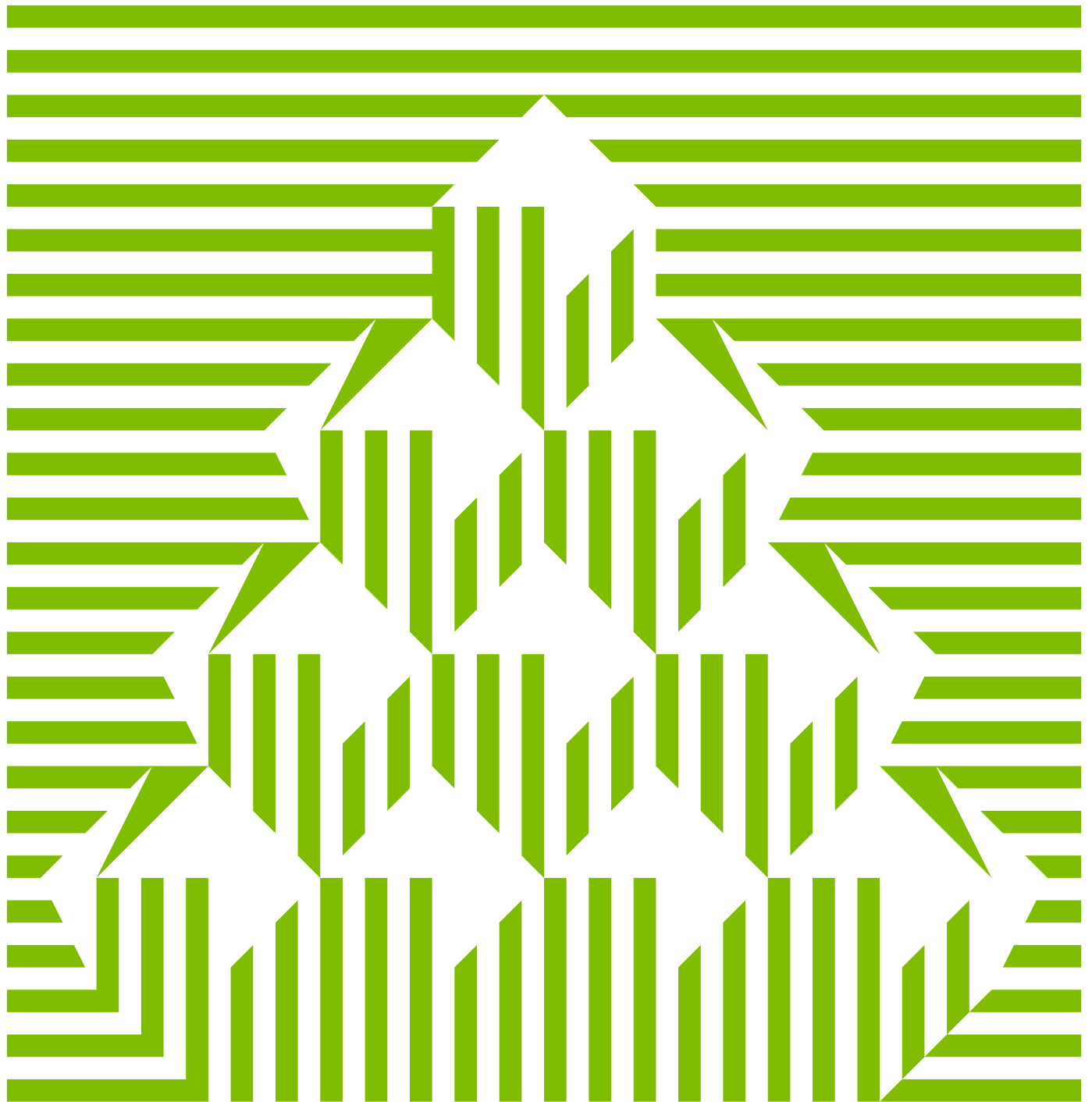


METSÄ GROUP

SUSTAINABILITY REPORT 2018



Metsä

SUSTAINABLE GROWTH FROM METSÄ

Metsä Group is a forerunner in sustainable bioeconomy utilising renewable wood from sustainably managed northern forests. Metsä Group focuses on wood supply and forest services, wood products, pulp, paperboards, tissue and greaseproof papers. In 2018, Metsä Group's sales totalled EUR 5.7 billion, and it employs approximately 9,300 people. The Group has 36 production facilities in eight European countries. Metsäliitto Cooperative is the parent company of Metsä Group and is owned by approximately 103,000 Finnish forest owners.



The cover of this Sustainability Report is MetsäBoard Prime FBB Bright folding boxboard. The surface layers of the three-layer paperboard are chemical pulp and the middle layer is high-yield pulp. Metsä Board's high-quality and lightweight paperboards made from fresh fibre are suitable for consumer good packaging and graphical end uses.



RENEWED STRATEGY OF PROFITABLE GROWTH

In 2018 Metsä Group's strategy was renewed. Sustainability was taken to a key role in renewing the strategy, and the new strategic 2030 sustainability objectives are launched.



Read more
p. 6



INCREASING WOOD SUPPLY VOLUMES IN FINLAND

Finland's forests are growing more than ever and wood supply volumes are increasing. We at Metsä Group take care of sustainable forestry.



Read more
p. 30–35

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PUBLISHER

Metsä Group

Kindly send your feedback to communications@metssagroup.com or discuss with @MetsäGroup on social media.

This publication and additional information is available online at www.metsagroup.com/CSR. Metsä Group's annual reporting consists of the following reports: Sustainably from the forest Brochure (B), Financial Statements (FS), including the Corporate Governance statement, and Sustainability Report (SR). Metsä Board and Metsä Fibre publish their own reports.



Metsä Group
Sustainably from
the forest 2018
brochure



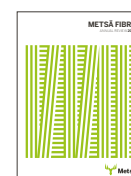
Metsä Group
Annual Review
2018



Metsä Group
Sustainability Report
2018



Metsä Board
Annual Report
2018



Metsä Fibre
Annual Review
2018

YEAR 2018 HIGHLIGHTS

88%

CERTIFIED
WOOD

100%

TRACEABLE
WOOD

75%

OF FOREST OWNERS
CHOSE HIGH
BIODIVERSITY
STUMPS

80%

OF THE ENERGY
USED IN
PRODUCTION
WAS RENEWABLE

-45%

FOSSIL CO₂
EMISSIONS PER
PRODUCT TONNE
SINCE 2009

-19%

PROCESS WATER
USE PER
PRODUCT TONNE
SINCE 2010





METSÄ FOREST

Metsä Forest is the market leader in wood trade and forest energy in Finland. It is responsible for Metsä Group's wood supply and provides the owner-members of the parent company, Metsäliitto Cooperative, with extensive services in wood trade as well as forest and nature management. Metsäliitto Cooperative has approximately 103,000 members, who own nearly half of the private forest area in Finland.



Read more
on page 18



METSÄ WOOD

Metsä Wood provides competitive and environmentally friendly wood products for construction, industrial customers and distributor partners. Metsä Wood manufactures products from northern wood, a sustainable raw material of premium quality.



Read more
on page 19



METSÄ FIBRE

Metsä Fibre is a leading producer of bioproducts, bio-energy and sawn timber. The company's brand in the pulp business is Botnia, and in sawn timber, it is Nordic Timber. Metsä Fibre is the world's leading producer of bleached softwood pulp and a major producer of sawn timber.



Read more
on page 20



METSÄ BOARD

Metsä Board is a leading European producer of premium fresh fibre paperboards including folding boxboards, food service boards and white kraftliners. The lightweight paperboards are developed to provide better, safer and more sustainable solutions for consumer goods as well as retail-ready and food service applications.



Read more
on page 21



METSÄ TISSUE

With its high-quality tissue and greaseproof papers, Metsä Tissue makes life more comfortable for consumers, customers and end-users every day. Metsä Tissue is a leading tissue paper supplier to households and professionals in Europe and the world's leading supplier of greaseproof papers. The main brands are Lambi, Serla, Mola, Tento, Katrin and SAGA.



Read more
on page 22

METSÄ GROUP IS AN IMPORTANT PART OF SOCIETY



More info on strategy
pages 6–7



More info on sustainability management
pages 8–9



**WE RESPOND
TO THE DEMAND
FOR SUSTAINABLE
PRODUCTS MADE
FROM RENEWABLE
RAW MATERIALS**

Metsä Group's business operations are guided by the Group's mission and values. The central theme in both is the realisation of sustainability in all our activities. The members of Metsäliitto Cooperative, the parent company of Metsä Group, are Finnish forest owners. Their activities are underpinned by a philosophy that spans many generations and it is this that provides the basis for how Metsä Group carries out the management and development of its business.

During 2015–2018, Metsä Group carried out a EUR 2 billion investment programme, which has significantly increased the volume of products made from renewable raw materials that are offered to the global markets. In 2018, we clarified Metsä Group's strategy and renewed our sustainability objectives and targets. Our new sustainability targets will be taken into use in 2019.

We will account for all aspects of sustainability in an equal manner. We must be able to reconcile financial aspects with ecological and social responsibility. Our business operations aim at increasing financial value for our owners, and the achievement of this goal enables the forest industry to create a significant amount of value for the surrounding society. Society benefits from the sourcing of the raw materials and the recruitment of workers required for the operations, as well as the tax income generated by the profitable business operations. The forest industry and Metsä Group must remain an important part of our society, contributing to future development needs.

Metsä Group is one of Finland's largest forest management service suppliers, and our wide range of services enables us to influence the ecological sustainability of forestry. Developing the resource efficiency of mills is part of our daily work, and something which we will never finish. Rather, in the spirit of continuous improvement, we will keep setting our goals even higher.

KEY FIGURES	2018	2017	2016	2015	2014	2013
Sales, EUR million	5,709	5,040	4,658	5,016	4,970	4,938
Comparable operating result, EUR million	849	566	439	537	418	343
Comparable ROCE, %	16.8	12.3	10.2	13.6	11.4	9.1
Equity ratio, %	53.1	45.0	43.9	43.2	37.9	37.9
Net gearing ratio, %	13	34	40	25	46	77
Investments, EUR million	272	608	758	492	143	214
Research and development, EUR million	18	18	18	18	18	18

SOCIAL RESPONSIBILITY

From the perspective of social responsibility, we have to consider our personnel, our partners and our status in society. As a member of society, we must ensure a good flow of information within our stakeholders.

We pay special attention to increasing our interaction with young people.

The functionality of working communities and safety at work are issues where our current performance is not good enough. In respect of occupational accidents, we had been approaching our long-term target of zero accidents for several years, but after all the positive development, we sadly had two fatal accidents in 2018. Due to these very unfortunate accidents, we must face the fact that our approach to safety at work has been inadequate.

RENEWAL AND SUSTAINABLE BUSINESS OPERATIONS

Metsä Group is responding to the demand for sustainably manufactured products made from renewable raw materials. Although the global market for our existing products is growing in all sectors, we must not forget to help change and renew our industry as a whole. Metsä Group is an active developer of new products, as demonstrated by the establishment of the innovation company Metsä Spring and its investment in the new textile fibre process. Another example of such renewal is the successful first running year of the bioproduct mill in Äänekoski, Finland. The new mill concept is a textbook example of resource efficiency and the industry's potential to develop the circular economy by converting side streams and emissions into raw materials and products.

Our goals must meet international agreements and commitments.

In accordance with the Paris Agreement, Metsä Group has a role to play helping to mitigate climate change. While industrial production and logistics inevitably cause carbon dioxide emissions, we must ensure that Metsä Group's operations are sustainable from the perspective of their climate impact. This is possible due to the forestry carried out by the members of our cooperative, the carbon stored by the products we make, and our production, 80% of which relies on renewable energy in 2018. We can continue to improve this positive situation by increasing efficiency in different parts of our value chain.

Sustainability is a very wide and topical area of discussion. Concern of climate change has impacts also on our operating environment. Another theme with an equally wide-ranging impact is digitalisation. The opportunities of digitalisation for operational development brought about by artificial intelligence, and, in particular the challenges AI presents for competence, require us to change and renew continuously.



Ilkka Härmälä
President and CEO
Metsä Group

METSÄ GROUP

SALES* EUR **5.7** BILLION | PERSONNEL **9,300**
RENEWABLE ENERGY **28.4** TWH

METSÄLIITTO COOPERATIVE

GROUP'S PARENT COMPANY

OWNED BY 103,000 FINNISH FOREST OWNERS

METSÄ FOREST

WOOD SUPPLY AND FOREST SERVICES

Sales **EUR 2.0 billion**
Personnel **840**

Holding
Metsäliitto Cooperative 100%

METSÄ WOOD

WOOD PRODUCTS

Sales **EUR 0.4 billion**
Personnel **1,500**

Holding
Metsäliitto Cooperative 100%

METSÄ FIBRE

PULP AND SAWN TIMBER

Sales **EUR 2.5 billion**
Personnel **1,200**

Holding
Metsäliitto Cooperative 50.1%
Metsä Board 24.9%
Itochu Corporation 25.0%

METSÄ BOARD**

PAPERBOARD

Sales **EUR 1.9 billion**
Personnel **2,400**

Holding
Metsäliitto Cooperative 41.2%
share of votes 61.9%

METSÄ TISSUE

TISSUE AND GREASEPROOF PAPERS

Sales **EUR 1.0 billion**
Personnel **2,800**

Holding
Metsäliitto Cooperative 100%

* Internal sales eliminated
** Listed on Nasdaq Helsinki

METSÄ SPRING | INNOVATION COMPANY

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 16–23



More info on resource efficiency
pages 40–41

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 sustainably, always taking into account economic, social as well as ecological 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 of the future.

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 our Finnish owner-members' forests.

COMPETITIVE PRODUCTION

As a result of the systematic investment programmes, 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 world-class resource efficiency. We develop our operations efficiently all business areas together as a unified Group.

PRODUCTS AND NEW INNOVATIONS

Our carbon storing products made from renewable raw materials offer sustainable solutions for global challenges. We aim to provide our global 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.

PEOPLE

Our operations are based on continuous improvement, which gives our personnel the opportunity to increase their own 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 multi-skilling. Good leadership is the cornerstone of our success.

PURPOSE

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

VISION

The preferred partner in developing sustainable business.

VALUES

RELIABILITY

COOPERATION

RENEWAL

RESPONSIBLE PROFITABILITY



SUSTAINABILITY IN A KEY ROLE IN RENEWED STRATEGY

As the concern of climate change is apparent, companies need to make strategic, long-term commitments to contribute to a sustainable future. Awareness and willingness to mitigate climate change and other global challenges are strongly steering the development of societies and regulatory frameworks.



More info on sustainability themes
pages 12–13



More info on UN's SDGs
page 70



The UN Global Compact Communication On Progress is included in our GRI index
pages 65–69



More info on Global Compact
www.unglobalcompact.org

Metsä Group as a sustainable forestry and forest industry operator has various means to mitigate climate change. In cooperation with other responsible actors, we are committed to work for a more sustainable and climate-neutral future. We actively work for increasing the growth and the amount of carbon stored in forests. Safeguarding biodiversity is an essential part of our sustainable forest management practices. Wood products are in a key role as they store carbon for a long time. Fibre based products substitute fossil materials and are recycled efficiently. Fibre is also a great platform for innovations.

The year 2018 brought changes in Metsä Group. The Group got a new CEO and President **Ilkka Hämmälä**, and the corporate strategy was renewed. Sustainability was taken to a key role in renewing the strategy, and the new highly ambitious strategic 2030 sustainability objectives were launched in early 2019. To strengthen the importance of sustainability as part of all the Group's operations from wood supply to production and customer relations, the change to a process management model was initiated. The purpose of the model is to make sure that sustainability is implemented throughout the Group.

2030 OBJECTIVES

In our 2030 objectives, we are committed to increase the amount of carbon stored in forests and products. We also carry our responsibility for safeguarding biodiversity in forests. To support the development of climate-neutral society,

we invest in our mills to generate no fossil CO₂ emissions. To improve resource efficiency, we continue to reduce the use of process water. All the production side streams will be directed to added-value uses. We continue the work towards fossil free raw materials of our products by 2030. In our own operations we further develop safety at work as well as ethical business practices. Our aim is to ensure sustainability also in our supply chain.

Each target is systematically followed to drive sustainable future development. The ambition level of sustainability objectives and actions has been risen to show our strong commitment to offering means and solutions for solving the global challenges.

Comprehensive sustainability management has strong roots in Metsä Group, which is an excellent starting point to achieve 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 on 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 those UN Sustainable Development Goals (SDGs) to which we contribute the most through our operations. The linkage to the goals can be found in the section of Metsä Group sustainability themes as well as in the cases throughout this report.

METSÄ GROUP'S MATERIAL TOPICS:

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

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

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.



RESPONSIBLE CORPORATE CULTURE

Our way of working is guided by Metsä Group's Code of Conduct and Sustainability Principles. The main objective of our Code of Conduct is to ensure that common ethical principles are available and applied in our operations.



For more info on sustainability in supply chain
pages 36–37



More info on the Financial Statements
pages 9–12

We must always be guided by our values – reliability, cooperation, renewal and responsible profitability. All of our personnel are expected to act with integrity and make ethically sound decisions in their daily work. We require ethical business practices also from our suppliers, and these practices and principles are stated in our Code of Conduct for Suppliers.

We have zero tolerance for corruption in our own operations and in our supply chain. Prohibition of any form of corruption is included in Metsä Group's Code of Conduct as well as in the Code of Conduct for Suppliers. No incidents of confirmed corruption came to our attention during 2018.

In 2018, we started preparing the renewal of Metsä Group's Code of Conduct and related training materials. The aim of this work was to identify improvement needs and future key focus areas as well as to plan how to increase the ethical awareness of our personnel. Also more traditional compliance topics such as conflicts of interest, anti-corruption and competition law, human rights and related fair practices were identified as an area requiring more thorough consideration. The new Code of Conduct will be implemented during 2019.

Our overall target is that 100% of our employees are trained in our Code of Conduct. In 2018, the share was 95% (91).

ENCOURAGING A SPEAK UP CULTURE

We encourage early detection of potential ethical 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 feels comfortable raising concerns. The employee's own manager is often the

best person to speak to and also the Group General Counsel, Compliance Director and Metsä Group's compliance channel are available to report ethical concerns.

Metsä Group has a Compliance Committee to steer compliance development and to ensure systematic handling of non-compliance investigations. The committee consists of Group General Counsel, Compliance Director and SVP, Internal Audit. All significant non-compliance notifications are addressed by the Compliance Committee. In 2018, there were a total of 41 (31) non-compliance investigations varying from external fraud attempts and conflicts of interest to privacy related topics.

Metsä Group is committed to responsible business practices and we expect the same from our business partners. During 2018 we have put special emphasis on developing both our suppliers' and customers' processes for knowing the business partners. In addition to ensuring regulatory compliance, the improvement of our own understanding enables us to react in a more agile manner when needed.

PRIVACY PROTECTION

Privacy and alignment of our processes to comply with the EU General Data Protection Regulation (GDPR) have continued to be on focus in 2018. Ensuring the privacy of our employees, customers and other stakeholders is important.

Special emphasis has been put on training our personnel, renewing our internal instructions and practices on personal data processing and increasing transparency towards the data subjects. One of the key targets of our privacy governance model is to ensure that good personal data protection practices are part of our normal day-to-day business.

HUMAN RIGHTS IMPACT ASSESSMENT

Metsä Group is committed to respect the human rights outlined in the UN's Universal Declaration of Human Rights and continuously develop our operations in alignment with the UN Guiding Principles for Business and Human Rights. Metsä Group is also committed to the UN's Global Compact initiative and supports its ten principles regarding human rights, labour, environment and anti-corruption. Metsä Group has zero tolerance on forced and child labour. The prohibition of using any form of forced labour, including modern slavery, is included in our Code of Conduct for Suppliers. We also respect and follow the legal reporting requirements such as the UK Modern Slavery Act and aim to develop our operations accordingly.

In 2018, we completed a human rights impact assessment process, which was initiated to deepen our understanding of the actual and potential human rights impacts resulting from our operations. We started this work by identifying the most important interfaces between our operations and stakeholders where actual or potential, negative or positive impact on human rights may occur.

Metsä Group's operations are located in countries where societal circumstances are relatively stable and due to that, negative human rights impacts are fairly unlikely to occur. In spite of that, the assessment suggests that there may be potential risks relating to adverse human rights impacts. Such potential risks may exist both in our own operations as well as in our supply chain. Consequently, we have paid attention to strengthen the role of human rights in our new Code of Conduct and related training.



RENEWING THE CODE OF CONDUCT

Preparing the renewal of Metsä Group's Code of Conduct was started in 2018. Top management's strong commitment has been driving the work and a large group of employees from sales and production to human resources, communications and legal department have been engaged in the preparation work.

The target of the renewal is to make ethically sound behavior recognised as an essential part of daily work throughout the organisation. In addition to modernising the Code of Conduct, the Group's sustainability principles as well as general human rights angles will also be included. The implementation will start from 2019 with various methods, such as extensive trainings to understand the Code of Conduct as well as learn new practices how to act in situations related to the topics included.

KNOW YOUR BUSINESS PARTNERS

Metsä Board was the first business area in Metsä Group to introduce the Know Your Business Partner process for new customer prospects. This is a natural step in developing our third-party due diligence process which has now a more preventive risk management focus. By having this process in place we are able to improve our understanding of whom we are doing business with and to mitigate the risk of becoming involved in illegal activities.

"Know Your Business Partner process was trained to all Metsä Board sales teams during the first half-year of 2018. It was integrated to our Contact to Contract process and the compliance check is performed at the same time when credit check is done for new customers," states **Jari Vuori**, VP, Sales Services, Metsä Board.

The plan is to introduce the process to other business areas during the year 2019.

METSÄ GROUP'S 2030 SUSTAINABILITY 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.



WE BRING THE FOREST TO YOU

- Increasing the amount of carbon stored in forests and products
- Safeguarding biodiversity

WE CREATE WELL-BEING

- Responsible corporate culture
- Accident-free work environment


SUPPORTING THE UN SUSTAINABLE DEVELOPMENT GOALS (SDG)



WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT

- Fossil free mills
- Resource efficient production

WE OFFER SUSTAINABLE CHOICES

- Fossil free raw materials
 - Sustainable supply chain
- 





WE OFFER SUSTAINABLE CHOICES

PRODUCTS AND SERVICES



Metsä Group's products made from renewable raw materials help to reduce dependence on fossil resources and offer sustainable choices for everyday life. Our wood products store carbon, pulp-based products are recyclable, paperboard from fresh fibre is a safe packaging material, tissue papers improve hygiene and greaseproof paper helps reduce food waste. Metsä Group's products are sold in over 100 countries.

OFFERING WELL- INFORMED CHOICES

To help our customers make well-informed choices, we prepare environmental product calculations, such as carbon footprint calculations and life cycle assessments (LCA). Life cycle assessments are communicated to customers with independently verified environmental product declarations (in accordance with the ISO 14025 standard).

We also communicate the environmental performance of our products with environmental product labels, e.g. the EU Ecolabel and the Nordic Ecolabel. For our paperboard products we offer Paper Profile information presenting the environmental performance of the products and product compositions.



HIGH-QUALITY LIGHTWEIGHT PAPERBOARDS

- Pure and safe paperboards
- Smaller environmental impact and less waste thanks to lightweight paperboards



EVEN
30%
LIGHTER
PAPERBOARDS
COMPARED TO
COMPETING GRADES

BREAKDOWN OF SALES

AMERICAS



7%



TOP-QUALITY FRESH FIBRE SOFTWOOD PULP

- Pure and safe pulp
- Pulp and bioproducts with excellent environmental performance



BIOPRODUCTS
MADE OF
PRODUCTION
SIDE STREAMS
ACCOUNT FOR
~10%
OF METSÄ
FIBRE'S SALES



RELIABLE WOOD SUPPLY AND EXCELLENT FOREST SERVICES

- Renewable wood raw material
- Sustainable forest management services

100%
TRACEABLE
AND CERTIFIED
OR CONTROLLED
WOOD



EMEA



APAC



1 M³ OF WOOD STOCKS
ABOUT
1 tonne
OF CO₂



INDUSTRIALLY EFFICIENT WOOD PRODUCTS

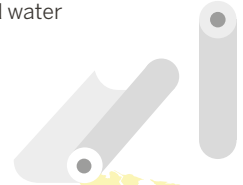
'Fast, light and green'

- Light loads cut traffic
- Lightness of wood enables lightweight and competitive structures
- Using wood products reduces CO₂ emissions generated in building



FOR CLEANER EVERY DAY WITH TISSUE AND GREASEPROOF PAPERS

- Tissue papers improve health, hygiene and well-being
- Greaseproof papers reduce food waste and use of energy and water



80%
OF INFECTIONS
TRANSMIT THROUGH
HANDS*. HAND WASH
AND USING TISSUE
PAPER FOR DRYING
REDUCES INFECTION
RISK.

* The Federal Centre for Health Education, 2016 (Germany)

WE ARE METSÄ GROUP

Metsä Group's five business areas create a strong value chain where we use the northern wood as efficiently as possible at every stage.



More info on business areas
pages 18–23



More info on utilising production side streams
pages 24–25



More info on resource efficiency
pages 40–41

Metsä Group consists of Metsäliitto Cooperative, its two businesses Metsä Forest and Metsä Wood, and its subsidiaries Metsä Tissue, Metsä Board and Metsä Fibre. Metsäliitto Cooperative is the parent company of Metsä Group. It is owned by approximately 103,000 forest owners.

Metsä Group stands out from the competition because of its ownership base and business structure, which also give its operations a long-term perspective. Through Metsäliitto Cooperative's owner-members, Metsä Group has access to a considerable reserve of premium-quality raw material, which provides a stable, long-term foundation for the development of its operations and production plants.

The administrative bodies of parent company Metsäliitto Cooperative are the Representative Council, the Supervisory Board, the Board of Directors and the President and CEO. Metsä Group's Executive Management Team assists the President and CEO in business planning and operative management and prepares proposals to the Board of Directors.

ADDED-VALUE USES FOR WOOD

The slow-growing northern wood is one of the most diverse raw materials in the world. To the different parts of the tree, new, higher-

value-added uses can be found through product development projects.

Processing the wood for recyclable and carbon-storing products also creates the most well-being locally, nationally and internationally. Therefore, the unlimited end-use and product development possibilities of wood should be directed towards the promotion of bioeconomy and circular economy.

SUSTAINABLE AND RESOURCE-EFFICIENT BIOECONOMY

Metsä Group manufactures products from renewable wood from the northern forests, these products replace the use of fossil raw materials. We manage and grow the forests we operate in sustainably and by taking the nature values in to account. We use raw materials, water and energy resource-wisely and produce renewable energy from our production side streams. This is sustainable and resource efficient bioeconomy, where Metsä Group is a forerunner.

In bioeconomy, renewable resources are processed into products that replace the use of fossil raw materials. In circular economy, the renewable products are kept in circulation for as long as possible – and by reusing and re-utilising maintaining the value of the raw material. In circular economy, the manufacturing and consumption of products also generate

as little loss and waste as possible, making production resource-efficient.

The importance of resource efficiency will become more pronounced in the future as population grow and competition from natural resources, energy and water becomes more intense. In circular economy, the resource-efficient manufacturing and use of bioproducts reduces the amount of waste and allows the recycling of materials and holds their value. A resource-wise bioeconomy in the circular economy is possible when we use every tree to the full to maximise the added value of the products. In Metsä Group, every production side stream is valuable.

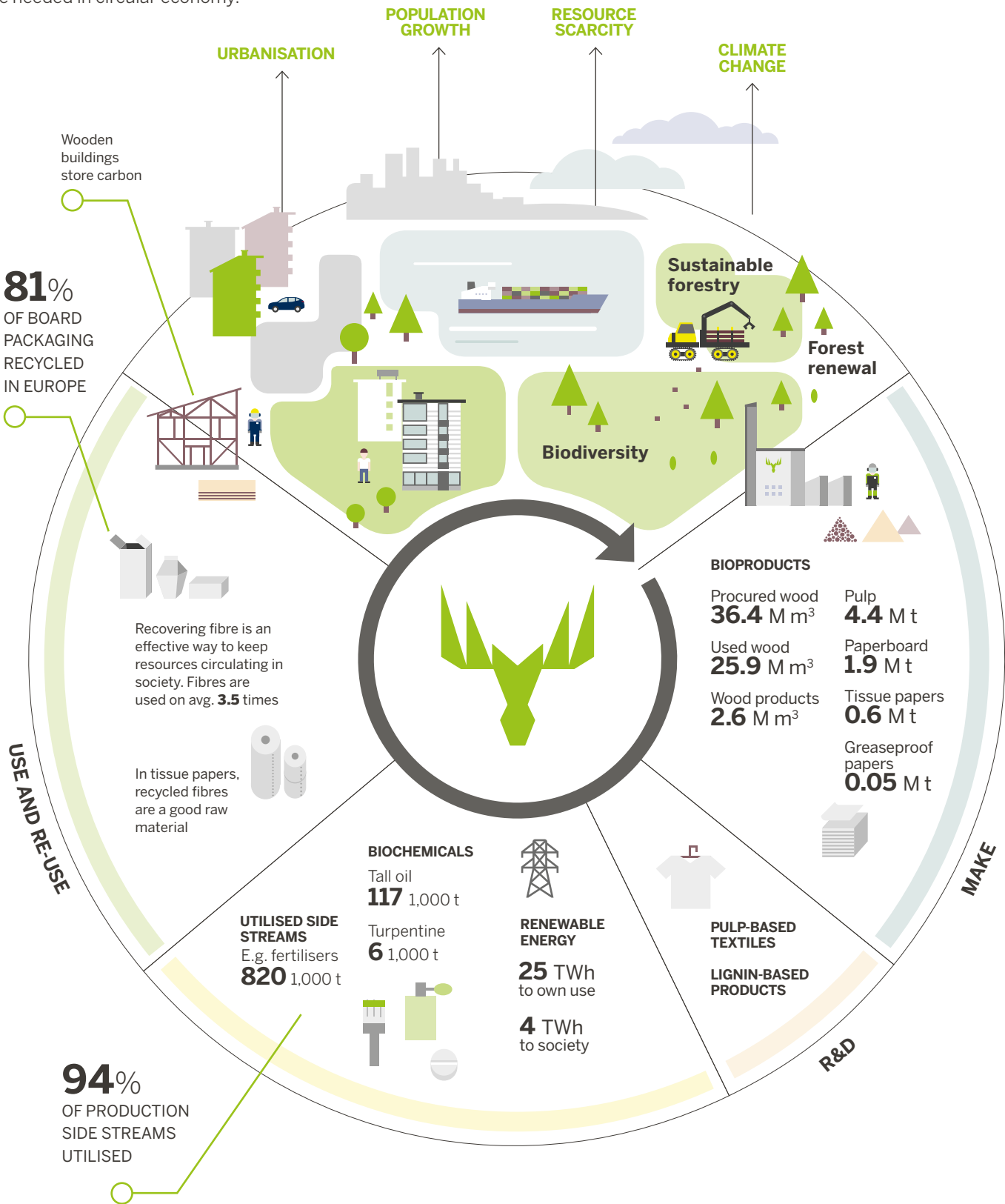
CIRCULAR ECONOMY FORMS THE BASE FOR OUR OPERATIONS

Our partner network plays an important role when utilising the side streams in the best possible way. Cooperation with small 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 to make bioproducts for a variety of end uses: wood products, pulp for board, papers, textiles, composite materials for the electronics industry, and raw materials for paints, tyres, perfumes, agriculture fertilisers and many more.

INDUSTRY BASED ON CIRCULATION

Wood-based products replace the use of fossil resources and are needed in circular economy.





FORESTRY WITH FOREST OWNERS

As the amount of wood we procure and deliver increases, the importance of sustainable forestry is highlighted. We at Metsä Forest work for sustainable forestry in every country we purchase wood from.



More info on use of forest
pages 30–31



More info on forest certification
pages 32–33



More info on forest biodiversity
pages 34–35

Metsä Forest procures all the wood Metsä Group uses. We also deliver wood and energy wood to chosen external industrial customers. We always know where the wood we procure originates from. Though we procure wood from the region around the Baltic Sea, the majority of the wood is procured from our owner-members' forests in Finland.

In 2018, our wood deliveries in volumes to our internal and external customers increased by 4.4 million m³ compared to 2017. The total amount of procured wood was 36.4 million m³ (32.0). The increase is mainly due to the new Metsä Group bioproduct mill in Äänekoski. We purchase wood all around Finland and we make approximately 35,000 individual timber trades with forest owners every year. Forests provide families who own them with a primary or partial livelihood and forests also play an important role in recreation. These family-owned forests are the main source of our sustainably procured wood for our production units.

METSÄ FOREST SERVICES SUPPORT THE OWNERS-MEMBERS

The forest services we offer to forest owners in Finland support them to establish a new forest and once established to maintain the forests health and good growth according to the Forest Act and certification criteria.

We want to be even more responsible in all our forestry actions. We actively develop better and more sustainable forestry practises also to safeguard the biodiversity and to minimise our environmental impact: an example of this is inverted mounding, a soil preparation method developed by Metsä Group. Inverted mounding ensures good growing conditions for the seedlings, but also diminishes erosion and nutrient runoff into waterways compared to traditional methods.

High biodiversity stumps are done as part of thinnings as well as in regeneration. Biodiversity stumps create nesting trees to birds and eventually decayed wood to forests for

species depending on it. Since 2016, approximately 75% of the forest owners has agreed to support biodiversity this way.

Every day, our professionals work for better understanding of what kind of characteristics our owners-members' forests have and to develop tools to ensure best possible quality in the forestry work we carry out in their forests. These tools range from ICT system development to digital maps combining data from multiple sources to harvester track solutions. We are a forerunner in digital services offered to forest owners – thus they can manage their forest assets anytime.

In 2018, Metsä Forest's entrepreneurs and their employees were trained extensively. Approximately 1,500 harvester and forwarder drivers went through hands-on training of Metsä Group policies and issues regarding safety, forest certification and bird nesting for example. The aim was to ensure that all actions done through the whole chain are at the required level.



LESS TERRAIN DAMAGE WITH HARVESTABILITY MAPS

Harvestability maps are forecasts of the ground's load-bearing capacity based on permanent terrain conditions. They have been developed in cooperation with practically the whole Finnish forest sector and Metsä Forest was the first to adapt them to use. In 2018, harvestability maps were also included to the forestry plans in our Metsäverkko web service available to our owner-members. Harvestability maps are used in all stages of forest work.

With harvestability maps, we can identify sites which can be harvested during a dry summer and which need the ground to be frozen, for example. This helps to prevent terrain damages. Simultaneously we can improve the year-round utilisation of our entrepreneurs' machinery and thus improve their business profitability and ability to employ.



CONSTRUCTING SUSTAINABLE WORLD

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



More info on utilising production side streams
pages 24–25



More info on resource efficiency
pages 40–41



More info on Metsä Wood
www.metsawood.com

Wood products do their part in mitigating climate change, as they store carbon for a long lifespan. Metsä Wood's primary products are Kerto® LVL (laminated veneer lumber) and birch and spruce plywood. The production is virtually waste-free and building phase can be conducted resource efficiently in terms of time, environmental impacts and costs. All the wood we use comes from 100% sustainable and traceable, meaning certified or controlled sources. In 2018, the proportion of certified wood at Metsä Wood was 89%.

Efficient use of valuable raw material is a key priority at Metsä Wood and it is followed through all operations. Metsä Wood continuously focuses 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.

Metsä Wood has approximately 150 million euros investment program for the years 2017–2019. The most significant investment of the programme was the birch plywood mill in Pärnu, Estonia, and the production started in August 2018. The value of this investment was 55 million euros. The annual birch plywood production capacity at the Pärnu mill is 50,000 m³. The mill will run at full capacity by the end of year 2019. This far, over 200 new jobs have been created and more people will be hired in the upcoming years. The birch veneers for the plywood production are manufactured in the new line in Äänekoski, Finland, which was also started in 2018.

In Punkaharju, Finland, the mill expansion was started in early 2018. The new Kerto® LVL production line, with an annual capacity of 65,000 m³, will start up during the first half of 2019.

OPEN SOURCE WOOD: AN OPEN PLATFORM

Metsä Wood innovates together with engineers and architects to make the design of wooden and hybrid structures easier.

In June 2018, we invited architects, designers and engineers to join forces to innovate and share information related to construction based on wood elements. This is a continuation of the Plan B project, and is aimed at expanding the market for urban wood construction by combining expertise from different countries.



RESOURCE-EFFICIENT KERTO® LVL PRODUCTION BENEFITS ALSO THE COMMUNITY

The Metsä Wood mill in Lohja, Finland, uses wood to produce Kerto® LVL to global markets. Wood as raw material is used as efficiently as possible to Kerto products. Side streams, such as sawdust and wood chips are used in pulp production or for generating renewable energy.

The energy produced at the site covers all the heat energy needed in production and makes the Kerto® LVL mill in Lohja self-sufficient in energy supply. In fact, there's renewable energy left also for the surrounding community. Due to the close cooperation, the City of Lohja has been able reach its own targets in shifting to more sustainable energy supply.



EXCELLENCE IN SUSTAINABILITY

Continuous improvement and excellence in all operations supports the target of Metsä Fibre to have industry's best environmental performance and its utilisation in stakeholder collaboration. Metsä Fibre is ready to tackle the sustainability challenges of the future.



More info on resource efficiency
pages 40–41



More info on environmental impacts
pages 44–47



More info on Metsä Fibre
www.metsafibre.com

Sustainability plays an important role in Metsä Fibre strategy update in 2018, four-fields-of-excellence. Sustainability is involved in all Metsä Fibre operations and new strategy highlights important sustainability topics; production efficiency, safety and well-being at work, new bioproducts and sustainability as competitive edge.

Interest towards wood origin and forestry has been more active in the past year due to the climate change discussion and utilisation of the forests as a renewable raw material. Metsä Fibre's share of certified wood was 92% in 2018. All the wood is traceable back to the forest and wood comes from certified or controlled, sustainable sources. Synergies between sawmills and pulp mills have improved the resource efficiency and each part of the tree is used for highest value products. Sustainable supply chain of other raw materials and

services has been also in the agenda, 89% (from the spend) of Metsä Fibre suppliers have committed to Metsä Group's Code of Conduct for suppliers.

Sawmills continued to improve the yield and energy efficiency, as the same amount of sawn timber is produced with less wood and electricity. Pulp mills' electricity efficiency increased to 174% and fossil CO₂ emissions per produced ton of pulp were reduced by 31% compared to previous year. Emissions and effluents were also decreased from the previous year, waste water effluent amount decreased by 7% and COD effluent by 13% per ton of pulp.

SUSTAINABILITY AS COMPETITIVE EDGE

New Äänekoski bioproduct mill is a good example of resource efficiency and utilisation of new technology to develop the circular

bioeconomy. Next big step in improvement is the renewal of Kemi mill. Meanwhile, continuous improvement is an on-going topic in all of the mills. Metsä Fibre has launched a prefeasibility study on the renewal of the Kemi pulp mill, project is called "Polar King" and it will again be a great example of how to improve sustainability in our operations.

New bioproducts and innovations to utilise all the wood and side streams to valuable products are studied further. Development work has generated fruitful results and jointly with Itochu Corporation, Metsä Spring will start the textile fibre demo plant in Äänekoski in 2019.

Sustainability cooperation and communication is getting more important from year to year. Metsä Fibre target is to be the most wanted, the most reliable, supplier to its customers – sustainability is getting evermore essential in our value chain.



SUSTAINABILITY HIGHLIGHTED IN CUSTOMER COOPERATION

Sustainability is central to our customers. They will continue to benefit from our responsible operations in their own activities. In 2018, we organized Metsä Day events and developed together with our customer Ahlstrom-Munksjö a new safety category for RISI PPI Safety Awards.

In Metsä Day the aim is to offer insight into the our unique and sustainable forestry and pulp production practices. The main reason for creating the Safety Award category is the aim to improve the level of safety at our production and throughout the whole supply chain with systematic and preventative work. The Award is an example of collaboration and sharing best practices, which allows us to learn from each other and develop the safety of the entire industry.



LIGHTWEIGHT AND WELL-DESIGNED PACKAGING

Consumers are increasingly aware of environmental concerns, and many want their purchases to reflect these values. Accordingly, Metsä Board works for finding the best packaging solutions with the least environmental impact. Paperboards made of renewable and recyclable fresh fibres combined with innovative packaging design enable many benefits.



More info on utilising production side streams
pages 24–25



More info on supply chain
pages 36–37



More info on Metsä Board
www.metsaboard.com

Metsä Board focuses on lightweight paperboards that are resource efficient and help to reduce CO₂ emissions across the value chain: they consume less water, energy and raw materials, reduce transport weight and produce less waste. They also ensure product safety and protection while enabling appealing promotion.

At the beginning of 2018 Metsä Board introduced an innovative eco-barrier paperboard that is non-plastic, recyclable and compostable. It is suitable for food service packages where the contact time with the packaging is short and where light grease resistance is required.

The SkinCare 2.0 gift box set created by Metsä Board's packaging design team presents an environmentally friendly design using fibre-based materials to replace plastic. The three inner cartons are made of lightweight paperboard and the outer rigid box and the tray are made with pulp moulding process.

A PREFERRED CHOICE

Replacing the plastic is a worldwide megatrend, so also in Finland. According to an independent study carried out in Finland in 2018, consumers prefer carton to plastic packaging. According to the study the participants compared two cherry tomato packages

– one made of Metsä Board's paperboard and one made of recycled plastic (RPET). The participants were also willing to pay more for the carton than the plastic package.

The other part of the study evaluated the food waste and how to ensure that cherry tomatoes end up to consumers' tables. The paperboard packaging preserved tomatoes as well or better as the plastic box. The climate impact of the package, both that of the paperboard box and the plastic box, was very small compared to the cultivation of cherry tomatoes. However, the climate impact of paperboard packaging was notably smaller than that of the plastic box.



A SUSTAINABLE ALTERNATIVE TO BUBBLE WRAP

The international packaging design competition, Better with Less – Design Challenge by Metsä Board, was 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. The competition inspired designers around the world with an impressive 302 design concepts from 38 different countries.

The winning design 'Stretching Inner Part' by **Iiro Numminen**, introduces an ingenious alternative to bubble wrap. It allows variable sized products to be packed without the need for bubble wrap. This versatile product could be used to pack various types of items and it ensures that the product stays attached to the package during transportation.





LESS AIR ON PRODUCT LOGISTICS

Metsä Tissue reviews its business operations continuously in terms of both profitability and environmental impacts. A good example of this are the actions taken for optimising logistics and warehousing.



More info on supply chain
pages 36–37



More info on resource efficiency
pages 40–41



More info on Metsä Tissue
www.metsatissue.com

Tissue papers are light and airy, and they are often in roll format. They take a lot of space in the transportation, and therefore Metsä Tissue aims at minimising the transport distances, and pack the products as efficiently as possible. Metsä Tissue strives to manufacture its products as close to the markets as possible.

Tissue paper is typically wound on a tube made of paperboard, and the end-products are handled, moved and stored on pallets. Metsä

Tissue has reduced the core diameter of the tube which makes a big difference in placing the products on the pallets and logistics. Reducing the core diameter with less than 10 per cent, has made it possible to pack the products more efficiently on the pallet and thus optimize the space better. This has increased the number of consumer packs up to almost 20% per pallet.

The change has brought many benefits. It has reduced transport and logistic CO₂

emissions and costs, as well as the need for packaging and core material. Furthermore, it has improved warehousing and product handling. Due to better fit on pallet and better truck utilisation it is expected that the goods will not be easily damaged. On a yearly basis, Metsä Tissue calculates that it will need, for example in Scandinavia over 300 trucks less yearly.



SUSTAINABLE TISSUE PAPER PRODUCTION NOW AND IN THE FUTURE

Metsä Tissue's Mänttä mill in Finland celebrated its 150th anniversary in September. The competitiveness of the traditional mill is ensured through continuous improvement and investments. In recent years Mänttä mill has invested in renewable energy among other things.

In 2017, Metsä Tissue started the renewing of deinking plant at the Mänttä mill. As a result of the renewal, de-inking sludge, a side stream generated in the purification process of recycled paper, can be used in energy production which naturally reduces the use of other fuels.

Additionally, in 2019, liquefied natural gas (LNG) will be introduced at the mill to replace the use of liquefied petroleum gas in the drying process of tissue paper. This will further reduce the mill's carbon dioxide emissions.

"Mänttä mill has always been development-minded and wanted to ensure the quality of its operations. We continuously strive to improve our environmental performance and to develop our operations so that we'll be producing tissue and cooking papers sustainably in the future, too," says **Kari Karttunen**, Mill Manager, Mänttä mill.



RESHAPING THE FOREST-BASED BIOECONOMY

Metsä Group established an innovation company called Metsä Spring in 2018. Metsä Spring's purpose is to build bridges from the R&D phase to new, proven forest bioeconomy innovations. The first equity investment, jointly with the Japanese Itochu Corporation, is a demonstration plant to produce new kind of wood-based textile fibres in Äänekoski, Finland.



More info on resource efficiency
pages 40–41



More info on Metsä Spring
www.metsaspring.com

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 company is essentially a new tool for Metsä Group and all its business areas, by which finding new business ideas can be accelerated. Broad collaboration with a variety of partners is essential for this purpose. 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.

THE FIRST JOINT VENTURE

The first project to launch is a joint venture with the Japanese Itochu Corporation. The budget of the joint venture is approximately EUR 40 million and will be used to build and operate a unique demonstration plant, with the aim of showcasing a new technology for converting softwood pulp into textile fibres. The basis for the new technology has been developed in several joint research projects, starting in 2009. In addition also more strategic development projects have been running in parallel since 2012.

The textile fibre demonstration plant will be located next to Metsä Group's bioproduct mill in Äänekoski, Finland. Construction of the plant, which has an annual capacity of about 500 tonnes, began in October 2018 and it is planned to be started up in late 2019.

Based on the results of the demonstration project, Metsä Spring will evaluate the technical and economic realities of building a significantly larger textile fibre plant in Finland in the future. The demonstration phase is expected to last two to three years.



METSÄ
SPRING

A GOOD NUMBER OF POTENTIAL IDEAS

During its first half year between June and December 2018 Metsä Spring already had approximately fifty new ideas submitted for consideration. They vary from manufacturing-based businesses to businesses based on digital applications.

Metsä Spring evaluates new potential proposals. During the early stages of the company, process to manage the ideas submitted was developed. The assessment work had to start immediately, as ideas came in right from the first day.

All fifty initiatives are worthy of careful research to fully understand the potential of them. Most of the ideas were submitted from outside Metsä Group and one-third of the ideas were submitted from outside of Finland, for example United States and Japan.





PRODUCTION SIDE STREAMS FOR UTILISATION

In circular economy, using resources efficiently and aiming to higher added-value is a normal way of working. At Metsä Group efficiency covers also the utilisation of production side streams.



More info on circular economy
pages 16–17



More info on resource efficiency
pages 40–41

The circular economy offers us a platform to convert our side streams to value added products. In ten years the forest industry's waste management has changed from landfilling to replacing primary raw materials with side streams in a broad range of applications due to circular economy.

We seldom discuss waste anymore thus 94% of Metsä Group's production side streams were utilised as materials or in renewable energy production in 2018. Out of our entire production, the share of side streams makes up about 5%. Side streams, such as ash, sludge and lime, are mainly used for fertilisers, land construction, landscaping and chemical industry applications.

As a result of systematic work and cross-industry co-operation, for example ash from the gasification of bark and lime from pulp production are today widely used as fertilisers. Metsä Group is active in developing solutions for utilisation of green liquor dregs and fibre sludge. Several studies have proved that fibre sludge has a great potential in fertilising and soil improvement while the best solution for green liquor dreg is still in the loop.

Currently fertilisers are not traded on an open internal market, and the EU Fertiliser Act is focusing on developing a labelling system with common rules for production and product characteristics. Another high priority topic is the use of secondary raw materials in

fertiliser products. Metsä Group is actively working on the Fertiliser Act revision with the Finnish Forest Industries Federation and the Confederation of European Paper Industries. The EU Fertiliser Act is a part of the Circular Economy package.

Experience has shown that the networks of businesses and research institutions result new ways to utilise production side streams and create new business models. In these networks one player's side stream is another player's raw material.

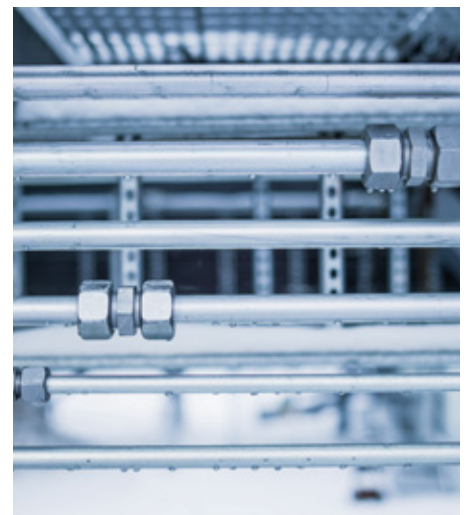
A good example of a circular economy network is the bioproduct mill concept in Äänekoski, Finland, including 14 different actors.



GREEN LIQUOR DREGS AND ASH TO SUBSTITUTE CEMENT

Metsä Group is active in R&D projects related to better utilising ash and green liquor dregs as additional materials for example in concrete based solutions. The Urban Infra Revolution (UIR) project is led by the City of Lappeenranta and implemented jointly by the Lappeenranta University of Technology and various partners. The Sustainable Bioresidual Concrete project is led by Jyväskylä University of Applied Sciences and implemented with forest and concrete industries. These projects are good examples of local scale collaboration.

"The projects are developing new kind of materials that could replace concrete in the future. According to a study by the Finnish Innovation Fund Sitra, the production of cement generates a significant share of fossil-based carbon dioxide emissions in Europe. We participate in the projects to improve utilisation of side streams", says **Sanna Pulkkinen**, Environmental Manager.



94%
OF PRODUCTION
SIDE STREAMS
ARE UTILISED AS
MATERIALS OR
IN RENEWABLE
ENERGY
PRODUCTION

SIDE STREAMS
(~5% OF THE PRODUCTION)

UTILISATION OF PRODUCTION SIDE STREAMS
WITH GROWING MARKET POTENTIAL

About 820,100 tonnes,
94% of side streams



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

WASTE
WASTE WHOSE UTILISATION IS UNDER DEVELOPMENT

About 55,200 tonnes,
about 6% of side streams



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



FIBRE SLUDGE TO IMPROVE CROP YIELDS

During 2018 Metsä Board has been active in Nutrient Fibre R&D project led by Soilfood and Natural Resources Institute Finland. The project investigates the ability of pulp and paper mills' fibre sludge side stream to stabilise soil aggregate structure consequently reduce erosion and nutrient leaching through a clay soil profile.

Field experiment was started in autumn 2015 and it continues to year 2019. Fibre sludge products decreased nutrition leaching risk and erosion remarkably, even 77% compared to the first year of the field experiment. The effectiveness remains high, 50–74% decrease in leaching risk, in following two years. Investigation proves that the wood-based recycled products can have an important role to reduce nutrient leaching from the fields into watercourses. Improving soil with recycled materials is a cost-efficient way to help farmers improve crop yields.



FROM FOREST TO TABLE

Metsä Group's operations cover the entire value chain of our products from the forest to product. Traceability and controlled raw materials ensure that our products are of high-quality and safe to use.



Wood used in our products is PEFC™ and/or FSC® certified or meets the criteria of controlled origin.



FSC Licence Code FSC-C014476



PULP MILL

All pulp used in Metsä Board's paperboard products is produced in Metsä Group's own pulp mills. This is why we know the pulp is safe for our purposes.



RAW MATERIAL

The wood supply chain is in our own hands and purchased wood always comes from sustainably managed Northern forests.



"We use every part of the wood for the purpose that brings the best value. Almost nothing is wasted."

JUSSI RIPATTI, Environmental Director, Metsä Forest



PAPERBOARD MILL

Our paperboard production process is hygienic and safe. Metsä Board has the same food safety certificates as the food industry.



"All Metsä Board's mills are certified according to FSSC 22000 or ISO 22000 Food Safety Management System."

HARRI PIHLAJANIEMI, SVP, Production, Metsä Board



DESIGN SERVICE

Metsä Board's design teams help our customers make their packaging both attractive and sustainable.



"Packaging is part of the brand. We co-create more appealing and sustainable packaging solutions e.g. with innovative structural designs."

LEENA YLINIEMI, Technical Marketing Director, Metsä Board



PAPERBOARD

Product safety is our top priority. We know the safest choice for food packaging comes with fresh fibres.



"Consumer safety is one of the key factors in packaging. Therefore this is regulated globally and we must produce our boards accordingly. For us it means strict control of raw materials and tight co-operation with our suppliers."

ANNE UUSITALO, Director, Product Safety and Sustainability, Metsä Board

CONSUMER



Thanks to the work we do, the food is safely stored in a sustainable package which also enables reduction of food waste.



AFTER FIRST USE

All Metsä Board's paperboards are recyclable when the right facilities exist in the consumer's local area.

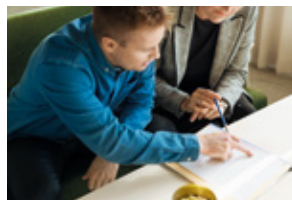


PRODUCT TESTING

Our products are tested to be safe in accredited external laboratories.

"It's crucial that no taste or odour is transmitted from the packaging. Chocolate is a very sensitive indicator. After storing the chocolate and the board sample, the chocolate is tasted by taste panelists to test the sensory neutrality."

MARJATTA PUNKKA, Manager, Product Safety, Metsä Board



SALES AND CUSTOMER SERVICE

We support our customers to choose the best packaging material for their intended use.



TRANSPORTATION

Our products are packaged carefully for transportation to ensure they stay clean and safe. Every vehicle is checked before transportation and our logistics partners are audited regularly.



SECURED PRODUCT SAFETY

Metsä Group's product safety work is guided by global product safety rules and regulations for chosen end-uses. Each business area is responsible for ensuring the compliance of their products for different end-uses for example for food contact.

We ensure that all chemicals used in Metsä Group's products are safe for consumers and this requires close cooperation with our chemical suppliers. In our product compliance work we follow not only the regulations but also the signals of concern coming from markets and therefore for example all Metsä Group's products are manufactured without fluorochemicals. Neither do we accept any genetically modified raw materials in our products.

CERTIFICATIONS ACCORDING TO THE FOOD INDUSTRY

Product safety is particularly important for materials used in contact with food, pharmaceuticals or products used by children. This has led to strict product safety requirements for Metsä Board's and Metsä Tissue's products. All Metsä Board mills, Metsä Fibre pulp mills and almost all Metsä Tissue mills have either ISO 22000, FSSC 22000, BRC or IFS Food Safety Certificates.

Metsä Group's internal operations covering the entire value chain from the forest to the product help to ensure the safety of our products. The pulp used by Metsä Board and most of the pulp used by Metsä Tissue is supplied by Metsä Fibre or Metsä Board. The wood used for the pulp production is supplied by Metsä Forest.

SAFE WOOD PRODUCTS

In the construction industry the indoor air quality is an important safety factor. All Metsä Wood's engineered wood products are CE-marked showing they meet the required safety, health and environmental protection criteria of the EU Construction Product Regulation. They fall well below the Class E1 requirement for formaldehyde emissions into indoor air, and majority of the products fulfil also the strictest formaldehyde emission requirements in the world. Metsä Wood also fulfils the REACH regulation and the products do not contain above 0,1% any of the Substances of Very High Concern (SVHC).

WE BRING THE FOREST TO YOU

RAW MATERIALS AND SUPPLY CHAIN



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 are committed to acting responsibly and we expect the same from our partners operating within our supply chain.

WOOD

Maintain the share of certified wood:

TARGET	PERFORMANCE 2018
>80%	88%

COMMENT

Achieved. We promote forest certification in our operating areas and strive to continuously increase the share of certified wood.

THE WOOD WE USE IS ALWAYS 100% TRACEABLE



"I see value in more than just produced timber. It's important that my forest provides a habitat for wildlife and enables berry picking and hunting. By managing my forest with principles taking into account wildlife, I simultaneously fulfill the certification requirements, which guarantees good markets for harvested timber worldwide."

MIKKO ALHAINEN, FINNISH FOREST OWNER



METSÄ FOREST WOOD SUPPLY



Origin of wood is identified by using maps, information systems, logging and transport documents



Legally binding contracts define safety at work, origin of wood, biodiversity and regeneration of forest

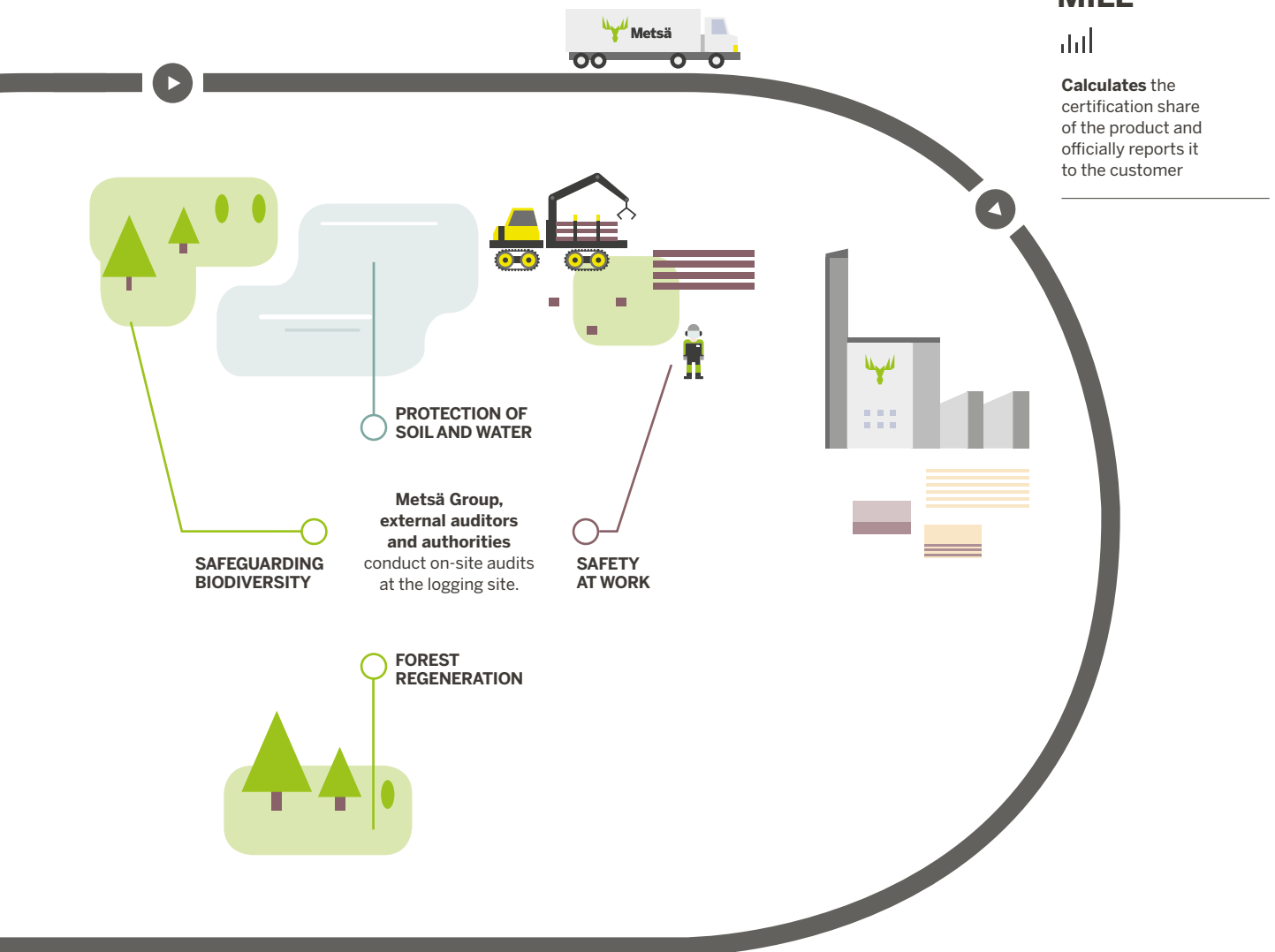


Calculates the share of certified wood purchased and sells an equivalent amount as certified

METSÄ WOOD KERTO® LVL MILL



Calculates the certification share of the product and officially reports it to the customer



“The most important thing is that the materials we use are coming from sustainably managed forests. Forest certification is a proof of that.”

RUNE ABRAHAMSEN, CEO, MOELVEN MILTRE AS



Certification assures that the wood used in the purchased product originates from sustainably managed forests.



The certificate enables our customers to communicate about the sustainability of the products to their customers.

MORE WOOD IN FORESTS THAN EVER BEFORE

While Finland's forests are growing more than ever, the wood procurement volumes are also increasing. Forests are a unique provider of different ecosystem services and play a very important role in the carbon cycle, offering solutions to combat climate change.



More info on forest certification
pages 32–33



More info on biodiversity
pages 34–35



More info on The National Forest Inventory online
www.luke.fi



More info on our long-term forest lease areas
www.metsagroup.com/csr

Metsäliitto Cooperative, the parent company of Metsä Group, is owned by around 103,000 forest owners. We provide the owner-members and other forest owners tailored services for wood trade, increasing forest assets, forestry and nature management. Most of the purchased wood originates from Finland, in addition Metsä Group actively procures wood from nearby areas.

In 2018, Metsä Group's wood deliveries in volumes to our internal and external customers increased by 4.4 million m³ compared to 2017. The total amount of procured wood was 36.4 million m³ (32.0). Out of this, 25.9 million m³ (23.1) was used by Metsä Group's own mills. The increase is mainly due to the new Äänekoski bioproduct mill, which according to plan reached its nominal capacity in August 2018.

Metsä Group's wood use may increase in the future, as Metsä Group is considering the renewal of Kemi pulp mill. Launched in May

2018, the ongoing prefeasibility study investigates the options of either building a new bio-product mill or modernising the current mill. Compared to the current mill, the new bio-product mill would be larger in terms of production capacity and therefore in consumption of wood raw material.

Related to the increasing use of wood by Metsä Group and other companies, there is an active debate in society on the impacts of increased forest use, especially regarding biodiversity and climate change. A group of NGOs gathered support for an initiative to ban regeneration fellings in state-owned forests and to start implementing continuous-cover forestry instead. By August 2018, the initiative gained over 50,000 signatures and therefore ensured parliamentary consideration of the issue.

Metsä Group's forestry services help to ensure the future growth of the forests, includ-

ing services such as tending young stands and forest regeneration. Metsä Group delivers annually approximately 30 million seedlings to Finnish forest owners, which equals one delivered seedling every second.

Metsä Group is a forerunner in the modernisation of forest data gathering and forest management planning. With more accurate available data, adjusting the forestry plans and operations according to the site conditions becomes easier. This enables minimising environmental impacts and improves the possibilities for more accurate nature management.

For our long-term forest lease areas in Podporozhye, Russia, Metsä Group has introduced forestry practices aimed at creating better growth potential. Modernisation of forestry methods include, for example, a new method for soil preparation and using pot seedlings in forest regeneration. 2018 was the second year in a row when Metsä Forest Podporozhye planted more than one million pot seedlings during the season.



FOREST RESOURCES CONTINUE TO GROW

The Natural Resources Institute Finland (Luke) updated its estimates of forest resources in Finland in October 2018. Based on the National Forest Inventory (NFI), Finnish forests grow 107 million m³ annually, which is 1.5 million m³ more than in the previous inventory period. Currently, the total volume of growing stock reaches 2.5 billion m³, which is more than ever before during the period that forest resources have been evaluated since the early 20th century.

"The most significant result is that the volume of forest resources continues to increase even though the harvesting amounts have been at a record level for the last couple of years. Growth is still larger than logging and natural mortality combined", state Luke's Principal Scientist **Kari T. Korhonen**.

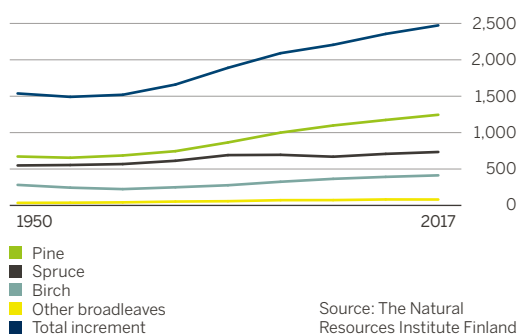
In connection with the inventory, future harvesting possibilities have been estimated. For the 10-year period 2015–2024, the largest sustainable logging potential will be 84.3 million m³ per year. Over the past decade, the level of logging has on average reached 80% of the sustainable potential.

CONTROLS AIM TO CONTINUOUS IMPROVEMENT

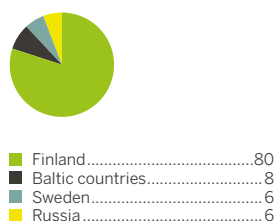
Monitoring the logging site quality, as well as nature management in forestry operations, is a regular practice for our whole wood supply area.

In 2018, no major shortcomings were found in a multitude of comprehensive internal and external audits, see the graphs next page on logging site audits and nature management in harvesting. Damages to the forest floor were the main issue for remarks. Root causes of the non-compliances are analyzed, and corrective measures taken. Targets for occurring development needs are included in the action plans for 2019.

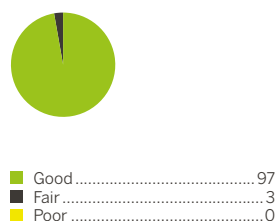
DEVELOPMENT OF GROWING STOCK OF MAIN TREE SPECIES IN FINLAND (1950–2017) MILLION M³



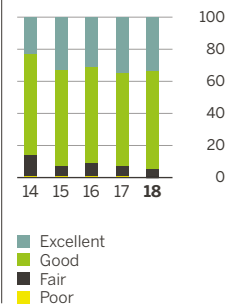
WOOD PROCUREMENT BY COUNTRY IN 2018, %



LOGGING SITE AUDITS RUSSIA AND BALTICS 2018, %



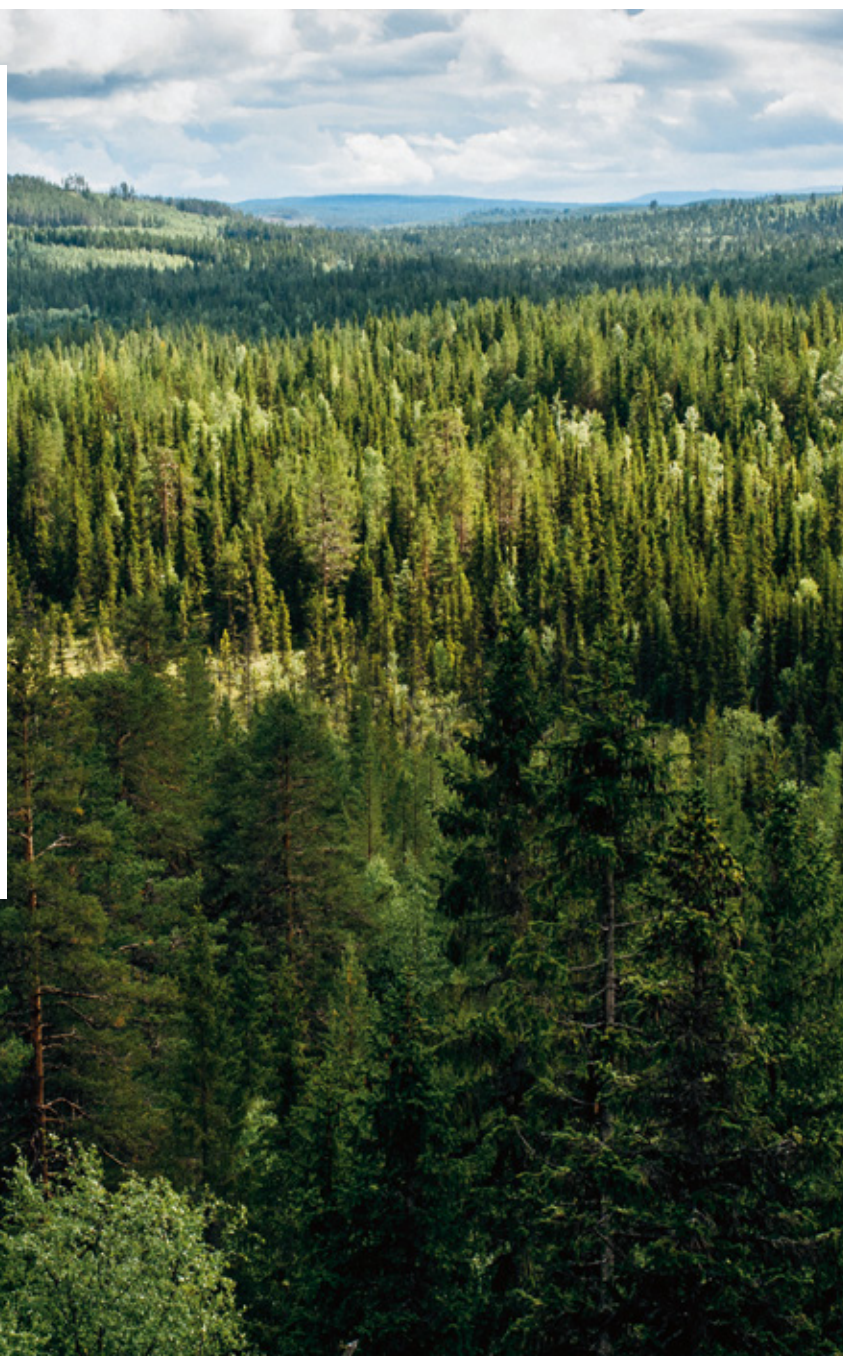
NATURE MANAGEMENT IN HARVESTING METSÄ GROUP IN FINLAND, %



CARBON SINK OF FORESTS EVALUATED IN EU

The LULUCF regulation adopted in May 2018 requires each Member State to ensure that accounted emissions from land use are entirely compensated by an equivalent removal of CO₂ from the atmosphere through action in the land use, land use change or forestry sector. In the forestry sector, the regulation requires to estimate the carbon sink levels in their forests.

In the official report published in December 2018, the Natural Resources Institute Finland (Luke), published an estimation of Finland's forest reference level which will be used to compare the realized carbon sink starting from 2021. According to projection, the carbon sink of Finnish forests would increase from 2021 to 2050.



CERTIFICATION COVERS THE WHOLE WOOD SUPPLY CHAIN

Forest certification is a comprehensive way to ensure the sustainable and traceable origin of wood. This is why Metsä Group puts a lot of effort into keeping certification reliable, effective and feasible.



More info on forest use
pages 30–31



More info on biodiversity
pages 34–35



More info on PEFC online
www.pefc.org



More info on FSC online
www.fsc.org

Forest certification sets a wide range of sustainability requirements, from safety at work to nature values and future growth of the forest. The comprehensiveness of certification in sustainability issues is why one of Metsä Group's sustainability targets is to maintain the share of certified wood in operations above 80%. In 2018, 88% (88) of the wood supplied by Metsä Group was PEFC™ (Programme for the Endorsement of Forest Certification) and/or FSC® (Forest Stewardship Council®; Licence Code FSC-C014476) certified.

DOUBLE CERTIFICATION INCREASES

In 2018, the global share of certified forests was 10.8% (10.6). The two major certification schemes, PEFC and FSC, reported a global combined total area of 437 million hectares. This area includes at least 71 (69) million hectares of double-certified forests, i.e. forests certified under both schemes. Thus, the share of double-certified forests is 16% of the global certified forest area. To increase the global area of certified forests and reach new areas, new approaches are needed, for example facilitating forest certification among smallholders and communities all around the world.

Finland, Metsä Group's main wood procurement country, has had a large-scale coverage of forest certification for almost 20 years. The share of PEFC certified forests is currently 85% (80) equalling 18.1 (17.7) million hectares. FSC certification also continues to increase gradually, covering 7% (7) or 1.6 (1.5) million hectares of forests. Forests certified by

FSC mostly overlap with the forests certified by PEFC.

Metsä Group actively promotes certification among forest owners. By the end of 2018, 7,580 forest owners have joined PEFC forest certification via Metsä Group's forestry specialists. The area covered by Metsä Group's FSC Forest Management group certificate in Finland continued to grow and currently amounts to 166,000 (160,000) hectares. In addition, Metsä Group's partially owned Finsilva Oyj received FSC Forest Management certificate for its' forests, covering altogether 130,000 ha.

Metsä Group's leased forest areas in Russia are certified by both PEFC and FSC. PEFC and FSC group certificates for forest management are maintained to support the wood suppliers willing to certify their leased forest areas.

CHANGES IN FOREST CERTIFICATION SYSTEMS AND STANDARDS

Certification systems are continuously developed to meet stakeholder expectation and make the systems more useable.

PEFC is updating the international standards, including the Forest Management and Chain of Custody requirements. The revised Sustainable Forest Management and Group Forest Management Certification benchmark standards were approved in November 2018. The new benchmark enhances PEFC's contribution to the United Nations' Sustainable Development Goals (SDGs). As a result, PEFC expanded the social requirements to include equal opportunities for employment

DEGREE OF FOREST CERTIFICATION GLOBALLY

88%

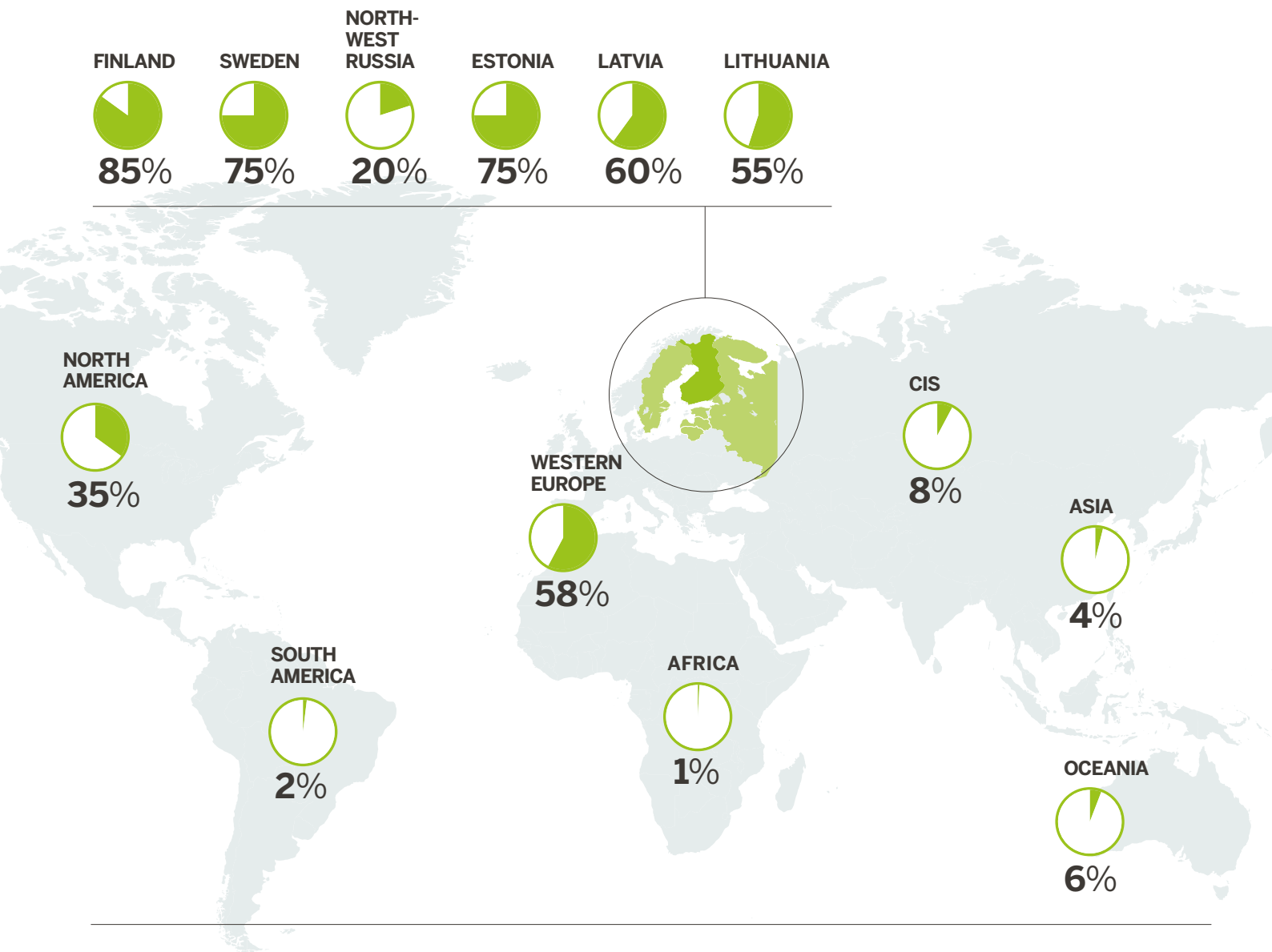
OF THE WOOD
PROCURED
BY METSÄ GROUP
WAS CERTIFIED

and to further emphasise the interests of indigenous people. The updated standards will lead to updated national standards, which will be developed in multi-stakeholder processes, starting in 2019. The Chain of Custody standard revision is expected to finish in 2019.

The FSC scheme is still undergoing major changes in both forest management and supply chain certifications. In Metsä Group's wood procurement area, multi-stakeholder risk assessment processes for the wood supply chain were finalised in 2018 in Finland, Sweden and Russia. In addition, working groups consisting of FSC's members from all around the world are updating the national Forest Management standards.

Metsä Group supports the development of forest certification and actively contributes to different working groups and consultations. Metsä Group is also an active member of PEFC and FSC, both at national and international levels. **Riikka Joukio**, SVP, Sales & Marketing, Consumer products at Metsä Tissue, is a member of the PEFC Board of Directors.

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



BRUSH-UP OF THE CERTIFICATION CRITERIA



Metsä Group organised an intensive training day for approximately 1,500 harvester and forwarder drivers. The training tour, which included almost 40 occasions, focused on the importance of occupational safety, environmental issues, customer service and good harvesting.



Particular attention was given to the requirements of the forest certification criteria and the newly introduced harvestability maps. During the field-based part of the training, the participants rehearsed how wide a buffer zone should be left to protect a brook and maintain its' biological values.

By means of such trainings, Metsä Group wants to ensure that the quality of harvesting work remains at a high level even though harvesting volumes have increased. "I think it is positive that Metsä Group takes care of drivers' skills. In the forest, every day is about learning, but common training reinforces knowledge and ensures that we work towards common goals", states entrepreneur **Marko Marin**.



SUSTAINABLE FORESTRY ENSURES BIODIVERSITY

Biodiversity of forests is best maintained by combining nature management and protection of habitats with specific nature values. As the harvesting amounts increase, additional efforts are developed to maintain biodiversity in the forests.



More info on forest use
pages 30–31



More info on forest certification
pages 32–33

Nature management in forestry includes several measures for maintaining and increasing nature values in forests. It is a part of every operation in forestry, including tree retention, leaving a mixture of broadleaved trees in the thinning of young stand, protection of key habitats, and buffer zones to safeguard cleanliness of water-courses and providing connectivity. The importance of nature management has been recognised in scientific research.

Additionally, there are active measures imitating natural processes to safeguard biodiversity. For example, due to the small size and rarity of forest fires in Finland, charred wood is a very limited resource. So, for species that depend on it, controlled burning has become essential for their survival as part of Finnish nature.

We work actively to continuously improve environmental performance of forestry operations. Measures include thorough follow-up and analysis, as well as hands-on development. There

is a lot of research and development work related to minimising soil damage, which also is an essential factor regarding water protection in forestry operations. Vehicle track solutions suitable for soft soils are being further developed, as well as digital maps combining data from multiple sources helping to determine the right season and optimal route for harvesting.

In recent years new practices have been introduced to increase the amount of deadwood which is a key to safeguarding biodiversity. We implement a voluntary practice to leave two high biodiversity stumps per hectare in thinning and regeneration loggings. By 2018, some 75% of the forest owners have agreed to support biodiversity in this way. As the high stumps gradually decay, they provide a home to different species from fungi to birds.

We contribute to an ongoing research project, 'Effects of forest management practices on forest biodiversity', organised by

Finnish Forest Industries. The aim is to study the effects of past and current forest management practices on selected indicators of forest biodiversity and to recommend improvements on the current practices. In 2018, the researchers presented the preliminary results on a stakeholder excursion.

NATURE VALUES ARE PROTECTED

The share of protected areas accounts for 12% of Finland's total forest area. In 2018, a study showed that the area of productive forest land under strict protection is five times larger than in the beginning of the 1980s, having increased from 370,000 hectares in 1980 to 1,830,000 hectares. Most of the protected forests are in northern Finland, but the relative increase of the protected area since 1980 has been 17 times larger in the south. The share of the forests under a strict protection regime in Finland is greater than in other European countries.



CONTROLLED BURNING FOR BIODIVERSITY

While several countries around the world fought forest fires in 2018, forestry experts in Finland conducted prescribed burning of regeneration areas and retention tree groups to maintain biodiversity of forests. Due to effective firefighting, the habitats for the species depending on charred wood would almost disappear without this approach to active nature management in Finland.

In the 1960s, controlled burning was a popular method in forest regeneration, but as it is a laborious method it was almost forgotten for decades. Prescribed burning is also an important way to become familiar with the behaviour of fire in wooded areas and therefore help to fight forest fires.

"Now the need for controlled burning has again increased due to forest certification criteria. Controlled burning is one of the ways to maintain the biodiversity of forests. While burning the area, the retention and decaying trees form charred large-diameter wood, which benefits many insect species", explains Operations Manager **Arto Tähkävuori**.



NEW GUIDELINES TO CONSIDER BIRD-LIFE

In the spring of 2018, Metsä Group updated its guidelines on how to consider bird-life in forest management and harvesting. The key objective is to ensure that both employees and contractors work according to a common operating model and are aware of how to consider bird-life when operating in forests during the nesting period.

To minimise the disturbance during the nesting period, the most efficient way is to select the right harvesting place. "The number of nesting birds is largest in lush forests with deciduous trees. That is why we try to avoid logging on such sites during the nesting period. If, for some reason, harvesting needs to take place during the nesting time, we will follow our new guidelines to check the area in advance to observe possible nesting", states Operations Specialist **Vesa Tuominen**, an active birdwatcher himself.

If a nest is found during forestry operations, the surroundings of the nest will be left untreated. In accordance with the new instructions, the nest is marked on the terrain and in the map application so that the nest can be preserved in the next loop of the chain, such as a harvester driver or an excavator operator.



IMPROVING SUPPLY CHAIN SUSTAINABILITY

Metsä Group is committed to acting responsibly and we expect the same from our partners in supply chain. Our Code of Conduct for Suppliers determines the minimum requirements for ethical business, integrity and sustainability.



More info on our sustainability principles
pages 8–9



More info about our policies and principles online
www.metsagroup.com/csr

Metsä Group's Sourcing and Logistics function is responsible for all Metsä Group's purchases excluding wood procurement, which is carried out by Metsä Forest. In 2018, Metsä Group's spend on external purchases was over 3 billion euros and we used about 20,000 suppliers. We use mainly European suppliers and aim to use local suppliers when possible. In 2018, 85% (85) of our suppliers were from countries where we have production sites.

We expect all our suppliers and service providers to commit to Metsä Group's Code of Conduct for Suppliers. By the end of 2018 it covered 92% (82) of our total spend. It was included in 1,115 (921) new supplier contracts

made during 2018. Most of our raw material suppliers, covering 99% of the raw material spend, have agreed to operate according to the requirements of the Code of Conduct. Further sustainability requirements are often agreed in contracts.

SUPPLIER ASSESSMENTS AND AUDITS

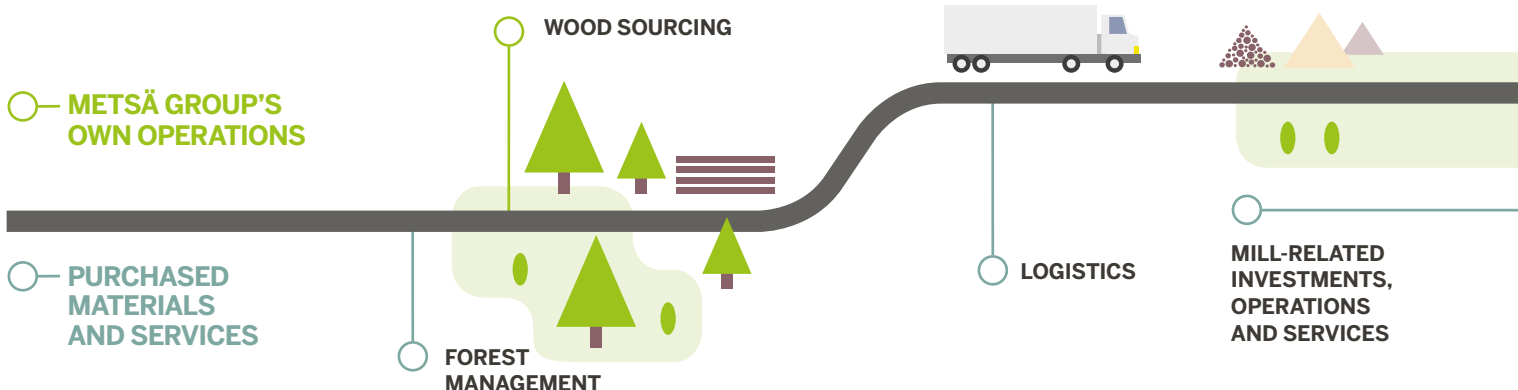
We have further developed our supplier sustainability assessment in 2018. A third-party analysis tool to check a supplier's compliance with laws and regulations was taken into use extensively, and the whole compliance screening process was further developed. Supplier self-as-

essment questionnaires were utilised to evaluate how the suppliers perform against our requirements.

In 2018, our focus was on our key suppliers that cover about 40% of our total spend. 56 suppliers responded to the evaluation questionnaire in 2018, of which 70% fulfilled our sustainability criteria. Feedback report on the required development actions and recommendations was given to the suppliers.

Product safety is a key priority in sensitive end uses such direct contact with food. To fulfill the high requirements of our raw materials and processing aids, our chemical suppliers are obliged to reply a detailed chemical compliance

SUPPLY CHAIN



questionnaire. It covers the requirements of global regulations and specific concerns of our customers.

Our current purchasing management system enables better visibility of supplier quality deviations and sustainability assessments. The supplier sustainability assessment cover the risk analysis of the supplier country, result of the compliance analysis and supplier self-assessment. The results are utilised in supplier management and in selection of new suppliers.

We also conduct supplier audits regularly. In 2018, we conducted 55 (64) on-site audits of which 15 (11) were third-party audits, including sustainability criteria, covering environmental as well as social responsibility aspects.

SUSTAINABILITY IN LOGISTICS

Logistics is one of our most significant purchasing categories. Majority of the procured wood, our main raw material, comes from Finland. Metsä Group's products are transported to approximately 120 countries by road, rail and sea. We have an extensive network of over 1,000 logistics service providers. A diverse and extensive logistics network helps us ensure the reliability and efficiency of our transportations.

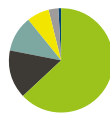
We have an established method for evaluating our logistics partners' sustainability. New potential service providers are always evaluated prior to being selected as supplier. Also the auditing practices have been developed.

COMPOSITION OF PURCHASES IN 2018 % OF MATERIAL AND SERVICE PURCHASES



Wood.....	28
Pulp and recovered paper....	17
In-direct materials and services.....	16
Logistics	15
Other (incl. packaging).....	11
Chemicals, pigments, binders and coatings.....	8
Energy	5

PURCHASES BY COUNTRY IN 2018* %



Finland.....	63
Other EU countries.....	15
Sweden.....	11
Germany.....	7
Outside Europe.....	3
Other European countries ..	1

* Wood procurement excluded

BREAKDOWN OF LOGISTICS MODES* %



Road.....	50
Sea.....	30
Port and warehouse	11
Rail	9

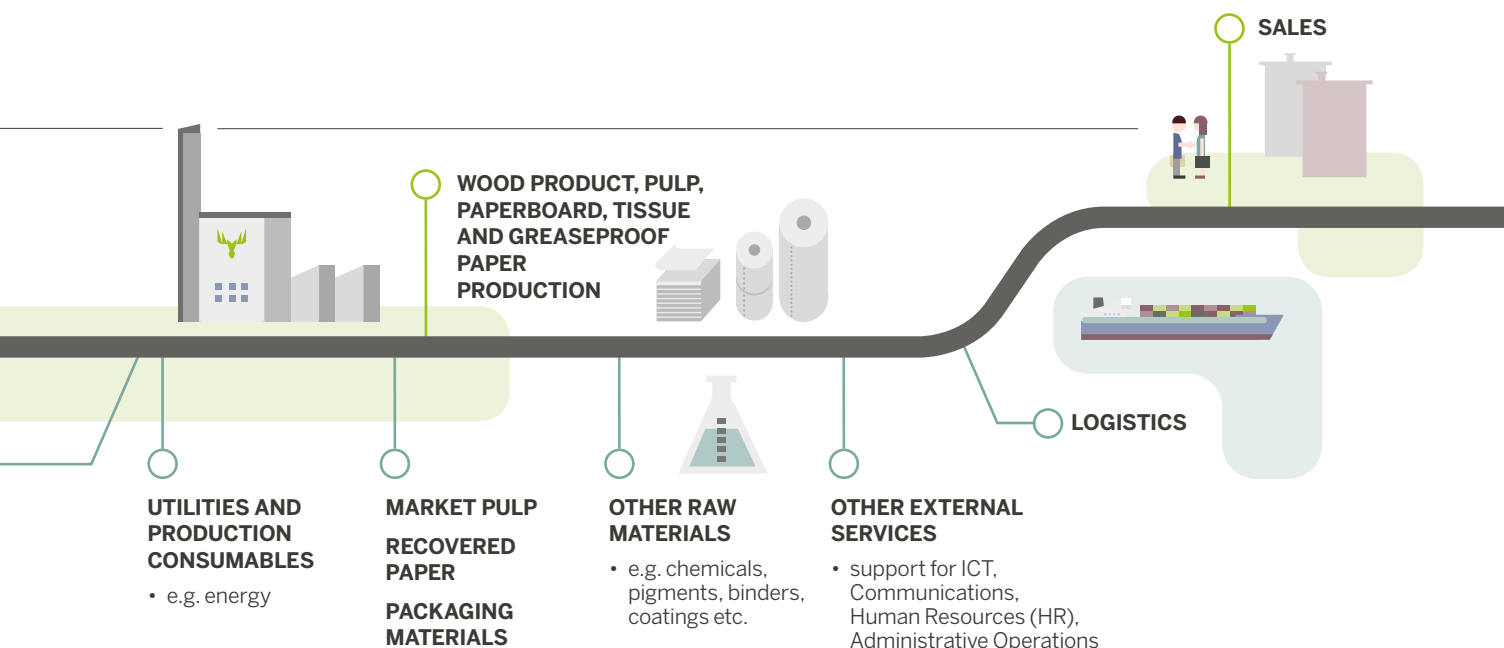
* Share of total logistics costs



NEW LOGISTICS SOLUTIONS AT ÄÄNEKOSKI BIOPRODUCT MILL

The internal logistics of the bioproduct mill in Äänekoski, Finland, has been developed to meet the high sustainability standards of the future and ensuring fossil free production of the mill from the wood reception to product deliveries. Wood unloading cranes and wood feeding to mill production are using electric driven machinery. After the fibre line, the pulp bales are fed to the automated warehouse. Electrical cranes are used in loading pulp to train wagons.

Majority of the mill's production is delivered through newly electrified train connection to the ports. Domestic truck transportation is loaded with electrical forklifts. All the new electrical solutions in Äänekoski mill's internal and external logistics are saving about 1,200,000 litres of fossil diesel fuel per year compared to conduct them with former, non-electrified solutions. This is equivalent of a 3,230 tonnes saving of fossil CO₂ emissions.



WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT

RESOURCE EFFICIENCY AND ENVIRONMENTAL IMPACTS



Metsä Group has production facilities in eight European countries. We strive to operate as resource wisely as possible and minimise our impacts on the environment.

CLIMATE

Fossil CO₂ emissions per product tonne 2009–2020:

TARGET	PERFORMANCE 2018
-30%	-45%

COMMENT

Achieved. Investments in modern technology and renewable energy have steadily reduced fossil CO₂ emissions.

ENERGY

Energy efficiency improvement 2009–2020:

TARGET	PERFORMANCE 2018
10%	7%

COMMENT

On track. Development work continues, and efficiency is expected to improve when bioproduct mill is running at nominal capacity.

RESOURCE EFFICIENCY

Process water use per product tonne 2010–2020:

TARGET	PERFORMANCE 2018
-17%	-19%

COMMENT

Achieved. Recycling water in processes and investing in efficient technologies have decreased process water use.

OTHER RAW MATERIALS^{1,000 t}

PIGMENTS
250 (290)

ADHESIVES
68 (72)

WOOD-BASED RAW MATERIALS

WOOD, 1,000 m³
25,864 (23,142)

PULP, 1,000 t
170 (206)

RECOVERED PAPER, 1,000 t
384 (329)

PURCHASED ENERGY^{TWh}

FOSSIL FUELS
2.8 (2.9)

BIOFUELS
1.2 (1.2)

ELECTRICITY*
1.6 (2.4)

HEAT*
-0.008 (-0.07)

*Figures are net values

99.6%
SURFACE WATER

WATER INTAKE^{1,000 m³}

SURFACE WATER
383,116 (315,885)

GROUNDWATER
1,484 (1,355)

The strength of the line is only an indication of the actual size of each material stream and does not represent accurately the actual size of the stream.

EMISSIONS TO AIR ^{1,000 t}

BIOGENIC CARBON
DIOXIDE (CO₂)
9,038
(7,771)

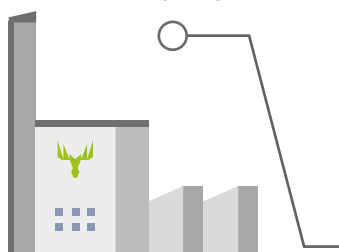
FOSSIL CARBON
DIOXIDE (CO₂)
693.9
(746.8)

NITROGEN OXIDES
(as NO₂)
6.2 (6.6)

SULPHUR (as SO₂)
0.9 (1.2)

PARTICLES
1.0 (1.3)

94%
OF PRODUCTION
SIDE STREAMS
UTILISED



PRODUCTS

PULP ^{1,000 t}
4,435 (3,817)

MECHANICAL WOOD
PRODUCTS ^{1,000 m³}
2,626 (2,697)

PAPERBOARD ^{1,000 t}
1,866 (1,817)

TISSUE PAPERS ^{1,000 t}
609 (608)

GREASEPROOF
PAPERS ^{1,000 t}
46 (46)

OTHER BIOPRODUCTS
TALL OIL, TURPENTINE
^{1,000 t}
123 (109)

UTILISED SIDE
STREAMS
e.g. FERTILISERS ^{1,000t}
820 (675)

WASTE

LANDFILL WASTE ^{1,000t}
53.0 (59.3)

HAZARDOUS WASTE ^{1,000t}
2.3 (2.9)

RENEWABLE ENERGY

USED IN OWN
PRODUCTION TWh
25 (21)

DISCHARGES TO WATER ^t

WASTE WATER
FLOW
(1,000 m³)
150,076
(145,609)

CHEMICAL
OXYGEN DEMAND
(COD)
42,080
(42,176)

TOTAL
SUSPENDED
SOLIDS
3,594
(3,565)

BIOLOGICAL
OXYGEN DEMAND
(BOD)
1,042
(1,109)

NITROGEN
(N)
627
(595)

AOX
397
(349)

PHOSPHORUS
(P)
52
(50)

COOLING WATER

Cooling water circulates in separated closed loops and is not in contact with any materials in the process. The only impact to the watercourse is warming. Water is also evaporated in the process to a certain extent.

RENEWABLE ENERGY

(BIOFUELS) TWh
4 (3)

EFFICIENT USE OF RESOURCES

The shift to the larger use of renewable resources strengthens Metsä Group's position in the global market. We are making various products of wood – a renewable though limited resource. In our operations, we make sure all the wood we use comes from sustainably managed forests and each part of it is directed to the highest added-value products. We also utilise valuable side streams and other resources, such as energy and water as efficiently as possible.



More info on utilising production side streams
pages 24–25



More info on renewable energy
pages 42–43



More info on water use
page 46–47

Our main raw material, renewable wood, comes from sustainably managed Northern forests. Even though our wood comes from areas where its growth exceeds use, each part of the material is utilised for the most valuable purpose: the thickest and most valuable parts are used for wood products and the thinner parts for pulp and other bioproducts. The parts not applicable for material or chemical production, such as bark and branches, are used for renewable energy production.

The resource-wise use of wood works best when the use of each part is in balance. In addition to environmental aspects, resource-wise operations are driven by enhanced competitiveness and profitability. By using every part of the raw material, we achieve a better yield and this results in cost-efficiency.

OPTIMISING THE USE OF ALL RESOURCES

In addition to making most of our main raw material, wood, we also aim to optimise the use of other resources needed for the production, such as water, energy, chemicals and other additives. We continuously work to improve material efficiency at our sites through internal development programmes, revised practices, personnel-led initiatives and investing in our production facilities.

Water is an important resource for Metsä Group's production processes. Despite our intensive water intake, our operations do not

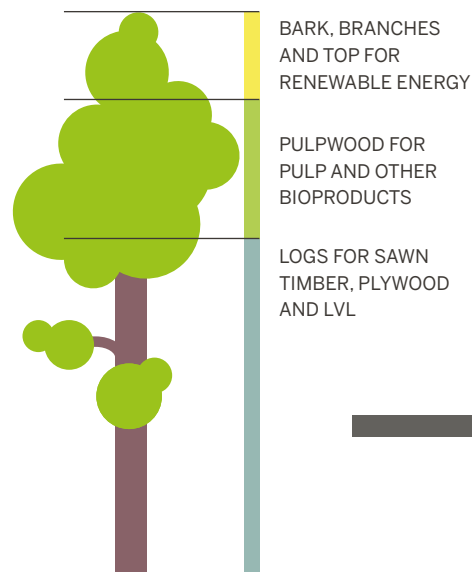
limit the water use of other parties as we operate in areas with vast water resources. A large part of the water we intake circulates in closed loops and is used for cooling before returning to the watercourses. Efforts to decrease the use of process water are constantly on focus, and since 2010 we have decreased it by 19% (15) per product ton. We will continue to invest in improving the efficiency of our process water usage even further.

We are committed to improve energy efficiency and further increase the share of the renewables. Since 2009 our energy efficiency has improved by 7% (7), and our target by 2020 is an improvement of 10%. Metsä Group particularly invests in renewable energy production based on the side streams from its own production.

EFFICIENCY FROM INDUSTRIAL ECOSYSTEMS

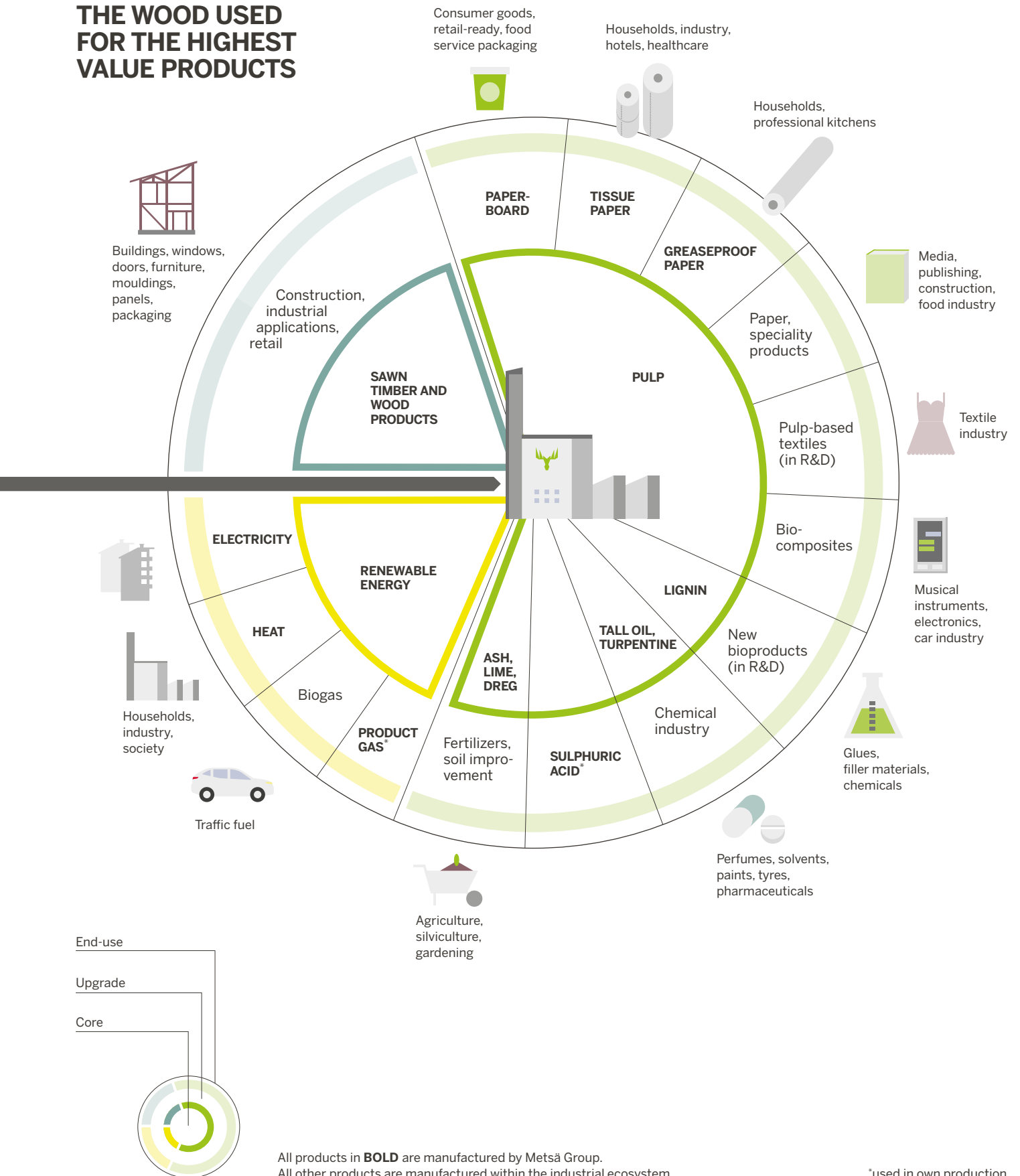
The results of industrial ecosystems and other cooperation initiatives are shown as better utilisation of resources, such as production side streams. In industrial ecosystems around production facilities higher value-added products are generated with the partners.

New business opportunities are realised through converting one company's waste to a valuable product by another actor. The benefits of ecosystems also often cover the



use of energy and water consumption. Metsä Group's bioproduct mill in Äänekoski, Finland is a great example of an efficient industrial ecosystem promoting resource efficiency and circular economy as well as generating new added-value bioproducts. Currently, there are 14 companies in the ecosystem efficiently supporting each other.

EACH PART OF THE WOOD USED FOR THE HIGHEST VALUE PRODUCTS



RESOURCE-WISE RENEWABLE ENERGY

Renewable energy is increasingly a focus area in global and national discussions. This is also a key topic for Metsä Group, which is both a significant user and a producer of renewable energy. We promote resource-wise bioeconomy and operations. Therefore, our production is mainly powered by energy generated from production side streams.



More info on utilising production side streams
pages 24–25



More info on resource efficiency
pages 40–41



More info on emissions to air
pages 44–45

Comprehensive energy management within Metsä Group emphasises the need to further increase the share of renewables in production and continuously invest in new energy technologies for better efficiency.

Currently, 80% (72) of Metsä Group's operations are run with renewable energy and in year 2018 the share of renewable fuels was 90% (88). In 2018, Metsä Group produced over 15% (15) of the renewable energy in Finland. Production-based energy efficiency and reduction of fossil-based CO₂ emissions into the air are monitored throughout the production units using set targets. The fossil-based CO₂ emissions per produced tonne have decreased by 45% (38) since 2009, clearly exceeding the target set for 2020 which is 30%.

In the Group's new strategic 2030 sustainability objectives, launched in early 2019, ambitious shift to fossil free mills plays a key role. Therefore, the upcoming energy related investments will be focused on further reducing the use of fossil-based fuels, improving energy efficiency and better utilisation of the side streams suitable for renewable energy production.

Energy efficiency is another focus area in developing our operations. Metsä Group is committed to the voluntary energy efficiency agreement in Finland for the years 2017–2025. We have improved our energy efficiency by 7% (7) since 2009, and the work continues towards the target of a 10% improvement by 2020. Resources to further develop energy efficiency

and share best practices between the mills were strengthened. Our energy efficiency work at mills across the Group is supported by Energy Management Systems, mainly ISO 50 001.

Metsä Group's increasing energy self-sufficiency and several mills' surplus energy production also support the surrounding communities' aims to reach renewable energy targets to help mitigate climate change. Currently 23 (23) production facilities have bioboilers and renewable energy production on-site, and investments will continue.

The total energy use of the Group in 2018 was 31.7 (30.1) TWh. At the same time, wood-based renewable fuel production was 28 (24) TWh, of which 25 (21) 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 2018, the energy content of these biomass based fuels represented 4 (3) TWh, which when replacing fossil-based fuels saved CO₂ emissions of up to 1 (1) million tonnes.

INVESTMENTS AND BEST PRACTICE SHARING FOR BETTER RESULTS

The new bioproduct mill in Äänekoski, Finland, started its operation in autumn 2017. During 2018, the focus has been upon to ramp up the operations running optimally and with the best efficiency and performance measures. At the mill, the production volume as well as quality targets were reached earlier than estimated. The work for optimising the energy

efficiency and renewable energy production continues. The mill is targeting to have 240% self-sufficiency in electricity and to provide annually 1 TWh of electricity to other companies in the mill site as well as to national grid after supplying its own operations with 0.75 TWh. The Äänekoski bioproduct mill is fossil free, both in fuel use as well as in fossil-based CO₂ emissions to the air.

The bioproduct mill is the core of the Äänekoski bioeconomy cluster that now consists of 14 (15) companies. Cooperation between the participants in an operationally integrated ecosystem leads to improved energy efficiency, as both the production and use can be optimised at a larger scale to maximise the bioenergy utilisation and minimise losses.

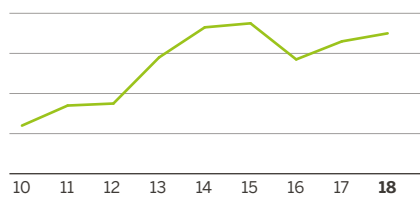
At Mänttä mill, Finland, new technologies were taken to use for energy production in summer 2018. In cooperation with Gasum Ltd., the use of liquefied petroleum gas (LPG) was replaced by liquefied natural gas (LNG), which reduces the process gas based fossil CO₂ emissions by 15%.

At Husum mill, Sweden, investment for renewing the disc filter was conducted. As a result of the investment, annual savings are 30 000 MWh of energy and 1,400,000 m³ of water.

At Småland mill, Sweden, the newest bioboiler was in use for the first full year at the planned performance level. The use of fossil fuel oil was virtually eliminated as a part of the mill's energy production.

ENERGY EFFICIENCY IMPROVEMENT

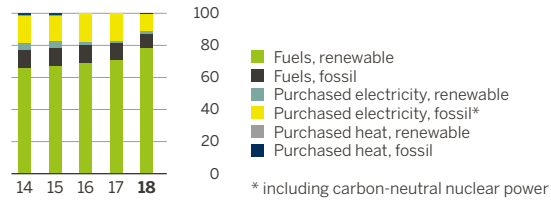
%



■ Metsä Group total

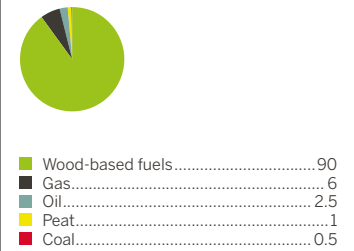
PRIMARY ENERGY CONSUMPTION

%



FUEL CONSUMPTION

%



80%
OF THE ENERGY USED
IN PRODUCTION WAS
RENEWABLE

MINIMISING EMISSIONS TO AIR

Efficient control and continuous reduction of emissions are essential parts of our operations. Emissions to air are a global issue, and the common aim is to continuously reduce fossil CO₂ emissions. Emissions to water are more of a local issue both due to the localised use of water and the environmental impacts of production.

Environmental data by unit
pages 58–61

More on calculation principles
page 63

More on environmental topics and water
pages 46–47

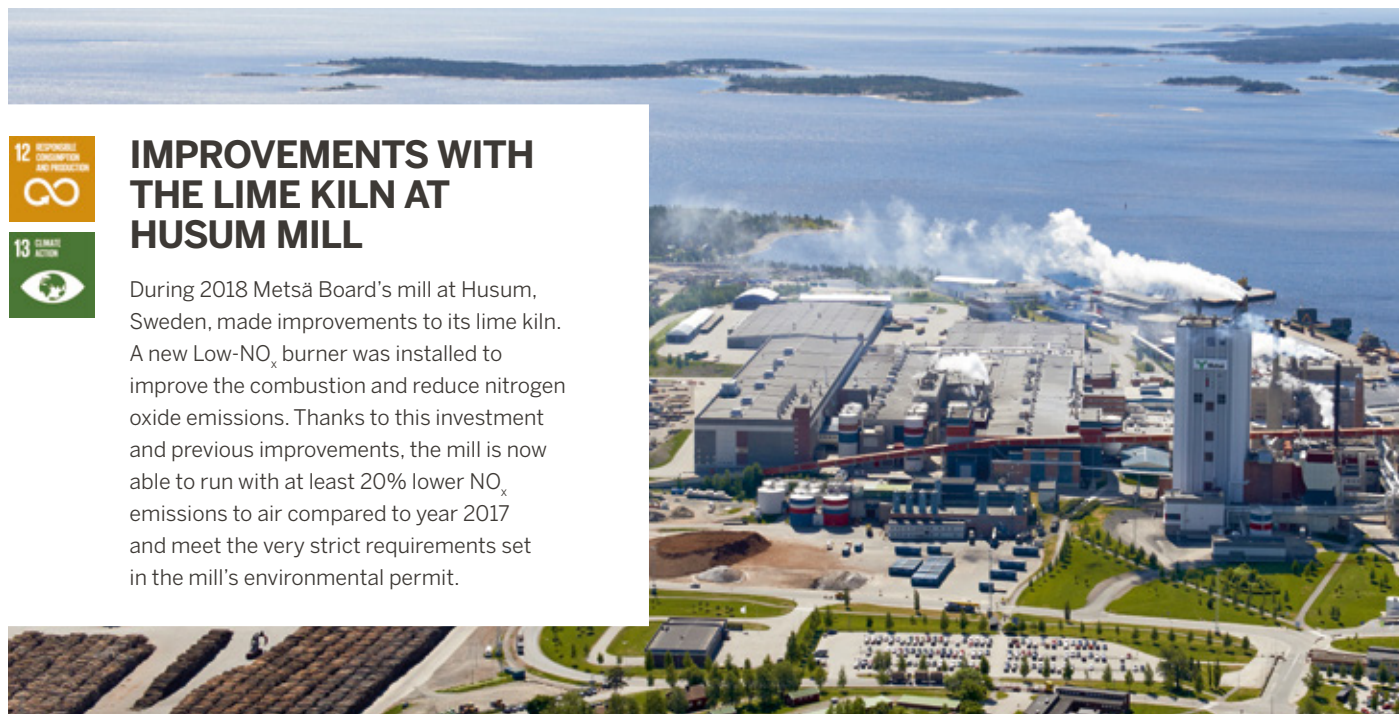
Our pulp mills and power plants are the main sources of air emissions of Metsä Group. Primary emissions to air are carbon dioxide (CO₂), sulphur dioxide (SO₂), nitrogen oxides (NO_x) and particles from pulp production and power plants. In addition, small amounts of total reduced sulphur (TRS) are emitted 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) were reduced in 2018. Emissions of particles reduced by 26% (increased by 14%) and odorous compounds (TRS) increased by 31% (reduced by 9%). Most significant investments for the further reduction of emissions to air were made at the Kemi and Husum pulp mills.

Metsä Group's energy production is largely based on renewable fuels, ensuring low emissions of fossil carbon dioxide into the atmosphere. The main fuels used are black liquor at pulp mills and biomass, such as bark, at power plants.

Our direct greenhouse gas emissions (Scope 1) were 694,000 (747,000) tonnes of fossil carbon-dioxide (CO₂). Fossil greenhouse gas emissions from the consumption of purchased electricity and heat (Scope 2) calculated with a market-based method were 574,000 (727,000) tonnes and 496,000 (666,000) tonnes when calculated with a location-based method. Emissions of fossil CO₂ have decreased by 45% (38) per product tonne since 2009. Emissions causing acidification decreased to 5,623 (5,830) tonnes SO₂ eqv. The total acidification effect has decreased by 29% during the period 2010 to 2018.



IMPROVEMENTS WITH THE LIME KILN AT HUSUM MILL

During 2018 Metsä Board's mill at Husum, Sweden, made improvements to its lime kiln. A new Low-NO_x burner was installed to improve the combustion and reduce nitrogen oxide emissions. Thanks to this investment and previous improvements, the mill is now able to run with at least 20% lower NO_x emissions to air compared to year 2017 and meet the very strict requirements set in the mill's environmental permit.

FOSSIL CO₂
EMISSIONS
DECREASED BY
45%
PER PRODUCT
TONNE FROM
2009



INVESTMENTS TO REDUCE PARTICLE EMISSIONS AT KEMI PULP MILL

Metsä Fibre's mill in Kemi, Finland, has been improving the electrostatic precipitators (ESP) which remove the particles from the flue gases of the mill's recovery boiler. The project started in 2017 when the first ESP unit was revised. Work with the second ESP was carried out in 2018 and the project will be finalised in 2019 with the third ESP. The investments are expected to reduce the particle emissions from the recovery boiler and ensure compliance with the mill's environmental permit limits.



CONTROLLING ENVIRONMENTAL IMPACTS AND VALUING WATER

We work actively to control and reduce the environmental impacts of our production as efficiently as possible. 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.



More on climate topics
pages 44–45



More on our environmental incidents
page 62



Environmental data by unit
pages 58–61



More on calculation principles
page 63



More info on the Financial Statements
pages 9 and 25

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

There were no environmental incidents in the reporting year. There were eight clear permit limit violations and five 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 annex table on the page 62.

Controlling the environmental impacts of our mills is based on the use of 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 2018 major investments were made at our mills in Kemi and Punkaharju, Finland, and Husum and Katrinefors, Sweden, to reduce emissions to air and water.

OPTIMISING THE WATER USE

Water is an essential resource for the forest industry. Ensuring that water use in produc-

tion 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 directed for cooling, whereby the water remains clean in its own, closed system. Cooling water does not come in contact with any materials used in the production process, and the only impact to 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.

Since 2010, the Group's process water usage per product tonne has decreased by 19% (15). The start-up of our new resource-efficient bioproduct mill in Äänekoski, Finland has significantly decreased our process water usage per product tonne during its first full year of production. Metsä Board is an exemplary role-model for successfully managing water issues. Now for the second consecutive year, Metsä Board has been positioned as a global leader on the CDP Water A List for its responsible water use. The CDP also recognised

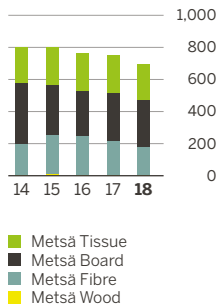
Metsä Board's strategy against climate change (Climate A List). Reducing water use is an essential part of Metsä Board's resource efficiency programme, as it also improves the company's energy and production efficiency.

CAREFUL TREATMENT OF PROCESS WATER

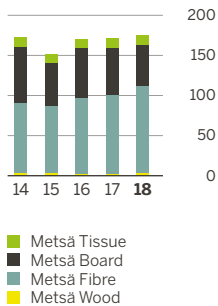
Before water is returned from the production process to the watercourse, it is carefully handled through efficient waste water treatment. The main waste water emissions from Metsä Group's production units are phosphorus, nitrogen, solid matter and organic matter, which is measured as chemical (COD) and 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. It is important to manage the impacts of emissions to waterbodies. 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 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.

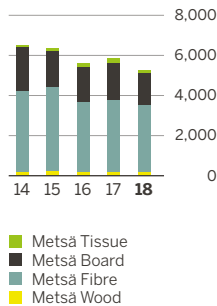
FOSSIL GREENHOUSE GAS EFFECT (1,000 TONS OF CO₂) BY BUSINESS AREA



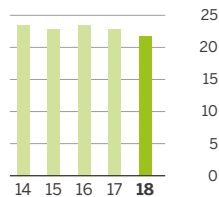
EUTROPHICATION (P EQUIVALENT TONS) BY BUSINESS AREA



ACIDIFICATION (SO₂ EQUIVALENT TONS) BY BUSINESS AREA



PROCESS WATER USAGE PER PRODUCT TONNE M³



Greenhouse gas (GHG) limits the ability of the Earth's heat radiation to pass out into space. This process is the fundamental cause of the greenhouse effect and global temperature rise. Metsä Group's greenhouse gas effect reporting consists of carbon dioxide emissions, which are the only relevant greenhouse gases related to our operations.

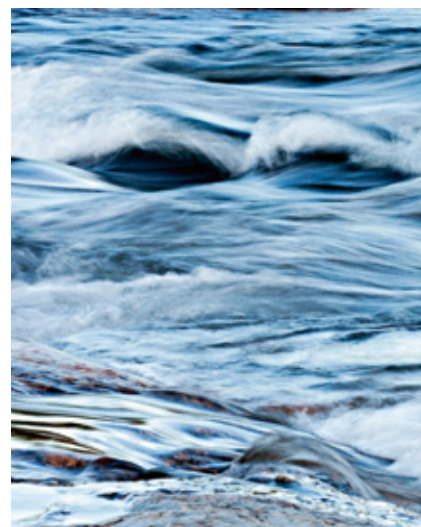
Eutrophication impact means overgrowth of plants and algae in a water body receiving waste waters. This accumulation of additional biomass changes the ecology of lakes, rivers and seas. Metsä Group's eutrophication figure includes phosphorus, BOD, nitrogen and NO_x emissions.

Freshwater and soil acidification results from acidic rain. It lowers the pH value of freshwater bodies and soil and is harmful to the freshwater and soil ecologies. Metsä Group's acidification figure consists of sulphur and NO_x emissions.



EFFICIENT FIBRE RECOVERY AT HUSUM MILL

Metsä Board's mill in Husum, Sweden, has installed a new disc filter to treat the fibre-rich circulation water from the board machines. The new equipment improves the resource efficiency of the board mill by enabling very effective recovery of fibres back to the production process. It also produces high-quality filtrates which can be used to replace fresh water in many parts of the process.



UPDATED LOG SOAKING AT PUNKAHARJU

The log soaking process at Metsä Wood's mill in Punkaharju, Finland, was renewed during the construction of the new LVL line. The new soaking process is based on 12 isolated chambers, which are filled and emptied one by one during the soaking process. The new system reduces the abrasion of the logs and creates less wood rejects than traditional soaking in one large basin. It also enhances the circulation of the warm water used in soaking and helps the mill to control the emissions to water more effectively.

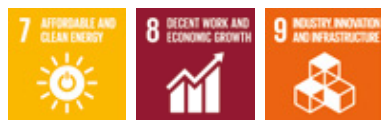


PURELY IMPORTANT WATER

Water is needed in practically all forest industry processes. For example, water is used to keep logs fresh, to carry fibres in the pulp production process, creating bonds between fibres in board and paper making, cleaning, cooling and for generating steam. Water is recycled several times at different stages of the production processes, and it can circulate around a mill up to 15 times.

WE CREATE WELL-BEING

STAKEHOLDERS AND IMPACTS ON SOCIETY



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.

ETHICAL BUSINESS

Coverage of Code of Conduct training:

TARGET	PERFORMANCE 2018
100%	95%

COMMENT

Left behind but good progress. We continue to work to ensure that the renewed Code of Conduct training will cover all personnel with an emphasis on new employees.

SAFETY AT WORK

Lost-time accidents frequency annually:

TARGET	PERFORMANCE 2018
-10%	7%

COMMENT

Not achieved. The Group's LTA1 unfortunately rose to 6.4 (5.9). Our long-term goal is zero accidents and we continue to work towards achieving this target.

WELL-BEING

Sickness absenteeism:

TARGET	PERFORMANCE 2018
<3%	4.0%

COMMENT

Left behind. An early intervention process is in place as a precautionary method. Additional actions to mitigate absenteeism are introduced.

CREATING VALUE

RESOURCES AND COMPETENCES

SECURE SUPPLY



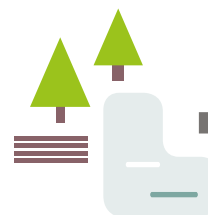
COOPERATIVE OWNERSHIP

- Steady wood flow secured by **103,000 forest-owner members**
- Covering about **50%** of Finland's privately owned forests

PERSONNEL

- 9,310** employees in **29** countries
- Retention rate **97%**

EFFICIENT USE OF RESOURCES



WOOD

- Procuring 36 million m³ of wood with **100% traceability**

WATER

- 99.6%** surface water – **no impact on water scarcity**

ENERGY

- 80%** of the energy used in production was renewable

PRODUCTION

- 36 production facilities** in **8 countries** in Europe using the best available techniques

STEADY OUTLOOK FOR FUTURE

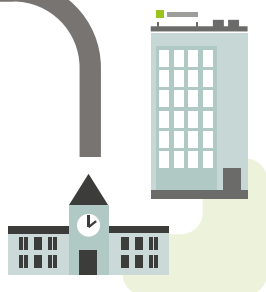


FINANCIAL

- In liquidity and undrawn credits **EUR 1,940 million**
- Capital employed **EUR 5,208 million**
- Equity ratio **53.1%**

RENEWING THE INDUSTRY

- EUR 290 million** in investments and research and development



STAKEHOLDERS

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

LOCAL VALUE



92% permanent employees | **over 1,000** summer jobs

EUR 635 million in wages, salaries and benefits

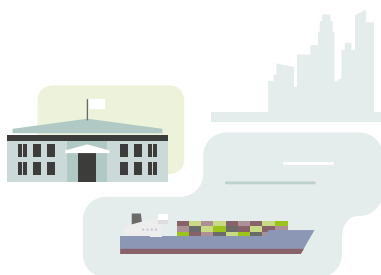
Each forest industry job creates **three new ones indirectly**

EUR 640 million to Finnish forest owners from wood sales

EUR 400 million to harvesting and transportation entrepreneurs in Finland

~30 million seedlings delivered to forest owners annually

NATIONAL VALUE



The value of exports from Metsä Group's Finnish mills is **EUR 3.4 billion**, corresponding to **5% of Finnish exports**

Producing over **15%** of the renewable energy in Finland

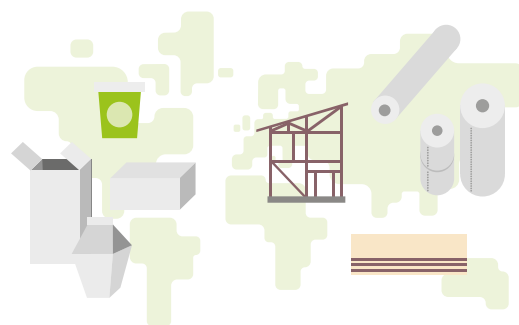
Partnering in circular economy: **94%** of production side streams utilised

96% of wood and **85%** of other purchases from production countries in Europe

Ensuring biodiversity by leaving at least two high biodiversity stumps per hectare in forests

EUR 74 million paid as interests to Metsäliitto Cooperative's owner-members

INTERNATIONAL VALUE



Reducing the dependence on fossil resources:

- Wood products that store carbon
- Pulp for recyclable products
- Paperboards for safe packaging
- Tissue papers for improving hygiene

Sales EUR 5.7 billion:

7% from Americas | **74%** from EMEA | **19%** from APAC

EUR 69 million as interest expenses

EUR 79 million of dividends to shareholders other than Cooperative's owner-members

BEING PART OF THE SOCIETY

Metsä Group creates value locally, nationally and internationally. In addition to the economic value Metsä Group produces, the company also has other major impacts on society.



More info on value creation
pages 48–49



More info on advocacy
pages 52–53

Our production units have a strong local influence and our operations affect the entire country. 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 about 5% of Finland's total exports, and we produce over 15% of Finland's renewable energy.

Metsä Group contributes to 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 and electricity used for production activities include indirect taxes. Considering all directly and indirectly generated taxes

and tax-like payments arising from Metsä Group's operations, our economic contribution to surrounding society is material.

In 2018, Metsä Group paid corporate income tax, CIT, and property tax totaling 68.6 million euros. In Finland the CIT was 50.3 million euros and property tax 2.7. In other countries totaling CIT was 12.4 and property tax 3.2 million euros.

Metsä Group is committed to follow international transfer pricing guidelines and local tax laws and regulations in all of its operating countries. 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 cooperative. We manage our tax issues by internal tax function and taxes are in the scope of Board of Directors' Audit Committee regular follow-up.

CONTINUOUS DIALOGUE WITH 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.

In addition to listening our stakeholders we are also active in offering our expertise, for example, in sustainable forest management and bioeconomy. Annually we arrange different types of stakeholder events, meetings with decision-makers, open house days and visits to our production sites. As before, our stakeholders were very interested in our activities in relation to global megatrends such as climate change, where the discussion was focused globally in 2018. The sustainability of forest use is also one the most important topics on various environmental NGOs' agendas.



BUILDING A STRONGER RELATIONSHIP TO FORESTS



In 2018 Metsä Group started cooperation with the Finnish 4H Organisation 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.

Also in 2018 started the collaboration with The Family Federation of Finland supporting the well-being of boys and young men.

SPONSORING THE STUDIES OF FOREST MACHINE OPERATORS

A sponsorship-based cooperation with educational institutes, as Esedu, represents Metsä Group's aim to increase awareness of the forest industry amongst young people. In 2018 we started cooperating with two new educational institutes for studying forest machine operators, in Saarijärvi and Tampere, Finland. In total approximately a hundred students were involved in this co-operation during 2018.

Today forest machine operators can find steady year-round work in forests and we want to do our part in ensuring that the industry has qualified and committed forest machine operators.



EXPLORING METSÄ IN A NEW WAY AT PRO NEMUS

Metsä Group's Pro Nemus visitor centre opened its doors next to the bioproduct mill in Äänekoski, Finland in June 2018. The centre offers an entirely new kind of forest experience by combining virtual reality, genuine nature and experiences. Pro Nemus tells visitors about the opportunities the forest industry has to offer and how Finnish wood is transformed into various kinds of products.

The centre is targeted for forest owners, customers, students and other stakeholders of Metsä Group. During the first opening year there were 6,063 visitors between June and December 2018.

Pro Nemus is Latin and means "for forests". The world needs responsibly produced renewable materials. Metsä Group wants to be increasingly active in the development of forest-related operations and forest use.

PARTICIPATION IN POLICY DEBATES

Metsä Group promotes sustainable and resource-wise bioeconomy and climate change mitigation as a part of national, EU and international policies and legislation. We also share expertise with decision makers. 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
pages 16–17

Our view is that valuable Northern wood should be used primarily for high added-value products and to drive bioeconomy innovation, in line with the resource-wise and market-based use of raw material. The material use of wood offers unlimited and innovative possibilities compared to focusing on direct, subsidised energy use. However, renewable energy is also important and Metsä Group is a significant producer and user of renewable energy made from harvesting residues and production side streams.

The European Commission announced the goal of achieving a carbon neutral EU economy by 2050. Also in 2018, the EU finalised its climate and energy legislation to meet the requirements of the Paris Climate Agreement. On the Finnish policy agenda, the national implementation of the Renewable Energy Directive (RED II) and the National Energy and Climate Strategy for 2030 have

ambitious targets for renewable energy, coal phase out and biofuel.

FOR A SUSTAINABLE CIRCULAR BIOECONOMY

Moving towards a sustainable circular economy remains one of the EU's priorities. Metsä Group highlights how bioeconomy contributes to sustainable circular economy.

Metsä Group's Äänekoski bioproduct mill is an example for making the maximum use of industrial side streams. Innovative products are developed in a leading industrial ecosystem where we work together with other companies, including SMEs. Initiatives such as Metsä Spring's textile demonstration plant have triggered interest in the EU and internationally. Metsä Group participates 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 this support under its next research and innovation framework programme 'Horizon Europe'. The European Commission updated its Bioeconomy Strategy in late 2018, aiming to promote coherent policies to support further innovation and bring more bioeconomy products to the markets. It has also published guidance on cascading the use of woody biomass, highlighting that this resource should be used to its highest value.

As part of its Circular Economy initiative the European Commission has launched a Plastics Strategy. It has also proposed legislation aimed at reducing or prohibiting the use of certain single-use plastic items, including certain plastics products used in the food service sector. Member States are expected to begin implementing the new rules as of 2019. Metsä Group has participated in this debate explaining our products and the potential of renewable fresh fibre based solutions.

WE PROMOTE

- Sustainable forest management and wood mobilisation
- Climate change mitigation
- Development of infrastructure and logistics to improved efficiency and environmental performance
- Resource-wise bioeconomy and use of raw materials
- A level playing field for different uses of wood
- The role of bioeconomy in a sustainable circular economy
- Efficient utilisation of industrial side streams and waste
- The important role of fresh fibre in the recycling loop
- Wood construction
- The importance of public R&D&I initiatives

MAIN MEMBERSHIPS IN THIRD-PARTY ORGANISATIONS

- National forest industry federations: Finnish Forest Industry 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)
- Business Europe's Corporate Advisory and Support Group
- Bio-based Industries Consortium (BIC)
- European Policy Centre (EPC)
- Programme for the Endorsement of Forest Certification (PEFC™)
- Forest Stewardship Council (FSC®)
(Licence Code FSC-C014476)

FIRST FOREST ACADEMY IN FINLAND

Metsä Group shared expertise on sustainable forest management with participants of the Forest Academy. The Academy for the EU decision makers is organised by the Finnish Forest Association and the Swedish Forest Agency.

"In this forum the discussions are focused on forests and how they can contribute to the development of a sustainable circular bioeconomy. The idea is to offer possibilities to connect with other key decision makers in the EU institutions and to share insights," states **Elina Antila**, Director, Forest Academy for Decision Makers at Finnish Forest Association.

The Academy held in November 2018 included a visit to a forest site owned by a member of the Metsäliitto Cooperative.

METSÄ GROUP PROMOTES BIOECONOMY IN BRUSSELS

In October 2018, Metsä Group's President and CEO, **Ilkka Härmälä**, spoke at the European Commission's Bioeconomy Conference, illustrating how the industry drives bioeconomy innovations.

Metsä Group's representatives widely opened up the forest industry's bioeconomy potential and its contribution to climate change mitigation at the European Raw Materials Week and at event by the European Policy Center, a Brussels-based think tank. In December 2018, Metsä Group participated in a COP24 side event on the link between sustainability, investments and climate change mitigation.



STRENGTHENING BUSINESS RELATIONS IN CHINA



To accelerate business growth and strengthen stakeholder relationships in China, Metsä Group participated in the 1st China International Import Expo in Shanghai in November 2018. At the Finnish national pavilion, Metsä Group presented its resource-wise bioeconomy solutions that replace the use of fossil-based materials and products. A large group of Chinese and Asian customers and stakeholders participated in the event hosted by Metsä Group.

Finland's Minister of Foreign Trade and Development, **Anne-Mari Virolainen**, was also present and recognised Metsä Group's sustainability practices in her honorary speech.



A RESPONSIBLE EMPLOYER

Metsä Group values employees and invests in their professional development, wellbeing and safety at work. The expectations for every one of our employees is to develop their work in the spirit of continuous improvement.



More info on safety
pages 56–57



More info on remuneration information
page 62



More info on the Financial Statements
pages 96–98

At Metsä Group, we succeed by continuously developing our operations. Our values – cooperation, reliability, renewal and responsible profitability – are important to us. Our responsible management practices are based on these values and they create a foundation for everything we do. We believe that employees committed to our values are one of our success factors.

As an employer, we are guided by several policies, which we expect all our employees to study and follow. Metsä Group has a remuneration system that supports our strategy implementation and motivates us to reach our goals.

High-quality products manufactured from sustainable raw material and diverse duties make our work meaningful. We offer a wide range of career paths and employ professionals in various fields. During 2018 we provided jobs to 9,310 (9,126) employees and we recruited 292 (218) people in Finland and 373 (291) abroad. 96% (97) of our employees

worked full time. We offered summer jobs to over 1,000 employees matching what we have done in previous years.

The restructuring of our business affected a total of 183 (425) employees during 2018, of whom 34 (26) were made redundant. In total 7 (20) employees were temporarily laid off. We provided individual support to those made redundant in finding new job opportunities.

In 2018, our employees received wages, salaries and benefits worth a total of 635 (621) million euros. In addition, we spent 1,040 (830) million euros on purchasing wood and harvesting and transport services in Finland. Each Finnish forest industry job indirectly creates three more jobs, according to the Finnish Forest Industries Federation. Consequently Metsä Group is an important employer both directly and indirectly.

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. In 2018, there were, once again, organized a large number of training opportunities organized with approximately 24,029 (25,652) training days held with 3,537 (3,552) Metsä Group employees in Finland and 3,596 (4,040) abroad.

We recognise our personnel's freedom to form unions and the right to negotiate representative collective agreements. 77% (79) 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.

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 2018, the sickness absence rate was 4.0% (3.9).

Job satisfaction and the functionality of the organisation is also monitored annually through an organisational functionality survey and a variety of other personnel surveys. In

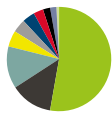


HR2020 TAKES HR TO THE NEXT LEVEL

The HR2020 development programme was started in 2018 and it aims to strengthen the process management model of Metsä Group's HR function and provide more user-friendly tools for HR, managers, and personnel. All HR processes will be reviewed and renewed during 2018–2019. A new personnel information system, 'Workday', will be introduced during 2019. 'Workday' will now combine, for example, personal target setting, the PDA process, recruitment and professional development tools.

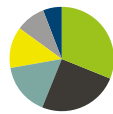
The most significant change in our daily work will be the possibility for each of us to actively take more responsibility for our own development and personal goals, and then to communicate them. This is an evolution that adds quality and competence to our HR services. With these changes there will be more time for HR to support business and leadership.

PERSONNEL BY COUNTRY ON 31 DEC 2018, %



Finland.....	52
Sweden.....	13
Germany.....	13
Poland.....	5
United Kingdom.....	4
Slovakia.....	4
Russia.....	3
Baltic countries.....	2
Rest of Europe.....	2
Other countries.....	1

PERSONNEL BY BUSINESS AREAS ON 31 DEC 2018, %



Metsä Tissue.....	31
Metsä Board.....	25
Metsä Wood.....	16
Metsä Fibre.....	13
Metsä Forest.....	9
Group functions.....	6

DISTRIBUTION OF EMPLOYMENT TYPE %



Permanent employees.....	92
Temporary employees.....	8

2018, the overall Group average was 8.2 (8.2) on a scale 4–10. The results of the survey were discussed with teams and development action plans were created based upon these discussions.

DEVELOPMENTS IN 2018

In 2018 we finalised the harmonization of the Personal Development Appraisal (PDA) practices used in all our units, and now all PDA discussions, are held using a common format. The performance and future development plans of our employees are regularly discussed in PDA discussions between employees and their managers. Our aim is that every employee should participate in a PDA, so far 93 (93) % of employees were covered by the PDA process in 2018.

In 2018 Metsä Group focused on discrimination, developing the definition and principles and monitoring and reporting the cases at a Group level. Discrimination legislation is based on International human rights declarations and principles and national non-discrimination and equality acts.

Discrimination cases must be investigated and reported in a centralised manner, which is the responsibility of Metsä Group's Compliance function. This function is responsible for the internal investigation of activities in breach of the law, Metsä Group's Code of Conduct and policies, as well as for the registration of non-compliance cases. Controlling the uniformity of consequences is also a responsibility of the Compliance function. This function obtains an overall

picture of discrimination at a Metsä Group level and ensures, together with management, that the company's employer duties are fulfilled.

Another issue related to personnel, which we have invested in and made further reforms to, is reporting on occupational safety. From 2019 onwards we will, in addition to the LTA1 frequency, report on the LTA severity rate, TRIF frequency and third-party work-related accidents.

KEY PERSONNEL DATA

	2018	2017	2016	2015	2014
Number of employees ¹⁾	9,310	9,126	9,300	9,599	10,410
Share of permanent employees, %	91.9	92.7	93.2	93.5	94.1
Average age, years	44.7	44.9	44.8	44.6	44.5
Average years served, years	16.0	16.4	16.6	16.7	16.8
Employee turnover, % ²⁾	6.5	6.8	8.0	7.9	7.4
Ratio between men/women, %	77/23	77/23	78/22	78/22	79/21
Share of women in management, % ³⁾	21.8	16.1	15.8	15.8	15.0

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.



A PROGRAMME FOR EXPERIENCED STAFF

Metsä Group arranged its first training programme for experienced staff in 2018. The purpose of the programme is to strengthen experienced employees' professional development and working capacity in terms of performance, learning ability, motivation and well-being at work, among other aspects. The programme is intended for employees aged over 55 or for employees with more than 30 years' of experience. As a responsible employer, Metsä Group supports employees' working capacity and performance throughout their careers.

Until now, Metsä Group's training portfolio has been lacking an option for employees with extensive work experience. Based on the feedback received in 2018, the Experienced Staff Professional Development Programme has now been included in the Group-wide training portfolio and is available for all.

LONG-TERM GOAL IS ZERO ACCIDENTS

Our goals and indicators for safety at work support us in continuously developing our operations.



More info on our personnel
pages 54–55



Personnel data by unit
pages 58–63

Metsä Group's long-term safety goal is zero accidents. The principle is that Metsä Group provides a safe and healthy working environment for everyone, both our own personnel and subcontractors' employees. In 2018 we did not succeed in our safety work adequately, as two very unfortunate fatal occupational accidents took place in Metsä Group's production units.

Our short-term safety target is to reduce the annual lost-time accident rate (LTA1) by 10% compared to the previous year. In 2018, the LTA1 rate was 6.4 (5.9), which is 7% more than in 2017.

Every accident is investigated and reported. It is extremely important to investi-

gate the reasons for accidents and prevent them happening again. Training is the most important factor in the preventive work. Preventive measures, such as safety inductions and regular safety tours, are of crucial importance.

At Metsä Group, safety at work is an integral part of day-to-day management and it is managed and monitored Group-wide. Everyone is responsible for following instructions, identifying defects and shortcomings and eliminating the causes of hazards.

NEW ACTIONS TO THE MEASUREMENT OF SAFETY

In 2018 we launched a development pro-

gramme to provide all supervisors with the knowledge and skills to address any working methods used by employees that compromise safety at work. All employees also have the opportunity to discuss how they can address and stop ways of working that could compromise safety in their workplace communities.

In 2018 the development actions made related to the measurement of safety. In addition to the LTA1 frequency, from 2019 we will also report the LTA severity rate, TRIF frequency, and third-party work related accidents. The new measurements defined in 2018 will help promote safety with new indicators in the future.

SAFETY AND WELL-BEING DATA, GROUP TOTAL

	2018	2017	2016	2015	2014
Sickness absenteeism, % ¹⁾	4.0	3.9	3.9	3.9	3.7
Work accident absenteeism, % ¹⁾	0.10	0.10	0.14	0.20	0.22
Accident rate ²⁾	6.4	5.9	7.4	9.5	11.2
Registered occupational diseases, no. of cases	2	4	6	6	7
Work related fatalities, no. of cases	2	2 ⁴⁾	1	1 ³⁾	0

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

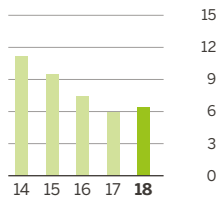
SAFETY AND WELL-BEING DATA BY BUSINESS AREA

	Metsä Forest		Metsä Wood		Metsä Fibre		Metsä Board		Metsä Tissue		Metsä Group	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Organisational functionality research index ¹⁾	8.5	8.5	7.9	7.8	8.6	8.4	8.1	8.1	8.3	8.3	8.2	8.2
Organisational functionality research response rate, % ¹⁾	89.1	94.4	78.4	82.2	82.3	83.5	72.3	79.6	72.3	76.0	76.9	81.4
Sickness absenteeism, % ²⁾	1.8	1.8	3.6	3.7	3.7	3.7	3.5	3.9	5.7	5.1	4.0	3.9
Work accident absenteeism, % ²⁾	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Accident rate ³⁾	7.4	6.8	7.7	6.8	5.8	5.1	7.5	6.4	5.6	6.2	6.4	5.9
Registered occupational diseases, no. of cases	1	0	0	2	0	0	1	2	0	0	2	4
Work related fatalities, no. of cases	0	1 ⁴⁾	1	0	0	0	0	1 ⁵⁾	1	0	2	2

¹⁾ Organisational functionality research covered 100% of Metsä Group employees in 2018 & 2017. ²⁾ % of theoretical working time ³⁾ Lost time accident 1 frequency rate.

Accidents at work resulting to at least one day sickleave per million worked hours. ⁴⁾ One fatal accident to an external service provider ⁵⁾ One fatal commuting accident

ACCIDENT RATE (LTA1)



TRANSPORT SAFETY ROADSHOW FOR CHILDREN

Metsä Group's transport safety roadshow visited eight elementary schools in Äänekoski and Uurainen in Central Finland during September 2018. The bioproduct mill in Äänekoski is now fully operational and as a result the area now receives more heavy vehicle traffic. We want to contribute to promoting transport safety by visiting the schools in the area.

More than 600 children from the schools attended the events and saw first-hand a big timber truck parked in their school yard. Students were encouraged to make independent observations and consider the impacts of more traffic. All first-graders attending the events were given high-visibility vests and reflectors. In addition, the pupils and teachers were given information packs that allowed them and their families to brush up on matters related to transport safety.

SAFETY AGENTS SUPPORTING MAINTENANCE SHUTDOWNS

Metsä Group's new bioproduct mill had its first annual maintenance shutdown in May 2018. Safety was supported by special safety agents from Metsä Fibre's other pulp mills.

Safety agents attend to maintenance shutdowns to provide coaching, support, guidance and information. In practice, they set an example and inspire their colleagues to work safely at the field, in addition to participating in internal safety assessments at mills.

The first safety agents were selected from a group of volunteers and provided with training in 2017. Their work started in 2018.



SUSTAINABILITY DATA BY UNIT

METSÄ FOREST

Country	Personnel				Wood procurement	Management systems		Chain of Custody	
	Number of employees ¹⁾	Accident rate ²⁾	Sickness absenteeism % ³⁾	Organisational functionality index	1,000 m ³	ISO 9001	ISO 14001	PEFC™	FSC®
Estonia	28	0.0	0.7	8.7	1,641	x	x	x	x
Finland	591	10.7	1.7	8.4	29,064	x	x	x	x
Latvia	43	0.0	0.9	8.6	1,169	x	x	x	x
Russia, St. Petersburg	18	0.0	2.9	8.7		x ⁴⁾	x ⁵⁾	x	x
Russia, Podporozhye	157	0.0	2.3	8.7	2,185 ⁶⁾	x ⁴⁾	x	x	x
Sweden	2				2,080	x	x	x	x
Others	5				211 ⁷⁾				
Total	844	7.4	1.8	8.5	36,350				

¹⁾ Full-time equivalent on 31 December 2018 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⁾ Included in Metsäliitto Cooperative's quality systems (ISO 9001) ⁵⁾ Included in Metsäliitto Cooperative's environmental systems (ISO 14001)

⁶⁾ Includes all wood procurement from Russia ⁷⁾ Includes wood from Lithuania

METSÄ WOOD

Mill	Country	Personnel				Production (1,000 m ³)		Management systems			Chain of Custody		
		Number of employees ¹⁾	Accident rate ²⁾	Sickness absenteeism % ³⁾	Organisational functionality index	Wood products		ISO 9001	ISO 14001	ISO 45001/OHSAS 18001	PEFC™	FSC®	CO ₂ bio
Pärnu ⁴⁾	Estonia	112	47.8	2.2		plywood	10	x	x	ISO 45001	x	x	0
Lohja ⁵⁾	Finland	111	10.4	3.6	8.1	Kerto® LVL	85	x	x ⁵⁾	ISO 45001	x	x	30,553
Punkaharju ⁶⁾	Finland	382	9.8	5.6	7.3	Kerto® LVL and plywood	174	x	x ⁵⁾	ISO 45001	x	x	77,583
Suolahti ⁶⁾	Finland	376	7.4	4.1	7.9	plywood	200	x	x ⁵⁾	ISO 45001	x	x	99,460
Äänekoski	Finland	30	0.0	1.3	8.3 ⁷⁾	veneer	20	x	x	ISO 45001	x	x	0
Boston	Great Britain	252	3.7	2.4	7.4	further processing	156	x	x ⁵⁾	OHSAS 18001	x	x	0
King's Lynn	Great Britain	39	0.0	2.8	7.4	further processing	113	x	x ⁵⁾	OHSAS 18001	x	x	0
Widnes	Great Britain	77	0.0	2.3	7.9	further processing	49	x	x ⁵⁾	OHSAS 18001	x	x	0
Others ⁸⁾		127											
Total		1,506	7.7	3.6	7.9		807						207,596

¹⁾ Full-time equivalent on 31 December 2018 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⁾ Pärnu mill started in August 2018. ⁵⁾ ISO 14001 standard includes the Energy Efficiency System (EES). ⁶⁾ Emissions, water use and wastes: Lohja includes 46% of Lohjan Biolämpö, Punkaharju includes 100% of Punkavoima and Suolahti includes 100% of Kumpuniemen Voima. ⁷⁾ Organisational functionality index includes only blue collars ⁸⁾ 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

Mill	Country	Personnel				Production		Management systems					Chain of Custody		CO ₂ bio
		Number of employees ¹⁾	Accident rate ²⁾	Sickness absenteeism % ³⁾	Organisational functionality index	Chemical pulp (1,000 t)	Sawn timber (1,000 m ³)	ISO 9001	ISO 14001	ISO 50001	OHSAS 18001	ISO 22000	PEFC™	FSC®	
Joutseno	Finland	136	4.1	2.7	8.4	675		x	x	x	x	x	x	x	1,448,422
Kemi	Finland	160	3.6	5.9	8.5	593		x	x	x	x	x	x	x	1,185,316
Rauma	Finland	121	14.5	5.5	8.1	557		x	x	x	x	x	x	x	1,152,048
Äänekoski	Finland	178	3.4	3.8	7.7	1,148		x	x	x	x	x	x	x	2,925,383
Eskola ⁴⁾	Finland						29	x	x	x	x		x	x	0
Kyrö	Finland	71	15.7	3.6	8.0		228	x	x	x	x		x	x	22,911
Lappeenranta	Finland	61	9.6	7.6	8.2		243	x	x	x	x		x	x	26,153
Merikarvia	Finland	75	0.0	2.9	8.3		220	x	x	x	x		x	x	25,858
Renko	Finland	57	28.6	3.1	8.3		308	x	x	x	x		x	x	30,587
Vilppula	Finland	86	0.0	3.2	8.3		510	x	x	x	x		x	x	77,168
Svir	Russia	114	0.0	1.7	9.0		281	x	x	x	x		x	x	27,109
Others ⁵⁾		151													
Total		1,210	5.8	3.7	8.6	2,973	1,819								6,920,956

¹⁾ Full-time equivalent on 31 December 2018 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⁾ Sold in July 2018 ⁵⁾ Includes personnel from sales operations, a subsidiary and management. Personnel figures of Others are included in Metsä Fibre's total figures.

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.

FSC Licence Code FSC-C014476

Emissions to air (t)				Discharges to water (t)					Water use (1,000 m³)		Waste (t)			Mill
CO ₂ fossil	Sulphur as SO ₂	Nitrogen oxides as NO ₂	Particles	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
0	0	0	0	0	0	0	0	0	2.4	2.4	195	0	20	Pärnu ⁴⁾
1,072	0.85	13	2.1	1.9	0.30	0.0054	0.040	0.12	89	59	667	1,444	108	Lohja ⁵⁾
1,199	0.80	71	3.3	80	43	0.030	0.13	1.9	192	60	438	3	253	Punkaharju ⁶⁾
489	0.16	143	57	33	60	0.71	0.14	19	1,290	63	460	0	90	Suolahti ⁶⁾
0	0	0	0	0.55	0.0046	0.00023	0	0.0046	21	5.5	261	0	0	Äänekoski
0	0	0	0	0	0	0	0	0	0	0	3,190	0	6.0	Boston
0	0	0	0	0	0	0	0	0	3.1	0	54	0	0	King's Lynn
0	0	0	0	0	0	0	0	0	0	0	362	0	2.0	Widnes
														Others ⁸⁾
2,760	1.8	227	63	116	103	0.75	0.31	21	1,596	189	5,627	1,447	479	Total

Emissions to air (t)				Discharges to water (t)						Water use (1,000 m³)		Waste (t)			Mill
CO ₂ fossil	Sulphur as SO ₂	Nitrogen oxides as NO ₂	Particles	AOX	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
24,093	171	1,047	201	107	6,860	127	8.3	120	314	77,883	18,346	41,888	21	74	Joutseno
61,554	97	1,072	204	57	7,690	142	6.8	150	687	38,761	16,325	23,127	11,336	65	Kemi
83,526	52	821	82	65	9,593	110	4.9	54	263	19,318	15,928	861	11,567	38	Rauma
0	16	1,098	22	112	6,472	105	7.3	102	557	127,351	21,608	12,036	15,868	84	Äänekoski
0	0	0	0	0	0	0	0	0	0	0	0	3.6	0	0	Eskola ⁴⁾
493	3.0	20	20	0	0	0	0	0	0	7.4	0	205	0	40	Kyrö
0	9.3	26	12	0	0	0.00059	0.000030	0	0.00059	14	0.71	5,259	0	0	Lappeenranta
525	0.038	22	17	0	0	0.011	0.00054	0	0.011	15	13	80	0	0.10	Merikarvia
1,112	0.10	28	9.0	0	0	0.0040	0.00020	0	0.0040	4.8	4.8	309	20	5.1	Renko
4,300	25	93	12	0	0	0.0037	0.00019	0	0.0037	22	4.5	135	37	14	Vilppula
0	0.19	40	3.2	0	10	7.0	0.018	0.70	4.3	160	188	11,078	0	0.65	Svir
															Others ⁵⁾
175,603	373	4,267	583	341	30,626	490	27	426	1,825	263,535	72,417	94,983	38,848	320	Total

SUSTAINABILITY DATA BY UNIT

METSÄ BOARD

Mill	Country	Personnel				Production (1,000 t)		Management systems					Chain of Custody		CO ₂ bio
		Number of employees ¹⁾	Accident rate ²⁾	Sickness absenteeism % ³⁾	Organisational functionality index	Chemical pulp and CTMP	Paper-board	ISO 9001	ISO 14001	ISO 50001	OHSAS 18001	ISO 22000/ FSSC 22000	PEFC™	FSC®	
Joutseno	Finland	54	10.7	3.0	8.0	335		x	x	x	x	ISO 22000	x	x	0
Kaskinen	Finland	81	14.0	2.3	8.0	351		x	x	x	x	ISO 22000	x	x	124,610
Kemi	Finland	91	12.4	6.2	8.6		418	x	x	x	x	ISO 22000	x	x	0
Kyro	Finland	152	7.6	3.5	7.7		188	x	x	x	x	ISO 22000, FSSC 22000	x	x	0
Simpele	Finland	266	10.9	3.6	7.8		265	x	x	x	x	ISO 22000, FSSC 22000	x	x	110,849
Tako	Finland	198	2.9	6.1	8.2		211	x	x	x	x	ISO 22000	x	x	0
Äänekoski	Finland	184	3.1	2.7	8.3		232	x	x	x	x	ISO 22000	x	x	116,352
Husum	Sweden	701	4.3	3.4	8.1	677	553	x	x	x	x	ISO 22000	x	x	1,460,981
Others ⁴⁾		625													24,507
Total		2,352	7.5	3.5	8.1	1,363	1,866								1,837,299

¹⁾ Full-time equivalent on 31 December 2018 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

Mill	Country	Personnel				Production (1,000 t)		Management systems					Chain of Custody		CO ₂ bio
		Number of employees ¹⁾	Accident rate ²⁾	Sickness absenteeism % ³⁾	Organisational functionality index	Greaseproof papers	Tissue papers	ISO 9001	ISO 14001	ISO 50001	ISO 45001/ OHSAS 18001	ISO 22000/ BRC/IFS	PEFC™	FSC®	
Mänttä	Finland	392	1.3	3.8	8.0	20	102	x	x	x	ISO 45001	ISO 22000	x	x	0
Düren	Germany	131	4.5	6.2	8.1	26		x	x	x	OHSAS 18001	BRC, IFS	x	x	0
Kreuzau	Germany	440	4.5	8.2	8.3		147	x	x	x	OHSAS 18001	BRC, IFS	x	x	0
Raubach	Germany	306	0.0	7.1	9.1		57	x	x	x	OHSAS 18001	BRC, IFS	x	x	0
Stotzheim	Germany	254	9.8	8.4	7.7		22	x	x	x	OHSAS 18001	BRC, IFS	x	x	0
Krapkowice	Poland	378	11.9	5.6	7.6		74	x	x	x	OHSAS 18001	BRC	x	x	0
Žilina	Slovakia	330	5.3	4.3	8.2		79	x	x ⁴⁾		OHSAS 18001	BRC	x	x	0
Katrinefors	Sweden	352	8.2	4.5	7.6		70	x	x	x			x	x	44,996
Nyboholm ⁵⁾	Sweden						29	x	x	x			x	x	17,971
Pauliström	Sweden	178	6.7	4.4	8.2		28	x	x	x			x	x	10,000
Others ⁶⁾		104													
Total		2,865	5.6	5.7	8.3	46	609								72,967

¹⁾ Full-time equivalent on 31 December 2018 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. Personnel figures of Others are included in Metsä Tissue's total figures.

FSC Licence Code FSC-C014476

Emissions to air (t)				Discharges to water (t)						Water use (1,000 m³)		Waste (t)			Mill
CO ₂ fossil	Sulphur as SO ₂	Nitrogen oxides as NO ₂	Particles	AOX	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
27,246	0	14	11	0	603	3.5	0.22	3.0	9	5,996	518	10,610	0	17	Joutseno
4,497	38	216	7.8	0	1,198	39	1.7	15	80	12,430	4,166	41,820	1,000	232	Kaskinen
6,565	0	2.8	0	0	259	27	1.5	40	105	9,277	7,111	5,271	380	0.5	Kemi
5,381	0	2.3	0	0	143	18	0.61	14	32	4,273	3,168	16,572	10	75	Kyro
98,733	113	99	0.86	0	345	19	1.1	9.7	32	27,105	4,797	32,571	0	31	Simpele
76,822	0.039	47	0	0	219	62	1.2	0.95	31	4,717	2,624	3,622	160	34	Tako
1,757	4.1	67	3.4	0	393	126	0.36	5.6	168	3,148	2,587	28,830	61	19	Äänekoski
58,454	361	1,036	275	55	6,794	- ⁵⁾	12	73	1,142	38,976	40,690	23,167	0	735	Husum
9,124	19	22	1.0	0	0	0	0	0	0			2,164	0.50	3.0	Others ⁴⁾
288,579	536	1,506	299	55	9,954	293	19	161	1,600	105,921	65,662	164,626	1,611	1,146	Total

Emissions to air (t)				Discharges to water (t)					Water use (1,000 m³)		Waste (t)			Mill
CO ₂ fossil	Sulphur as SO ₂	Nitrogen oxides as NO ₂	Particles	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
15,424	0	6.5	0	348	42	1.0	19	59	3,443	4,836	90,497	0.46	39	Mänttä
20,243	0	11	0	18	4.0	0.20	0	4.0	650	397	731	0	60	Düren
87,834	0.76	87	0.21	442	18	0.92	0	18	3,159	1,841	108,844	6,253	15	Kreuzau
25,044	0.010	15	0	130	5.0	0.25	0	5.0	453	501	35,387	0	6.3	Raubach
10,445	0.018	6.5	0	12	3.1	0.16	0	3.1	342	310	1,345	0	179	Stotzheim
30,739	0.86	4.4	35	53	4.5	0.79	7.1	3.8	920	787	610	3,288	2.8	Krapkowitz
12,230	0.057	11	0.41	103	7.5	0.38	0	7.5	938	754	2,068	1,550	11	Žilina
12,579	1.5	31	0	189	34	0.24	11	35	2,732	1,684	30,977	0	13	Katrinefors
4,663	0.28	17	1.6	24	5.6	0.17	0.94	6.4	575	466	1,942	0	1.5	Nyboholm ⁵⁾
7,751	0.57	23	8.6	67	30	0.25	0.84	4.9	335	232	1,183	0	8.1	Pauliström
									0					Others ⁶⁾
226,953	4.1	211	46	1,385	154	4.4	39	148	13,547	11,808	273,584	11,091	337	Total

ANNEX TABLES

ENVIRONMENTAL INCIDENTS AND LIABILITIES

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

The Svir sawmill in Russia paid EUR 1,260 as fiscal levy related to water discharges and waste handling.

Business Area	Unit	Incident	Corrective actions
Metsä Fibre	Joutseno mill, Finland	Particle emissions to air from the lime kiln exceeded the permit limit in annual measurements and problems continued throughout the year.	The operation of the lime kiln, electrostatic precipitators and fuels used have been investigated. However, the reason for the elevated emission level has not been completely identified and the situation remains unstable.
	Rauma mill, Finland	The monthly permit limit for COD emissions from the joint effluent treatment plant of Rauma integrate was exceeded in October.	The COD loading and operation of the plant was stabilized and emissions have returned to normal level.
	Äänekoski mill, Finland	The monthly permit limit for total suspended solids emissions to water was exceeded in March and May due to poorly settling sludge from the biological treatment stage.	The operation of the plant was stabilized with several actions and emissions have returned to normal level.
Metsä Board	Husum mill, Sweden	Particle emissions to air from the lime kiln exceeded the annual permit limit due to technical problems at the flue gas treatment system.	Maintenance and technical improvements were made at the flue gas treatment and emissions have returned to normal level.
	Kaskinen mill, Finland	The permit limit for nitrogen oxide (NOx) emissions to air from the power plant was exceeded in February.	Leaks in the power plants flue gas system were fixed during a maintenance break and air-staging in the boiler was changed. Emissions have returned to normal level.
Metsä Tissue	Mänttä mill, Finland	The monthly permit limit for total nitrogen emissions to water was exceeded in August and COD/BOD in October.	The operation of the effluent treatment plant was stabilized and emissions have returned to normal level.
	Nyboholm mill, Sweden	The permit limit for total suspended solids emissions to water was exceeded in the first quarter of the year. Permit limit for total phosphorous was exceeded in December due to excess amount of process cleaning agent entering the treatment plant.	Mechanical problems at the treatment plant were fixed yearly in the year and operation of the plant has been stabilized after the phosphorous discharge. Emissions have returned to normal level.
Metsä Wood	Punkaharju mill, Finland	The permit limit for COD emissions to watercourse were exceeded in the first quarter of the year.	Maintenance and clean-up work was carried out at the treatment plant to improve its performance. Emissions have returned to normal level.

REMUNERATION DATA

Compensation per production country*	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	4.7	2.9	4.8	3.6	7.3	4.5	2.7
Ratio of percentage increase of highest individual salaries (highest 1%) to average percentage increase	3.3	0.2	1.1	2.0	0.0	0.2	3.1
Ratio of basic salary and remuneration of women to men, based on comparable average job grades index	0.9	0.9	0.9	0.8	1.0	1.0	0.9

*Including 31% of the whole personnel; 90% of white-collar personnel

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 2018 has been prepared according to the Global Reporting Initiative (GRI) standards (2016). 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 2018 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. 64.

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 and calculated assuming 40% energy efficiency for purchased electricity production and 85% energy efficiency for purchased heat production.

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 is 1 and for NOX 0.7. Eutrophication is expressed as phosphorus equivalents. The coefficient for total phosphorus is 1; for BOD 0.0088; for total nitrogen 0.14; and for NOX 0.0041. The greenhouse effect only consists of carbon dioxide emissions and has a coefficient of 1. The biogenic CO₂ emission coefficient for wood based fuels of 364 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 separate to mill units 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 channelled 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 uncertified 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%. Turnover data, Coverage of Code of Conduct training, Coverage of PDA process, Number of recruited personnel, Score in organisational functionality survey, Share of employees working part-time, Share of permanent employees, Average age, Average years served, Share of women in management and Renumeration data excludes statistics from Hangö Stevedoring.
- 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: accidents at work per million worked hours. Only accidents involving Metsä Group's personnel are included in the LTA1 fr indicator.
- The organisation functionality index is based on organisation functionality study results. These reflect the 22 defined Group-level topics that affect functionality of the organisation. Here, the overall level of organisation 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 2018 ("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 defined 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) 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 eleven (11) 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 and the responsiveness to stakeholder concerns.
- 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, Metsä Fibre and Metsä Wood Äänekoski mills 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.

- Metsä Group continued stakeholder dialogue on the growth of bioeconomy and sustainable use of natural resources. We recommend that this dialogue will be further deepened to better understand different stakeholder views.
- Metsä Group introduced a Group-wide sustainability process management model. The purpose of the model is to ensure that sustainability is implemented throughout the Group. We recommend Metsä Group to utilize the full potential of the new management process in order to strengthen the importance of sustainability as a part of all operations and throughout the value chain.
- Metsä Group has made good progress towards the Group-level sustainability targets. However, after several years of positive development, serious drawbacks were experienced in the occupational health and safety performance. We recommend Metsä Group to further intensify efforts to ensure safety at work.
- Sustainability was taken to a key role in renewing the Metsä Group's strategy, and the new strategic, long-term sustainability targets will be taken into use in 2019. We recommend Metsä Group to progress the target-driven sustainability work aligned with global sustainable development goals.

Helsinki, Finland, 21st February 2019
Mitopro Oy

Mikael Niskala

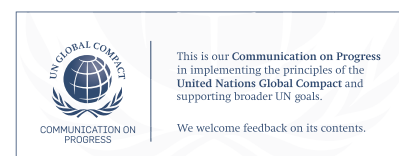
Independent Sustainability Practitioner

Tomi Pajunen

Independent Sustainability Practitioner

GRI CONTENT INDEX

Metsä Group's Sustainability Report 2018 has been prepared according to the Global Reporting Initiative (GRI) standards (2016). 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		
ORGANISATIONAL PROFILE		
102-1 Name of the organization	SR p. 4-5, FS p. 88	
102-2 Activities, brands, products and services	SR p. 4-5, 7, 14-23, 40-41	
102-3 Location of headquarters	See more on the FS	
102-4 Location of operations	SR p. 16-17, 56-59	
102-5 Ownership and legal form	SR p. 4-5	
102-6 Markets served	SR p. 14-23, FS p. 24	
102-7 Scale of the organization	SR p. 4-5, 52-53	
102-8 Information on employees and other workers	SR p. 52-53, 60	UNGC P6
102-9 Supply chain	SR p. 26-35	
102-10 Significant changes to the organization and its supply chain	FS p. 21, 59	
102-11 Precautionary Principle or approach	SR p. 8-9, FS p. 10, www.metsagroup.com/csr	UNGC P7
102-12 External initiatives	SR p. 8-9, 50-51	
102-13 Membership of associations	SR p. 48-49, 52-53	
STRATEGY		
102-14 Statement from senior decision-maker	SR p. 4-5	
102-15 Key impacts, risks and opportunities	SR p. 4-5, 6-7, www.metsagroup.com/csr	UNGC P7
ETHICS AND INTEGRITY		
102-16 Values, principles, standards and norms of behavior	SR p. 4-11, Metsä Group's brochure (Sustainably from the forest) p. 4	UNGC P10
102-17 Mechanisms for advice and concerns about ethics	SR p. 10-13	
GOVERNANCE		
102-18 Governance structure	SR p. 8-9, FS p. 88-95	
102-19 Delegating authority	SR p. 8-9	
102-20 Executive-level responsibility for economic, environmental and social topics	SR p. 8-9	
102-21 Consulting stakeholders on economic, environmental and social topics	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 p. 99-101	
102-23 Chair of the highest governance body	FS p. 90-91	
102-24 Nominating and selecting the highest governance body	FS p. 90-91	
102-25 Conflicts of interest	FS p. 94-95	
102-26 Role of highest governance body in setting purpose, values and strategy	SR p. 8-9, FS p. 88	
102-27 Collective knowledge of highest governance body	SR p. 8-9. Sustainability is on the Board's agenda annually.	
102-28 Evaluating the highest governance body's performance	The Board of Directors prepare a self-assessment annually.	

STANDARD AND DISCLOSURE	References and comments	UN Global Compact
102-29 Identifying and managing economic, environmental and social impacts	SR p. 4-5, 8-9, 48-49	
102-30 Effectiveness of risk management processes	FS p. 92-94	
102-31 Review of economic, environmental and social topics	SR p. 4-11	
102-32 Highest governance body's role in sustainability reporting	SR p. 8-9	
102-33 Communicating critical concerns	SR p. 8-11, FS p. 92-94	
102-34 Nature and total number of critical concerns	SR p. 10-11, FS p. 92-94	
102-35 Remuneration policies	FS p. 95-97	
102-36 Process for determining remuneration	FS p. 95-97	
102-37 Stakeholders involvement in remuneration	FS p. 95-97	
102-38 Annual total compensation ratio	SR p. 62	
102-39 Percentage increase in annual total compensation ratio	SR p. 62	
STAKEHOLDER ENGAGEMENT		
102-40 List of stakeholder groups	SR p. 48-57	
102-41 Collective bargaining agreements	77% of all Metsä Group's employees fall within the scope of collective agreements.	UNGC P3
102-42 Identifying and selecting stakeholders	SR p. 8-9, 46-49	
102-43 Approach to stakeholder engagement	SR p. 8-9, 48-49	
102-44 Key topics and concerns raised	SR p. 4-5, 10-11, 34-35, 48-51	
REPORTING PRACTICE		
102-45 Entities included in the consolidated financial statements	FS p. 60-61	
102-46 Defining report content and topic boundaries	SR p. 63, www.metsagroup.com/csr	
102-47 List of material topics	SR p. 8-9. Based on materiality analysis a total of 12 topics has been identified as material. All indicators for identified aspects are reported.	
102-48 Restatements of information	Restatements are explained as part of data tables.	
102-49 Changes in reporting	No changes in reporting.	
102-50 Reporting period	1 Jan - 31 Dec 2018	
102-51 Date of most recent report	26 Feb 2018	
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 prepared in accordance with the GRI Standards: Comprehensive option.	
102-55 GRI content index	SR p. 65-69, www.metsagroup.com/csr	
102-56 External assurance	SR p. 64	
GRI 103 MANAGEMENT APPROACH		
103-1 Explanation of the material topic and its Boundary	SR p. 4-13, www.metsagroup.com/csr	
103-2 The management approach and its components	SR p. 6-15, 63, FS p. 9-11 www.metsagroup.com/csr	
103-3 Evaluation of the management approach	SR p. 6-15, 63, FS p. 9-11 www.metsagroup.com/csr	
GRI 200 ECONOMIC STANDARD		
ECONOMIC PERFORMANCE		
201-1 Direct economic value generated and distributed	SR p. 4-5, 48-49	
201-2 Financial implications and other risks and opportunities due to climate change	FS p.11-13, www.metsagroup.com/csr	
201-3 Defined benefit plan obligations and other retirement plans	FS p. 29-32	
201-4 Financial assistance received from government	FS p. 25	
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, has generated various, for example infrastructural benefits in the economic area.	
203-2 Significant indirect economic impacts	SR p. 48-49, 50-51	
PROCUREMENT		
204-1 Proportion of spending on local suppliers	SR p. 36-37	

STANDARD AND DISCLOSURE	References and comments	UN Global Compact
ANTI-CORRUPTION		UNGC P10
205-1 Operations assessed for risks related to corruption	SR p. 10–11, FS p. 90–95. Anti-corruption is included in the Internal Audit's risk assessments procedures.	
205-2 Communication and training about anti-corruption policies and procedures	SR p. 10–11	
205-3 Confirmed incidents of corruption and actions taken	No confirmed incidents of corruption during the reporting period.	
ANTI-COMPETITIVE BEHAVIOUR		
206-1 Legal actions for anti-competitive behavior, anti-trust and monopoly practices	FS p. 11–12, 63	
GRI 300 ENVIRONMENTAL STANDARD		UNGC P7, P9
MATERIALS		
301-1 Materials used by weight or volume	SR p. 16–17, 38–39	
301-2 Recycled input materials used	SR p. 38–39	
301-3 Reclaimed products and their packaging materials	SR p. 17, 36–37	
ENERGY		
302-1 Energy consumption within the organization	SR p. 42–43	
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 p. 42–43	
302-4 Reduction of energy consumption	SR p. 42–43	
302-5 Reductions in energy requirements of products and services	Not applicable for Metsä Group.	
WATER		
303-1 Water withdrawal by source	SR p. 46–47	
303-2 Water sources significantly affected by withdrawal of water	SR p. 46–47, 38–39	
303-3 Water recycled and reused	SR p. 46–47. Water is continuously recycled in closed loops in the process and used several times. Metsä Group has set a reduction target of 17% for the use of process water per product tonne.	
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 p. 30–35	
304-3 Habitats protected or restored	SR p. 28–33, metsagroup.com/csr	
304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	SR p. 32–33. Protecting biodiversity is a part of sustainable forest management practices.	
EMISSIONS		
305-1 Direct (Scope 1) GHG emissions	SR p. 38–39, 44–45	
305-2 Energy indirect (Scope 2) GHG emissions	SR p. 44–45	
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 p. 38–39, 40–41, 42–43, 44–45, 58–61, 63	
305-5 Reduction of GHG emissions	SR p. 44–45	
305-6 Emissions of ozone-depleting substances (ODS)	Not applicable for Metsä Group	
305-7 Nitrogen oxides (NOX), sulphur oxides (SOX), and other significant air emissions	SR p. 38–39, 38–39, 44–45	
EFFLUENTS AND WASTE		
306-1 Water discharge by quality and destination	SR p. 38–39, 38–39, 46–47, 58–62	
306-2 Waste by type and disposal method	SR p. 24–25, 36–37	
306-3 Significant spills	No significant spills, SR p. 62.	
306-4 Transport of hazardous waste	Not applicable for Metsä Group.	
306-5 Water bodies affected by water discharges and/or runoff	SR p. 46–47	
ENVIRONMENTAL COMPLIANCE		UNGC P8
307-1 Non-compliance with environmental laws and regulations	SR p. 62	
SUPPLIER ENVIRONMENTAL ASSESSMENT		UNGC P8
308-1 New suppliers that were screened using environmental criteria	SR p. 36–37. All new suppliers must approve our Supplier Code of Conduct, which includes environmental criteria.	
308-2 Negative environmental impacts in the supply chain and actions taken	SR p. 36–37. Partial data available on wood	

STANDARD AND DISCLOSURE	References and comments	UN Global Compact
GRI 400 SOCIAL STANDARDS SERIES		
EMPLOYMENT		UNGC P6
401-1 New employee hires and employee turnover	SR p. 54-56	
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Not applicable for Metsä Group. 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	We comply with local labour agreements and legislation and the employment contracts continue unchanged after parental leave.	
LABOUR/MANAGEMENT RELATIONS		UNGC P2
402-1 Minimum notice periods regarding operational changes	We comply with local agreements and legislation redundancy situations.	
OCCUPATIONAL HEALTH AND SAFETY		
403-1 Workers representation in formal joint management-worker health and safety committees	Local occupational health and safety committees cover 100% of Metsä Group's employees in all main operating countries.	
403-2 Types of injury and rates of injury, occupational diseases, lost days, absenteeism and number of work-related fatalities	SR p. 54-56, 58-61	
403-3 Workers with high incidence or high risk of diseases related to their occupation	SR p. 56-57. Considered as a part of continuous preventive safety work.	
403-4 Health and safety topics covered in formal agreements with trade unions	We comply with each country's local regulations and legislation on collective agreements and working conditions, including health and safety.	
TRAINING AND EDUCATION		UNGC P6
404-1 Average hours of training per year per employee category	SR p. 54-55. Training reported as days/year.	
404-2 Programs for upgrading employee skills and transition assistance programs	SR p. 54-55	
404-3 Percentage of employees receiving regular performance and career development reviews	SR p. 54-55. All Metsä Group's employees are entitled to a Personnel Development Appraisal (PDA).	
DIVERSITY AND EQUAL OPPORTUNITY		UNGC P6
405-1 Diversity of governance bodies and employees	SR p. 54-55, see more on the FS	
405-2 Ratio of basic salary and remuneration of women to men	SR p. 62	
NON-DISCRIMINATION		UNGC P6
406-1 Incidents of discrimination and corrective actions taken	One confirmed case out of three investigations.	
HUMAN RIGHTS ASSESSMENT		UNGC P1, P2
412-1 Operations that have been subject to human rights reviews or impact assessments	SR p. 10-11	
412-2 Employee training on human rights policies or procedures	SR p. 10-11. 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. Code of Conduct for Suppliers is included in Metsä Group's contracts and we require our suppliers to commit to it.	
LOCAL COMMUNITIES		UNGC P1
413-1 Operations with local community engagement, impact assessments, and development programs	SR p. 48-49, 50-51	
413-2 Operations with significant actual and potential negative impacts on local communities	SR p. 10-11, 38-39, 44-47, 48-51	
SUPPLIER SOCIAL ASSESSMENT		UNGC P2, P4, P5
414-1 New suppliers that were screened using social criteria	SR p. 10-11, 36-37. All suppliers must approve Metsä Group's Code of Conduct for Suppliers.	
414-2 Negative social impacts in the supply chain and actions taken	SR p. 10-11, 36-37	
PUBLIC POLICY		UNGC P10
415-1 Political contributions	None were made, www.metsagroup.com/csr	
CUSTOMER HEALTH AND SAFETY		
416-1 Assessment of the health and safety impacts of product and service categories	SR p. 26-27	
416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	No incidents reported during 2018.	

STANDARD AND DISCLOSURE	References and comments	UN Global Compact
MARKETING AND LABELLING		
417-1 Requirements for product and service information and labeling	SR p. 14-27, 32-33	
417-2 Incidents of non-compliance concerning product and service information and labeling	No incidents reported during 2018.	
417-3 Incidents of non-compliance concerning marketing communications	No incidents reported during 2018.	
CUSTOMER PRIVACY		
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	No incidents reported during 2018.	
SOCIOECONOMIC COMPLIANCE		
419-1 Non-compliance with laws and regulations in the social and economic area	FS p. 11-12, 63	

THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDGs)

The United Nations Sustainable Development Goals (SDGs) represent a global commitment to sustainable development. The SDGs turned the extensive sustainability agenda into concrete targets. Metsä Group is committed to working towards reaching the SDGs.



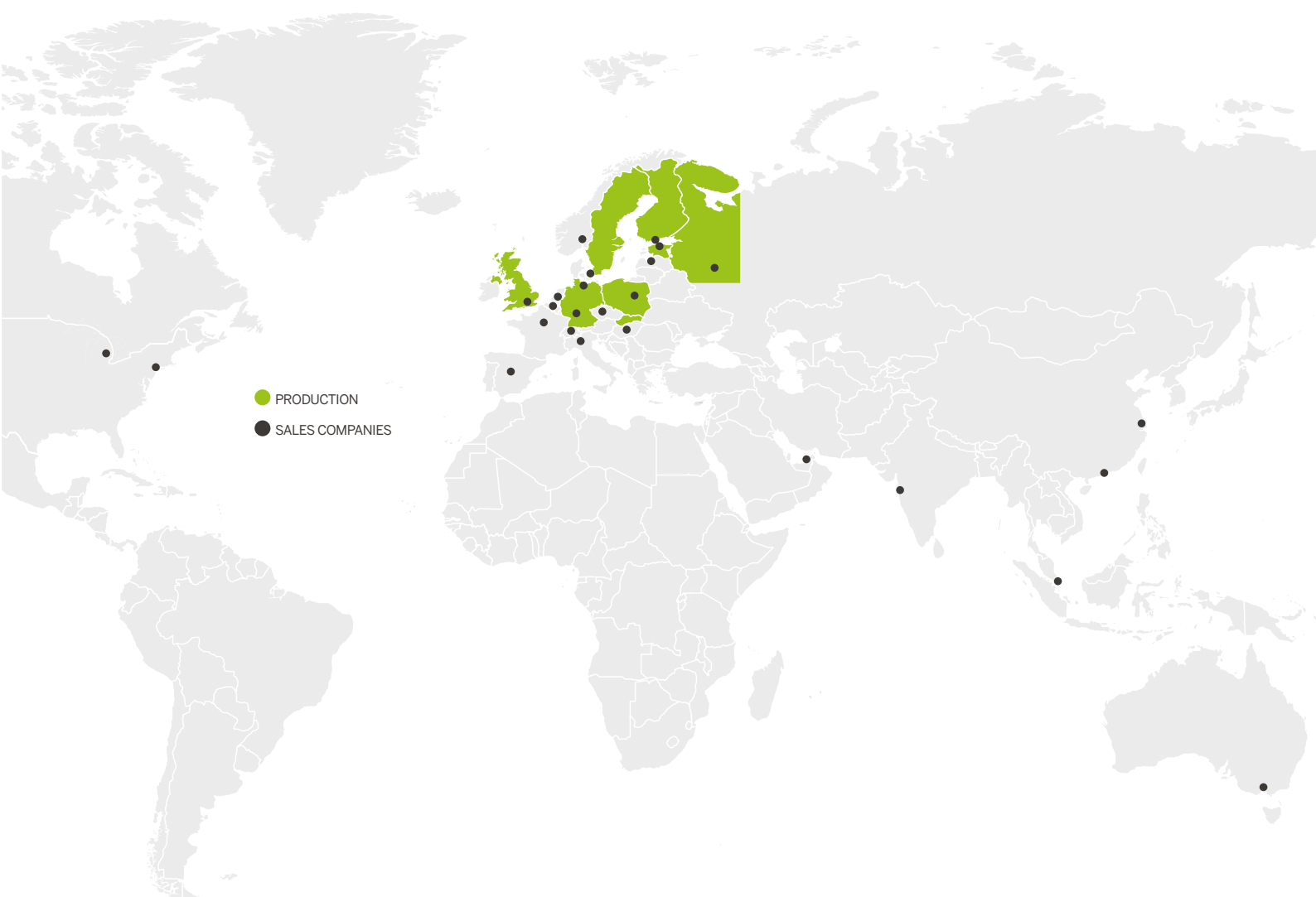
THE GLOBAL GOALS
For Sustainable Development

1 NO POVERTY End poverty in all its forms everywhere	7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	13 CLIMATE ACTION Take urgent action to combat climate change and its impacts
2 ZERO HUNGER End hunger, achieve food security and improved nutrition and promote sustainable agriculture	8 DECENT WORK AND ECONOMIC GROWTH Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	14 LIFE BELOW WATER Conserve and sustainably use the oceans, seas and marine resources for sustainable development
3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	15 LIFE ON LAND Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
4 QUALITY EDUCATION Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	10 REDUCED INEQUALITIES Reduce inequality within and among countries	16 PEACE AND JUSTICE STRONG INSTITUTIONS Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
5 GENDER EQUALITY Achieve gender equality and empower all women and girls	11 SUSTAINABLE CITIES AND COMMUNITIES Make cities and human settlements inclusive, safe, resilient and sustainable	17 PARTNERSHIPS FOR THE GOALS Strengthen the means of implementation and revitalise the global partnership for sustainable development
6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all	12 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption and production patterns	

INTERNATIONAL METSÄ GROUP

Metsä Group is a Finnish forest industry company that operates on the international market. We have 36 production units in eight European countries.

Sales companies, retailers and agents sell our products around the world. In addition, over 300 forest specialists serve forest owners in approximately 100 locations throughout Finland.



Make the most of Metsä



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