productivity	We focus on industrial efficiency, wise use of resources and high added value products and innovations.	
	8.4	Improve resource efficiency in consumption and production	We operate resource-wisely. Our wood products efficiently store carbon for their entire lifespan. Our fibre-based products are recyclable.	
	8.7	End modern slavery, trafficking and child labour	We value high ethical standards. Our objective is to ensure all of our suppliers operate sustainably by 2030.	
	8.8	Protect labour rights and promote safe working environments	Safety at work is our key priority. Our objective is zero accidents. We have extensive improvement programmes to support further development.	

	9.2	Promote inclusive and sustainable industrialisation	We have announced major investment programmes to support the forest industry and ensure its competitiveness in the long run.	R&D&I Investments Resource efficiency Fossil free mills
	9.4	Upgrade all industries and infrastructures for sustainability	All the investments we make build a path to a sustainable society. We use the most modern technologies to minimise emissions and optimise resource efficiency. Our objective is to have fossil free mills and use only fossil free raw materials by 2030. We are actively innovating for example via networks and by our own innovation company Metsä Spring that will start the production of wood-based textile fibre at the demo plant in Äänekoski in 2020.	
	12.2	Sustainable management and use of natural resources	We only use wood from traceable and sustainable sources. We know the impacts of our operations throughout the value chain and communicate them transparently.	Sustainable forest management Resource efficiency Fossil free mills Circular economy Product safety Described in business area sections
	12.4	Responsible management of chemicals and waste	In ensuring safety at work and product safety, responsible management of chemicals plays a key role.	
	12.5	Substantially reduce waste generation	Our approach is that all production side streams are utilised by 2030. We optimise the use of all resources and minimise waste generation. All waste fractions are treated accordingly. Management systems support this comprehensive work.	
	12.6	Encourage companies to adopt sustainable practices and sustainability reporting	We work closely with our partners and suppliers and expect them to commit to our Supplier Code of Conduct. We work towards ensuring that by 2030 all our suppliers are sustainable in their operations.	
	13.2	Strengthen resilience and adaptive capacity to climate-related disasters	Our sustainable forest management practices ensure that forests grow more than they are used and that biodiversity is safeguarded. Our objective is to contribute to a low carbon society. By 2030 our mills will be fossil free and we will no longer use fossil oil based packaging or raw materials. We are active in stakeholder dialogue and policy debates and offer our expertise to policy development either directly or through industry associations.	Sustainable forest management Fossil free mills Fossil free raw materials Stakeholder dialogue
	15.1	Conserve and restore terrestrial and freshwater ecosystems	Safeguarding biodiversity is one of our strategic sustainability objectives. Our sustainable forest management practices help ensure that our forest use does not cause deforestation or harm natural habitats. We support forest growth. We plant four seedlings per each harvested tree. Ensuring forest growth and safeguarding biodiversity are also important ways to prevent insect and pest damages.	Sustainable forest management Biodiversity Metsä Forest
	15.2	End deforestation and restore degraded forests		
	15.5	Protect biodiversity and natural habitats		
	15.8	Prevent invasive alien species on land and in water ecosystems		

CIRCULAR BIOECONOMY

through the value chain

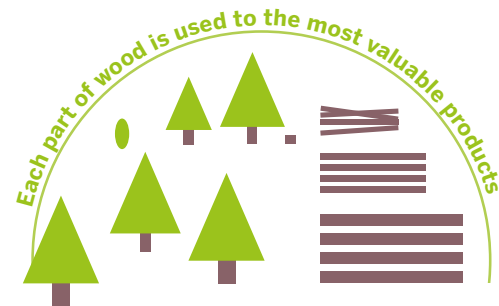
In resource-wise circular bioeconomy, renewable resources are sourced sustainably and processed into products that replace the use of fossil raw materials. In circular economy generally, materials, products and side streams are kept in use and circulation as long as possible and by reusing and re-utilising the value of the raw material is maintained. To decrease fossil CO₂ emissions, a clear shift from the use of fossil fuels to renewable energy solutions is needed.



More info on sustainable forest management pages 38–49

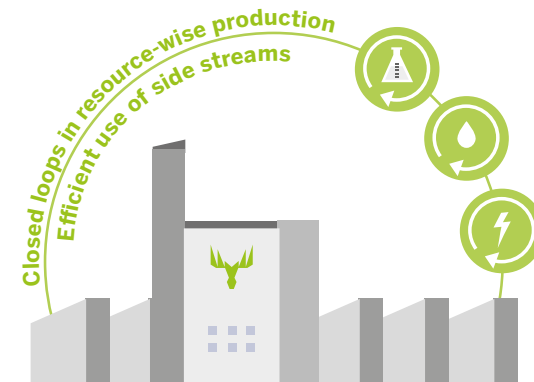


More info on efficient use of resources pages 50–57



Sustainable forest management

- Renewable raw material from sustainable sources
- Sustainability ensured and biodiversity safeguarded



Industrial circular economy

- Ecosystem partners play a key role in improving resource utilisation
- Closed water and chemical loops in production
- Renewable energy

OUR OPERATIONS ARE BASED ON THE SUSTAINABLE USE OF RENEWABLE RESOURCES AND EFFICIENT CIRCULATIONS

- We ensure sustainable forest management, wood supply and operations in forests. Where we operate, forests grow more than they are used. We do not cause deforestation. In regeneration fellings, we plant four seedlings for each harvested tree. We actively accelerate the regeneration of forests and support their strong growth. Sustainable forest management practices are applied in all wood procurement.
- The wise use of resources steers our operations. Each part of wood is used for the most valuable product. All resources, such as raw materials, energy, water and chemicals are used efficiently. Resource efficiency is continuously improved for example, by closing water and chemical circulations. A great majority of our production is run with renewable energy. Excess renewable energy is supplied to accommodate the needs of society.
- Production side streams are utilised efficiently for material use or energy. For example, tall oil and turpentine are valuable products that have global markets. Fertilizers and some other side stream based products are preferably used locally and by partners.



PRODUCTS

high added value

- Wood products
- Pulp
- Paperboard
- Tissue
- Greaseproof paper
- Pulp-based textile*
- Tall oil
- Turpentine
- Biocomposites*
- Biochemicals
- Renewable energy

basic value

- Fertilisers*
- Soil improvement*

* R&D, collaboration with partners

TOWARDS METSÄ GROUP STRATEGIC SUSTAINABILITY 2030 OBJECTIVES

ALL PRODUCTS REPLACE THE USE OF FOSSIL RESOURCES

WOOD PRODUCTS STORE CARBON

RECYCLABLE PRODUCTS REPLACE USE OF PLASTICS

SIDE STREAMS ARE EFFICIENTLY UTILISED

- We produce circular economy products that replace the use of fossil-based resources. The wood products store carbon for example in buildings for up to centuries. All of our fibre based products are recyclable. They are made of fresh fibre to meet the highest quality and purity requirements. Fresh fibre has an important role in keeping fibre circulation vital and enabling recycling. A wood fibre can be used up to seven times. Recycled fibre suits products with lower purity requirements.
- There is a significant potential for new bioproducts, such as a wood-based textile fibre. It could replace the use of fossil oil-based textiles or water critical cotton. Metsä Group's demonstration plant for wood-based textile fibres was built in 2019 and the test runs are starting as of 2020. Biocomposites reduce the use of plastics in various products.

SIDE STREAMS
(~5% OF THE PRODUCTION)

UTILISATION OF PRODUCTION SIDE STREAMS
WITH GROWING MARKET POTENTIAL

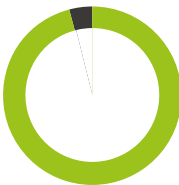
About 690,000 tonnes,
92% of side streams



■ Energy utilisation (process sludges)	40
■ Material utilisation (ashes, lime, fibre rejects, mixed materials)	29
■ Industrial use (lime dust)	19
■ Fertilising and soil improvement (e.g. sand bark, ash, fiber fraction)	8
■ Fuel (recovered fibres)	4

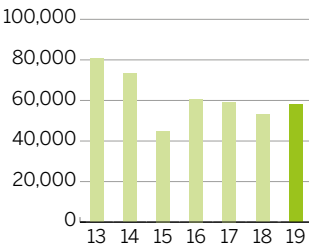
WASTE
WASTE WHOSE UTILISATION IS UNDER
DEVELOPMENT

About 60,000 tonnes,
about 8% of side streams



■ Landfill waste (green liquor dreg)	96
■ Hazardous waste treatment (e.g. hydraulic and lubricating oils, paints, colour pastes, lab chemicals)	4

LANDFILL WASTE
WET TONNES



UTILISATION OF SIDE STREAMS IMPROVED WITH
THE PARTNERS

In the earlier, linear economy model the use of resources has not been sufficiently wise. In circular economy, raw materials and products are reused or recycled, and their value endures for as long as possible. Partnerships and knowing the features of the side stream properly help in using resources more efficiently.

The utilisation of industrial side streams is an important way to improve resource efficiency. Our partner network plays a significant role in it. Cooperation with smaller and industrial partners is key to creating efficient ecosystems as part of sustainable bioeconomy and circular economy. Resource efficiency and a broad network of partners enables us to make bioproducts for a variety of end uses: wood products, pulp for board, papers, wood-based textiles, composite materials for the electronics industry, and raw materials for paints, tyres, perfumes, agriculture fertilisers and many more.

2030

With collaboration and partners, Metsä Group aims to achieve its objective of 100% utilisation of production side streams by 2030.

Of all the production, the share of side streams accounts to some 5%. Of this, the utilisation rate was 92% in 2019. The utilisation is split up to material use, fertilizers and soil improvement, industrial use and energy. The share of fertiliser use has been increasing constantly during the past five years. At the moment 8% of Metsä Group's utilised side streams are used as fertilisers or landscaping materials. The annual amount of landfilling has decreased approximately 20% over the last five years.

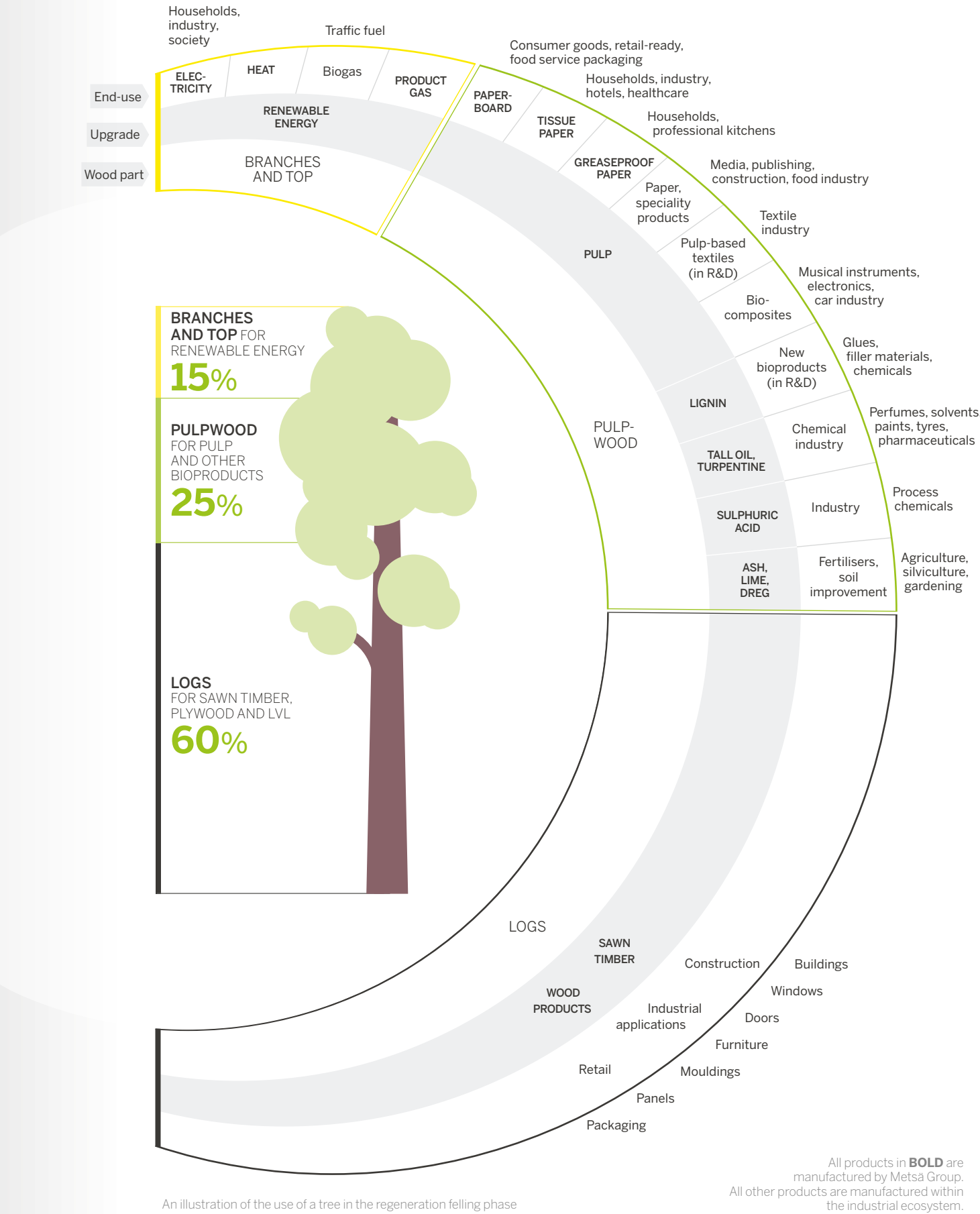
Metsä Group has still work to do in developing solutions for utilisation of green liquor dregs and minimising its landfilling. Being able to take advantage of the full potential of production side streams requires scientific research and cross-industry collaboration.

CASE

Nutrients
return to forest

Some 35,000 tonnes of wood-based and mixed ash is generated annually as a side stream of energy production at Metsä Group's mills. With a systematic work over the long term, ashes from the combustion are today used as forest fertilisers for peatlands.

With the experience of over 20 years, we know the ash suits well to fertilise forest peatland sites where growth is hindered because of deficiencies in phosphorus and potassium. The nutrients in the ash dissolve slowly so the effect is long lasting compared to many other fertilisers.



An illustration of the use of a tree in the regeneration felling phase

MAKING MORE FROM LESS

through research and development

More info on circular economy pages 16–17

More info on Metsä Spring page 21

Wood is one of the most versatile raw materials in the world and has a variety of uses, many of which are still under development. Some of the main objectives for our R&D work are promoting circular economy, replacing fossil materials with renewables and meeting future needs with new products and services.

Softwood from northern forests is a renewable and valuable, yet limited, resource that has a large variety of uses, from raw material e.g. for buildings and packaging products, to future innovations. In this era of increasing global demand for products made of renewable materials, Metsä Group is engaged in several research and development networks and projects to create new solutions to replace the use of fossil resources. Through Metsä Spring, our innovation company established in 2018, we are looking for new business opportunities in sustainable forest-based bioeconomy.

GLOBAL TRENDS DRIVE OUR R&D&I WORK

Metsä Group’s research, development and innovation (R&D&I) work is driven by global trends, such as climate change, resource scarcity and changes in consumer behaviour. We have set three focus areas for our R&D&I work. Circular economy and resource efficiency emphasises

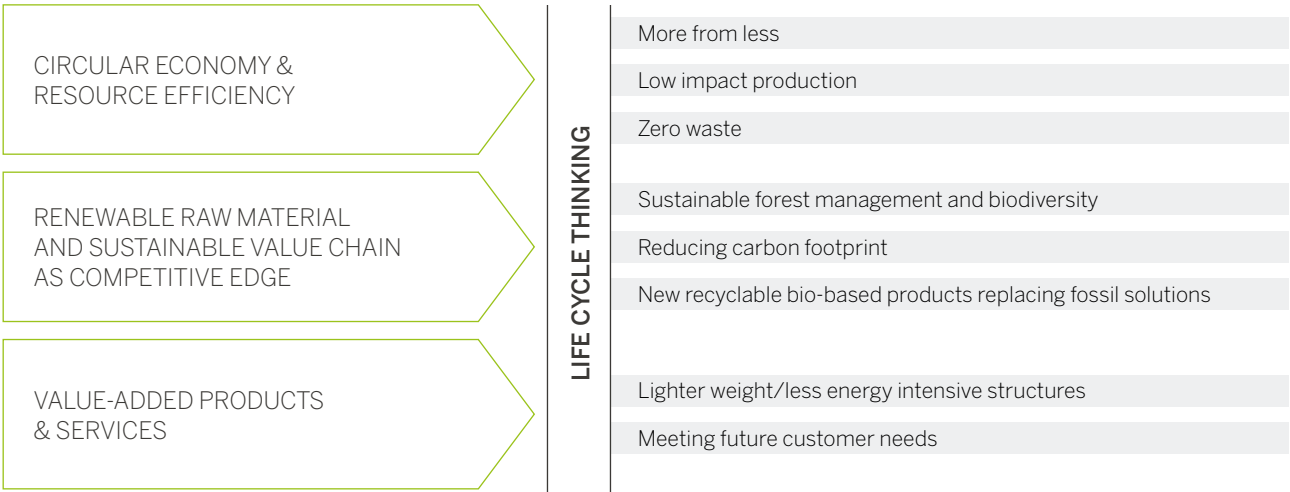
making more from less, low impact production and zero waste. Renewable raw material and sustainable value chain as a competitive edge focuses on sustainable forest management and biodiversity, reducing carbon footprint and finding new, recyclable bio-based products. Through our value-added products and services focus area we seek new ways to add value by lightweighting and the use of less energy-intensive structures, as well as meeting future customer needs.

INNOVATIONS TAKE TIME AND RESOURCES

Developing new concepts and finding solutions that help mitigate the challenges our society is facing today demands time, dedication and resources. Some 80 Metsä Group employees in various countries are dedicated to R&D&I work. The Group’s investments allocated to R&D&I were EUR 15 (18) million in 2019 and at the moment it holds some 70 patent families. Metsä Group has an important role in five EU-based development projects.

In 2018, Metsä Group established an innovation company, Metsä Spring, that invests in start-ups in order to identify and develop new business opportunities in sustainable forest-based bioeconomy.

FOCUS AREAS AND TARGETS



METSÄ SPRING

reshaping the forest-based bioeconomy

More info on R&D page 20

More info on strategy pages 6–7

The purpose of Metsä Spring is to build bridges from the R&D phase to new, proven forest bioeconomy innovations. As a separate company, Metsä Spring can significantly increase innovation efficiency and improve Metsä Group’s ability to support technology development that leads towards a low-carbon economy. Together with partner organisations, Metsä Spring will invest in start-ups with the target to identify and develop new business opportunities in sustainable forest-based bioeconomy.

The world today is driven by globalisation and all the opportunities and challenges that come with this development. Companies can no longer rely merely on their own R&D – they need partners to collaborate with in order to innovate and develop more efficiently.

As a leading bioeconomy operator, Metsä Group has a huge network of potential partners, but we want to find the best ones for us. Metsä Spring is a new tool for Metsä Group and all its business areas, through which the process of finding new business ideas can be accelerated.

FINDING IDEAS THAT SUPPORT METSÄ GROUP’S BUSINESS ECOSYSTEM

Metsä Spring is looking for new ideas and solutions in the field of wood-based bioeconomy. Sustainability is a key aspect. The primary goal of the investments is not generating profit. Rather, Metsä Spring is a strategic investor, who primarily looks for business ideas that would improve the current Metsä Group business ecosystem.

Integrating new business ideas or technologies into the business ecosystem can be either, as part of the Metsä Group’s businesses, or as an independent entity. Hence, in addition to direct financing, Metsä Spring also acts as a link to the competences, capabilities and networks of Metsä Group as a whole. Partnering with Metsä Spring can be beneficial, for instance, in terms of know-how transfer or increased credibility towards third parties.

By the end of 2019, Metsä Spring had already acquainted itself with close to 200 start-ups. This assessment work has thus far resulted in two actual investments. The first investment is the development of a new concept for the conversion of paper-grade pulp into textile fibre. In October 2018, Metsä Spring and Japanese Itochu Corporation decided to set up a joint venture on a 50:50 basis. This company is now trying to demonstrate that the concept works on a semi-industrial scale.

The second investment gave Metsä Spring a minority stake in Woodio Ltd, a leading developer of waterproof wood composite materials. The quest for more partner start-ups continues, while also the active steering of the current partner companies has a significant role in 2020. In February 2020, Metsä Spring and Valmet announced a collaboration to develop a new wood-based 3D product to replace fossil-based materials, especially in consumer products like packaging.



CASE

Joining forces with Woodio

In August 2019, Metsä Spring made an equity investment in Woodio Ltd, a leading developer of waterproof wood composite products.

With Woodio’s proprietary technology, Metsä Group’s underutilised side streams can be manufactured into long-lived, value-added products. A potential industrial side stream, to be used in the Woodio material, is the under-sized wood chips generated in wood chipping at several Metsä Group mills. The combination of using a side stream as the main raw material and a product storing CO₂ for a long time is also expected to be very competitive, when assessing the environmental footprint of this new biomaterial against the existing commercial solutions of today. Woodio’s first success, in terms of sales, comes from using this technology in the production of bathroom and kitchen washbasins.

– The direction, in which start-ups join forces with large companies, thus harnessing effectively the best qualities of both worlds, adds an important dimension to securing the forest industry’s competitiveness in the future, says **Petro Lahtinen**, CEO & Founder of Woodio.

– We also see significant potential for this technology in various business-to-business material markets. We are thrilled to start supporting this promising start-up in its strive towards industrialisation, says **Niklas von Weymarn**, CEO of Metsä Spring.

2030

We create well-being

Metsä Group's operations create value, both economic and social, to stakeholders at a local, national and international level. We strive to be a responsible and active member in the communities where we operate. We value our employees and invest in their professional development, well-being and safety.

103,000

FOREST OWNER MEMBERS

SALES EUR

5.5

BILLION

PRODUCING OVER

15%

OF FINLAND'S
RENEWABLE ENERGY

9,265

EMPLOYEES

Business INTEGRITY

Business integrity and ethics form the foundation of Metsä Group’s Code of Conduct and our key values: responsible profitability, reliability, cooperation and renewal. A number of Metsä Group policies further expand on several Code of Conduct topics, including group policies on competition law, environmental matters, equal opportunities, human resources, and personal data protection.



More info on sustainability management pages 8–9



More info on sustainable supply chain pages 60–62

Ensuring a responsible corporate culture is highly important at Metsä Group. Social responsibility makes up a large part of our sustainability efforts, and related targets form a key part of our strategic sustainability 2030 objectives. The implementation of these objectives is steered as part of Metsä Group’s Sustainability Management Process. This process allows frequent participation and buy-in from senior business and function leaders, and furthers the concept of integrated sustainability that we aspire towards.

The Board of Directors promotes efforts in integrity and compliance and its Audit Committee is presented with annual status updates by the Compliance Director. Metsä Group’s President and CEO, as the owner of our Code of Conduct, is ultimately responsible for its implementation. Metsä Group has a Compliance Committee in order to steer compliance development and to ensure systematic handling of non-compliance investigations. The committee consists of the Group General Counsel, the Compliance Director and the SVP, Internal Audit.

Metsä Group is committed to respecting human rights as presented in the UN’s Universal Declaration of Human Rights and we continuously develop our operations in line with the UN Guiding Principles for Business and Human Rights. Metsä Group is also a member of the UN’s Global Compact initiative and supports its ten principles on human rights, labour, environment and anti-corruption. We have a zero-tolerance on forced and child labour. In addition to our own Code of Conduct, the prohibition of using any form of forced labour, including modern slavery, is also included in our Code of Conduct for Suppliers. We ensure to respect and follow the legal reporting requirements such as the UK Modern Slavery Act and aim to develop our operations accordingly.

NEW CODE OF CONDUCT FOR METSÄ

A revised Metsä Group Code of Conduct was launched in May 2019. The purpose of the revision and the related training programme was to increase ethical awareness amongst our personnel and to further develop leadership which takes business ethics into account in daily decision making. This is best done by ensuring that these common principles, which meet the requirements of a modern guidance on ethical business practices, are available, understood and applied throughout Metsä Group. One of the key targets set for the Code of Conduct renewal project was to improve the readiness of our personnel to recognise and thereby prevent misconduct and, most importantly, to promote a culture where our personnel are encouraged to raise concerns if they come across ethical dilemmas or misconduct.

All our personnel are expected to comply with applicable laws, act with integrity and make ethically sound decisions in their daily work. We also require the same level of ethical business practices from our suppliers – these practices and principles are stated in our Code of Conduct for Suppliers.

Since its launch in May 2019, extensive training on the revised Code of Conduct has taken place both in classrooms as well as online. In 2019, the share of personnel that had been trained in our revised Code of Conduct e-learning was 95%. Our long-term target is that 100% of our personnel will complete the Code of Conduct e-learning.

In addition to the new e-learning course, a global classroom training programme was designed to give deeper insight into business ethics and the possibility for an open discussion. In 2019, nearly 3000 Metsä Group employees participated in these supplementary Code of Conduct classroom trainings, which we organised using the train the trainer concept. The personnel of the Stortzheim site are not included in the figures presented here due to the planned divestment of the site in the first quarter of 2020.

95% of Metsä Group’s personnel participated in the new Code of Conduct training in 2019.

NON-COMPLIANCE CASE CATEGORIES 2019

Fraud or other criminal activity	Privacy or data security
Corruption or hospitality	Health & safety
Competition law	Environment
Conflict of interest	Breaches of Supplier Code of Conduct
General human resources	Miscellaneous
Discrimination	

2030 ETHICS BAROMETER IN PROGRESS

A key message in connection with the Code of Conduct renewal was that Metsä Group is interested in understanding how ethics is perceived internally and identifying possible risks and gaps between the Code of Conduct principles and the reality. Understanding where we are and what remains to be done is essential when planning the next steps in developing our ethical culture. A related improvement is the upcoming launch of an internal ethics barometer that will be conducted from 2020 onwards.

The ethics barometer is targeted to all personnel with the aim to provide us with an insight on how our personnel perceive ethics in the workplace and to improve our understanding on compliance and ethics related risks. When done properly, the results shown by the ethics barometer will also help illustrate where Metsä Group stands with regards to its corporate culture. Achieving high ethics barometer results form a part of Metsä Group’s strategic sustainability 2030 objectives.

RENEWED GRIEVANCE MECHANISM – THE COMPLIANCE AND ETHICS CHANNEL

We encourage early detection of potential misconduct. We consider that trust, commitment to non-retaliation and a clear process for handling non-compliance investigations are the foundation for building an open culture where our personnel feel comfortable raising concerns. The employee’s own manager or HR representatives are often the best persons to speak to, but the members of the Compliance Committee and Metsä Group’s compliance channel are also available to report ethical concerns to.

In 2019, Metsä Group launched an updated Compliance and Ethics Channel. It is hosted by a third party and notifications can be made anonymously – meaning that anonymity and impartiality are underlined. The service is accessible for Metsä Group personnel as well as for external stakeholders, such as supplier employees. The messages are received by the members of the Compliance Committee which has the responsibility to manage non-compliance investigations.

In 2019, there was a total of 49 (41) non-compliance investigations varying from external fraud attempts and conflicts of interest to privacy related topics. A breakdown of registered cases of potential misconduct is presented above.

IMPROVED INFORMATION ABOUT OUR BUSINESS PARTNERS

Metsä Group is committed to responsible business practices and expects the same from our business partners. In addition to our own aspirations to develop our business responsibly, the constantly changing political situation, various cultural aspects and new legal obligations highlight the need to carry out due diligence on our current and future business partners.

During 2019 we continued to improve and implement both our supplier and customer side ‘Know your business partner’ process with a wider scope. In addition, we have successfully trained our key sales personnel on this process as well as the people who operate the third party screenings. Transparency with our business partners is important to ensure regulatory compliance and preventive actions to mitigate trade sanction, corruption, fraud, money laundering and human rights violation risks, but the improvement of our own understanding also enables us to react in a more agile manner when necessary.

Creating VALUE

We are a significant player in society through our operations and products. In Finland, where we procure most of the wood and where most of our production is located, we create value directly and indirectly especially in rural areas. Our products create value through replacing the use of fossil resources in the global market.

INPUTS

COMPETENT PERSONNEL

- OWN PERSONNEL AND SUPPLIERS
- **9,265** employees in **29** countries
 - **53%** of employees in Finland
 - Retention rate of employees **96%**

SECURE SUPPLY OF RAW MATERIALS

- OWNERSHIP
- Cooperative with **103,000** owner-members
 - The cooperative members hold some **50%** of the privately owned forests in Finland
- WOOD
- Procuring **34.7** million m³ of wood
 - **79%** of wood comes from Finland
 - **100%** traceable wood from sustainable sources
 - **85%** of the used wood from certified sources
 - Safeguarding biodiversity in all the logging sites
 - About **20,000** suppliers in **68** countries
- WATER
- Water intake **381,228** m³
 - No contribution to water scarcity among stakeholders

- ENERGY
- **90%** of production fuels are renewable (Scope 1)
 - **80%** of production made with renewable energy (Scope 1 and 2)

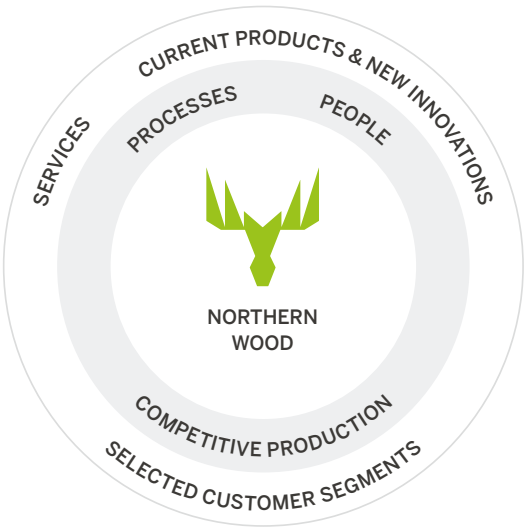
- PRODUCTION FACILITIES AND PRODUCTS
- **36** production facilities in **8** countries*

STEADY OUTLOOK FOR THE FUTURE

- FINANCIAL
- Liquidity EUR **2,022** million
 - Equity ratio **56.2%**
 - Net gearing **10%**
 - Capital employed EUR **5,227** million
 - Comparable ROCE **9.6%**
 - EUR **275** million in investments and R&D

* as per 31.12.2019

GROUP STRATEGY



Our business is based on renewable raw materials and recyclable products in whose production sustainably managed northern forests and our deep-seated know-how provide a competitive advantage.

More info about our strategy on p. 6–7.

OUTPUTS

STEADY AND LONG-TERM JOBS

- **97%** of employees with a full-time contract
- Employees worked for Metsä Group **16.3** years on average
- Annually almost **1,000** summer jobs around Finland and in other countries

WELFARE TO STAKEHOLDERS

- EUR **630** million paid as wages, salaries and benefits
- EUR **600** million to Finnish forest-owners from wood sales
- EUR **325** million to harvesting and transportation entrepreneurs in Finland
- EUR **72** million paid as interests to Metsäliitto Cooperative's owner-members
- EUR **84.5** million of dividends to shareholders other than Cooperative's owner-members
- **82%** of purchases (excl. wood) from production countries in Europe

ACTIONS FOR BIODIVERSITY

- Over **500,000** high biodiversity stumps left in forests in 2016–2019
- High biodiversity stumps in **79%** of thinning and regeneration fellings, retention trees in **94%** of regeneration fellings

SUSTAINABLE USE OF RESOURCES

- Share of surface water **99.6%**
- **92%** of production side streams utilised to support circular economy

NATIONAL VALUE

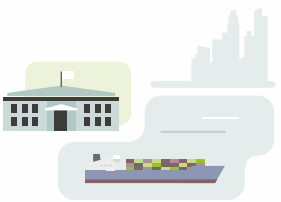
- The value of exports from Metsä Group's Finnish mills is EUR **3.1** billion, equivalent to approx. **5%** of Finnish exports
- EUR **128** million paid as corporate income and property taxes
- EUR **54** million as interest expenses
- Over EUR **2** billion investment programme realised in 2015–2018. A new investment plan of over EUR **2** billion published for 2019–2023

IMPACTS

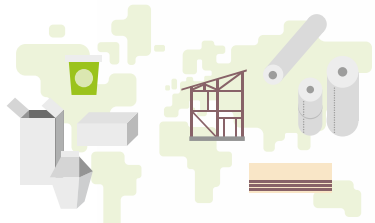
Metsä Group is an important employer. In Finland, Metsä Group's operations create up to **15,000*** jobs indirectly around the country. The impact is realised especially in rural areas. The value of paid salaries, wood sales income to forest owners and purchased forest management and logistics services totalled over EUR **1.5** billion in 2019.



We promote sustainable forest management and accelerate the growth of forests. Our operations do not cause deforestation. We plant four seedlings per each harvested tree. We deliver approx. **36** million seedlings to forest owners annually. We are committed to increasing the amount of decayed wood in forests to safeguard biodiversity.



We utilise all the resources efficiently. Each part of the wood is used for the highest added value products. Process water and energy use are under continuous development. We promote circular economy through partnerships for creating new wood-based innovations. **90%** of the production fuels are renewable and our aim is to be fossil free by 2030. We produce over **15%** of the renewable energy in Finland.



All of our products replace the use of fossil resources. Wood products store carbon for their entire life span. Pulp-based products are recyclable. Paperboards meet the highest product safety criteria. Tissue products play a key role in improving hygiene. The Group's sales of EUR **5.5** billion comes from the global markets: **73%** from EMEA, **19%** from APAC and **8%** from Americas.

* According to Finnish Forest Industries Federation

Being part of the SOCIETY

Metsä Group is an important part of society and creates value locally, nationally and internationally. We strive to be a responsible and active member in the communities where we operate.

- 

More info on value creation
pages 26–27
- 

More info on corporate affairs
pages 30–31

Our production units have a strong local influence in Finland and our operations affect the entire country. Metsä Group is an important employer directly and indirectly. Each Finnish forest industry job creates three more jobs indirectly, according to the Finnish Forest Industries Federation.

On a national level, we are an important producer of export goods and renewable energy in Finland. The value of the exports from our Finnish mills equals approximately 5% of Finland's total exports, and we produce over 15% of Finland's renewable energy. On international markets, our products correspond to global trends and reduce dependence on fossil raw materials.

It is worth noting that our primary raw material, wood, comes from sustainably managed northern forests with 100% traceability. On a global scale it is important that we make sure our operations and wood supply do not cause any deforestation; we make sure our forests grow more than they are being used.

We are an international forestry company with a cooperative structure. Metsä Group has 103,000 owner-members, who are Finnish private forest owners. Our cooperative structure creates a strong foundation of values for sustainable operations. We want to be a fair and open neighbour in our local communities, where we cooperate closely with other local stakeholders.

STAKEHOLDERS

Local communities	Customers and consumers	Own personnel
Schools and universities	Associations	Shareholders
Cooperative's owner-members	Corporate networks	Investors and analysts
Other forest owners	Media	Research organisations
NGOs	Authorities, legislators and political decision makers	Subcontractors and suppliers

CONTINUOUS DIALOGUE WITH OUR STAKEHOLDERS

We believe that open and effective stakeholder dialogue supports our business and strategy. The better we know what is expected from us, the better we can meet the needs and expectations of our stakeholders, including our customers. Annually, we arrange different types of stakeholder events, including meetings with decision-makers and visits to our sites.

Our contribution to the local society and region close to our production sites is strong, through employment as well as paid taxes. Local stakeholders, such as schools and potential employees, media, decision-makers and the general public are interested in our activities. To support our aim to offer stakeholders possibilities to get to know us better, in 2019 we arranged open house days at many of our production sites in Finland. Furthermore, various forest visits were arranged for school groups and other stakeholders, for example, our partnership with the Finnish 4H organisation.

The focus of our social engagement is on the well-being of children and young people. Every year Metsä Group offers around a thousand summer jobs as well as hundreds of thesis work and trainee programmes to students. We also continue a long tradition of visiting junior high schools to share our expertise about the opportunities the forest industry has to offer. By supporting the Wings for Youth campaign of the Finnish

Olympic Committee's sports academies, Metsä Group donates 30,000 hours of coaching lessons for secondary school students in eight locations where Metsä Group has operations. As part of the collaboration, together with the Finnish Olympic Committee's sports academies, Metsä Group also organises open sporting events for families in selected locations.

LARGE ECONOMIC IMPACTS

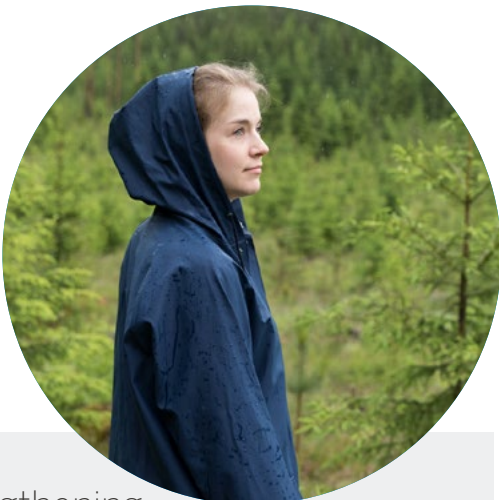
Metsä Group contributes to the surrounding society also through paid taxes. In addition to paid corporate income taxes and property taxes, Metsä Group's operations generate various other taxes and tax-like payments. Some are directly paid by the company, like employer's social security payments. Some are collected by Metsä Group on behalf of the government, like employees' payroll taxes. In addition, many inputs like fuels used for transport and electricity used for production include indirect taxes. Considering all directly and indirectly generated taxes and tax-like payments arising from Metsä Group's operations, our economic contribution to the surrounding society is significant.

In 2019, Metsä Group paid corporate income tax, CIT, and property tax totaling 128.3 (68.6) million euros. In Finland the CIT was 113.7 (50.3) million euros and property tax 2.9 (2.7). In other countries, the total CIT was 8.6 (12.4) and property tax 3.0 (3.2) million euros.

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

Metsä Group's behaviour with tax authorities is transparent and co-operative. We manage our tax issues by an internal tax function and taxes are in the scope of the Board of Directors' Audit Committee regular follow-up.

Metsä Group launched a Group-level Green Finance Framework in 2019. The framework integrates environment, sustainability and climate change mitigation to the Group's investments through the value chain and related financing activities. The framework is based on and in line with the Group's strategy and the strategic sustainability objectives for 2030. We are committed to regularly and transparently reporting the uses of proceeds financed within the framework, and their progress.



CASE

Strengthening young people's relationship with forests

Metsä Group has been collaborating with the Finnish 4H organisation since 2018 to strengthen young people's relationship with forests.

– The cooperation aims to give information to young people about the economical, ecological and social significance of sustainable forestry, as well as promote the excellent prospects the industry has to offer for the future, both in Finland and globally, explains **Juha Laine** SVP Communications at Metsä Group.

In the scope of the collaboration, Metsä Group supports the purchases of clearing saws for local 4H associations that young people can borrow to start their career as forestry entrepreneurs. In addition, Metsä Group supports the forest day visits that the Finnish 4H organises annually for about 35,000 pupils and students in various parts of Finland. In cooperation with 4H, in 2019 Metsä Group offered approximately 300 young people the opportunity to visit the Group's production units or forest sites in Finland.

Participation in POLICY DEBATES

Metsä Group operates transparently with its stakeholders and promotes solutions to climate change mitigation. The topic has been strongly debated in public discussions, as 2019 has been an election year both in Finland and in the EU. Metsä Group has participated in policy debates for climate change mitigation and a sustainable, resource-wise circular bioeconomy. Metsäliitto Cooperative is registered in the EU's Transparency Register and adheres to the Transparency Register Code of Conduct.

- 

More info on sustainability management pages 8–9
- 

More info on circular economy and resource efficiency pages 16–19

The new European Commission and European Parliament are committed to leading the transition to a climate-neutral Europe by 2050 and to making Europe a world leader in circular economy. The European Green Deal is one of the key priorities of the European Commission and the European Parliament. The Green Deal will set the direction for the EU to meet its Paris Agreement goals and to get to net-zero emissions by 2050. It also includes several sustainability issues including a new circular economy action plan, a strategy for green financing, a biodiversity strategy for 2030, a new EU Forest Strategy and a plan to move towards zero pollution. Other priorities include how Europe will invest in innovation and research, redesign its economy and update its industrial policy.

To contribute to these objectives, the CEOs representing the European paper industry have outlined their plans to reach a climate-neutral Europe by 2050 in a declaration published in autumn 2019. To turn this ambition into reality, the European policymakers are asked to support the industry's efforts by setting an appropriate legislative framework that:

- improves market access for recyclable and bio-based products
- supports sustainable management of forest and recycling schemes
- provides a coherent, stable and predictable regulatory framework with clear milestones for a cost-competitive energy transition, to promote decarbonisation investments and guarantee access to clean energy.

In June 2019 the new Finnish Government agreed in its programme that Finland will be carbon neutral by 2035 and carbon negative soon after that. The Government and industry operators will create low-carbon roadmaps that will be brought in line with Finland's new climate actions. The Finnish Forest Industry Federation's roadmap will be published in the summer of 2020.

Metsä Group is committed to climate change mitigation and contributes to EU's and Finland's ambitions for climate-neutrality. To contribute to these objectives we engage in policy debates and provide decision makers with information about sustainable forest management and the sustainability of our raw materials, decarbonisation of our operations, and the climate and environmental friendliness of our products. We also

explain how we work on new innovative sustainable solutions, such as wood-based textile fibres and biocomposites.

Our low carbon investments into European bioeconomy support the transition to a climate-neutral Europe. Over the last few years we have invested EUR 2 billion in our production units to make them more energy efficient and environmentally friendly and also in our existing and new bioproducts. Currently, we are planning three new investments worth another EUR 2 billion, the biggest of these, the Kemi bioproduct mill, would be worth EUR 1.5 billion.

As an elementary method of the Group's R&D&I, we participate in various EU-funded cross-sector research programmes. This demonstrates how the EU facilitates R&D&I and has a positive impact on society and local economies. We hope the EU will continue to this support under its next research and innovation framework programme 'Horizon Europe'.

To promote fibre-based packaging in a circular and sustainable economy that minimises climate and environmental impact, Metsä Board joined a new value chain alliance called 4evergreen. The alliance increases awareness about the benefits of fibre-based packaging materials, advocates for EU legislation supporting product design for recyclability and calls for the development of optimised collection systems and appropriate recycling infrastructures. The 4evergreen alliance connects industry members from across the fibre-based packaging value chain, from paper and board producers to packaging converters, brand-owners and retailers, technology and material suppliers, waste sorters and collectors.

WE PROMOTE:

- Sustainably managed forests and their role in mitigating climate change
- Bioeconomy and circular economy to promote wise and sustainable use of limited resources
- Predictability of the operational environment
- Supply chain sustainability

Read our list of memberships and organisations on page 97.



CASE

A wooden Metsä pavilion in Tokyo during the 2020 Olympic Games

Metsä Group and Business Finland are joining forces to build a wooden Metsä pavilion to be used in Tokyo during the Olympic Games. The pavilion will be built on the grounds of the Finnish Embassy in the centre of Tokyo.

The Metsä pavilion offers multifunctional facilities which lend themselves to many kinds of events such as exhibitions, seminars, celebrations and for relaxation. It will serve as the official National Hospitality House for Finland's Olympic team during the Summer Olympic Games and the Paralympic Games. It will be open until the end of the year 2020, during which it will be hosting delegations from the Finnish government, Finnish Olympic Committee and Paralympic Committee as well as top athletes, company guests and tourists.

– The pavilion takes advantage of high-quality wood products – which function as a long-term carbon stock – in a variety of ways. The pavilion can be transported to the site as ready elements, unloaded, moved again, and re-assembled. This is in line with Metsä Group's goal to replace fossil-based products with renewable and recyclable materials, says **Mikko Saavalainen**, SVP, Business Development, at Metsä Wood.

The architectural design of the Metsä pavilion will be carried out by Helin & Co Architects. The design is based on the Kerto® LVL-based elements published in Metsä Wood's Open Source Wood service.

CASE

EU Agricultural ministers visiting Metsä Group's owner-member's forest estate

The Finnish Minister for Agriculture and Forestry, **Jari Leppä**, chaired a meeting of EU Agriculture ministers in Helsinki, Finland in September 2019.

On the first day of the meeting, the ministers visited the Palojärvi family's forest estate in Vihti. The family has owned and managed these forests for five consecutive generations and they are a Metsä Group owner-member.

Sustainable forest management practices were introduced to the ministers and their advisers at three different sites. The guests experienced seedling planting, young stand tending and thinning.

Metsä Group's experts and the guests discussed how sustainable Finnish forestry provides solutions to global issues for example, how well managed forests are efficient carbon sinks, how safeguarding biodiversity is an essential part of Finnish forestry, and how wood-based renewable products will replace fossil materials.

After the forest visit, the delegation had the opportunity to visit a display presenting the different bioproducts that are replacing fossil materials such as pulp, paperboard, Kerto® LVL wood construction materials and pulp-based textiles.



CASE

European bioeconomy scene 2019

In January 2019, we organised a bioeconomy excursion for EU decision makers to our bioproduct mill in Äänekoski, Finland, together with Finnish Government representatives. The decision makers heard about our industrial ecosystem, built

around the bioproduct mill. They visited the Pro Nemus visitor centre and a forest site, where one of our private forest owners presented how we ensure sustainable management and growth of forests and protect nature's biodiversity.

ENGAGING employees

We value our employees and invest in their professional development and a responsible organisational culture. We find it important that our employees develop in their work and thus find ways to continuously improve our operations. We believe this is a key to our success.



More info on
business integrity
pages 24–25



More info on safety
and well-being
pages 36–37

Our responsible management practices are based on our values and they create a foundation for everything we do. We believe that employees who are committed to our values, and our company, is what differentiates us as a business.

As an employer, we are guided by policies and instructions on human resources, equality and occupational safety and well-being. SVP, Human Resources reports to the CEO and President of Metsä Group. The HR organisation serves the business areas for example in the fields of recruitment and employer image, competence management, compensation and health and well-being at work.

LEADERSHIP AND PROFESSIONAL DEVELOPMENT IN FOCUS

A strong focus on leadership is one of the key elements in building a sustainable corporate culture. In order to support profitable growth, Metsä Group has set a special focus on leadership development. In addition, we have a remuneration system that supports our strategy implementation and employee engagement and motivates us to reach our goals. In 2019, our employees received wages, salaries and benefits worth a total of 630 (635) million euros.

We encourage everyone to develop their skills continuously and offer our personnel a variety of development and leadership programmes, as well as training focused on more specific needs. We support job rotation, and aim at developing multiskilled employees. In 2019, a large number of training opportunities were organised with approximately 20,626 (24,029) training days held with 4,680 (3,537) Metsä Group employees in Finland and 4,129 (3,596) abroad.

Metsä Group is an important employer both directly and indirectly. We offer a diverse range of opportunities and career paths and employ professionals in various fields. In the end of 2019 we had 9,265 (9,310) employees and during the year we recruited 335 (292) people in Finland

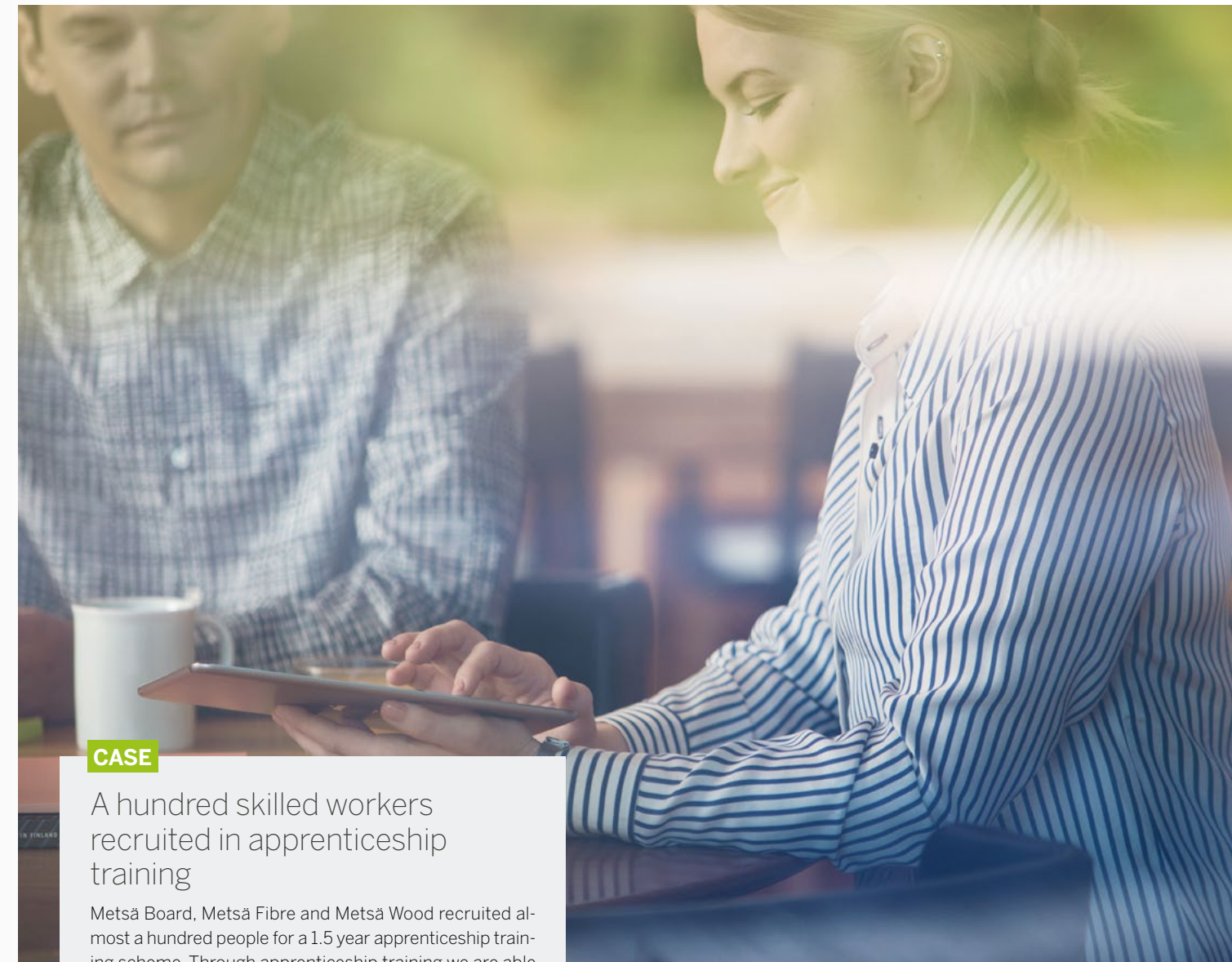
and 370 (373) abroad. 97% (96) of our employees worked full time. We offered summer jobs to almost 1,000 employees, matching the previous year's figures. We collaborate actively with schools and other educational institutions as well as industry associations.

CASE

New HR system launched to unify way of working

Metsä Group has revised its HR processes to meet Metsä Group's strategy and objectives, and HR will operate in a more integrated way in the future. When working in process organisation, work is done the same way across business areas and 'best practices' guide the work. This minimises any overlapping of work, giving more time for HR to support business and leadership.

The new HR system 'Workday' was launched for white collar workers, managers and certain units in March 2019 and it will be used for all employees by the end of 2020. For HR and managers, Workday creates a framework to manage all HR processes – resource planning, recruitment, competence development, performance management and compensation – in one place and with the same tool. Workday is a modern and user-friendly service that allows employees to view and add their own information, among other things. Workday enables every Metsä Group member to take responsibility for their own development and personal goals.



CASE

A hundred skilled workers recruited in apprenticeship training

Metsä Board, Metsä Fibre and Metsä Wood recruited almost a hundred people for a 1.5 year apprenticeship training scheme. Through apprenticeship training we are able to strengthen the knowledge level of our personnel and compensate for future retirement. The work in forestry production is continuously changing and evolving. We use the industry's latest and best technology, which means that the competence requirement level is rising.

The selected people were required to have a suitable education, for example, electrical automation, process or mechanical engineering. We also emphasised the qualities that we value in our work community: cooperation skills, taking initiative, solution-oriented way of working and a will to develop oneself and the organisation.

The training started in January 2019 and the contents were tailored according to the knowledge requirements of Metsä Group. The selected people were introduced to our way of working, safety at work and our world-class production. In principle, the students will be employed in varied jobs at Metsä Group production facilities after completing the apprenticeship training.



REMUNERATION DATA 2019

Compensation per production country ¹⁾	Finland	Germany	Slovakia	UK	Poland	Russia	Sweden
Ratio of annual total compensation for organisation's highest paid individuals (highest 1%) to median annual total compensation	4.3	3.0	4.4	3.5	6.1	6.5	3.2
Ratio of percentage increase of highest individual salaries (highest 1%) to average percentage increase	0.4	0.1	0.4	0.4	0.4	0.7	4.7
Ratio of basic salary and remuneration of women to men, based on comparable average job grades index	0.9	0.9	0.8	0.9	1.1	0.9	0.9

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

Job satisfaction and the functionality of the organisation is monitored annually through an organisational functionality survey and a variety of other personnel surveys. In 2019, the overall Group average was 8.3 (8.2) on a scale of 4–10. The results of the survey were discussed with teams and development action plans were created based upon these discussions.

The restructuring of our business affected a total of 908 (183) employees during 2019, of whom 94 (34) were made redundant. In total 496 (7) employees were temporarily laid off. We provided individual support to those made redundant in finding new job opportunities. We recognise

our personnel's freedom to form unions and the right to negotiate representative collective agreements. 77% (77) of all our employees fall within the scope of collective agreements, and a shop steward system is in place in many of our operating countries.

In Finland 864 people participated in a three-day strike in mechanical forest industry. A six-day lockout followed the strike that impacted 973 people.

In 2019, the position of SVP, Human Resources was taken over by a new person due to retirement.

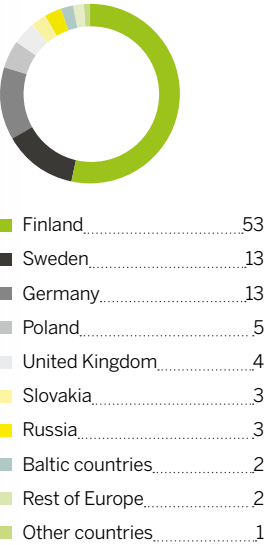
KEY PERSONNEL DATA	2019	2018	2017	2016	2015
Number of employees ¹⁾	9,265	9,310	9,126	9,300	9,599
Share of permanent employees, %	91.9	91.9	92.7	93.2	93.5
Average age, years	44.8	44.7	44.9	44.8	44.6
Average years served, years	16.3	16.0	16.4	16.6	16.7
Employee turnover, % ²⁾	8.3	6.5	6.8	8.0	7.9
Ratio between men/women, %	78/22	77/23	77/23	78/22	78/22
Share of women in management, % ³⁾	19.2	21.8	16.1	15.8	15.8

¹⁾ Full-time equivalent (FTE) on 31 Dec

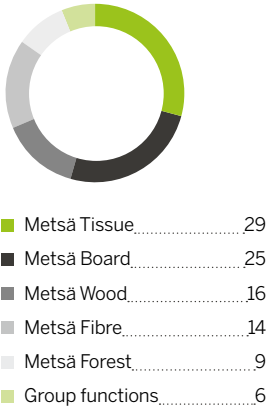
²⁾ The figure includes also redundancies caused by restructuring of business

³⁾ Management includes Board of Directors, Executive Management Team and business areas' management teams and boards of directors

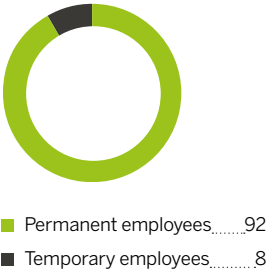
PERSONNEL BY COUNTRY
ON 31 DEC 2019, %



PERSONNEL BY BUSINESS AREAS
ON 31 DEC 2019, %



DISTRIBUTION OF EMPLOYMENT TYPE
%



Safety and well-being of EMPLOYEES COMES FIRST

Our priority is to provide a safe and healthy workplace for all of our employees. Metsä Group has a proactive approach on workplace safety and well-being and a long-term goal of zero accidents.



More info on
working at Metsä Group
pages 32–35



More info on
business integrity
pages 24–25

At Metsä Group, safety at work is an integral part of day-to-day management and it is managed and monitored Group-wide. Safety management at Metsä Group includes the safety of our partners, the subcontractors who work for us and stakeholders while they are on our premises. The principle is that Metsä Group provides a safe working environment for everyone.

We comply with each country's local regulations and legislation on collective agreements and working conditions, including health and safety. We are all responsible for our own and others' safety and personally accountable for complying with local safety laws, as well as Metsä Group's safety processes, standards and instructions. The management of the company bears the overall responsibility for safety, and it ensures that safety is developed consistently.

The Metsä Group security policy guides all actions regarding security and safety. Metsä Group's safety processes form our guidelines for ensuring safe working practices across the company. They standardise our safety work across the company. All of our own employees and subcontractors have to go through safety training before working on mill premises.

Local labour protection committees play an important role in providing training and promoting safety at work. These committees cover our employees in our key countries of operation.

WORKING TOWARDS AN ACCIDENT FREE WORKPLACE

2030

Metsä Group's long-term safety goal is zero accidents. We are proactive and monitor our safety performance with unified KPIs. In 2019, the LTA1 rate was 5.9 (6.4), which is 8% less than in 2018. There was one fatal occupational accident at the Zilina production site in Slovakia. Every accident and critical near miss are investigated and reported. It is extremely important to investigate the root causes of accidents and with corrective actions, prevent them from happening again. In addition, best practices are shared between the mills and businesses.

Training is one of the most important factors in our preventative work. Preventative measures, such as risk analyses, safety inductions and regular safety tours, are of crucial importance. Everyone is responsible for

SAFETY AND WELL-BEING DATA,
GROUP TOTAL

	2019	2018	2017	2016	2015
Sickness absenteeism, % ¹⁾	4.4	4.0	3.9	3.9	3.9
Work accident absenteeism, % ¹⁾	0.14	0.10	0.10	0.14	0.20
Accident rate LTA1 ²⁾	5.9	6.4	5.9	7.4	9.5
Registered occupational diseases, no. of cases	6	2	4	6	6
Work related fatalities, no. of cases	1 ³⁾	2	2 ⁴⁾	1	1 ³⁾
TRIF ⁵⁾	17	19.8	-	-	-
LTA severity rate ⁵⁾	20	-	-	-	-

¹⁾ % of theoretical working time

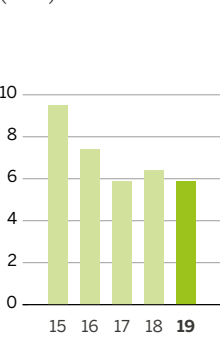
²⁾ Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sickleave per million worked hours

³⁾ External employee

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

⁵⁾ TRIF and LTA severity rate are reported as of 1.1.2019

ACCIDENT RATE
(LTA1)



following instructions, identifying defects and shortcomings, and eliminating the causes of hazards.

General e-learning for safety was launched in 2019 in eight different languages. Every mill was also audited from a safety perspective by an external company with the same concept.

In 2020, the implementation of common safety processes will start. In addition, new safety standards will be launched starting with a lock out – tag out standard.

PROMOTING WELL-BEING AT WORK

At Metsä Group, promoting and maintaining well-being at work is based on preventative action. Our goal is to identify factors that threaten to compromise our employees' working capacity as early as possible, take systematic measures in a timely manner and maintain good health throughout their careers.

Our well-being-at-work services are provided in collaboration with the management, HR and supervisors. We use a shared, Group-wide model to

support our employees' working capacity. This model includes early support, assessments and personal working capacity plans. We want to create caring work communities and ensure that we treat our employees equally.

We monitor absences and accidents through Group-wide goals and reporting. The sickness absence rate is one of our most important indicators for measuring well-being at work. Our target is to keep the absence rate below 3%. In 2019, the sickness absence rate was 4.4 (4.0).

If we detect that an employee is exposed to a health risk that is known to cause sickness absences and reduced working capacity and if the risk is realised, we will prepare a personal health programme for the employee to mitigate or even eliminate the risk. As a result of our proactive, performance-based operating model, sickness absences have decreased by more than half, which is also reflected in sickness absence costs.

We support employee well-being and prevent ill-health in various ways. In 2019 we provided trainings on how to deal with substance addiction in the work community.

SAFETY AND WELL-BEING DATA BY BUSINESS AREA

	METSÄ FOREST		METSÄ WOOD		METSÄ FIBRE		METSÄ BOARD		METSÄ TISSUE		METSÄ GROUP	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
Sickness absenteeism, % ¹⁾	1.6	1.8	4.2	3.6	4.1	3.7	4.0	3.5	6.0	5.7	4.4	4.0
Work accident absenteeism, % ¹⁾	0.07	0.10	0.23	0.13	0.20	0.09	0.16	0.12	0.11	0.11	0.14	0.10
Accident rate LTA1 ²⁾	6.1	7.4	9	7.7	8.6	5.8	5.5	7.5	4.3	5.6	5.9	6.4
Registered occupational diseases, no. of cases	0	1	3	0	0	0	3	1	0	0	6	2
Work related fatalities, no. of cases	0	0	0	1	0	0	0	0	1 ³⁾	1	1	2
TRIF ⁴⁾	13.5	20	30.3	28.7	20	18.4	10.2	12.6	17.5	24.3	17	19.8
LTA severity rate ⁴⁾	13.6	-	25.8	-	27.7	-	18.6	-	10	-	20	-

¹⁾ % of theoretical working time

²⁾ Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sickleave per million worked hours

³⁾ One fatal accident to an external service provider

⁴⁾ TRIF and LTA severity rate are reported as of 1.1.2019

2030

We bring the forest to you

Metsä Group's main raw material, wood, comes from sustainably managed northern forests where growth exceeds use. We always know the origin of the wood we source and ensure sustainable forest management with forest certification. We safeguard the biodiversity of forests by various means.

85%
OF WOOD USED IS CERTIFIED

FORESTS COVER
75%
OF FINLAND'S
LAND AREA

PROCURED
35
MILLION m³
OF WOOD

The forest reserves of Europe and Finland ARE GROWING

Forest area and the volume of wood in forests are growing in Europe. More wood is growing in Finland’s forests than at any point in the last hundred years. The sustainable use of forests is essential as wood procurement volumes also increase.



More info on promoting biodiversity pages 48–49



More info on forest certification pages 44–47

Forests cover roughly 75% of Finland’s land area. Finland’s forests contain some 2.5 billion m³ of wood and the annual growth of forests is 108 million m³. The volume of wood in Finland’s forests has increased by approximately 70%, or around a billion m³, over 50 years. Generally northern forests grow well and applied sustainable forest management practices ensure that different aspects of sustainability are considered and the use does not exceed the rate of growth.

In 2019, Metsä Group’s wood procurement totalled 34.7 million m³ (36.4). Out of this, 25.5 million m³ (25.9) was used by Metsä Group’s own mills. 79% of the wood was procured from Finland, 6% from Russia, 6% from Sweden and 8% from the Baltic countries.

Metsä Group applies the same sustainable forest management practices in all wood procurement areas. The most significant tools to ensure sustainable forest management are the certification schemes PEFC™ and FSC®. Metsä Group’s forestry services help to ensure the future growth of the forests, including services such as tending young stands and forest regeneration. In 2019, Metsä Group delivered approximately 35 million seedlings to Finnish forest owners. The forest owners planted about half of these and the rest of the seedlings were planted by contract entrepreneurs. In regeneration felling, on average four new seedlings are planted for every harvested tree. In addition, multiple broad-leaved trees appear naturally in regenerated areas compared with the amount of seedlings planted.

DETERMINING SUSTAINABLE HARVESTING POTENTIAL

Natural Resources Institute Finland (Luke) produces accurate and credible information concerning the growth and volumes of forests, biodiversity and the age and tree species distribution of forests. Taking into account all sustainability aspects, this information is used to determine the sus-

tainable harvesting potential of forests. National Forest Inventory data is an important source of information when estimating the production and utilisation potential of forests for forestry operators. The National Forest Inventory data has been collected since the 1920s.

The starting point for the estimations for sustainable harvesting potential is that the felling of forests should not impair future felling potential. The potential for log removals, for instance, must remain at least on the level of the first calculation period throughout the calculation time. The calculation also accounts for various restrictions on use, such as conservation decisions.

The sustainable felling potential in Finland has increased by around 40% from the 1980s, and hectare-specifically by nearly 50%. This increase concerns pulpwood especially.

Luke’s estimate on the sustainable felling potential extends to 2040. The estimate on sustainable felling potential for 2015–2024 is 84 million m³ of stem wood a year. The percentage felled on average during the period 2015–2018 was 86% of the sustainable felling potential.

ENSURING SUSTAINABLE WOOD PROCUREMENT IN FUTURE INVESTMENTS

To continue its strategy implementation, Metsä Group started pre-engineering projects related to investments worth 2 billion euros in April 2019. The projects are related to building a new bioproduct mill in Kemi and a new sawmill in Rauma in Finland, as well as the first phase in renewing the Husum pulp mill in Sweden. If actualised, the investments will increase Metsä Group’s wood use in the future.

The annual pulpwood consumption of the new Kemi bioproduct mill would be approximately 7.6 million m³, which is roughly 4.5 million m³ more compared to the consumption of the current mill. Pulpwood for the mill is targeted to be sourced from Finland. Securing the

FSC licence number FSC-CO14476

FORESTS COVER

75%

OF FINLAND'S LAND AREA

THE ANNUAL GROWTH EXCEEDS THE ANNUAL FELLINGS BY ABOUT

30%

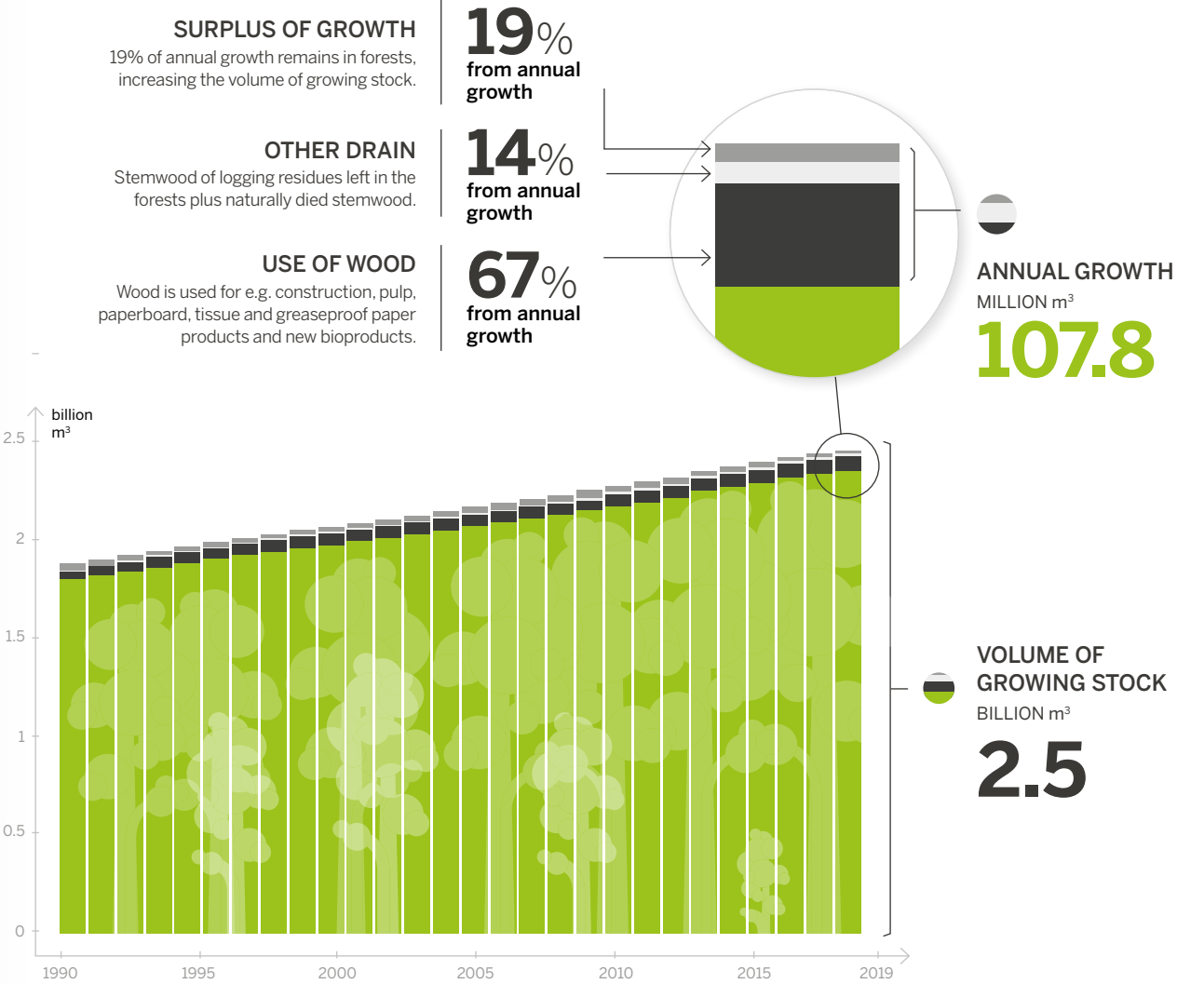
THE VOLUME OF GROWING STOCK HAS INCREASED SINCE 1971 BY MORE THAN

40%

ON AVERAGE

4

SEEDLINGS PLANTED FOR A FELLED TREE



Finland has 4 hectares of forest per resident, whereas the European Union member states have 0.30 hectares of forest per resident.

wood sourcing for the mill requires further studies to maximise the share of domestic wood. The Rauma sawmill’s annual sawlog consumption would be approximately 1.5 million cubic meters. Wood for the sawmill is planned to be sourced from Finland.

Related to the increasing use of wood by Metsä Group and other companies is the active debate in society on the impacts of increased forest use, especially regarding biodiversity and climate change. Metsä Group has been active in promoting the forest industry’s important role in operating sustainably, developing sustainable forest management methods and supporting the growth of forests. These topics are strongly embedded in our strategic 2030 sustainability objectives.

THE IMPACT OF CLIMATE CHANGE ON FORESTS

Climate change affects the growth of forests and their capacity for carbon sequestering, as well as their susceptibility to damage. The changing climate creates good conditions for the growth of trees – plants photosynthesise and grow more rapidly in warm conditions and within a high concentration of carbon dioxide. However, the changing climate also poses risks. Droughts, floods and forest damage may become increasingly common in the future. Active forest management has an increasingly important role to play in the changing climate.

Climate change has increased the growth of wood, particularly in Northern Finland. Of Finnish tree species, birch especially has benefited from the increased warmth. Spruce has poor tolerance to storms and is susceptible to drought, root rot and damage caused by the European spruce bark beetle. Damage caused by the European spruce bark beetle may increase, since the reproduction of the pest insects is accelerating as the climate becomes warmer.

FORESTS AS CARBON SINKS

A forest’s ‘carbon sink’ means that a forest actively captures more carbon than it releases. Carbon stored in tree stock is released in felling operations and through trees that die naturally (i.e. natural drain). An increase of the carbon sink means that the tree stock or soil have stored more carbon, or that the size of the storage has grown. In carbon storage, the carbon is, above all, stored, and its amount will not vary greatly.

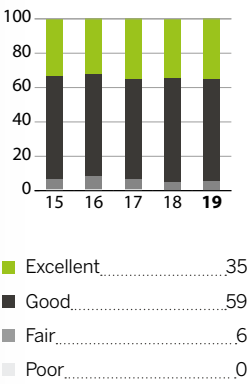
The annual growth of Finland’s forests has been greater than the total drain for decades. This is why Finnish forests are a carbon sink. Regulation (EU) 2018/841 on land use, land use change and forestry (LULUCF) defines accounting rules for how the sinks and emissions from land use, land use change and forest management are taken into account in the EU’s climate targets for the period from 2021 to 2030.

As per the LULUCF Regulation, Finland has suggested a reference level for its forests based on the criteria defined in the Regulation. The reference level, published in December 2019, for Finnish forests for 2021–2025 without harvested wood products is –21.16 million tonnes of carbon dioxide equivalent (CO₂ eq.) per annum and with harvested wood products -27.64 million tonnes per annum.

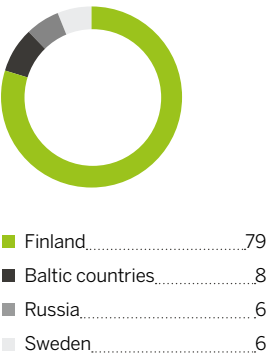
The reference level is the calculated level against which the actual development of sinks between 2021 and 2025 is assessed. These assessments will be carried out in 2027 for 2021–2025 and 2032 for 2026–2030.

The land use sector is highly significant in terms of Finland’s emission and carbon balances as the sinks correspond to about 20% to 50% of the emissions of other sectors. In the EU, sinks account on average for about 10% of emissions.

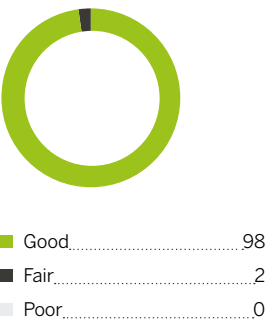
NATURE MANAGEMENT IN HARVESTING
METSÄ GROUP IN FINLAND, %



WOOD PROCUREMENT BY COUNTRY IN 2019, %



LOGGING SITE AUDITS
RUSSIA AND BALTICS 2019, %



We follow the quality of our felling operations (own and suppliers) regularly concerning environmental and safety issues, for example decaying wood, retention trees, key habitats and water buffer zones. A good result means that no major non-conformities in environmental or safety aspects have been found during the audit. Fair indicates some deviation and poor means a failure in some of the critical environmental criteria.



FOREST CERTIFICATION

is proof of sustainable origin of wood

Forest certification is a comprehensive way to ensure sustainable and traceable origin of wood. Forest certification takes into account social, ecological and economical aspects in forest management operations. By setting requirements that assure a certain level of performance, irrespective of country, forest certification is a valuable tool to increase sustainability.



More info on sustainable forest management pages 40–43



More info on promoting biodiversity pages 48–49

In the 1990s, the loss of forest cover in the tropics was the wakeup call for developing forest certification systems. Although the same issues are still acute in some areas, this is not the case in Metsä Group's wood procurement areas. Currently, forest certification prospers in areas where Metsä Group procures wood. Whereas 85% of the wood Metsä Group used was certified, globally only about 10% of forests are under forest certification schemes.

Forest certification sets a wide range of sustainability requirements, from safety at work to considering nature values and future growth of the forest. The comprehensiveness of certification in sustainability issues is one of the reasons Metsä Group continuously promotes forest certification to all of its stakeholders. In 2019, 85% (88) of the wood used by Metsä Group was PEFC™ (Programme for the Endorsement of Forest Certification) and/or FSC® (Forest Stewardship Council; Licence Code FSC-C014476) certified.

Chain of custody certification provides the proof that origin, legality and sustainability are realised throughout the supply chain. By following FSC and PEFC chain of custody certification requirements, Metsä Group is not only sourcing wood mainly from certified forests, but also choosing responsible partners and suppliers and following and reporting certified amounts and origin information correctly throughout the chain. In addition, we also make sure that all the non-certified materials follow and exceed requirements, for example, the legal requirements in sustainability related issues.

DOUBLE CERTIFICATION INCREASES

In 2019, the global share of certified forests was 10.8% (10.8). The two major certification schemes, PEFC and FSC, reported a global combined total area of 436 (437) million hectares. This area includes at least 92 (86) million hectares of double-certified forests, i.e. forests certified under both schemes. The share of double-certified forests is therefore 21% of the global certified forest area.

Finland, Metsä Group's main wood procurement country, has had a large-scale coverage of forest certification for over 20 years. The share of PEFC certified forests is currently 85%, equaling 18.1 million hectares.

FSC certification increases only moderately, covering 7% or 1.6 million hectares of forests. Forests certified by FSC mostly overlap with the forests certified by PEFC.

ACTIVE PROMOTION OF FOREST CERTIFICATION

Metsä Group actively promotes both certification systems among forest owners. By the end of 2019, 12,130 (7,580) forest owners had joined PEFC forest certification via Metsä Group. The area covered by Metsä Group's FSC Forest Management group certificate in Finland currently amounts to 174,000 (166,000) hectares. Metsä Group's partially owned Finsilva Oyj's forests in Finland and leased forest areas in Russia are certified by both PEFC and FSC. PEFC and FSC group certificates in Russia are maintained by Metsä Group's wood procurement organisation who supports the local wood suppliers to join the certification.

CHANGES IN FOREST CERTIFICATION SYSTEMS AND STANDARDS

Certification systems are continuously developed to meet stakeholder expectations and make the systems more useable. PEFC is updating its international standards, including the Forest Management and Chain of Custody requirements.

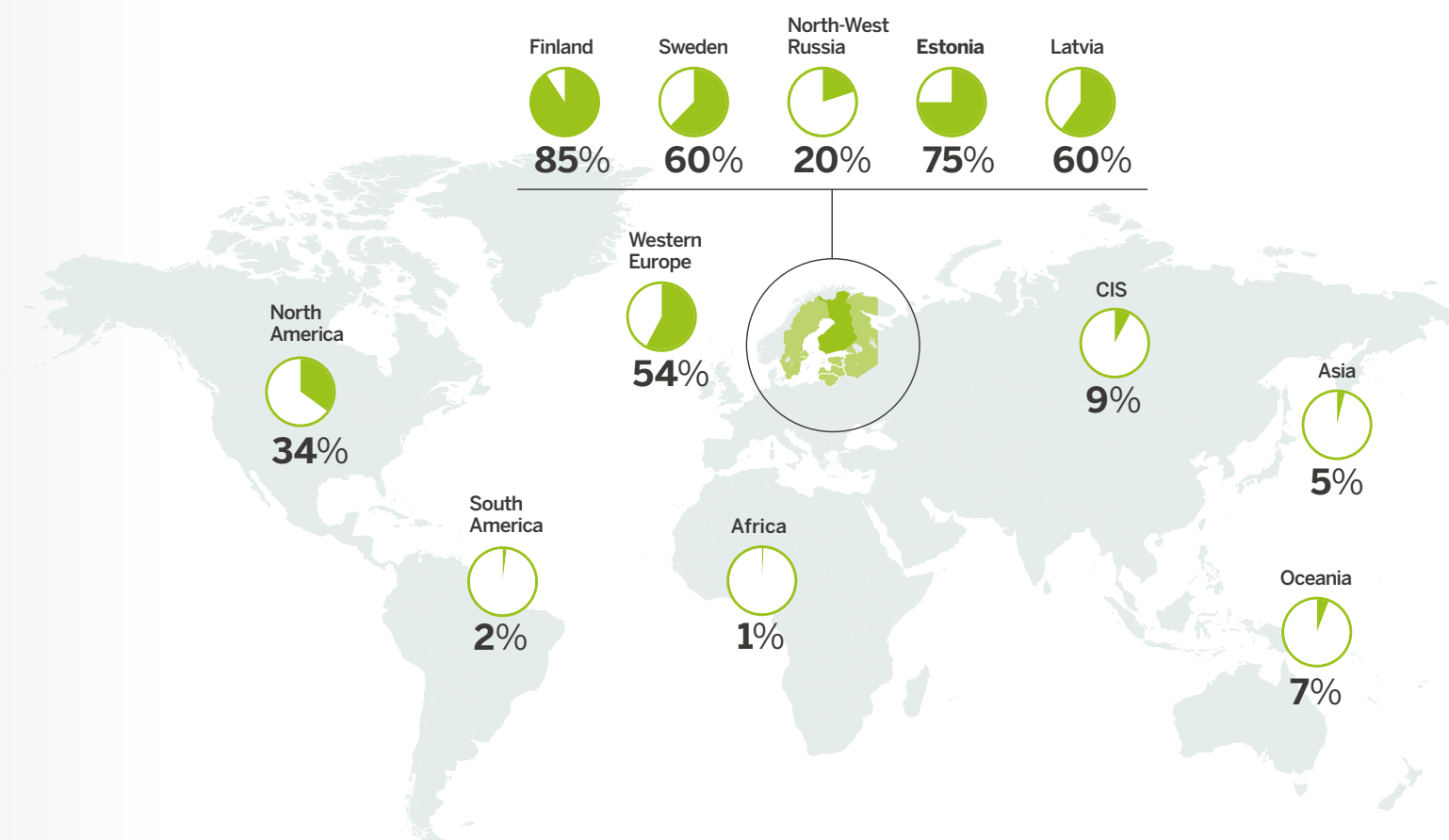
The FSC scheme is also undergoing changes in both forest management and supply chain certifications. In Metsä Group's wood procurement area, multi-stakeholder risk assessment processes for the wood procurement chain were finalised in 2018 in Finland, Sweden and Russia. Metsä Group adapted the required changes into wood procurement operations according to the transition periods.

Metsä Group promotes forest certification systems. We believe there is still a great potential through additional hectares of forests that could be managed more sustainably and development of the schemes which would have an effect on a wider scale. Metsä Group is also an active member of PEFC and FSC, both at national and international levels. Riikka Joukio, SVP, Climate and Circular Economy, Metsä Group, is a member of the PEFC Board of Directors.



The degree of forest certification globally is 10%. 85% of the wood used by Metsä Group was certified.

DEGREE OF FOREST CERTIFICATION IN METSÄ GROUP'S WOOD PROCUREMENT AREA



ASSURING THE SUSTAINABILITY OF NON-CERTIFIED WOOD

All the wood that Metsä Group uses meets, at minimum, the requirements of FSC Controlled Wood and PEFC Controlled Sources. The FSC’s Centralised National Risk Assessment (CNRA) for Finland was approved in November 2018. The FSC’s CNRA stated specified risk areas where high conservation values (HCV) are threatened by forest management activities in Finland. Some changes in sourcing FSC Controlled Wood in Finland have been done through the adaptation of the CNRA results.

According to FSC’s CNRA, the whole country is considered a specified risk regarding HCV 1 and HCV 3. HCV 1 is defined as concentrations of biological diversity including endemic species, and rare, threatened or endangered species that are significant at global, regional or national levels. HCV 3 are forest sites within rare, threatened, or endangered ecosystems, habitats or refugia. Typically in Finland these areas are extensive and uniform concentrations of small set aside areas (key biotopes) listed in the FSC forest management standard of Finland.

Metsä Group, as a wood procurement organisation, makes sure that the CNRA and its conclusions are taken into account in our wood procurement chain. The purpose of these activities is to mitigate the risk of Metsä Group in Finland using wood that does not comply with our purchasing policy. Close cooperation with the suppliers assures that the required policies and procedures are in place.

In order to ensure compliance with the FSC Controlled Wood requirements, Metsä Group in Finland has conducted a variety of control measures and applies these in all the procurement of wood material supplied without an FSC claim. For example, data and maps of potential high conservation value forest areas are included in the data systems utilised in the planning and conducting of wood purchase and harvesting operations of Metsä Group.



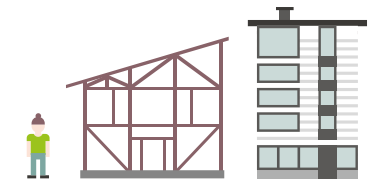
CASE

Controls aim to give continuous improvement

Metsä Group conducted numerous internal controls and assessments covering, amongst others, environmental management systems and chain of custody certification requirements. Monitoring the logging site quality, as well as nature management in forestry operations, is a regular practice for our whole wood procurement area. In 2019, no major shortcomings were found in a multitude of comprehensive internal and external audits. Root causes of the non-compliances identified have been analysed, and corrective measures taken. Targets for development are included in the action plans for 2020.

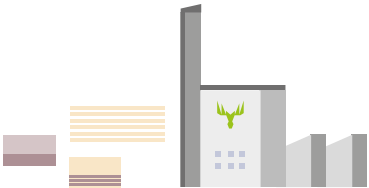
HOW WE ENSURE THE 100% TRACEABILITY OF THE WOOD WE USE

Chain of custody certification provides the proof that origin, legality and sustainability are realised throughout the supply chain. Metsä Group is not only sourcing wood mainly from certified forests but also choosing responsible partners and suppliers that meet the criteria concerning wood origin and sustainability. Metsä Group reports certified amounts and origin information correctly onwards in the chain. In addition, we also make sure that all the non-certified material follows requirements that exceed e.g. the legal requirements in sustainability related issues.



CUSTOMER

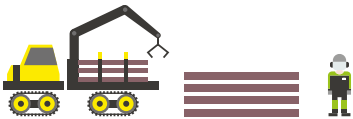
Certification assures that the wood used in the purchased product originates from sustainably managed forests. Forest certification is a proof of that. The certificate enables our customers to communicate about the sustainability of the products to their customers.



METSÄ GROUP

Mill

The wood that a Metsä Group mill receives comes from sustainably managed forests. The mill calculates the certification share of the product and officially reports it to the customer.



METSÄ GROUP

Wood supply

All the wood is traceable back to the forests. The sustainable and traceable origin of wood is identified by using maps, information systems and logging and transport documents. Metsä Group’s wood supply calculates the share of certified wood purchased and sells an equivalent amount as certified.



FOREST OWNER

The majority of the wood we use comes from certified northern forests (PEFC™ or FSC®). Metsä Group is committed to the requirements of FSC and PEFC chain of custody certification and therefore we also have sustainability requirements for the non-certified wood that we procure. The forest owner is committed to the requirements of forest certification. Metsä Group, external auditors and authorities verify the sustainable management of forests by, among others, conducting on-site audits at the logging sites. In 2019, the proportion of certified wood at Metsä Group was 85%.

PROMOTING BIODIVERSITY every day

Metsä Group safeguards the biodiversity of forest nature in everyday forestry. Consideration for nature values and biodiversity is an integral part of sustainable forest management measures and wood supply.

- 

More info on forest certification pages 44–47
- 

More info on sustainable forest management pages 40–43

Safeguarding biodiversity is one of Metsä Group's strategic sustainability objectives for 2030 and is a key aspect of consideration in planning and conducting each and every operation in forestry.

Biodiversity can be considered in various ways, such as leaving retention trees in regeneration felling, and a mixture of broadleaved trees in thinning. Biodiversity can also be safeguarded by protecting key habitats and making buffer zones to protect the cleanliness of watercourses and to provide connectivity.

MULTIPLE WAYS OF SAFEGUARDING BIODIVERSITY

Forests play an important role in preserving biodiversity, as they are a home with many different habitats, to over 20,000 different species. Preserving these habitats maintains the living conditions for countless species in each area. Of key importance to forests characteristics is the regeneration of forests with different tree species which are both indigenous and suitable for the area. Using native tree species ensures the preservation of the living conditions required by other species indigenous to the area. The tree species used in the regeneration are also carefully selected according to the area's nutrient content.

In terms of biodiversity, it is important to support mixed forests wherever the fertility of the site allows for it. In the autumn of 2019, Metsä Group launched a new forest regeneration service aimed at increasing the proportion of mixed forests.

Broadleaved trees increase a forest's biodiversity, because they provide favourable conditions for different species other than coniferous trees. In addition, the presence of birch trees, for example, helps coniferous trees to grow more efficiently. The leaf litter of birches alters the soil and improves the availability of nutrients for coniferous trees. The retention of an adequate mix of broadleaved trees is taken into consideration throughout the forest management chain.

Streams, ponds and other wet areas in a forest are also important for biodiversity. One of the most significant measures, with regard to the protection of water, is to leave a buffer zone by, or along, the watercourses. The widths of these zones and the permitted operations on them are defined by forest certification. The soil surface of the buffer zones should be kept untouched and driving over these areas with machines must be avoided.

ACTIONS TO MEET THE SUSTAINABILITY 2030 OBJECTIVES



Increasing the amount of decaying wood in forests is one of the actions which supports Metsä Group's sustainability objective of safeguarding biodiversity. The amount of decaying wood in a forest is actively increased by both the retention of decaying trees already there and the creation of new ones. The most important and visible element for this process is to leave a group of retention trees standing after a felling. At least ten trees are left standing on each hectare, preferably in small groups. The retention trees have two principal purposes: they provide a forest with trees of various ages, and with decaying wood. Metsä Group monitors the quality of retention trees left in a felling. In 2019, we left an average of 14.5 retention trees on each hectare. Broadleaved trees – such as birch, aspen and alder – are the most valuable retention trees.

Since late 2016, all types of felling operations carried out by Metsä Group have included the creation of high biodiversity stumps. High biodiversity stumps are made by cutting a tree's trunk at the height of 2–4 metres. A high stump starts decaying after a few years, benefiting fungi, insects and a number of forest-dwelling birds. High stumps are a forest owner's voluntary addition to efforts aimed at supporting the biodiversity of forest nature. In 2019, high stumps were created on approximately 80% of Metsä Group's felling sites. In 2019, Metsä Group further updated its goal for the number of high stumps left on a felling site. From the beginning of 2020, the goal is now set at four high stumps per hectare.

Strictly protected forests account for 9% of the total area of Finland's forests.

PROTECTING ENDANGERED SPECIES

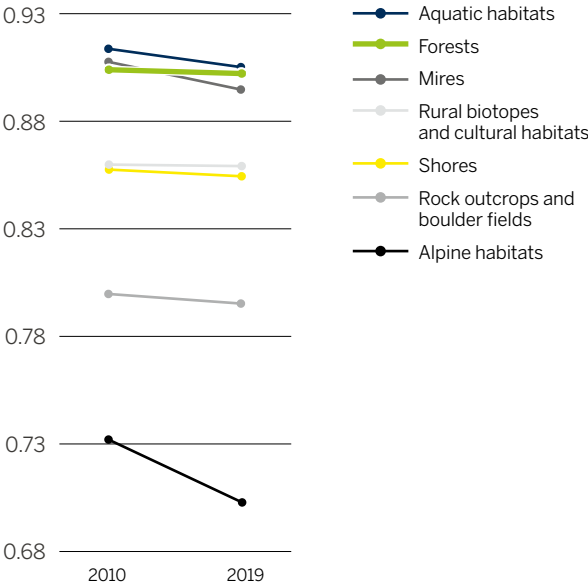
According to a survey published by the Finnish Environmental Institute in the spring of 2019, 9% of Finland's forest-dwelling species are endangered. The percentage has remained the same as the 2010 study of endangered species. The most threatened of forest-dwelling species live in valued habitats, such as herb-rich forests and sunlit slopes. The survival of these species' often also depends on the amount of decaying wood.

The protection of species is accounted for in many different ways. The impairment of the habitat of any species specified in the Nature Conservation Act is always prohibited. The known occurrences of any endangered species can be found in Metsä Group's digital map systems, which ensure these species are protected in all stages of forest management.

Valuable habitats are small in size and are fairly rare concentrations of nature value which differ from the surrounding forest. Their location data is available in Metsä Group's data systems. This information supports the retention of these sites and their characteristic features during the different stages of forest management. Metsä Group's personnel and contractors have been trained to identify any new sites they may encounter and to enter this data into the system.

The nesting trees of large birds of prey are preserved. Large birds of prey are sensitive to disturbances during nesting, so Metsä Group will not carry out felling operations or other forest work in the vicinity of a nest during the nesting season.

All birds of prey in Finland are protected. The numbers of hawks (Accipitridae) nesting in forests have declined continuously. Any data showing the locations of hawks' nests was therefore distributed to a digital service aimed at forest owners in a collaboration with the Finnish Forest Centre and Luomus (the Finnish Museum of Natural History), in April 2019. Metsä Group urges all forest owners to inform their forest specialists of any nests when agreeing to forest management measures; this ensures that the nests are preserved.



The Red List Index (RLI) trends between 2010 and 2019 of primary habitats. The Red List Index, developed by the International Union for the Conservation of Nature and Natural Resources, is used to show trends in overall extinction risk for species. The index maximum value of 1.0 means that species are not expected to become extinct in the near future. The index value of 0.0 equates to species having gone extinct. In Finland, the forest-habitat species prosper fairly strongly, with the value of over 0.8, in comparison with many other species of dedicated primary habitats. The value has also remained on the same level during the last 10 years.

2030

We work for a better climate and environment

Metsä Group strives to operate as resource wisely as possible and minimise our impacts on the environment. Each part of the wood is utilised to the most valuable purpose and we optimise the use of other resources needed for production. Our long-term target is that our mills are fossil free.

92%

OF SIDE STREAMS WERE UTILISED

OVER

99%

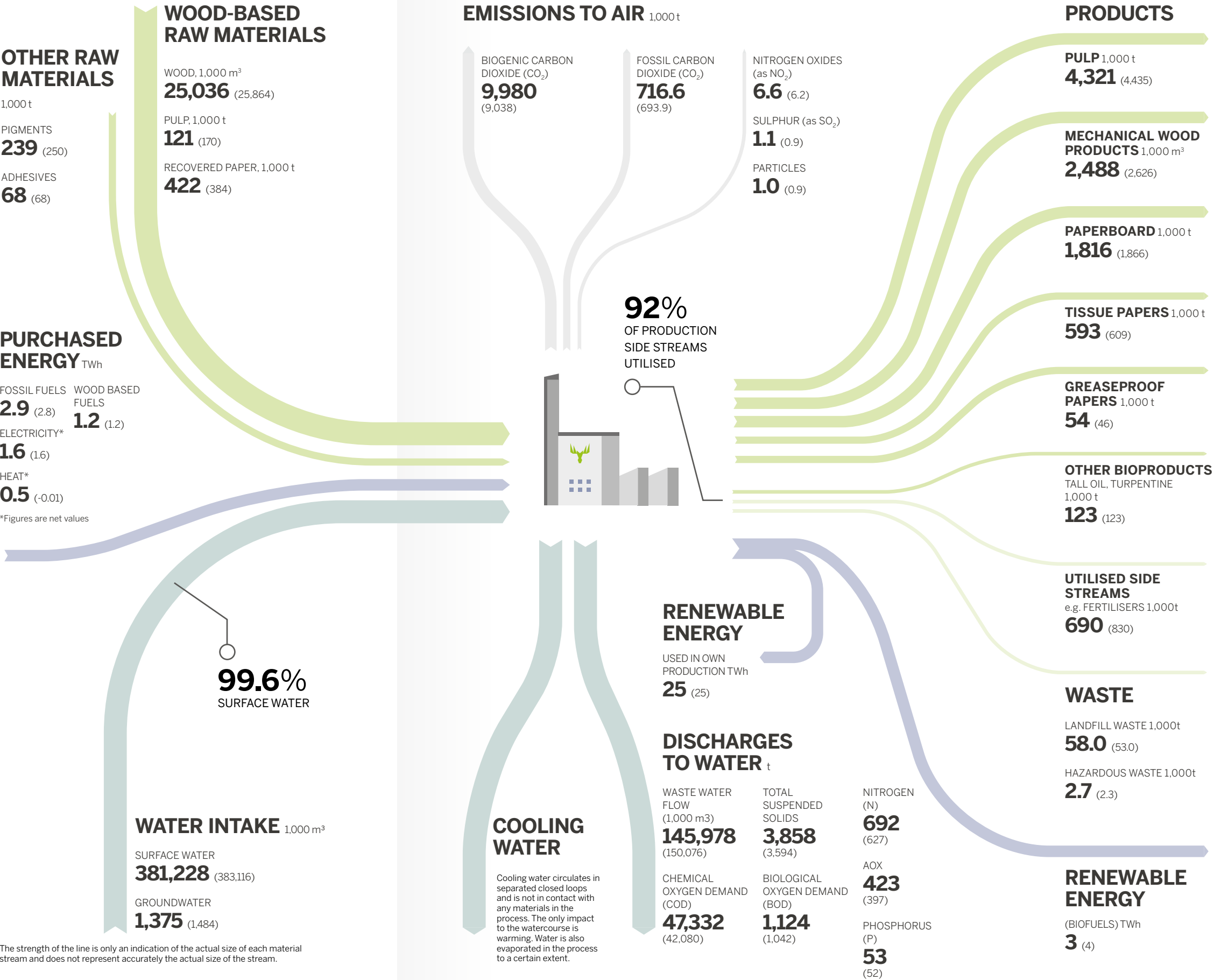
OF WATER USED IS SURFACE WATER

90%

OF FUELS USED IN PRODUCTION WERE RENEWABLE (SCOPE 1)

MATERIAL streams

The efficient use of wood and other resources steer Metsä Group’s operations. We work for minimising the environmental impacts and continuously improving our performance. The majority of our operations are run with renewable energy. The excess renewable energy is provided to the needs of society.



Towards FOSSIL FREE MILLS

In mitigating climate change, a great impact can be achieved through radically decreasing the use of fossil-based energy. Metsä Group is a significant producer and user of renewable energy. We have set an ambitious objective of having fossil free mills by 2030. This supports global climate work, but requires a lot of investments and development actions throughout the company.

- 

More info on circular economy and resource efficiency pages 16–19
- 

More info on emissions to air and water pages 56–57

2030 Energy is a key resource in forest industry, especially in the production of forest based products. We have made long-term investments in the production and utilisation of renewable energy and improved our performance significantly, but we still have work to do. To gain our strategic objective of having fossil free mills by 2030, we will put our focus into three main development areas:

- improving energy efficiency
- investing in new technologies and electrification
- utilisation of bio-based fuels

A large-scale harmonisation programme for improving energy efficiency has been started throughout Metsä Group's mills and operations. An investment and development roadmap has been made by thoroughly mapping the currently applied technologies and ways of operating. Internal best practices and external potential benchmarks have been identified to support this work. The energy efficiency programme is expected to generate improved energy efficiency measures, and also better operational security and direct cost savings results. For example, improving the utilisation of process water gives improved energy efficiency through the use of smaller volumes of water to pumping, heating and drying. It is also good to recognise that the cold weather conditions in the Nordics increase the need for energy, for example, in the heating of process water. It is therefore important to consider how we can operate efficiently.

For continuous improvement, we plan to apply and adapt our production, as well as other projects, to modern technologies. The progress of energy efficiency work and the introduction of modern technologies will be reported regularly.

WORKING TOWARDS FOSSIL FREE MILLS

Renewable energy is in a key role in Metsä Group's operations. Our aim is to use no fossil-based fuels in production and thereby cause zero fossil CO₂ emission by the year 2030. In 2019, 80% (80) of our production was run with renewable energy (Scope 1 and 2). The share of bio-based fuels was 90% (90) (Scope 1). The used renewable biofuels mainly consisted of wood-based production side streams as well as harvesting residues. Stem wood is not directed to energy generation.

The total energy use of the Group in 2019 was 32.4 (33.1*) TWh. At the same time, wood-based renewable fuel production was 28 (28) TWh, of which 25 (25) TWh was used in our own processes. A surplus of wood-based fuels from mill processes and forestry, such as bark and branches, are sold to external partners. In 2019, the energy content of these biomass-based fuels represented 3 (4) TWh, which when replacing fossil-based fuels saved CO₂ emissions of up to 1 (1) million tonnes.

Long-term work for reducing fossil CO₂ emissions continues. We have worked towards, and measured, the reduction of fossil CO₂ emissions (Scope 1 and 2) since the year 2009, and in these ten years emissions have reduced by 46% (45) per product tonne.

A lot of progress regarding energy issues has been made during 2019, but some setbacks have been encountered. At Metsä Wood, the new production lines in Punkaharju and Äänekoski, Finland and Pärnu, Estonia were still on a ramp-up curve, and as a result, full optimised energy performance is still being sought. Metsä Fibre has agreed with Gasum Ltd to collaborate together with the target of putting the biogas plant into use in Äänekoski, Finland, and supporting the delivery of fuel starting in 2020. The Äänekoski bioproduct mill has been running with no fossil fuels, yet

* Minor changes in the calculation method. In the Sustainability Report 2018, the reported figure for the total energy use was 31.7 TWh, which corresponds to 33.1 TWh with the updated calculation method.

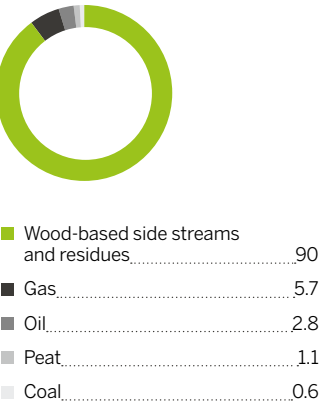
the power plant at Äänekoski site has still been using fossil fuels to complement biofuels. Development work at the mill's power plant continues towards its goal of using zero fossil fuels. In Joutseno, Finland, the efficiency of the gasification process has improved and stabilised to a satisfactory level. At Metsä Board, significant improvements to process water utilisation have been made, which resulted, for example at the Husum mill, Sweden, in an improvement of 5% in energy efficiency throughout the year. This improvement has been reached with investments in new devices and technologies as well as rationalising the operations within the whole Husum integrate. Metsä Tissue announced improved results regarding greaseproof paper production, corresponding to 10% of improvement. At Metsä Wood, the power plant of Punkavoima, next to the production facilities in Punkaharju, Finland, has made progress towards reducing the use of natural gas.

We have systematically developed a method for observation and implementation of energy efficiency, and energy saving actions, through developing our way of working. This means there is still a significant improvement potential through non-investment development actions. The number of these projects this year accounts for 40% of the energy efficiency actions.

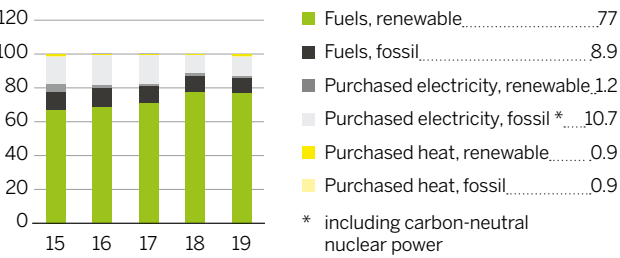
ADVANCING MANAGEMENT SYSTEMS

Metsä Group's anticipatory energy management is supported by comprehensive energy management systems. A large revision of the ISO 50001 energy management systems in 2020 will require changes and improvements on our sites. The revised systems will emphasise the management's strong commitment to improving energy efficiency, and conducting this in all circumstances throughout our operations. In line with the revision, the updated systems will be applied to all of Metsä Group's production units. Metsä Group has started preparations to the revisions by renewing and upgrading measuring methods and updating the baselines, updating the calculation of energy balances, revising the key points of energy utilisation and updating the related key performance indicators.

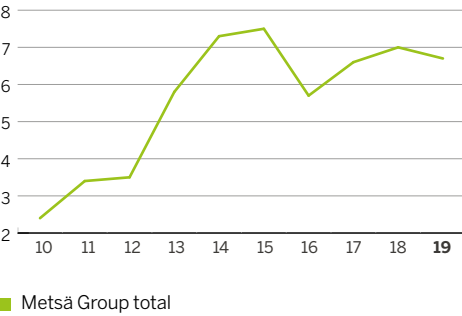
FUEL CONSUMPTION
SCOPE 1
%



PRIMARY ENERGY CONSUMPTION
SCOPE 1 AND 2
%



ENERGY EFFICIENCY IMPROVEMENT
%



Metsä Group's energy efficiency index has improved from the base year 2009 by 6.7% (7.2). The energy efficiency improvement target for 2009–2020 has been set to 10%. The index is calculated as specific energy consumption of electricity and heat. Since the index emphasises electricity consumption with multiplier two, actions that save more heat than electricity weakened the index. From 2020 on, the Metsä Group energy efficiency index follows EU calculation methods, where electricity, heat and fuels are summarised with no multipliers.

Minimising emissions to AIR AND WATER

We work actively to control and reduce the environmental impact of our production as efficiently as possible. Emissions to air are a global issue, and the common aim is to continue reducing fossil CO₂ emissions. Emissions to water are more of a local issue due to the localised use of water and the environmental impacts of production.



More info on circular economy and resource efficiency pages 16–19



More info on calculation principles pages 98–99

Preventive environmental management is a guiding principle of Metsä Group's production. Efficient control and mitigation of emissions to air and water are the cornerstones of managing the environmental impacts of production.

Metsä Group's operations are guided by our Environmental Policy and its principles on the sustainable forest management, environmental responsibility, continuous improvement of environmental performance, resource-efficiency and environmental and social responsibility of our suppliers.

Our production units are regulated by environmental permits and emission limits set and controlled by the authorities. We monitor our compliance with the regulative requirements and continuously aim to reduce our emissions. All of our mills are certified according to the ISO 14 001 environmental management system standard.

Controlling the environmental impacts of our mills is based on the use of the best available technologies (BAT). EU-wide emission limits have been defined for those technologies commonly used in the forest industry. To ensure compliance with the limits, we continuously develop our operations and invest in our production facilities. During 2019 improvement investments were made at our mills in Simpele and Joutseno, Finland to reduce emissions to air and water.

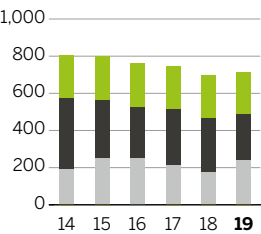
There were no environmental incidents in the reporting year. There were clear permit limit violations at three of our mills and two minor, momentary non-compliances. We are committed to a high environmental performance and each case is investigated carefully for corrective actions. All permit limit violations are described in the table on page 97.

EMISSIONS TO AIR

Our pulp mills and power plants are the main sources of air emissions of Metsä Group. Primary emissions to air are carbon dioxide (CO₂), sulphur dioxide (SO₂), nitrogen oxides (NO_x) and particles from pulp production and power plants. In addition, small amounts of total reduced sulphur (TRS) are emitted from pulp mills.

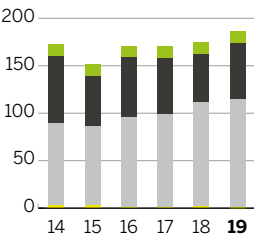
Efficient control of the combustion processes and treatment of flue gases ensure low emissions to the atmosphere. Normally our emissions do not cause any noticeable environmental impacts. However, the odorous sulphur compounds are challenging to control and therefore some occasional odours can still be noticed around pulp mills. Our emissions to air causing acidification (SO₂, NO_x) increased by 4% in 2019. Emissions of particles reduced by 1% (reduced by 26%) and odorous compounds (TRS) decreased by 14% (increased by 31%).

FOSSIL GREENHOUSE GAS EFFECT
(1,000 TONS OF CO₂)
BY BUSINESS AREA



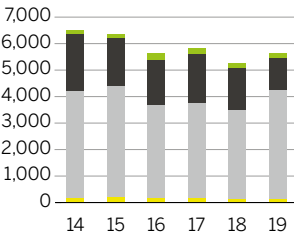
Metsä Tissue	224
Metsä Board	248
Metsä Fibre	241
Metsä Wood	3

EUTROPHICATION
(P EQUIVALENT TONS)
BY BUSINESS AREA



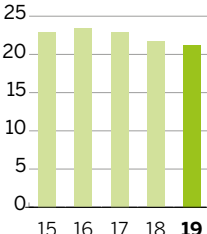
Metsä Tissue	12
Metsä Board	59
Metsä Fibre	114
Metsä Wood	1.2

ACIDIFICATION
(SO₂ EQUIVALENT TONS)
BY BUSINESS AREA



Metsä Tissue	159
Metsä Board	1,187
Metsä Fibre	4,125
Metsä Wood	149

PROCESS WATER USAGE
PER PRODUCT TONNE
m³



2030 EMISSIONS TO WATER

Water is an essential resource for the forest industry. Ensuring that water use in production is optimised and that waste water is treated efficiently are both guiding principles of our water management.

Metsä Group's production units are mostly located in the Nordic area where water resources are abundant. Over 99% of the water we use is surface water with only minimum quantities of ground water being used. Approximately half of the water we intake is used in the production process and the other half directed for cooling purposes. Cooling water does not come in contact with any materials used in the production process, and the only impact on this water is temporary warming. Water is also evaporated in the process to a certain extent. Metsä Group's operations do not prevent or weaken any other parties' access to water at this moment, or potentially in the future.

Metsä Group's objective is to improve the use of process water by 25% per product tonne in 2018-2030. In 2019, the use improved by 2%. Since 2010, the Group's use of process water has decreased by 21% (19) per product tonne. The start-up of Äänekoski bioproduct mill and improvements in water use at Husum mill have significantly decreased our process water usage per product tonne during the last few years.

Before process water is returned from the production process to the watercourse, it is carefully treated with efficient waste water treatment. The main waste water emissions from Metsä Group's production units are phosphorus, nitrogen, solid matter and organic matter, which is



CASE Minimising emissions to air in Simpele

The NO_x emissions from Simpele power plant have been decreased by approximately 30% within the last three years. This has been achieved mainly by an improved combustion controlling system, skillful plant operation and strict target setting towards the year 2020. Also SO₂ emissions to air have been decreased by 25% thanks to changes in the fuel mix.

CASE Towards leaner water use in Husum

Metsä Board Husum mill has taken major steps towards leaner water use. Husum's pulp mill has been able to reduce the process water flow by 30% within the last 18 months. This has been achieved by monitoring and evaluating water use and temperature in different parts of the process, and using that data to make numerous small improvements in the water consumption processes. This work has paid off in large savings without major investments. The work will be continued to achieve the Metsä Group level targets for process water use by 2030.

measured as chemical (COD) and biological (BOD) oxygen demand. Emissions from pulp mills also contain organic chlorine compounds (AOX), sodium and sulphates. The state of waterbodies surrounding the production units and their fish stock are carefully monitored. Emissions to the water in the pulp and paper industry have fallen considerably over the last 25 years. In particular, the load of organic matter and solids have also decreased significantly. The importance of this is reflected by the fact that the lakes and rivers around Metsä Group mills are largely used for recreational purposes.

2030

We offer sustainable choices

Metsä Group's products made from renewable raw materials help to reduce dependence on fossil resources and offer sustainable choices for everyday life. We want to ensure that our suppliers follow our high ethical standards. We are working towards not using any fossil oil-based raw materials or packaging materials.

93%

OF SUPPLIERS COVERED
BY METSÄ GROUP CODE OF
CONDUCT FOR SUPPLIERS

OVER

99.7%

OF RAW MATERIALS
ARE FOSSIL FREE

OUR MAIN
RAW MATERIAL WOOD IS

100%

TRACEABLE

Improving supply chain SUSTAINABILITY

Metsä Group is committed to acting responsibly and we want to ensure sustainability in our supply chain.

- 
More info on business integrity pages 24–25
- 
More info on wood traceability and certification pages 44–47

Metsä Group’s external purchases, excluding wood, were nearly EUR 3 billion in 2019, and we used about 20,000 suppliers. We mainly use European suppliers and aim to use local suppliers where possible. In 2019, 82%(85) of our purchases came from suppliers located in countries where we have production sites. Our purchases from high risk countries are very low (1.5% of spend). We have renewed our Sourcing & Logistics organisation in 2019. We currently have close to 80 professionals in the fields of category management, investment and area sourcing, operative purchasing, and development and management of procurement processes and sustainability. SVP, Sourcing and Logistics, is part of Metsä Group Sustainability Process Management Team. Targets and roadmaps related to ensuring the sustainability of the supply chain are reviewed by the Sustainability Process Management Team.

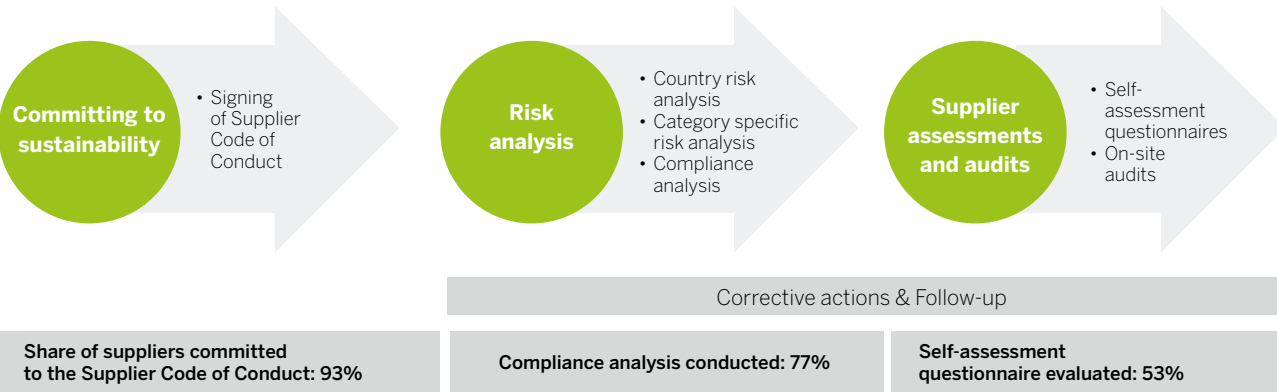
2030 Our target is for all our suppliers to be sustainable. We require all of our suppliers to commit to the Metsä Group Code of Conduct for Suppliers, and we will further develop our supplier sustainability practices in order to verify that all suppliers act according to our environmental, social and economic responsibility requirements. We employ a risk-based approach and have a number of tools to aid this. Currently, these practices include risk analysis and background checks, as well as supplier assessments and audits. Human rights risks have been taken into account in all these practices and in our Supplier Code of Conduct.

IMPROVING THE SUPPLIER RISK ANALYSIS

In 2019, we improved our supplier risk analysis to take into account the sustainability risks and adverse impacts on the supply chain. Risk analysis is done as part of the long-range planning of our sourcing categories. The target is to identify the most significant impacts, or risks, related to each sourcing category, and to recognise the riskiest suppliers. We identified that the chief adverse impacts in the supply chain are predominantly related to environmental effects in the operations of our suppliers and logistics service providers, and to health and safety related risks. These findings are also in line with the findings from our sustainability self-assessment questionnaire results. In addition other sustainability risks were identified. We therefore understand that we need to develop the risk assessments and supplier evaluation further, and extend our focus deeper into the supply chain. Sufficient transparency of our supply chain, beyond first tier suppliers, remains a challenge.

We intend to improve the ways in which we learn about supplier misconduct and will work with suppliers to improve their practices. Our new compliance and ethics channel is also open for our suppliers to raise concerns, and this will help us to identify any misconduct and also the responsibility risks related to the supply chain.

TOOLS FOR ENSURING THE SUSTAINABILITY OF OUR SUPPLIERS

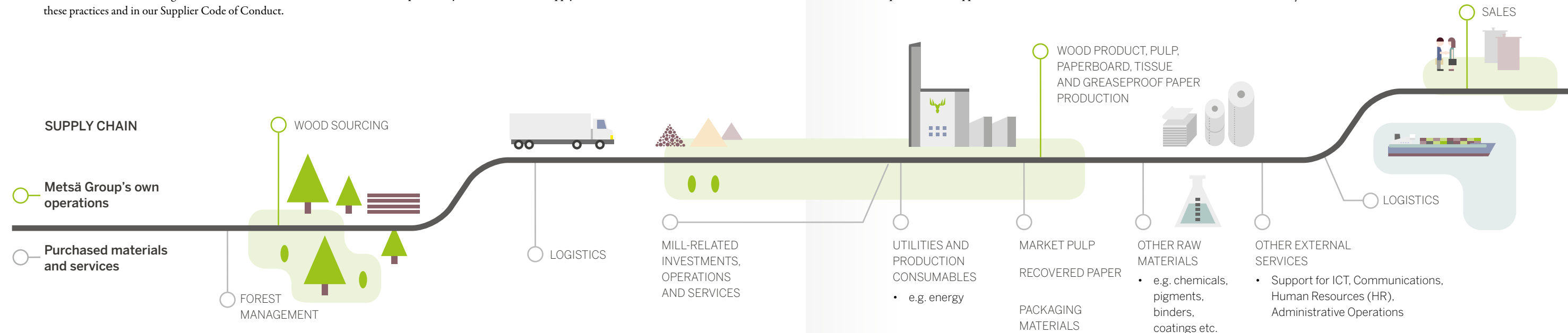


SUSTAINABILITY TAKEN INTO ACCOUNT IN PROCUREMENT PROCESSES

As part of the project to unify the processes of Metsä Group, the supplier sustainability practices have been taken into account in the design of our procurement processes. One example of this is the supplier background check, which ensures the supplier’s compliance with laws and regulations. This is now conducted as part of the tendering and negotiation processes when suppliers are pre-qualified. We also continue to analyse our suppliers using sustainability self-assessment questionnaires. Answers, while useful, are often insufficient and work is ongoing to assess how to improve this. We have also started to develop our supplier audits to ensure that sustainability issues are taken into account in the audits and in the selection of the suppliers to be audited. In 2019, we conducted 45 (55) on-site audits of which 19 (15) were third-party audits, including sustainability criteria, covering environmental as well as social responsibility aspects.

In 2019, we arranged a ‘Supplier Days’ event for important suppliers. The agenda of the event was focused on sustainability. We introduced our strategic sustainability objectives and encouraged our suppliers to help us to reach these goals. We also highlighted our responsibility requirements to suppliers.

Our main methods to ensure the sustainability of our suppliers and the related key performance indicators are presented in the picture above. All our suppliers should commit to Metsä Group Supplier Code of Conduct, and by the end of the year, it covered 93% (92) of our total spend. The Supplier Code of Conduct coverage KPI has been modified to exclude authorities and associations from the spend. In addition to the Supplier Code of Conduct, further sustainability requirements are often agreed in individual contracts. We evaluate the sustainability risks of our suppliers by analysing the category specific risks and by using the risk country classifications. In addition, we use a third-party analysis tool to check supplier’s compliance with the laws and regulations. This analysis has been conducted on suppliers representing 77% of our spend. We also utilise supplier self-assessment questionnaires and on-site audits to evaluate how our suppliers perform against the requirements set in our Supplier Code of Conduct. We then follow the required development actions of those suppliers who we expect to improve their sustainability management. These supplier self-assessment questionnaires cover currently 53% of our spend. In 2019, no serious deviations were found in our supplier compliance and sustainability evaluations. In 2020, we will evaluate how third-party assessments could be better utilised in the supplier sustainability evaluation.



COMPOSITION OF EXTERNAL PURCHASES IN 2019
% OF MATERIAL AND SERVICE PURCHASES
BY SPEND



Wood	33
Logistics	17
Indirect mill sourcing (excl. energy)	15
Chemicals	7
Energy	6
Administrative materials and services	6
Binders, coatings and pigments	3
Packaging materials	3
Pulp	2
Recovered paper	2
Other	6

PURCHASES BY SUPPLIERS' COUNTRY IN 2019
%, BY SPEND



Finland	65
Sweden	10
Germany	6
Russia	2
Estonia	1
Poland	1
Slovakia	1
Other Europe	12
Outside Europe	2

BREAKDOWN OF LOGISTICS MODES
SHARE OF TOTAL LOGISTICS
%, BY SPEND



Road	48
Sea	30
Port and warehouse	13
Rail	10

TRACEABLE RAW MATERIALS

In order to ensure the sustainability of our supply chain, we also want to ensure that we know the origin of our raw materials and packaging materials used in the production of products by Metsä Group. Our main raw material is wood, which is 100% traceable and 85% obtained from certified sources. We also know the origin of the pulp we purchase externally. Wood and pulp cover over 70% of our raw material spend. We have also developed the traceability of the other raw materials such as process, basic and coating chemicals as well as recovered paper and packaging materials. For these materials, we are typically aware of their origin but data has not been systematically collected and tracked.

Recovered paper is typically collected from the country, or neighboring country, where it is purchased. Our target is to identify the collection country. This information is gathered from suppliers with self-assessment sustainability questionnaires.

Our suppliers are expected to disclose the manufacturing locations of our raw materials in product safety questionnaires. Our main focus currently is to trace the origin of manufacture of the raw materials we purchase, but in the future we plan to extend the analysis further into the supply chain. Currently, not all suppliers disclose this information in the product safety questionnaires.

In 2019, we knew the origin of 89% of raw materials.

CASE

New maritime liner service concept from Kemi to Lübeck, Antwerp, Zeebrugge and Tilbury

Metsä Group has made a long-term contract with Wallenius-SOL for Metsä Board products from Kemi and Husum to European markets. We will use a new shipping line that will transport forestry products and other goods in a network covering the Gulf of Bothnia, the Baltic Sea and the North Sea.

Specially designed vessels built to 1A Super Finnish/Swedish ice class will ensure a year-round service, even in the Northern Baltic Sea and the Gulf of Bothnia. The fleet in the Baltic Sea will consist of five vessels. Two of these will be new builds, operated by sustainably efficient LNG power to reduce any environmental impact. The products are transported directly from several Metsä Group mills closer to customers. This technology, as well as the reduced need for land transportation, will result in lower environmental emissions. The delivery of the new vessels is planned for 2021.

2030

Towards
FOSSIL FREE
RAW MATERIALS

Our main raw material is wood, which is a renewable raw material originating from sustainably managed forests. Currently, most of our raw materials are already obtained from renewable sources. Our target, in our efforts to contribute towards a low carbon society, is that by 2030 we will eliminate the use of any fossil oil-based raw materials or packaging materials.

More info on sustainability 2030 objectives pages 10–13

More info on R&D pages 20–21

Our aim is to seek bio-based alternatives for the fossil oil-based raw materials and packaging materials that we currently use. This review will be done taking into account the environmental aspects of the alternative material. Targets comprise of raw materials and packaging materials included in the finished products which are produced by Metsä Group.

During 2019 we defined which raw materials are currently fossil oil-based and calculated their share of all raw materials used in the finished products. In 2019, the share of fossil free raw materials was 99.7% (99.6% of volume (dry tonnes)). Our main raw material, wood, accounts for 94% of all raw materials.

The main raw materials that we are looking to replace that include fossil oil, are latex, plastic coatings and hydrophobic sizing agents which are used in board production; converting and wet strength glues used in tissue production; and phenolic resins used in wood products production, in addition to packaging materials used in multiple business areas. For most of the raw materials, alternatives have been researched and, for some of them, a replacement already found. Business areas' research and development teams and centralised raw material sourcing teams have planned activities to find and evaluate alternative raw materials and estimate any impact they may have on our product portfolio. Follow-up of targets and the review of roadmaps are done by Metsä Group's Sustainability Process Management Team.

There are, however, 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 of coatings and provide stiffness and toughness when the paperboard is converted or bent to form boxes and other forms.

RAW MATERIALS BY WEIGHT
%, DRY TONNES:



Wood and wood products	95
Pulp and recovered paper	3
Coating and process chemicals	2
Packaging materials	<1

Serving global customers efficiently and with high quality

Metsä Group consists of five business areas that cover the whole value chain from sustainably managed forests to global markets.

**METSÄ
FOREST**

WOOD PROCUREMENT
AND SUSTAINABLE
FORESTRY SERVICES

P. 66

**METSÄ
WOOD**

WOOD PRODUCTS
FOR CONSTRUCTION

P. 70

**METSÄ
FIBRE**

SAWN TIMBER, PULP AND
OTHER BIOPRODUCTS

P. 74

**METSÄ
BOARD**

PREMIUM-QUALITY
PAPERBOARDS TO HIGH-
DEMAND END-USES

P. 80

**METSÄ
TISSUE**

TISSUE AND
GREASEPROOF PAPERS

P. 88

METSÄ FOREST

Metsä Forest provides services to both forest owners and the industry that uses wood. We procure all the wood used by Metsä Group. We offer extensive forest services in wood trade and forest and nature management to forest owners. All the wood we procure is 100% traceable.



FAMILY FORESTS ARE THE MOST IMPORTANT SOURCE OF WOOD

Most of Finland's forests are owned by private forest owners who are ordinary families, owning more than 60% of Finland's forests. Metsä Group's owner-members own half of Finland's privately-owned forests.

Some 70% of the annual growth of Finnish forests takes place in family-owned forests, and private forest owners provide the industrial sector with 80% of the Finnish wood it requires.

Metsä Forest is responsible for the purchasing, harvesting and measuring of the wood, as well as for its transportation to Metsä Group's production units and our other industrial customers. Our wood delivery volume to our internal and external industrial customers in 2019 declined by 1.7 million m³ compared with 2018. In 2019, we procured a total of 34.7 million m³ of wood, most of it from Finland. For wood purchases made in Finland, we prioritise the owner-members of our parent company Metsäliitto Cooperative. Every year, we complete around 35,000 wood trade transactions in Finland.

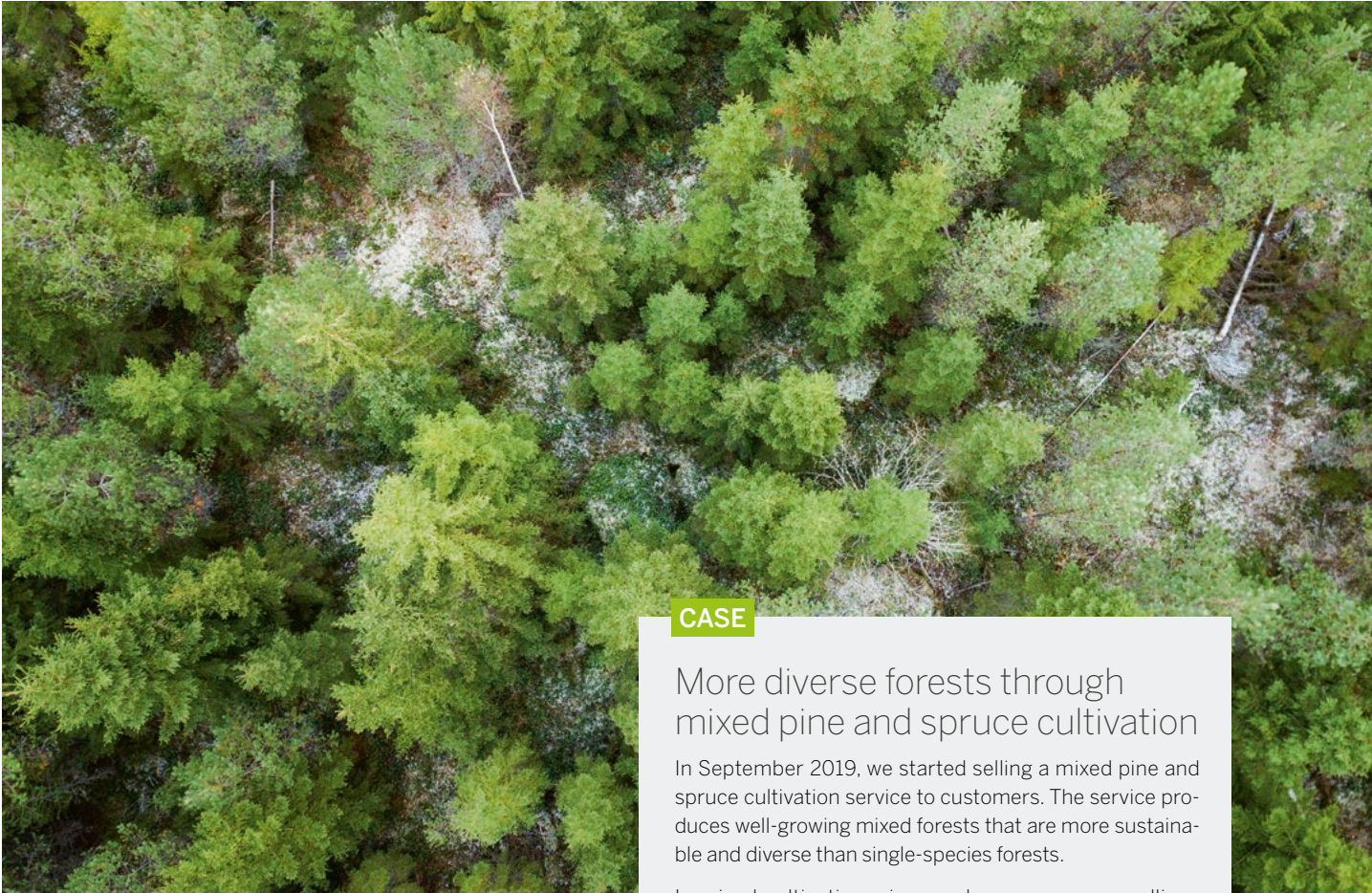
OUR SERVICES SUPPORT SUSTAINABLE FOREST MANAGEMENT

Metsä Forest provides forest owners with all services related to forest ownership, the management of forest assets, the investment of forest income and a forest estate's generational changes. The majority of our services are also available to those who are not our owner-members.

Consideration for nature and the environment are an integral part of all our forest services. In Finland, a felled forest is always regenerated. We help forest owners establish a new forest and to maintain the health, good growth and biodiversity of forests in accordance with the Forest Act and certification criteria. We work according to the same responsibility principles in all the countries where we procure wood.

We continually develop our services in forest management. In 2019, we launched a new pine-and-spruce mixed cultivation service, which ensures the generation of a mixed forest on soils suitable for this method from the outset. We have been actively involved in a project led by the Finnish Environment Institute which is developing a new biological water protection method that relies on wood.

The implementation of strategic sustainability throughout the organisation is essential for reaching the development targets. It is important that each employee at Metsä Forest understands and values the significance of sustainability in their work. Our subcontractors also play an important role as they are our partners, in charge of harvesting and transport, and our forest management work. Our goal is long-term cooperation that gives our partners the possibility to increase and develop their business operations.



CASE

More diverse forests through mixed pine and spruce cultivation

In September 2019, we started selling a mixed pine and spruce cultivation service to customers. The service produces well-growing mixed forests that are more sustainable and diverse than single-species forests.

In mixed cultivation, pine seeds are sown or seedlings planted between spruce seedlings. We provide forest owners with seeds and seedlings with a native origin.

Mixed spruce and pine cultivation is not a new idea, but there are new research results that support this method. According to initial research results from the Natural Resources Institute Finland, simultaneously cultivated pine and spruce grow at the same rate in well-managed forests. Successful mixed cultivation requires that seedling stands be managed in a good and timely manner.

The method is particularly suitable for areas with a risk of damage caused by elks. Mixed cultivation can be used to ensure that a new forest is sufficiently dense and continues to grow well, even if elks eat some of the pine seedlings.

Mixed forests are more resistant to damage than single-species forests. During particularly dry summers, spruce is more prone than pine to suffer from a lack of water, which hinders its growth. In such circumstances, spruce is also more prone to damage caused by insects, and this risk increases with climate change.

Mixed cultivation increases biodiversity especially when it is ensured during seedling stand management that a sufficient number of silver birches and other deciduous trees are left on the site in addition to pines and spruces.

TAKING ACTION TOWARDS THE 2030 OBJECTIVES

In 2019, Metsä Group updated its sustainability goals to be met by 2030. Metsä Forest's particular responsibility, in terms of the goals, is to increase the amount of carbon stored in forests and to safeguard biodiversity.

In 2019, Metsä Forest prepared an action plan for the sustainability goals and developed indicators for their monitoring. The goals will be put into practice from the beginning of 2020.

The amount of carbon stored in forests will be increased by accelerating the regeneration of a new forest after felling and by carrying the work out in accordance with the highest standards. According to results published by the Finnish Environment Institute in 2019, soil preparation, for example, improves a forest's growth and helps increase a forest ecosystem's carbon stock.

Since the autumn of 2016, all Metsä Forest's felling operations have included, with the permission of the forest owner, the making of two high biodiversity stumps on each hectare. This supports biodiversity of forests through leaving vital habitat for hole nesters and species dependent on decaying wood. In 2019, we left high biodiversity stumps on 80% of felling sites. In 2020, we will double the number of high stumps to four per hectare. Our aim is to leave high stumps on 90% of our felling sites.



CASE

Developing fire extinguishing equipment

The Ponsse Buffalo forwarder of Veljekset Hokkanen, Metsä Group’s contractor in Kangasniemi, is equipped with a water tank, pump equipment and a water cannon. Using the pump equipment, the 11,000-litre tank can be filled with water from a natural source.

– The forwarder makes putting out a forest fire more effective at a reasonable cost, says **Seppo Lokka**, director of the Southern Savonia Rescue Department. Several regional rescue departments contributed to the development of the forwarder, which was piloted in the summer, with good results.

– We are playing our part in further developing the prevention of forest fires so that extensive damage can be avoided in Finland. Through the dense network of forest roads in our country, forest machines have better access to fire areas than a traditional fire extinguishing fleet. In addition, more water can be transported in the tanks than on a helicopter and it is more cost-effective, says production manager **Pasi Arkko**.

– We are a national operator, and as the project progresses further, our contractors will have equipment for the use of all rescue departments.

In line with the planned operating model, a forwarder will arrive on a fire site based on an agreement between the contractor and the rescue department. The rescue department will bring a tank to be attached to the forwarder, and the tank can be put to use quickly.

CASE

We offer all felling methods

The Forest Act, which came into effect in 2014, gave forest owners more freedom to decide on felling methods. We provided our employees with training before the Act took effect, and this year we offered refresher training on continuous cover forestry.

A total of 400 forests specialists in wood trade and forest services and in operations participated in training events held across the country. Experts from the Natural Resources Institute Finland were responsible for the content of the events.

The themes of the training events included forest regeneration and harvesting in continuous cover forestry, and the effects of continuous cover forestry on biodiversity, carbon storage, forest damage and game. Matters related to the growth, yield and profitability of uneven-aged forests were also covered.

– These important themes provoked lively discussion, which continued even more actively on the forest sites the participants visited in the afternoon, said forest specialist **Juhani Savijärvi** from Padasjoki.

– We were also provided with information about continuous cover forest management recommendations, which were renewed this year.

– A good partnership between a forest specialist and a forest owner requires honest discussion. I provide guidance to the best of my knowledge, but the forest owner ultimately decides what measures will be carried out in their forest, said Juhani Savijärvi.

Country	Estonia	Finland	Latvia	Russia, St. Petersburg	Russia, Podporozhye	Sweden	Others	Total
PERSONNEL								
Number of employees ¹⁾	28	589	43	19	151	3	5	838
TRIF	0	19.3	0	0	0	-	-	13.5
LTA1 fr ²⁾	0	8.7	0	0	0	-	-	6.1
Sickness absenteeism % ³⁾	0.2	1.4	2.5	2	2.4	-	-	1.6
Organisational functionality index	8.7	8.1	8.6	9	8.9	-	-	8.6
WOOD PROCUREMENT								
1,000 m ³	1,361	27,495	1,134	-	2,245 ⁴⁾	2,203	231	34,669
MANAGEMENT SYSTEMS								
ISO 9001	x	x	x	x ⁵⁾	x ⁵⁾	x		
ISO 14001	x	x	x	x ⁶⁾	x	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 2019
2) Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sickleave per million worked hours
3) % of theoretical working time
4) Includes all wood procurement from Russia
5) Included in Metsäliitto Cooperative’s quality systems (ISO 9001)
6) Included in Metsäliitto Cooperative’s environmental systems (ISO 14001)

Read more on forest growth and sustainable forest management on pages 40–43
Read more on forest certification and traceability of wood on pages 44–47
Read more on how we safeguard biodiversity on pages 48–49

METSÄ WOOD

Metsä Wood provides competitive and environmentally friendly wood products for construction, industrial customers and distributor partners. Metsä Wood manufactures products from premium quality northern wood that comes from sustainably managed certified forests and is always fully traceable. The primary products of Metsä Wood are Kerto® LVL and birch and spruce plywood. The company has production facilities in Finland, Estonia and UK and products are exported all over the world. The main market areas are the UK, Germany and Nordic countries with Asia and North America becoming growing market areas.



METSÄ WOOD 2030 SUSTAINABILITY TARGET AND STRATEGY

Metsä Wood’s strategy is based on industrial efficiency. Our focus is on industrial scale production and sales of premium quality engineered wood products. Wood products with a long lifespan have a key role in circular economy as they store carbon for a long time.

The role of wood construction in the urbanising world is strengthening, as the importance of sustainability in built-up environments increases. To offer efficient products to its customers, Metsä Wood upgrades wood from sustainable sources efficiently in modern facilities.

Metsä Wood has been implementing an investment programme of approximately 150 million euros since 2017. With these investments we increase the amount of carbon stored in wood products for a long term. The most significant investment, worth 55 million euros, has been the birch plywood mill in Pärnu, Estonia where the mill’s production started in August 2018. The birch veneers for the plywood are manufactured at Äänekoski, Finland. Over 150 new jobs have been created and more people will be hired in the next few years. In Punkaharju, Finland, the new Kerto® LVL production line, with an annual capacity of 65,000 m³, started up in April 2019.

RAW MATERIAL FROM SUSTAINABLE SOURCES

All the wood we use is 100% sustainable and traceable, which means that it comes from certified or controlled sources. In 2019, the proportion of certified (PEFC™ or FSC®) wood at Metsä Wood was 89%.

SUSTAINABILITY IN PRODUCTION AND PRODUCTS

The efficient use of valuable raw material is a key priority at Metsä Wood and it is followed through all operations. Metsä Wood continuously fo-

cuses on improving the efficiency of the raw material use. Also the production side streams, such as chips and sawdust, are utilised either as raw material for pulp or in renewable energy production. The production of Metsä Wood is virtually waste-free.

Wood products play a part in mitigating climate change, as they store carbon for a long lifespan. As an example, Metsä Wood’s Kerto® LVL is a laminated veneer lumber product used in all types of construction projects, from new buildings to renovation and repair. In the manufacture of Kerto® LVL, a large share of renewable energy is used, resulting in lower fossil greenhouse gas emissions and global warming potential compared to other building materials. In addition, LVL stores biogenic carbon, which constitutes about one half of the dry weight of the wood. The biogenic carbon remains in the LVL throughout its lifetime until it is released back to the atmosphere to be absorbed by the next generation of growing trees. Kerto® LVL also serves as a carbon store in buildings: 1 m³ of LVL contains stored carbon equivalent to 789 kg of CO₂. With wood products, the building phase can be conducted resource efficiently in terms of time, environmental impacts and costs.

PRODUCT SAFETY IS SYSTEMATICALLY CONTROLLED

Metsä Wood products are manufactured according to relevant national and international regulations and standards and the products have several product approvals. Continuous high product quality is ensured by modern quality assurance procedures. Both production process and product properties are systematically controlled. In addition to Metsä Wood’s own quality control, Eurofins Expert Services Oy oversees production operations and internal quality control at Metsä Wood LVL and plywood mills. Majority of the Metsä Wood products are CE marked, which indicates that a product has been assessed by the manufacturer and deemed to meet EU safety, health and environmental protection requirements for construction products.



CASE

Green construction and living in Norway

Verksbyen, a new green neighbourhood in Fredrikstad in Norway, showcases the future of sustainable living. As part of the project, the construction company Arca Nova Bolig is building five five-storey apartment buildings situated in Capjon Park area in Verskbyen. The buildings are being constructed using Metsä Wood’s Kerto® LVL products – making the construction fast, lightweight and green.

Verksbyen is going to become a home for 5,000 people within the next 10 years. It aims to be Norway’s most innovative sustainable housing project.

– We have managed to reduce CO₂ emissions in a variety of ways. The houses are built with timber elements according to the Passive House Standard. Electricity is produced with solar energy and heating with solar thermal energy, says **Ruben D. Hansen**, CEO of Arca Nova Bolig part of the Arca Nova Group.

– By building with prefabricated elements using Kerto® LVL products, we can reduce both the building time and CO₂ emissions quite substantially compared to the traditional way of building with steel and concrete, says Hansen.

The first of the five multi-storey buildings were finished in 2019 and the rest will be completed by the end of 2020.

A SAFE AND HEALTHY WORK ENVIRONMENT

Metsä Wood’s long-term safety goal is zero accidents. Safety continued to be one of the focal areas in 2019 as our target is to provide a safe and healthy working environment for all our employees as well as our partners. Safety management is based on annual company-level and unit-specific safety targets set and regularly monitored by Metsä Wood’s management. A good example of this are the targets set for safety observations.

We also aim in our short-term safety target to zero accidents. In 2019, the annual lost time accident rate (LTA1) was 9.0 and annual target for 2020 is to get LTA1 below 5.0. In this, the preventive measures such as systematic safety inductions and regular safety tours are of crucial importance. Furthermore, we will focus on improving machine safety by further refining safety practices so that maintenance work and troubleshooting can be done more safely. More attention will also be paid to use of personal protective equipment, general cleanliness of premises and fire-fighting equipment.

Every accident and the reasons for it is investigated and reported, emphasis being on preventive work.



CASE

The Kerto® LVL mill in Lohja improved noise and odour control

The Kerto® LVL mill in Lohja is located close to a residential area so paying attention to the noise caused by production is important. Major improvements have been made in the past few years.

Cooperation with local residents and stakeholders is important for our production units. The production of Kerto® LVL occasionally causes both noise and odour in the nearby areas. The Kerto mill in Lohja has previously received negative feedback regarding occasional noise nuisance.

To solve this, the mill conducted a noise modelling study, renewed its crusher systems and modernised the drying machines, which had caused odour nuisance.

– The most significant noise nuisance arose from the crushing of what is known as field bark, as well as other fractions from the production, outside the mill, says **Jaakko Pusa**, Production Manager at the Lohja mill.

– We renewed the mill’s crusher system, which reduced the amount of work to be performed outdoors.

A storage shelter was also built in the mill area. The shelter serves as a noise barrier for the town and residential areas.

– We were also able to stop the drying machines from emitting a burning smell by modernising both machines, Pusa tells.

These investments in environmental efficiency are good examples of responsible operations and continuous improvement. With lower levels of noise and odour nuisance, residential satisfaction has increased significantly in the nearby areas. When the mill held a Doors Open Day in September 2019, visitors confirmed that the measures had the desired effect: the level of noise is now very low and even less irregular than before.

SUSTAINABILITY OVER THE LIFE CYCLE

Wood products offer renewable and sustainable solutions for construction. Wood as a renewable material has a lower global warming impact compared to alternative, non-renewable building materials. The infinite carbon cycle between the atmosphere, growing trees and wood products distinguishes renewable wood from non-renewable materials.

The natural cycle of wood begins when trees grow and absorb CO₂ from the atmosphere via photosynthesis. When trees reach certain age their growth significantly slows down and therefore also the absorption of CO₂ slows down. By harvesting trees in a responsible manner more room in the forest is made for new trees that can in turn act as carbon sinks.

The environmental performance of wooden buildings derives from their light weight (compared to other building materials), energy efficiency of materials and buildings, life-time carbon storage in wood, and their renewable and sustainable origin. Wooden buildings typically achieve the same service time as other buildings, typically 50–100 years.



Mill	Pärnu	Lohja ⁵⁾	Punkaharju ⁵⁾	Suolahti ⁵⁾	Äänekoski ⁵⁾	Boston	King's Lynn	Widnes	Others ⁷⁾	Total
Country	Estonia	Finland	Finland	Finland	Finland	UK	UK	UK		
PERSONNEL										
Number of employees	156	108	395	340	28	243	41	78	121	1,510
TRIF	57.4	54.5	54.3	18.9	19.8	11.8	0.0	18.8	-	30.3
LTA1 fr ²⁾	42.1	10.9	14.0	0.0	19.8	0.0	0.0	6.3	-	9
Sickness absenteeism % ³⁾	4.7	4.1	5.9	4.3	3.3	3.2	3.6	3.7	-	4.2
Organisational functionality index	8.7	8.1	7.8	7.8	8.4	7.6	8.2	7.6	-	8
PRODUCTION (1,000 m ³)										
Wood products	plywood	Kerto® LVL	Kerto® LVL and plywood	plywood	veneer	further processing	further processing	further processing		
Production	27	77	174	163	42	135	77	52		747
MANAGEMENT SYSTEMS										
ISO 9001	x	x	x	x	x	x	x	x		
ISO 14001	x	x ⁴⁾	x ⁴⁾	x ⁴⁾	x	x ⁴⁾	x ⁴⁾	x ⁴⁾		
ISO 45001	x	x	x	x	x					
OHSAS 18001						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)										
CO ₂ bio	0	37,832	78,605	98,089	0	0	0	0		214,526
CO ₂ fossil	0	983	1,462	618	0	0	0	0		3,063
Sulphur as SO ₂	0	0.88	0.90	0.21	0	0	0	0		2
Nitrogen oxides as NO ₂	0	14	67	129	0	0	0	0		210
Particles	0	2.1	3.2	50	0	0	0	0		55
DISCHARGES TO WATER (t)										
COD	0	1.7	38	10	1.00	0	0	0		51
BOD	0	0.27	21	13	0.0	0	0	0		34
Total phosphorus	0	0.0053	0.01	0.23	0.0	0	0	0		0.25
Total nitrogen	0	0.037	0.1	0.15	0.0	0	0	0		0.29
Total suspended solids	0	0.30	1.4	5	0.0	0	0	0		6.8
WATER USE (1,000 m ³)										
Water sourcing	6.1	81	57	1,209	19	0	4.5	0		1,376
Waste water flow	6.1	54	38	30	7.0	0	0	0		134
WASTE (t)										
Utilised	299	428	314	478	127	2,876	106	395		4,709
Landfill	0	234	0	0	0	0	0	0		234
Hazardous	124	176	313	92	0	27	0	2.0		734

¹⁾ Full-time equivalent on 31 December 2019

²⁾ Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sickleave per million worked hours

³⁾ % of theoretical working time

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

⁵⁾ Emissions, water use and wastes: Lohja includes 46% of Lohjan Biolämpö, Punkaharju includes 100% of Punkavoima and Suolahti includes 100% of Kumpuniemen Voima

⁶⁾ Organisational functionality index includes only blue collars

⁷⁾ Includes personnel from sales operations and management. Personnel figures of Others are included in Metsä Wood’s total figures

Metsä Wood’s discharges to the water occur only in plywood production processes

METSÄ FIBRE

Metsä Fibre is a leading producer of bioproducts, biochemicals and bioenergy. The company is the world’s leading producer of bleached softwood pulp and a major producer of sawn timber. Metsä Fibre has four pulp mills in Finland, five sawmills in Finland and one sawmill in Russia. The main market areas include Europe, Asia, North Africa and the Middle East.



AIMING FOR EXCELLENT PERFORMANCE IN ALL OPERATIONS

At Metsä Fibre, sustainability and responsibility are an integral part of everything we do. Metsä Group’s four sustainability themes cover our entire value chain – from the forest all the way to finished products. The commitment to our strategic sustainability objectives for 2030 is guiding our path towards a low-carbon society.

We create sustainable and renewable growth from wood and we are a forerunner in the pulp and sawn timber market. Together with our partners, we actively develop future pulp and sawmill technology concepts and new bioproducts. New bioproducts enhance the cost efficiency and growth of our pulp and sawn timber business operations and create a sustainable bioeconomy and circular economy.

We support our aim for continuous improvement with certified management systems such as quality, environmental, energy efficiency and safety systems. The Chain of Custody systems we use enable us to trace the origins of all wood used by Metsä Fibre.

Our goal is excellent performance in all our operations. We systematically develop our production efficiency and cost efficiency, as well as carry out timely maintenance investments and major repairs at our production facilities. The continuous minimisation of the environmental impacts of business operations is an integral part of excellent performance.

SUSTAINABLE RAW MATERIALS

We use northern wood from sustainably managed forests in areas where the forests grow more than they are used. 90% of the wood we use is certified according to the international forest certification schemes PEFC® or FSC®. All of the wood we procure is 100% traceable and meets, at minimum, the requirements of FSC Controlled Wood and PEFC Controlled Sources.

SUPPLY CHAIN SUSTAINABILITY

The wood supply chain is covered with chain of custody certificates and all the wood is traceable back to the origin. The sustainability of other than wood suppliers and logistics partners is ensured by a group-wide process in Metsä Group’s centralised purchasing. By 2030, all our suppliers will operate according to the responsibility criteria we have set for our suppliers. So far, up to 92% of our suppliers have already accepted these criteria. In addition to the Supplier Code of Conduct, supplier audits and evaluations are performed and further sustainability requirements are often agreed in the contracts. A sustainable supply chain is an important part of operations and this is emphasised also in customer cooperation to show that Metsä Fibre is a reliable partner to our customers.

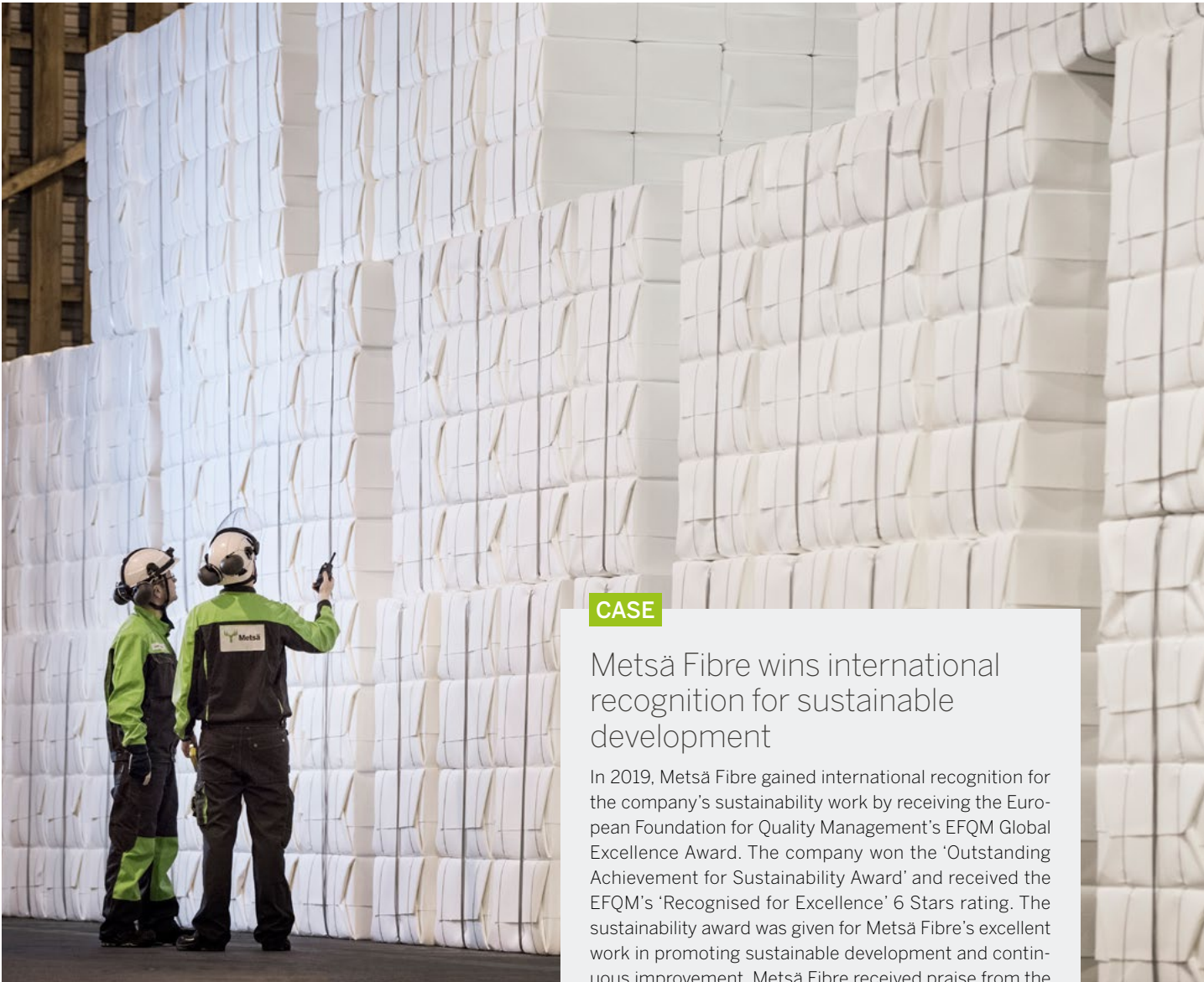
RESOURCE-EFFICIENT PRODUCTION

One of the key sustainability objectives for the whole of Metsä Group is to have fully fossil free mills by 2030. Of Metsä Fibre’s mills, the pulp production at our Äänekoski mill is already fossil free, as is our mill in Joutseno under normal operating conditions. If the planned investments in Kemi and Rauma are realised, the Kemi bioproduct mill and the Rauma sawmill and pulp mill will also be fossil free.

In terms of resource efficient production, the 2030 objectives focus on utilising 100% of side streams and reducing process water usage by 25% from the level of 2018. The use of process water in pulp production has already been reduced by 16% in 2010-2019 and we will continue to increase the efficiency of its use by a further 25% by 2030. In 2019 process water usage per produced tonne of pulp increased 4%.

SAFE AND HIGH-QUALITY PRODUCTS

Our high-quality products guarantee safe products to our customers. The fresh fibre pulp produced by Metsä Fibre is pure and suitable for various demanding end uses including products that will be used in food contact. Metsä Fibre’s pulp mills have been granted with an ISO 22000 food safety system.



CASE

Metsä Fibre wins international recognition for sustainable development

In 2019, Metsä Fibre gained international recognition for the company’s sustainability work by receiving the European Foundation for Quality Management’s EFQM Global Excellence Award. The company won the ‘Outstanding Achievement for Sustainability Award’ and received the EFQM’s ‘Recognised for Excellence’ 6 Stars rating. The sustainability award was given for Metsä Fibre’s excellent work in promoting sustainable development and continuous improvement. Metsä Fibre received praise from the EFQM assessors for how sustainability is reflected in the company’s investments and action plans and how it is part of the company culture at all organisational levels.

- Metsä Fibre’s key principle is to continuously improve our operations and take account of sustainability and responsibility in all our operations. We use northern wood from sustainably managed forests for the resource-efficient manufacture of products that can replace fossil-based raw materials. We take care of the well-being and safety of our personnel, and we are developing our production plants to make them more environmentally friendly and to achieve greater efficiency with the use of energy and materials. In addition to this, we use production side streams as efficiently as possible, as renewable energy and other bioproducts, says Metsä Fibre CEO **Ismo Nousiainen**.
- We apply the EFQM excellence model for the long-term development of Metsä Fibre’s operations. External feedback of this kind is extremely valuable to us.

WORK SAFETY IS A PRIORITY

At Metsä Fibre, we consider safety to be an important part of professional skills. Safety is a priority for us in everything we do, and everyone at Metsä Fibre has the right to a safe workplace. Key aspects of safety management include proactive safety work, risk identification and assessment, addressing unsafe working methods and ensuring the entire personnel’s commitment. We engage in long-term work to improve safety at work and require occupational safety skills from our suppliers and partners as well. We provide all of our employees, and the partners working at our mills, with induction training on safe ways of working.

Our goals and the occupational safety indicators we monitor encourage us to develop our operations continuously. We aim to decrease Metsä Fibre’s TRI frequency to three by 2025. In 2019 it was 20.0 and our long-term goal is zero accidents.

INVESTING FOR THE FUTURE

Metsä Fibre is planning a totally new modern bioproduct mill to Kemi, Finland. The ongoing pre-engineering of the mill is based on the premises of a totally fossil free operations and a 250% self-sufficiency in electricity. The total value of the investment would be EUR 1.5 billion and the investment decision will be made at the earliest in summer 2020. After the investment decision, the construction of the mill would begin immediately. If implemented, it will be the largest investment in the Finnish forest history after Äänekoski bioproduct mill, EUR 1.2 billion.

The Kemi bioproduct mill is planned to be the most energy, material and environmental efficient mill in the world, as its equipment present the best available techniques (BAT). Besides 1.5 million tonnes of pulp produced per year, the bioproduct mill also produces a broad range of other bioproducts. The traditional ones such as tall oil, turpentine and electricity, and the new ones, for example, sulphuric acid and product gas. The wood consumption of the new mill would be 7.6 million m³.

The effects of the new mill are significant. The new mill in Kemi would employ directly 250 people and, in its entire direct value chain, roughly 2,500 people in total. This is an increase of 1,500 people compared to the current situation. The employment impact in the construction phase would be almost 10,000 person-years of which over half will be in Kemi.

The mill would also increase the annual income by EUR 0.5 billion and export income annually EUR 0.5 billion.

Metsä Fibre is planning the construction of a sawmill at its mill site in Rauma, Finland. The sawmill would be the world's largest, most modern and most efficient, single-line pine sawmill. The pre-engineering project began in the spring of 2019, and the goal of the project is to establish the preconditions for an investment decision. The investment is valued at EUR 200 million and the investment decision will be made in early 2020.

The sawmill would be designed to use the latest technology at all stages of production. The new technology also allows for the transition from separate workstations to centralised monitor room set up.

Locating the sawmill next to an existing Rauma pulp mill would support meeting our sustainable development goals, for example, by reducing fossil fuel based carbon dioxide emissions. The sawmill would use the surplus bioenergy from the pulp plant, thereby eliminating fossil-based CO₂ emissions. In the longer term, the sawmill would enable Metsä Group to achieve its sustainable development goal of a fossil fuel-free mill environment. The environmental impacts of operations will be reduced through integration and the creation of synergies related to energy, by-products and logistics.

IMPLEMENTATION OF SUSTAINABILITY

Metsä Fibre held training on sustainable development for all employees during 2019. The training focused on the importance of each employee's own work in reaching the company's sustainable development goals. The target was to understand Metsä Fibre's role in sustainable development and to ensure that everyone is aware of Metsä Fibre's sustainable development goals and knows their own role in contributing to these in the pursuit of excellence.

As a responsible operator, Metsä Fibre has demonstrated its commitment to developing and deploying solutions that are as environmentally friendly as possible, and also its commitment to continuously increase the share of renewable energy in energy production. By fostering our own expertise and working in accordance with the company's values and goals, each of us plays our part in acting responsibly to meet the sustainable development goals that have been set.

CASE

Metsä Fibre receives EcoVadis Gold rating for corporate environmental and social responsibility

Metsä Fibre has been awarded a gold medal in recognition of a CSR achievement. The EcoVadis Gold rating was given to Metsä Fibre for the work the company has done related to environment, labour and human rights, ethics, and sustainable procurement.

– At Metsä Fibre, responsibility and sustainability are an integral part of everything we do, and strategically a key area for us. One concrete example of our resource efficiency agenda

is our unique bioproduct mill concept where we aim to utilise 100% of wood raw material, and continuously convert side streams from pulp production into bioproducts that offer higher added value than before, says **Ismo Nousiainen**, CEO, Metsä Fibre.

– We are all happy to achieve the EcoVadis Gold rating. This was our first round with EcoVadis, and we will utilise the feedback as one tool to further improve our operations.

CASE

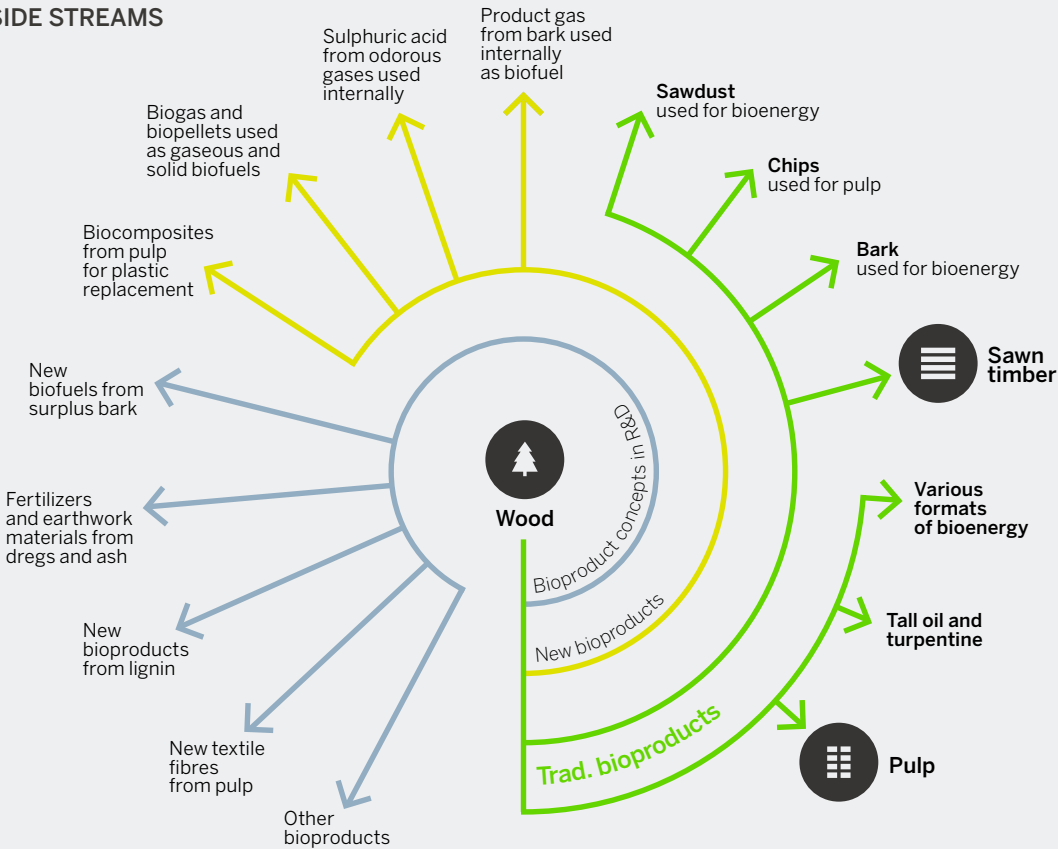
Bioproduct mills – our concept for renewing pulp mills

Metsä Fibre's unique bioproduct mill concept enables the future expansion of the company's product range to new bioproducts with increasingly high added value. The bioproduct mill concept is based on utilising 100% of the wood raw material as well as production side streams for producing pulp and a broad range of other bioproducts that can be used to replace fossil materials and fuels. Bioproduct mills generate considerably more bio-based electrical energy than traditional pulp mills, and do not use fossil fuels.

The world's first next-generation bioproduct mill was started up in Äänekoski, Finland in August 2017, and full production capacity of 1.3 million tonnes was reached as planned in August 2018. Now Metsä Fibre is planning the next bioproduct mill to be built to Kemi, Finland.

At the core of the bioproduct mill is the world's most efficient pulp process. The concept of the bioproduct mills' business model is based on an efficient partner network, in which new products are upgraded in cooperation with various parties. Businesses of various sizes and at various stages of development operate in the ecosystem.

UTILISATION OF MAIN AND SIDE STREAMS





CASE

Äänekoski road safety tour expands to Metsä Fibre’s other mill locations in Finland

Metsä Group’s road safety tour for primary school children was launched in 2018 in the Äänekoski region. The project was positively received, and in 2019 it was expanded to several other regions where Metsä Fibre has mills and sawmills.

At the safety tour events, young schoolchildren get to explore a timber truck and receive practical tips on road safety.

The children are also given Metsä Group high-visibility vests and reflectors, as well as an information package to make it easy to review issues related to road safety. The events are planned in conjunction with schools and municipalities in the region and implemented by Metsä Fibre and Metsä Group wood procurement.



CASE

Active cooperation to develop fish stocks

Metsä Fibre mills are participating in regional waterway monitoring which allows for careful monitoring of the state of the natural waterway downstream of the mills. As part of monitoring programme of the Äänekoski bioproduct mill, fish stock monitoring is carried out including for example the migration of trout. The monitoring was started a year before the start-up of the mill in 2016.

– Based on the results of the monitoring, the wastewater and thermal load of the bioproduct mill does not prevent the migration of trout along the Päijänne-Keitele waterway. Migration of the trout was similar before and after the start-up of the mill, say **Antti Leppänen** and **Heikki Alaja**, Fishery Environmental Specialists of Eurofins Ahma which is responsible for the monitoring.



	Joutseno	Kemi	Rauma	Äänekoski	Kyrö	Lappeenranta	Merikarvia	Renko	Vilppula	Svir	Others ⁴⁾	Total
Country	Finland	Finland	Finland	Finland	Finland	Finland	Finland	Finland	Finland	Russia		
PERSONNEL												
Number of employees ¹⁾	136	157	123	181	65	75	79	78	107	114	164	1,279
TRIF	4.1	7.1	9.5	27.9	30.5	43.2	56.1	44.1	27.3	4.7	-	20
LTA1 fr ²⁾	4.1	7.1	0	6.2	0	21.6	28.1	22	21.8	0	-	8.6
Sickness absenteeism % ³⁾	2.9	5.5	5.8	4.5	3.2	5.4	4.1	3.5	6.2	1.9	-	4.1
Organisational functionality index	8.1	8.6	8.2	7.7	8.2	8.1	8.2	8.1	8.4	9.2	-	8.4
PRODUCTION												
Chemical pulp (1.000 t)	638	566	600	1143								2,948
Sawn timber (1.000 m ³)					221	238	214	290	491	288		1,742
MANAGEMENT SYSTEMS												
ISO 9001	x	x	x	x	x	x	x	x	x	x		
ISO 14001	x	x	x	x	x	x	x	x	x	x		
ISO 50001	x	x	x	x	x	x	x	x	x	x		
OHSAS 18001	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) ⁵⁾												
CO ₂ bio	1,597,247	1,387,429	1,307,531	3,347,746	24,422	27,549	27,779	32,881	85,376	28,760		7,866,720
CO ₂ fossil	22,042	67,477	80,180	67,112	498	0	628	433	2,778	0		241,148
Sulphur as SO ₂	322	209	22	165	2.8	0.3	0.04	0	25	0.17		747
Nitrogen oxides as NO ₂	886	1 129	823	1892	19	27	26	26	93	33		4,954
Particles	267	72	105	29	20	5	19	6	12	2.2		537
DISCHARGES TO WATER (t)												
AOX	95	47	96	126	0	0	0	0	0	0		364
COD	7,209	7,748	10,827	7,639	0.37	0.29	0.38	0.29	0.53	20		33,444
BOD	163	116	110	133	0.006	0.005	0.006	0.005	0.009	7.1		529
Total phosphorus	9.7	6.1	4	6.7	0.0003	0.00024	0.00032	0.00024	0.00044	0.032		26
Total nitrogen	146	152	60	87	0	0	0	0	0	2.8		448
Total suspended solids	1,016	486	290	505	0.0061	0.0049	0.0063	0.0049	0.0088	7.3		2,304
WATER USE (1.000 m ³)												
Water sourcing	66,945	37,260	19,983	142,095	13	15	11	38	108	160		266,629
Waste water flow	18,105	17,727	15,952	22,891	7.3	5.9	7.6	5.8	11	313		75,025
WASTE (t)												
Utilised	29,963	21,671	536.1 ⁶⁾	9,049	99	65	1,063	2,087	2,674	10,033		76,965
Landfill	9,107	8,490	13,199 ⁶⁾	17,534	0	0	66	33	160	7		48,596
Hazardous	106	70	38.7 ⁶⁾	64	18	30	8	13	4	0		627

¹⁾ Full-time equivalent on 31 December 2019

²⁾ Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sickleave per million worked hours

³⁾ % of theoretical working time

⁴⁾ Includes personnel from sales operations, a subsidiary and management. Personnel figures of Others are included in Metsä Fibre’s total figures

⁵⁾ **Äänekoski:** These figures include emissions from the pulp mill and the separate energy plant serving other industrial units at the site and the town of Äänekoski. The energy plant uses some fossil fuels while the pulp mill is fossil free

Kemi: These figures include emissions from the pulp mill and the separate energy plant serving other industrial units at the site and the town of Kemi

⁶⁾ The Rauma mill waste figures have been revised in April 2020. These minor changes have no significant impact on the Group level calculations, which therefore have not been recalculated.

At Metsä Fibre sawmills in Finland, waste water is treated in clarification basins, the volumes are very small and measurements of discharges to watercourse are not required

METSÄ BOARD

Metsä Board is a forerunner in sustainability, focusing on premium fresh fibre products for consumer and retail packaging, including folding boxboards, food service boards and white kraftliners. The high performance of the products is based on technical excellence and tailor-made high-quality Nordic pulps. Metsä Board’s mission is to create packaging solutions that respect nature.



COMMITTING TO SUSTAINABILITY

At Metsä Board, the Board of Directors approves the company’s long-term strategic objectives, targets and guidelines. Metsä Board’s CEO together with the Corporate Management Team manages the implementation of the company’s strategy, including sustainability, in accordance with the decisions and instructions of its Board of Directors.

Metsä Board’s sustainability targets are based on Metsä Group’s strategic sustainability objectives and the Metsä Board strategy. The ambitious sustainability targets for 2030 published in August 2019 focus on four themes: responsible corporate culture and safety at work, sustainable forest management, climate and environment, and sustainable products and supply chain. The new targets support the UN Sustainable Development Goals and demonstrate Metsä Board’s commitment to responsibility in its own operations as well as in the supply chain.

Combating global warming is at the core of the targets: Metsä Board aims to achieve fossil free mills by 2030 with zero fossil CO₂ emissions. This means that by 2030, our mills will not use any fossil fuels nor purchase any fossil-based energy. In addition, Metsä Board searches for alternatives to fossil-oil based materials with the target that all raw materials and packaging materials will be fossil free in 2030.

SCIENCE BASED TARGETS

Metsä Board’s greenhouse gas emission reduction targets have been approved by the Science Based Targets initiative. The targets are consistent with the reductions required to keep the global warming in 1.5°C, the most ambitious goal of the Paris Agreement. With these targets Metsä Board commits to reduce its absolute Scope 1 and 2 GHG fossil emissions with 100% by 2030 from a 2016 base year. In addition, Metsä Board commits to reduce its Scope 3 emissions by targeting to have 70% of its non-fibre suppliers and downstream transportation suppliers by spend to set science based targets by 2024.

MANAGING CLIMATE-RELATED RISKS

Metsä Board carefully considers the climate change related risks and opportunities that may affect the implementation of the company’s strategy and on how short-term and long-term objectives are met. The climate related risk assessments include current and emerging regulation, technology requirements, market situation, supply chain, reputation risks and physical risks such as temperature changes and water availability. Metsä Board regularly assesses and monitors the risks to the environment and any changes in it. Identified risks and the means to control them are reported to Board of Directors at least twice a year.

SUSTAINABLE FINANCE AT METSÄ BOARD

Metsä Board has signed a bank financing facility consisting of a five-year term loan and a five-year multicurrency revolving credit facility (“RCF”) with two one-year extension options and an accordion option in 2019. The margin of the RCF is linked to sustainability criteria, including reduction in specific water consumption and reduction in specific energy consumption.

Metsä Board is preparing for a wider climate-related reporting to fulfill the recommendations and requirements of the Task Force on Climate-Related Financial Disclosure. In 2019 reporting the considered climate-related risks are presented in the risk section of the Board of Directors’ report in Metsä Board’s Annual report.

EXTERNAL RECOGNITION IN SUSTAINABILITY

Metsä Board is included in several external assessments that evaluate the company’s performance in the context of sustainability and corporate social responsibility.

In 2019 Metsä Board was nominated on the CDP Climate A List for the fourth consecutive year for its actions to mitigate climate change. In addition, Metsä Board achieved A- in the CDP Water and Forest



Programmes and in CDP Supplier Engagement Rating for leadership in water stewardship and sustainable forest management and for supplier engagement on climate change.

In the EcoVadis corporate social responsibility assessment Metsä Board achieved, for the third consecutive year, the recognition level Gold and was included in the top 1% of companies assessed by EcoVadis in the manufacture of corrugated paper and paperboard industry.

Metsä Board has also scored highly in other ratings related to environmental, social and governance (ESG) issues, including assessments by MSCI, ISS ESG, Sustainalytics and Vigeo Eiris.

CODE OF CONDUCT COVERAGE

In 2019, the share of personnel that has been trained in the revised Code of Conduct e-learning was 97% whilst our long-term target is that 100% of our personnel will complete the Code of Conduct e-learning.

In addition, a global classroom training programme was designed to give a deeper insight into business ethics and the opportunity for open discussions. In 2019, 532 people participated in these supplementary Code of Conduct classroom trainings.

EVERYONE HAS THE RIGHT TO A SAFE WORKING ENVIRONMENT

Metsä Board’s professionals put safety first, and safety is an integral part of each and every task. Everyone has the right to a workplace where no accidents occur. All our mills apply certified health and safety management systems and 5S. We also require our partners to be as committed to the promotion of safety at work as we are.

We always start off morning meetings with safety matters at our mills. Our long-term safety goal is zero accidents.

We utilise the information gathered from safety discussions, walk-throughs and briefings and record them in the HSE system. In addition to safety observations, the system includes reports on safety hazards and

accidents. We also conduct risk assessments, root cause analyses and organise safety trainings.

All our mills are OHSAS 18001 certified, and the mills comply with the 5S system to improve productivity, well-being and safety at work. In 2020, we will be focusing on the deployment of group-wide safety processes and our mills’ ISO 45001 certification.

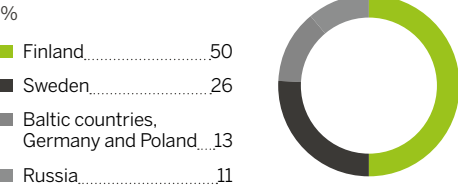
RAW MATERIALS FROM SUSTAINABLE SOURCES

As part of Metsä Group, Metsä Board has full control over the wood raw material supply chain from forest to paperboard production. Metsä Board procures all its wood through the operations of Metsä Forest. The pulp used for paperboard production is manufactured in Metsä Board’s own pulp mills or in the pulp mills of our associated company Metsä Fibre with 24.9% holding. This provides Metsä Board a secure pulp supply, high quality consistency as well as an unbroken product safety chain through full control of chemicals used in production.

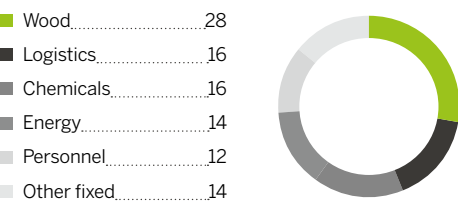
All wood raw material Metsä Board uses comes from sustainably managed northern forests, and is 100% traceable both through PEFC™ or FSC® Chain of Custody management systems. Of this wood, 76% (79) originated from certified forests in 2019, and 24% (21) came from controlled forest sources.

The total wood use of Metsä Board in 2019 was 8.2 million m³ (8.5). This includes the wood used for Metsä Board’s own pulp and CTMP production as well as wood used for the pulps purchased from Metsä Fibre. 50% of the total wood used came from Finland and 26% from Sweden. The rest came from the Baltic countries, Russia, Germany and Poland.

METSÄ BOARD'S
WOOD SUPPLY
AREAS 2019



METSÄ BOARD'S
COST SPLIT IN 2019
EUR 1.7 BILLION, %



BREAKDOWN OF
LOGISTICS MODES* 2019
%



* Share of total logistics costs

SUSTAINABILITY IN THE SUPPLY CHAIN

Sustainability of all Metsä Board's suppliers is ensured by a group-wide process in Metsä Group's centralised purchasing. Metsä Board's suppliers include wood and fibre suppliers within Metsä Group as well as external suppliers such as chemical, machinery, equipment and service providers.

By the end of 2019, suppliers that covered 95% (95) of Metsä Board's total purchasing were committed to Metsä Group's Supplier Code of Conduct or had a corresponding Code of Conduct themselves. In addition to the Supplier Code of Conduct, further sustainability requirements are often agreed in the contracts. By the end of the year, the compliance analysis was conducted on suppliers representing 82% of total purchasing value. The sustainability evaluation, which includes a suppliers' self-assessment questionnaire and required development actions if needed, covered 58% of suppliers measured by spend.

In 2019, Metsä Group conducted 14 (27) and external party 15 (15) on-site audits at Metsä Board's suppliers.

Metsä Board uses local suppliers where possible. In 2019, 76% of purchases came from Finland and Sweden where we have production sites. 96% of our purchases came from Europe.

Adverse impacts of logistics are mitigated with careful route planning, minimising transported distances and developing more efficient operations and guidelines. This reduces both costs and emissions. The lowest emissions' alternative is prioritised, for example, sea and rail deliveries are preferred over trucks where possible.

Metsä Board tracks the origin of all the wood used through PEFC™ and FSC® Chain of Custody systems. As a next step we will further improve the traceability of chemicals and other raw materials.

In 2019, we knew the origin (manufacturing location) of 93% of the raw materials we purchased.

CASE

Ensuring product safety
by better traceability

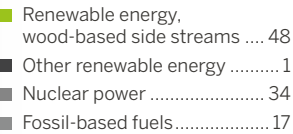
Metsä Board's product safety questionnaires, which are directed to the suppliers, are one example of ways to increase traceability of raw materials. These questionnaires are sent to all Metsä Board's raw material suppliers annually.

Metsä Group's comprehensive system for supplier communication consists of a vendor portal for suppliers and an internal procurement management database. Suppliers can reach Metsä Group via the vendor portal for all matters. One of the key functions are the questionnaires sent and answered in this system.

The compliance of Metsä Board's end products must be verified in many ways, e.g. raw material assessments, good manufacturing practices and end product testings. The supplier management system is a valuable tool when evaluating the chemicals used as raw materials in our products. It compiles all information in one place, where it can easily be reviewed.

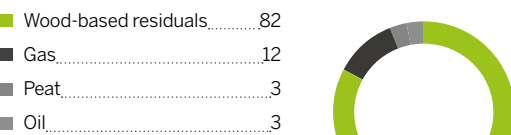
The system is Metsä Group wide enabling one harmonised portal to all suppliers delivering products or services to the Group's business areas.

TOTAL ENERGY
CONSUMPTION IN 2019
11.7 TWH (AS PRIMARY
ENERGY)



Total energy consumption is expressed as primary fuel consumption. Primary energy of purchased electricity is calculated assuming following efficiency factors; for traditional combusted fuel fuels 40%, nuclear energy 33%, hydro, wind and solar energy 100%. Purchased heat is calculated according to actual fuel consumption of the near-by energy plants.

TOTAL FUEL CONSUMPTION
IN 2019
5.6 TWH*



* excluding purchased heat

RESOURCE EFFICIENCY IN PRODUCTION

Metsä Board systematically manages the environmental impacts of its production units by detailed plans, targets and measuring progress against its sustainability target. We work to mitigate global warming and use raw materials, water and energy responsibly and resource-wisely.

We have an annual and long term action plan to reach our sustainability targets. These targets were renewed in 2019 for the period of 2018–2030.

TOWARDS FOSSIL FREE MILLS

Metsä Board has reduced its fossil CO₂ emissions (Scope 1 and Scope 2) by 50% per product tonne since 2009. Reduced fossil carbon dioxide emissions are a result of long-term actions and investments that have improved efficiency in the use of process water and energy, and increased the share of fossil free energy.

Our target is to have fossil free mills by 2030. This means that in 2030 we will not use any fossil fuels in our production units nor purchase any fossil-based energy to be used in our production.

In 2019, the share of fossil free energy of Metsä Board's total energy consumption was 83% (82). Most of this consisted of renewable bioenergy produced from wood-based side streams from our processes such as black liquor, bark and logging residuals.

During the year our energy efficiency decreased by 0.5%. Our target is to achieve at least 10% improvement between 2018–2030. Since 2009 the improvement has been 12%. Both enhanced energy efficiency and the mill-specific actions to reduce the share of fossil fuels are needed to achieve our fossil free mills target. A major contribution to this will come from the planned renewal of the Husum pulp mill.

SAVING WATER

Metsä Board's mills are located in the water-rich Nordic countries. In 2019 Metsä Board's fresh water intake totalled 101 million m³. All process and cooling water was taken from surface waters such as rivers and lakes. After use, the process water is cleaned thoroughly before it is returned back into near-by waterways. About half of the water intake is used for cooling machinery. As the cooling water runs in a separate system it stays clean during use. 99% of all water used is released back to nature.

Our target is to reduce the process water use per product tonne by 30% by 2030 compared to the 2018 level. In 2019, the reduction was 11%, and since 2010 the reduction has been 29%.

To reach the target we have set mill-specific targets. Husum mill has the largest potential for improvements, and these are included in the planned renewal of the pulp mill.

UTILISING PRODUCTION SIDE STREAMS

Our 2030 target is that all production side streams will be utilised and nothing is landfilled. To prevent waste generation in pulp and board manufacturing, Metsä Board enhances its recovery processes, seeks new ways to reuse residuals and uses organic waste to generate energy. In 2019, as much as 99% (99) of Metsä Board's side streams were utilised. Side streams consist of production waste and by-products such as ash, which is used as fertilizer. Of production waste 46% was reused as materials and 53% was incinerated to produce energy. The remaining stake, 1%, was landfilled or treated as hazardous waste.

CASE

Noise reduction at Tako mill

Metsä Board's Tako paperboard mill is located in the heart of Tampere city in Southern Finland. Due to its central location, the mill pays special attention to the noise from its operations.

The main source of noise at Tako mill is the hum from blowers. The mill has prepared a noise reduction plan, and the implementation of the plan is regularly monitored in cooperation with the local authorities. The noise level of a noisy blower was reduced in 2018, and noise reduction measures continued in 2019 by increasing the dampening in the inlet ducts of the Tako power plant. The following step is to update the dampening of the paperboard machine blowers during 2020. These measures will significantly decrease the noise in the surrounding areas.

CASE

Restoring a fish migratory route

Metsä Board participates in the restoring of Mämmenkoski fish migratory route close to Äänekoski mill site. This is done in cooperation with WWF Finland, authorities and the local community. The aim of the restoration is to reconstruct a natural fish migratory route from lake Kuhnamo to lake Keitele and enable natural reproduction of trout. Restoration includes construction of a migratory route, removal of dams clogging up the stream and creating suitable habitats for fish reproduction. Planning of the project proceeded in 2019 and the implementation phase will take place in 2020.

SUPPORTING SUSTAINABLE CONSUMPTION

There is growing concern among consumers about the effects of climate change and plastic waste. This sets new requirements also for packaging. According to ProCarton, 75% of consumers from across Europe say the environmental impact of a products packaging affects their purchasing decision. At the same time regulations related to recycling targets, producer responsibility and restrictions of certain types of single-use packaging drive production and consumption towards more sustainable solutions.

Metsä Board's folding boxboards are developed for food, beauty, healthcare and luxury packaging and graphics applications. In the spring 2019, Metsä Board further lightweighted and optimised its folding boxboards based on improvements in its high yield pulp.

Metsä Board works for creating better packaging solutions with less environmental impact. Metsä Board's lightweight fresh fibre paperboards reduce CO₂ emissions across the value chain: they consume less raw ma-

CASE

The blue box – classical, lightweight and sustainable

The classical and famous blue package of Barilla pasta is made of Metsä Board's lightweight paperboard. Barilla's GRDQ (Group, Research, Development & Quality) Vice President of Global Packaging, **Michele Amigoni** tells that Metsä Board plays a significant role in providing technical innovations and developing lighter and more ecological packaging material alternatives for the packaging industry.

Barilla is very aware of consumers' changing attitudes towards plastic. The company uses plastic since everything cannot be substituted with paperboard. However, it is important to identify when plastic is not necessary.



terial, water and energy, reduce transport weight and produce less waste. Metsä Board's paperboards are up to 30% lighter compared to conventional paperboards (e.g. solid bleached board and recycled board) but still provide the same strength and stiffness, and the weight difference can be even higher when compared to recycled paperboards.

Even small weight reductions can play a big role at global scale. Some 150 million cartons made from Metsä Board's folding boxboard are used by consumers every day. With a reduction of 1% paperboard weight we can create material savings equalling 1.5 million cartons per day. Thus, the material savings equalling to almost 550 million cartons in a year can be achieved in end uses like cereals, chocolate, cosmetics and medicine packaging.

Metsä Board's lightweight and strong white kraftliners are used in high quality corrugated packaging for example in shelf-ready packaging, displays and point-of-sale solutions. They support the promotion and differentiation of product brands and for the growing on-line shopping where durability and lightness are key considerations.

RECYCLABLE PLASTIC-FREE ALTERNATIVES

Paperboard is made from renewable, bio-based wood fibre and is highly recycled. For example in Europe, 85% of paperboard is collected for recycling, while the corresponding figure for plastic is 42% (Eurostat). All Metsä Board's paperboards are recyclable depending on local recycling infrastructure.

Paperboards can reduce or replace the use of plastics in many packaging end uses and the application areas will widen as the properties of paperboards are further developed.

Autumn 2019, Metsä Board introduced a new eco-barrier paperboard that is plastic-free and recyclable. The eco-barrier paperboard, MetsäBoard Prime FBB EB, provides an alternative to plastic in end uses requiring medium grease and moisture resistance such as food service, fresh food, dry food and frozen food packaging. As the paperboard is plastic-free, it is recyclable in existing paper or paperboard recycling schemes. It contains no fluorochemicals nor optical brightening agents which makes it safe for direct food contact.

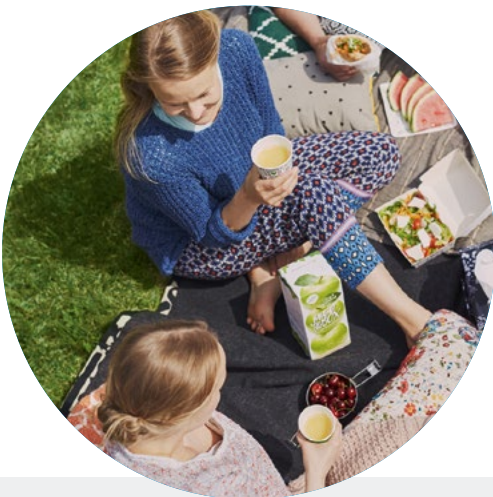
One of Metsä Board's recently revised sustainability targets for 2030 is to only use fossil free raw materials. During 2019 Metsä Group defined which raw materials are currently fossil oil-based and calculated their share of all raw materials used in the finished products. In 2019, the share of fossil free raw materials was 99% (99) of volume (dry tonnes). Our main raw material fibre covers 92% of all raw materials.

SUSTAINABLE PACKAGING DESIGN

Designing packaging in a smarter way can have a big impact on sustainability. Packaging should be right-sized and functional, made of material fitting the purpose and protect the product from damage. Sustainability of the packaging can be improved by optimising the use of materials, lightweighting, minimising the use of glues and other additional chemicals, ensuring functionality in the logistic chain, in stores and in consumers' use, as well as enabling reuse or recyclability.

Metsä Board has invested in structural and graphical packaging design competence to support its customers with more sustainable packaging solutions. Metsä Board's design team works with brands globally to provide inspiration and ideas that help utilise the full potential of premium lightweight paperboards. In 2019, Metsä Board started the construction of Paperboard and Packaging Excellence Centre in Äänekoski, Finland. The centre will be operational in 2020.

We also encourage innovation in sustainable packaging design through our global packaging design competition. The Better with Less – Design Challenge was run for the second time in 2019–2020 to find new environmentally-friendly and functional packaging solutions for some of the world's most frequently used and fastest growing types of consumer packages.



CASE

Paper cup recycling in France

Metsä Board participates in an pilot initiative for recycling of paperboard cups launched in France in 2019. The project is managed by the Alliance Gobelet Carton. Metsä Board is one of the founding members of the association.

Alliance Gobelet Carton is an association of four paperboard cup producers and two paperboard producers. It aims to create a collection system to recycle paperboard cups and to bring together cup producers, paperboard suppliers, cup users and the recycling sector. Participants in the scheme will be issued with a collection box that can take up to 750 cups.

– Paperboard cups can be collected after use, recycled and used as valuable raw material when producing new packaging products. This is what we intend to demonstrate through the pilot project and to create a model that can be widened to more extensive use, says **Laurence Sovran**, Sales Manager at Metsä Board.

Read more about Metsä Board and sustainability in Metsä Board's Annual Report.

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	81	119	151	273	209	193	672	595	2,351
TRIF	19.9	7.1	17.8	7.5	14.7	8.5	18.5	6.1	-	10.2
LTA1 fr ²⁾	0	7.1	5.9	7.5	6.3	5.7	6.2	3.5	-	5.5
Sickness absenteeism % ³⁾	3.2	3.3	4.2	3.4	4	5.2	3.9	4	-	4
Organisational functionality index	7.4	7.9	8.6	7.7	8.1	8.2	8.2	8.3	-	8.2
PRODUCTION										
Chemical pulp and CTMP	336	365						673		1,373
Paperboard			372	184	264	213	240	542		1,816
MANAGEMENT SYSTEMS										
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		
OHSAS 18001	x	x	x	x	x	x	x	x		
ISO 22000	x	x	x	x	x	x	x	x		
FSSC 22000			x	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)										
CO ₂ bio	0	163,992	0	0	135,774	0	0	1,515,413		1,815,179
CO ₂ fossil	27,230	4,734	6,183	4,654	75,371	76,815	0	53,287		248,274
Sulphur as SO ₂	0	14	0	0	67	0.04	0	252		333
Nitrogen oxides as NO ₂	15	192	2.7	2.4	94	47	0	869		1,221
Particles	11	15	0	0	1	0	0	318		345
DISCHARGES TO WATER (t)										
AOX	0	0	0	0	0	0	0	60		60
COD	646	1,374	249	159	598	202	532	8,677		12,437
BOD	3.6	53	28	48	79	63	155	0		429
Total phosphorus	0.23	2.4	1.5	0.82	1.6	1.3	0.65	13.3		22
Total nitrogen	3.4	29	43	18	11	0.87	11	90		206
Total suspended solids	22	74	110	54	89	34	127	856		1,366
WATER USE (1.000 m³)										
Water sourcing	6,657	11,693	8,578	4,378	19,175	4,715	3,906	41,865		100,967
Waste waterflow	576	3,949	7,060	3,201	5,149	2,814	3,321	33,256		59,326
WASTE (t)										
Utilised	3,701	31,083	5,041	15,476	54,970	4,351	12,549	29,579		156,750
Landfill	0	962	294	4	0	180	62	0		1,502
Hazardous	28	65	1	9	38	67	15	713		936

¹⁾ Full-time equivalent on 31 December 2019

²⁾ Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sickleave per million worked hours

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⁾ Husum mill’s BOD not measured

METSÄ TISSUE

Metsä Tissue is a leading tissue paper supplier to households and professionals in Europe and the world’s leading supplier of greaseproof papers. Our brands are Lambi, Serla, Mola, Tinto, Katrin and SAGA. In addition to our own brands, we develop and manufacture a range of customer label products for leading European retailers and distributors. Metsä Tissue’s products are manufactured in Finland, Sweden, Germany, Poland and Slovakia.

1	2,702	10	91%	17%
BILLION EUR IN SALES	EMPLOYEES	PRODUCTION UNITS	SHARE OF CERTIFIED PULP	SHARE OF BIOFUELS USED IN PRODUCTION

CREATING A CLEANER AND SUSTAINABLE EVERYDAY

Metsä Tissue innovates tissue and greaseproof paper products and services that make everyday life cleaner, softer and easier – in a sustainable way. Our tissue and greaseproof papers are used by millions of consumers daily.

Metsä Tissue continuously evaluates its business operations not only for profitability, but also for their environmental impact. We take sustainable development into account in all our operations. We strive to keep the environmental impact of our operations and products as low as possible throughout their lifecycle, ranging from product development and procurement of raw materials to production, transportation, consumption and proper disposal. We work closely with our suppliers, customers, partners and consumers.

Metsä Tissue’s strong position as a responsible local operator is an important success factor. The company’s mills are located within the main market areas. Our products are manufactured as close to consumers as possible, reducing carbon dioxide emissions and transportation costs. The logistics chain is developed in such a way as to minimise transport emissions. In 2019, over 90% of our deliveries were delivered within a distance of 500 kilometres from our mills. Our product portfolio is also being harmonised to make storage and transportation as efficient as possible.

STRATEGIC 2030 OBJECTIVES GUIDE OUR WORK

Metsä Group’s strategic 2030 objectives for sustainable development also guide Metsä Tissue’s activities. They focus on forests, climate and the environment in general, providing sustainable alternatives and creating well-being. Key goals include a safe working environment and an ethical operating culture, as well as more efficient use of water, effective utilisation of production side streams and responsible procurement. As part of Metsä Group, Metsä Tissue’s goal is to have fossil free mills and use only fossil free raw materials by 2030.

Metsä Tissue’s own goals also include a plastic-free offering as well as development of more efficient logistics in tissue paper operations.

AIMING FOR SAFER AND MORE EFFICIENT MILLS

Safety is an essential part of all our activities. Our operations are guided by Metsä Group’s common ethical principles, which everyone must uphold. In the development of safety at work, in 2019 we concentrated in particular on harmonising the use of personal protective equipment (PPE) at all our mills. We have also introduced the ‘Fair & Just’ operating procedures throughout Metsä Tissue in order to comply with occupational safety guidelines. These practices were initiated during 2019 and will be fully implemented in 2020.



In the reporting period, a fatal accident occurred at the Zilina mill in Slovakia. The accident, and the causes leading to it, have been carefully investigated in cooperation with the authorities. Major investments continue to be made to improve safety and prevent accidents. During 2019, occupational safety was developed extensively. At the company-level review, there has been a positive development in the reduction of accident frequencies.

OPEN COMMUNICATION ON SUSTAINABLE DEVELOPMENT

We want to openly communicate the results we have achieved in sustainable development areas to our customers and other stakeholders. Many of our products are labelled with the EU Ecolabel, Nordic Ecolabel or the Blue Angel environmental label, as an indication that the products are in the top segment of their product category in terms of environmental performance.

Metsä Tissue participated in the World Wildlife Fund’s 2019 Environmental Paper Company Index, which analysed and evaluated paper manufacturing companies’ corporate responsibility, wood fiber procurement and environmental performance in production. Metsä Tissue has participated in this index since 2011.

We report on our sustainability performance in Sedex and Ecovadis sustainability platforms.

Tissue papers

FOCUS ON FRESH FIBRE PRODUCTION

In 2019, Metsä Tissue revised its strategy with the aim to increase the long-term industrial efficiency and environmental performance of the tissue paper business. Improving product quality and ensuring the availability of high-quality tissue paper products are part of the strategy.

In 2019, Metsä Tissue initiated an environmental permit process and a pre-feasibility study to create preconditions to double the company's tissue paper production in two phases at the Mariestad mill site in Sweden. Metsä Tissue will focus increasingly on fresh fibre-based products, and the investments planned for the Mariestad mill support this goal.

The availability and quality of recycled fibre have deteriorated, and investment in the production of high-quality fresh fibre products with modern technology is the most sustainable solution for the future.

SUSTAINABLE RAW MATERIALS

WOOD FIBRES

The most important raw material in the production of our tissue paper products is pulp, which is made of wood fibre. To respond to market needs in terms of quality and functionality, we use fresh and recycled fibre and combinations of them in our tissue paper products. Other raw materials come from reliable suppliers that follow the ethical guidelines set out in Metsä Group's Code of Conduct for Suppliers. By the end of 2019, suppliers that covered 93% of Metsä Tissue's total purchasing were committed to these requirements. In addition, a sustainability evaluation, which includes a suppliers' self-assessment questionnaire and required development actions, covered 36% of suppliers measured by spend.

In recent years, approximately half of the fibre we use has been fresh fibre, most of which comes from the Group's own mills from Metsä Fibre and Metsä Board. As a part of Metsä Group, we are self-sufficient with respect to the supply of fresh fibre from sustainably managed northern

forests. This ensures Metsä Tissue a secure pulp supply, high quality consistency and pure and safe fibre raw material.

The use of recycled paper-based fibre in our products decreases as its availability and quality continue to deteriorate. This is mainly due to a decrease in the amount of paper used in offices and newsprint consumption as a result of digitalisation. The certified chain of custody management systems in place at Metsä Tissue's mills ensure the traceability of fresh fibre. In addition to using pulp from Metsä Group, we also buy market pulp. We only work with pulp suppliers that can verify the responsible origin of their wood fibre. Fibre must not originate from illegal sources. When choosing pulp suppliers, we give priority to suppliers with a valid FSC® or PEFC™ certificate. In 2019, 91% of the pulp we used was certified.

OTHER RAW MATERIALS

In addition to wood fibre, we use additives in the manufacture of our products to ensure good absorbency and strength. Only small traces of these additives remain in the final products, and safety is a priority in our choice of all additives.

We also use recycled fibre from recycled paper in some of our products. The recycled paper comes from a wide variety of sources, and always requires cleaning. This process makes use of soap and various other substances.

We use all the additives and substances that are necessary for the production process in such a way that they do not cause harm to people or the environment. They meet the requirements of the Nordic Ecolabel and EU Ecolabel criteria.

The safety of the chemicals we use is important, as many of our products come into contact with the skin and food. For this reason, we have pre-defined limits both for chemical properties and the quantities used. Our pre-approval procedure ensures that these restrictions are met. Our mill personnel are trained to handle chemicals safely and appropriately.

In 2019, over 90% of Metsä Tissue's deliveries were delivered within a distance of 500 kilometres from the mills.

EFFICIENT USE OF RESOURCES

The most significant environmental impacts of tissue paper production are related to the use of energy and water, as well as the de-inking sludge generated in the recycled fibre purification and de-inking process.

Energy usage is one of the most important sustainable development issues in Metsä Tissue's operations. Metsä Tissue, and Metsä Group as a whole, are aiming for fossil free mills by 2030. This means that fossil fuels will no longer be used in production, and thus no fossil fuel-based carbon dioxide emissions would be generated. In 2019, the share of fossil free fuels in Metsä Tissue's production was 17% (16).

The transition to fossil-free production requires new technologies to be taken into use. Metsä Tissue has reduced its direct fossil CO₂ emissions (Scope 1 and Scope 2) by 22% per product tonne since 2009, through actions and investments that have improved efficiency in the use of energy and process water.

In 2019, changes were made at Metsä Tissue's Mänttä mill in Finland in order to use liquefied natural gas (LNG) instead of liquefied petroleum gas for the drying of tissue paper. This reduced fossil carbon dioxide emissions in the drying process by 15%.

Water is an important resource for us. We continuously develop water use and efficiency in our processes. During 2019, we reduced process water use per produced tonne by 1%, and have reduced it by 18% since 2010. We are continuously making water use more efficient by closing water cycles inside the mills and developing biological wastewater treatment processes. Water circulates in the process many times, and it is carefully purified before released as an effluent.

We strive to utilise all production side streams as efficiently as possible, and our goal is that by 2030 we will make use of all the side streams rather than generating any landfill waste. In 2019, the utilisation rate for side streams was as high as 98%. In the production of tissue paper, the largest side stream is the de-inking sludge from the cleaning of recovered paper. Currently, de-inking sludge is used as a raw material and for generating



energy. It is used as fibre clay for various purposes, such as raw material for the construction industry and material for the construction of landfill sites and road building. At the Mänttä mill, de-inking sludge is pressed to form pellets that are used as fuel for energy production, replacing the use of fossil fuels such as peat. Thanks to this process, the fossil CO₂ emissions from the mill area have been reduced by 12,000 tonnes per year.

All of Metsä Tissue’s mills have a certified ISO 9001 quality management system and ISO 14001 environmental management systems. The product safety management systems in use are the ISO 22000, BRC and/or IFS standards. Almost all Metsä Tissue mills have a certified ISO 50001 energy management system and an occupational safety management system OHSAS 18001 or ISO 45001. With the aid of certified management systems, we ensure continuous improvement of our operations and compliance with systems’ requirements.

PROVEN PRODUCT SAFETY

All Metsä Tissue’s products are manufactured according to Good Manufacturing Practices (GMP). In addition to the approval of safe raw materials, the finished tissue products are tested to ensure their safety.

Hygiene and product safety management covers the entire supply chain, from product development to production and distribution. Our tissue paper and greaseproof paper products are biodegradable and easy to dispose of. They can be composted, recycled or burned for energy after use.

Fresh fibre products are ideal for kitchen and hospital hygiene. Recycled fibre products are most suitable for hand towels used in public toilets and for toilet paper. Our household towels can be safely used with food, as the manufacture of household towels and foodstuffs are partly subject to the same stringent safety requirements, such as Good Manufacturing Practices.

We adhere to the recommendations of the German Federal Institute for Risk Assessment (BfR) for the selection of raw materials for tissue products that come into contact with food and for product testing. The recommendation lists the acceptable raw materials for papers that come into contact with food and the suitable testing methods.

We fulfil the EU requirement that ensures papers which come into contact with food should not release any substances that are harmful to human health, or that alter the sensory characteristics of foodstuffs. The measures we take to ensure this involve verifying the acceptability of raw materials from suppliers, process hygiene, and regular product testing.

The packaging of tissue paper products ensures the safety and hygiene of our products. All our packaging, both plastic packaging and cores, are fully recyclable. We buy packaging material from suppliers with ISO 14001 certification for environmental management systems and ISO 9001 certification for quality systems.

CASE

Alternatives to plastic

The main raw material for Metsä Tissue’s products is renewable northern wood fibre; however we use plastic for packaging our products, for example. Our responsibility goals for a plastics-free product offering by 2030 apply to both product packaging and dispensers.

Plastic packaging has been developed over the years, and it has been possible to make plastic wrappings thinner and thereby reduce the use of plastics. We avoid over-packaging and transport in large batches, so that the use of plastic per delivered paper product remains as low as possible. Metsä Tissue collaborates with its suppliers to develop packaging and dispensers and find alternative materials. In the first phase, we aim to increase the use of recycled plastics in our products.

Early in 2019, Metsä Tissue launched the “Serla Green pack” on the Finnish market. This is a tissue paper package made of recycled plastic and renewable raw material. The recycled plastic is derived from plastic recycled by the industrial sector and consumers. The bio-based raw material, ethanol, is a by-product of sugar production. According to calculations, the new packaging reduces the use of plastics from conventional fossil-based raw material by approximately 89 tonnes per year.

CASE

Smart moves

Transporting light, airy and bulky tissue paper products over a distance of more than 500 kilometres from a single mill is not feasible. The carbon footprint of transportation must be kept to a minimum, and we closely monitor the carbon dioxide emissions per tonne of product transported. Metsä Tissue’s products are manufactured as close to the market as possible, transport distances are kept as short as possible, and the products are efficiently packed.

Significant logistical advantages have been achieved in the Nordic countries by reducing the diameters of the cardboard cores of tissue papers by approximately 10%. Tissue papers can now be packed on pallets so tightly that the pallet can accommodate up to 20% more packs. In addition, we need 300 fewer trucks a year to transport them than before.

In Poland, Metsä Tissue reduced the carbon dioxide emissions arising from transportation by 94 tonnes a year by changing hand towel package sizes from 200 sheets to 150 sheets. It is now possible to load 27% more hand towel packages on a single pallet, which means that the same amount of paper can be transported to customers by 790 trucks instead of the previous 1,000 trucks. This significantly reduces the carbon footprint of transportation.



Greaseproof papers

PURELY SMARTER FOOD PREPARATION

In 2019, Greaseproof Papers published a new growth strategy with the purpose of being the preferred partner in offering sustainable materials for the fast changing global food industry. There is a strong need to avoid single-use plastics and to have more ecological and efficient ways to cook and serve food in restaurants, bakeries, on the go, and at home. Metsä Tissue’s aim is to serve customers in these growing sectors with the right volumes and a competitive offering.

Greaseproof papers are produced at Mänttä mill in Finland and Düren mill in Germany. In 2019, Greaseproof Papers concentrated on achieving full utilisation of the capacity increase investment made in 2018 at the Düren mill.

TRACEABLE RAW MATERIALS

Our greaseproof papers are made of fresh wood fibre. The wood fibres are fully traceable to their origin and come from sustainably managed northern forests.

The main raw material is softwood pulp. We also use a small amount of hardwood pulp in our fibre furnish. A thin plastic-free release coating creates the non-stick surface for the baking and cooking paper assortment. Most of the fibre comes from Metsä Fibre’s pulp mills securing both the availability and quality. In co-operation with Metsä Fibre, we continuously improve and optimise the quality of the fibre.

We focus on products manufactured from white pulp. All pulp used for manufacturing brown greaseproof paper is purchased from carefully selected and audited external partners.

SAFE AND HYGIENIC PRODUCTS

Greaseproof papers are intended to come into direct contact with food, and they must comply with global legal requirements. We only use fresh fibre and our products are safe and hygienic to use.

Our baking and cooking papers have an ‘easy-release’ coating. They are also used in high temperatures, and therefore they must comply with especially strict requirements. We use all substances of our processes with care and caution so that they do not harm people or the environment. We do not use fluorinated chemicals in our production.

Metsä Tissue’s greaseproof papers are manufactured according to good manufacturing practice (GMP) and our production processes are certified according to quality (ISO 9001), environmental (ISO 14001) and product safety (ISO 22000, BRC-CP, IFS Household and Personal Care) management system standards.

Metsä Tissue follows regulations and recommendations that are set for food contact papers in each country. For example, in Europe we follow the recommendations of the German risk assessment institute (BfR) and in the USA regulations of the Food and Drug Administration (FDA).

The actions we take to ensure regulations are complied with include food contact approval from material suppliers, process hygiene, regular end product testing and up-to-date declarations of compliance for our customers.

Metsä Tissue only uses fresh fibre in its greaseproof papers and the products are safe and hygienic to use.

CASE

Less mess and food loss

Päijät-Häme Food service handles daily around 25,000 portions of food as they prepare meals for local school children and senior citizens.

Traditionally, the baking dishes are oiled or buttered to prevent the food from sticking to the sides of the dish. Instead of this, the cooks at our customer line the baking dishes with sheets of GN Liner paper.

The benefits from using of the GN Liner paper are clear. When making casseroles, the liner paper prevents the food sticking to the sides and decreases food loss as much as a single food portion per 24 portion dish. This represents over 4% saving per dish in serving.

When using the liner paper, the dishes are also easy to wash without scrubbing and soaking, which results in shorter washing time and lower usage of water and detergents. In addition, there is no need for a separate scrub dishwasher in the kitchen.

Annually, the use of lining paper generates significant cost savings through decreasing food loss, use of water and detergents, and making washing quicker and easier. The GN Liner paper itself is compostable and biodegradable.



Mill	Mänttä ⁷⁾	Düren	Kreuzau	Raubach	Stotzheim	Krapkowice	Žilina	Katrinefors	Nybo-holm ⁵⁾	Pauliström	Others ⁶⁾	
Country	Finland	Germany	Germany	Germany	Germany	Poland	Slovakia	Sweden	Sweden	Sweden		Total
PERSONNEL												
Number of employees ¹⁾	402	140	449	290	202	331	311	328	-	173	76	2,702
TRIF	16.5	16.7	27.1	24.6	14.5	4.7	16.7	11.9	-	37.6	-	17.5
LTA1 fr ²⁾	4.1	0.0	2.9	0.0	2.9	3.1	11.1	3.4	-	13.7	-	4.3
Sickness absenteeism % ³⁾	5.7	6.2	8.0	6.7	10.2	4.6	5.9	3.7	-	4.2	-	6
Organisational functionality index	7.7	8.3	8.2	9.0	-	7.7	8.4	7.9	-	7.9	-	8.3
PRODUCTION (1,000 t)												
Tissue papers	95		148	57	22	67	74	73	29	28		593
Greaseproof papers	19	34										54
MANAGEMENT SYSTEMS												
ISO 9001	x	x	x	x	x	x	x	x	x	x		
ISO 14001	x	x	x	x	x	x	x ⁴⁾	x	x	x		
ISO 50001	x	x	x	x	x	x		x	x	x		
ISO 45001	x											
OHSAS 18001		x	x	x	x	x	x					
ISO 22000	x											
BRC		x	x	x	x	x	x					
IFS		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)												
CO ₂ bio	0	0	0	0	0	0	0	52,074	19,337	11,884		83,295
CO ₂ fossil	13,512	21,722	88,659	24,889	9,918	28,465	11,337	12,697	5,509	7,385		224,093
Sulphur as SO ₂	0	0	0.77	0.010	0.040	0.85	0.053	1.0	0.51	0.55		3.8
Nitrogen oxides as NO ₂	6.2	12	90	14	8.5	4.4	10	38	15	24		222
Particles	0	0	0.20	0	0	35	0.44	1.0	1.7	6.1		44
DISCHARGES TO WATER (t)												
COD	405	20	461	146	10	33	124	173	16	52		1,440
BOD	55	3.4	20	4.7	2.4	3.8	8.6	26	3.5	23		150
Total phosphorus	1.5	0.17	0.98	0.24	0.12	0.53	0.43	0.19	0.027	0.018		4.2
Total nitrogen	21	0	0	0	0	6.2	0	9.0	0.68	0.79		38
Total suspended solids	96	3.4	20	4.7	2.4	3.6	8.6	38	2.5	5.0		184
WATER USE (1,000 m ³)												
Water sourcing	3,310	1,024	3,093	505	324	858	906	2,716	610	286	0	13,632
Waste water flow	4,449	336	1,951	470	243	660	857	1,784	515	227		11,492
WASTE (t)												
Utilised	24,304	518	109,415	34,899	1,313	16,168	2,224	38,977	2,111	1,051		230,980
Landfill	7.23	0	6 278	0	0	0	1,339	0	0	0		7,624
Hazardous	21	73	20	3.5	177	0.0	22	63	1.9	11		392

¹⁾ Full-time equivalent on 31 December 2019

²⁾ Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sickleave per million worked hours

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 others than mill locations

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®) (License Code FSC-C014476)

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.

All incidents that have caused violations of monthly, quarterly or annual permit limit values are detailed with description and corrective actions in the table below. In addition, minor and momentary environ-

mental permit violations with no perceptible environmental effects were reported at Kemi and Rauma mills. The authorities have been informed and corrective actions have been taken in all cases.

The Svir sawmill in Russia paid EUR 716 as fiscal levy related to water and air discharges, and waste handling.

Business Area	Unit	Incident	Corrective actions
Metsä Fibre	Joutseno mill, Finland	The monthly permit limit for total suspended solids emissions to water was exceeded in February due to a technical failure in the treatment plant, and in September and October due to unordinary emissions from the after-treatment pond. Particle emissions to air from the lime kiln exceeded the permit limit throughout the year due to technical reasons.	The broken sludge digesting unit was fixed and emissions returned to normal level. The use of the former after-treatment pond will be terminated and the area will be remediated within the next years. A new flue-gas treatment system will be installed during 2020.
Metsä Board	Simpele mill, Finland	The permit limit for COD emissions to watercourse were exceeded in January-March and for phosphorous emissions in February-March, due to operational problems at the effluent treatment plant.	Several corrective actions and investigations were carried out, operation of the treatment plant has been stabilised and emissions have returned to normal level.
Metsä Tissue	Mänttä mill, Finland	The monthly permit limit for total nitrogen emissions to water was exceeded in January due to excess loading of nitrogen from the site’s power plant. Permit limit for COD and total nitrogen were exceeded in May due to abnormally high flow to treatment plant from melting snow.	The operation of the effluent treatment plant was stabilised and emissions have returned to normal level.

Scope of the report

Metsä Group comprises of Metsä Forest, 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 Wood’s sawmills were transferred to Metsä Fibre in 2016. Sawmills are now reported in Metsä Fibre figures.

Metsä Group reports its sustainability performance at the Group, business area and product levels. The Sustainability Report 2019 has been prepared according to the Global Reporting Initiative (GRI) standards (2016 and 2018). We have selected 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 reputation risk in environmental or human resource management, or ethical business practices.

The Sustainability Report 2019 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. 102.

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 thus 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 40% efficiency factor for combustion energy production, 33% for nuclear energy and 100% for hydro, wind and solar energy. 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 (NO_x) 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 NO_x 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 double the value compared to the use of 1 MWh of heat.

The figures for BOD emissions do not include Husum mill as the measurement is not required by the authorities.

Waste volumes are reported including moisture. The use of temporary waste storage before final disposal at some mills gives some variations to the waste figures depending on how much waste is channeled to temporary storage and how much is taken from there on each year. Waste figures include volumes to 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.

Scope 1 CO₂ emissions cover emissions from the Group. Emissions from purchased heat and electricity together compose Scope 2 emissions. Emissions from purchased electricity are calculated with two methods. Market based method uses electricity supplier specific emissions coefficients completed with the national residual mix emission co-efficients for non-tracked purchased electricity. 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 employee data was 98%. Employee data excludes statistics from Hangö Stevedoring.
- However the number of employees, sickness absenteeism, work accident absenteeism, total recordable injury frequency rate (TRIF), lost time accident frequency rate (LTA1 fr), LTA severity rate and registered occupational diseases cover 100% of the employees. 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 (LTA1 fr) includes all accidents at work that have resulted in at least one disability day. The LTA1 fr 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 LTA1 fr indicator.
- The organisational functionality index is based on organisational functionality study results. These reflect the 22 defined Group-level topics that affect functionality of the organisation. Here, the overall level of organisational functionality is calculated for each company on a scale of 4–10. The organisational functionality research covered 94% of employees.
- The share of women in management includes women in 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 of permanent employees subtracted with voluntary turnover divided by headcount of permanent employees.

Independent assurance statement

To the Management and Stakeholders of Metsä Group

SCOPE AND OBJECTIVES

The Management of Metsäliitto Cooperative commissioned us to perform a limited assurance engagement on the Metsä Group Sustainability Report 2019 (“the Report”). The assurance engagement was conducted in accordance with the AA1000 Assurance Standard (2008) with 2018 addendum, 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 Board of Directors of Metsäliitto Cooperative 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 (2016, 2018) 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 twelve (12) senior management representatives from Metsä Group and business areas 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 Husum mill in Sweden, Metsä Forest wood procurement in Latvia and Metsä Tissue Mänttä mill in Finland.

CONCLUSIONS

ADHERENCE TO AA1000 ACCOUNTABILITY PRINCIPLES
Metsä Group has made a commitment to active stakeholder dialogue. Metsä Group has stakeholder engagement processes in place in order to understand stakeholder expectations and to respond to stakeholder concerns. The material topics presented in the Report correspond to stakeholder interests and major economic, environmental and social impacts in Metsä Group’s value chain. Metsä Group has identified impacts related to the material sustainability topics and committed to manage and disclose comprehensive and balanced information of these impacts. It is our opinion that the Report gives a fair and balanced view on the material topics and stakeholder interests; and that Metsä Group adheres in its sustainability practices to the AA1000 Accountability Principles of inclusivity, materiality, responsiveness and impact.

SUSTAINABILITY PERFORMANCE DATA

We have reviewed the basis of the sustainability information provided in the Report. It is our opinion that the Report provides adequate information of Metsä Group’s sustainability performance and the information is presented 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.

- In 2019, Metsä Group introduced new long-term sustainability objectives for 2030 to guide the Group’s path towards a climate neutral society. The operationalization of the targets through roadmaps has begun in the business areas and functions, and the progress against the targets is measured and disclosed regularly. We recommend Metsä Group to proceed the target-driven sustainability work aligned with global sustainable development goals.
- Metsä Group has established a Group-wide Sustainability Process Management model to ensure that sustainability is implemented throughout the Group. Metsä Group has systems and controls in place to collect and consolidate sustainability data from different sources. In order to ensure a smooth and streamlined process, we recommend that an integrated sustainability reporting approach is further developed and aligned with the Sustainability Process Management model.
- Metsä Group has developed actions in the line with the new 2030 objectives. The results in many areas are encouraging. However, we would like to highlight the importance of safety and recommend that Metsä Group further intensifies the work to prevent workplace accidents and improve safety at work.

Helsinki, Finland, 24th February 2020
Mitopro Oy

Mikael Niskala
Independent Sustainability
Practitioner

Tomi Pajunen
Independent Sustainability
Practitioner

GRI content index



Metsä Group’s Sustainability Report 2019 has been prepared according to the Global Reporting Initiative (GRI) standards (2016, 2018). 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. It has confirmed the report to comply with the Global Reporting Initiative standards in accordance criteria at the Comprehensive level.

SR Sustainability Report | **FS** Financial Statements

Standard and disclosure	References and comments	UN Global Compact
GRI 102 GENERAL DISCLOSURES		
General disclosures		
GRI 102 ORGANISATIONAL PROFILE		
102-1 Name of the organization	SR front cover inlet, FS 94	
102-2 Activities, brands, products and services	SR front cover inlet, 16–17, 19, 20–21, 64–97	
102-3 Location of headquarters	See more on the FS 94	
102-4 Location of operations	SR 26–27, 64–97, FS 10	
102-5 Ownership and legal form	SR front cover inlet, FS 94	
102-6 Markets served	SR 26–27, 64–97, FS 11	
102-7 Scale of the organization	SR front cover inlet, 26–27, 32–35, FS 10	
102-8 Information on employees and other workers	SR 26–27, 32–35, 64–97	UNGC P6
102-9 Supply chain	SR 60–62, 64–97	
102-10 Significant changes to the organization and its supply chain	SR 4–5, 8–9	
102-11 Precautionary Principle or approach	SR 8–9, FS 12	UNGC P7
102-12 External initiatives	SR 8–9, 28–31	
102-13 Membership of associations	SR 30–31, 97	
GRI 102 STRATEGY		
102-14 Statement from senior decision-maker	SR 4–5	
102-15 Key impacts, risks and opportunities	SR 4–7, 26–27, FS 12–13	UNGC P7
GRI 102 ETHICS AND INTEGRITY		
102-16 Values, principles, standards and norms of behavior	SR 4–6, 8–9, 24–25	
102-17 Mechanisms for advice and concerns about ethics	SR 24–25	
GRI 102 GOVERNANCE		
102-18 Governance structure	SR 8–9, FS 94–98, 104–107	
102-19 Delegating authority	SR 8–9, 30–31	
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 8–8, 30–31. Stakeholder consultation is incorporated in the governance structure. There are also four personnel representatives in Metsäliitto Cooperative’s Supervisory Board. Stakeholder consultation with relevant stakeholders is included in the regular operations and management of business units.	
102-22 Composition of the highest governance body and its committees	FS 96–97	
102-23 Chair of the highest governance body	FS 96–97	
102-24 Nominating and selecting the highest governance body	FS 96–97	
102-25 Conflicts of interest	SR 8–9, 24–25, FS 100	

Standard and disclosure	References and comments	UN Global Compact
102-26 Role of highest governance body in setting purpose, values and strategy	SR 4–7, FS 94–98	
102-27 Collective knowledge of highest governance body	104–107	
102-28 Evaluating the highest governance body's performance	The Board of Directors prepare a self-assessment annually.	
102-29 Identifying and managing economic, environmental and social impacts	SR 4–9, 26–27	
102-30 Effectiveness of risk management processes	SR 8–9, FS 12–14, 98–99	
102-31 Review of economic, environmental and social topics	SR 4–13, 26–27	
102-32 Highest governance body's role in sustainability reporting	SR 8–9	
102-33 Communicating critical concerns	SR 8–9, 24–25, FS 98–99	
102-34 Nature and total number of critical concerns	SR 24–25, FS 98–99	
102-35 Remuneration policies	FS 101–103	
102-36 Process for determining remuneration	FS 101–103	
102-37 Stakeholders involvement in remuneration	FS 101–103	
102-38 Annual total compensation ratio	SR 34	
102-39 Percentage increase in annual total compensation ratio	SR 34	
GRI 102 STAKEHOLDER ENGAGEMENT		
102-40 List of stakeholder groups	SR 28	
102-41 Collective bargaining agreements	SR 35	UNGC P3
102-42 Identifying and selecting stakeholders	SR 8–9, 28–29	
102-43 Approach to stakeholder engagement	SR 8–9, 28–31	
102-44 Key topics and concerns raised	SR 4–5, 8–9, 28–31	
GRI 102 REPORTING PRACTICE		
102-45 Entities included in the consolidated financial statements	SR front cover inlet, FS 94–98	
102-46 Defining report content and topic boundaries	SR 98–99	
102-47 List of material topics	SR 9. Based on materiality analysis a total of 12 topics has been identified as material. All indicators for identified aspects are reported, corresponding 27 GRI topics listed in the general content index.	
102-48 Restatements of information	No major restatements. Minor corrections on figures marked in data by unit tables.	
102-49 Changes in reporting	In addition to group-level reporting, business area sections were added.	
102-50 Reporting period	1 Jan – 31 Dec 2019	
102-51 Date of most recent report	28 Feb 2019	
102-52 Reporting cycle	Annual	
102-53 Contact point for questions regarding the report	SR front cover inlet and back cover	
102-54 Claims of reporting in accordance with the GRI Standards	The report has been prepered in accordance with the GRI Standards: Comprehensive option.	
102-55 GRI content index	SR 101–107	
102-56 External assurance	SR 100	

Standard and disclosure	References and comments	UN Global Compact
MANAGEMENT APPROACH		
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 4–5, 8–15, 24–25, FS 94–98	
103-3 Evaluation of the management approach	SR 4–5, 8–9	
ECONOMIC STANDARD SERIES		
Economic performance		
GRI 201 ECONOMIC PERFORMANCE		
201-1 Direct economic value generated and distributed	SR front cover inlet, 26–27	
201-2 Financial implications and other risks and opportunities due to climate change	FS 8–9, 12–13	
201-3 Defined benefit plan obligations and other retirement plans	FS 29–32	
201-4 Financial assistance received from government	FS 25	
Indirect economic impacts		
GRI 203 INDIRECT ECONOMIC IMPACTS		
203-1 Infrastructure investments and services supported	Due to developed infrastructure in our operating countries, no major in-kind or pro bono investments have been made. On the other hand, the major bioproduct mill investment in Äänekoski, Finland, in 2015–2017, has generated various, for example infrastructural benefits in the economic area. The investment plan published in 2019 would have similar impacts to local economic areas if realised.	
203-2 Significant indirect economic impacts	SR 26–31	
Procurement		
GRI 204 PROCUREMENT		
204-1 Proportion of spending on local suppliers	SR 60–62	
Anti-corruption		UNGC P10
GRI 205: ANTI-CORRUPTION		
205-1 Operations assessed for risks related to corruption	SR 24–25, FS 10–11. Anti-corruption is included in the Internal Audit's risk assessments procedures.	
205-2 Communication and training about anti-corruption policies and procedures	SR 24–25, FS 10–11	
205-3 Confirmed incidents of corruption and actions taken	SR 24–25. No confirmed incidents of corruption during the reporting period.	
Anti-competitive behaviour		
GRI 206 ANTI-COMPETITIVE BEHAVIOUR		
206-1 Legal actions for anti-competitive behavior, anti-trust and monopoly practices	FS 13–14, 65	

Standard and disclosure	References and comments	UN Global Compact
ENVIRONMENTAL STANDARD SERIES		
Materials		UNGC P7, P9
GRI 301 MATERIALS		
301-1 Materials used by weight or volume	SR 52–53, 63, 64–97	
301-2 Recycled input materials used	SR 52–53, 90–91	
301-3 Reclaimed products and their packaging materials	SR 16–17, 64–97	
Energy		
GRI 302 ENERGY		
302-1 Energy consumption within the organization	SR 54–55	
302-2 Energy consumption outside of the organization	No data available. Most important sources: raw material and product transport, purchased pigment and chemical production.	
302-3 Energy intensity	SR 54–55	
302-4 Reduction of energy consumption	SR 54–55	
302-5 Reductions in energy requirements of products and services	Not applicable for Metsä Group.	
Water and effluents		
GRI 303 WATER AND EFFLUENTS (2018)		
303-1 Interactions with water as a shared resource	SR 26–27, 52–53, 56–57, 64–97	
303-2 Management of water discharge related impacts	SR 56–57	
303-3 Water withdrawal	SR 26–27, 52–53, 56–57	
303-4 Water discharge	SR 26–27, 52–53, 56–57	
303-5 Water consumption	SR 26–27, 52–53, 56–57. Water is continuously recycled in closed loops in the process and used several times. Metsä Group has set a reduction target of 25% for the use of process water per product tonne in 2018–2030.	
Biodiversity		
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	metsagroup.com/csr	
304-2 Significant impacts of activities, products and services on biodiversity	SR 38–49, 66–69, 78, 84	
304-3 Habitats protected or restored	SR 38–49	
304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	SR 49. Biodiversity is a part of sustainable forest management practices and Metsä Group’s strategic sustainability 2030 objectives.	
Emissions		
GRI 305 EMISSIONS		
305-1 Direct (Scope 1) GHG emissions	SR 52–57	
305-2 Energy indirect (Scope 2) GHG emissions	SR 52–57	
305-3 Other indirect (Scope 3) GHG emissions	No data available. Most important sources: raw material and product transport, purchased pigment and chemical production.	UNGC P8
305-4 GHG emissions intensity	SR 10–13, 52–57, 64–97	
305-5 Reduction of GHG emissions	SR 52–57	
305-6 Emissions of ozone-depleting substances (ODS)	Not applicable for Metsä Group	
305-7 Nitrogen oxides (NO _x), sulphur oxides (SO _x), and other significant air emissions	SR 52–53, 56–57	

Standard and disclosure	References and comments	UN Global Compact
Effluents and waste		
GRI 306 EFFLUENTS AND WASTE		
306-1 Water discharge by quality and destination	SR 52–53, 56–57, 64–97	
306-2 Waste by type and disposal method	SR 18, 52–53	
306-3 Significant spills	No significant spills, SR 99	
306-4 Transport of hazardous waste	Not applicable for Metsä Group.	
306-5 Water bodies affected by water discharges and/or runoff	SR 52–53, 56–57	
Environmental compliance		
GRI 307 ENVIRONMENTAL COMPLIANCE		
307-1 Non-compliance with environmental laws and regulations	No major violations. SR 97	UNGC P8
Supplier environmental assessment		
GRI 308 SUPPLIER ENVIRONMENTAL ASSESSMENT		
308-1 New suppliers that were screened using environmental criteria	SR 60–62	UNGC P8
308-2 Negative environmental impacts in the supply chain and actions taken	SR 60–62	
SOCIAL STANDARDS SERIES		
Employment		
GRI 401 EMPLOYMENT		
401-1 New employee hires and employee turnover	SR 26–27, 32–35	
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	All Metsä Group employees have the same benefits regardless of their employment type. Benefits might vary depending on the operating country.	
401-3 Parental leave	The GRI indicators are not reported. We comply with local labour agreements and legislation and the employment contracts continue unchanged after parental leave.	
Labour/management relations		
GRI 402 LABOUR/MANAGEMENT RELATIONS		
402-1 Minimum notice periods regarding operational changes	We comply with local agreements and legislation redundancy situations.	UNGC P2
Occupational health and safety		
GRI 403 OCCUPATIONAL HEALTH AND SAFETY (2018)		
403-1 Occupational health and safety management system	SR 64–97	
403-2 Hazard identification, risk assesment, and incident investigation	SR 36–37, 64–97	
403-3 Occupational health services	SR 36–37. Considered as a part of continuous preventive safety work.	
403-4 Worker participation, consultation, and communication on occupational health and safety	We comply with each country's local regulations and legislation on collective agreements and working conditions, including health and safety.	
403-5 Worker training on occupational health and safety	SR 36–37	
403-6 Promotion of worker health	Part of health and safety work.	
403-7 Prevention and mitigation of occupational health and safety impacts directly by business relationships	Part of health and safety work.	
403-8 Workers covered by an occupational health and safety management system	SR 36–37, 64–97	
403-9 Work-related injuries	SR 36–37, 64–97	
403-10 Work-related ill health	SR 36–37, 64–97	

Standard and disclosure	References and comments	UN Global Compact
Training and education		UNGC P6
GRI 404 TRAINING AND EDUCATION		
404-1 Average hours of training per year per employee category	SR 32. Training reported as days/year.	
404-2 Programs for upgrading employee skills and transition assistance programs	SR 32–35	
404-3 Percentage of employees receiving regular performance and career development reviews	SR 32–35. All Metsä Group's employees are entitled to a Personnel Development Appraisal (PDA).	
Diversity and equal opportunity		UNGC P6
GRI 405 DIVERSITY AND EQUAL OPPORTUNITY		
405-1 Diversity of governance bodies and employees	SR 32–35, FS 96, 104–109	
405-2 Ratio of basic salary and remuneration of women to men	SR 34	
Non-discrimination		UNGC P6
GRI 406 NON-DISCRIMINATION		
406-1 Incidents of discrimination and corrective actions taken	SR 24–25	
Human rights assessment		UNGC P1, P2
GRI 412 HUMAN RIGHTS ASSESSMENT		
412-1 Operations that have been subject to human rights reviews or impact assessments	SR 24–25, FS 10–11	
412-2 Employee training on human rights policies or procedures	SR 24–25. Coverage of Code of Conduct training reported.	
412-3 Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	There were no investments which required a specific human rights impact assessment.	
Local communities		UNGC P1
GRI 413 LOCAL COMMUNITIES		
413-1 Operations with local community engagement, impact assessments, and development programs	SR 2–3, 26–29	
413-2 Operations with significant actual and potential negative impacts on local communities	SR 24–25, 56–57	
Supplier social assessment		UNGC P2, P4, P5
GRI 414 SUPPLIER SOCIAL ASSESSMENT		
414-1 New suppliers that were screened using social criteria	SR 24–25, 60–62	
414-2 Negative social impacts in the supply chain and actions taken	SR 24–25, 60–62	
Public policy		UNGC P10
GRI 415 PUBLIC POLICY		
415-1 Political contributions	None were made	
Customer health and safety		
GRI 416 CUSTOMER HEALTH AND SAFETY		
416-1 Assessment of the health and safety impacts of product and service categories	SR 64–97	
416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	No incidents reported during 2019.	

Standard and disclosure	References and comments	UN Global Compact
Marketing and labelling		
GRI 417 MARKETING AND LABELLING		
417-1 Requirements for product and service information and labeling	SR 44–47, 64–97	
417-2 Incidents of non-compliance concerning product and service information and labeling	No incidents reported during 2019.	
417-3 Incidents of non-compliance concerning marketing communications	No incidents reported during 2019.	
Customer privacy		
GRI 418 CUSTOMER PRIVACY		
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	No incidents reported during 2019.	
Socioeconomic compliance		
GRI 419 SOCIOECONOMIC COMPLIANCE		
419-1 Non-compliance with laws and regulations in the social and economic area	FS 65	

Make the most of Metsä



METSÄ GROUP

P.O. Box 10

FI-02020 METSÄ, Finland

Tel. +358 10 4601

www.metsagroup.com



The cover of this Sustainability Report is MetsäBoard Prime FBB Bright folding boxboard. The pure fresh fibre used in our lightweight premium paperboards is a renewable raw material, fully traceable to sustainably managed northern forests.

© Metsä Group 2020

