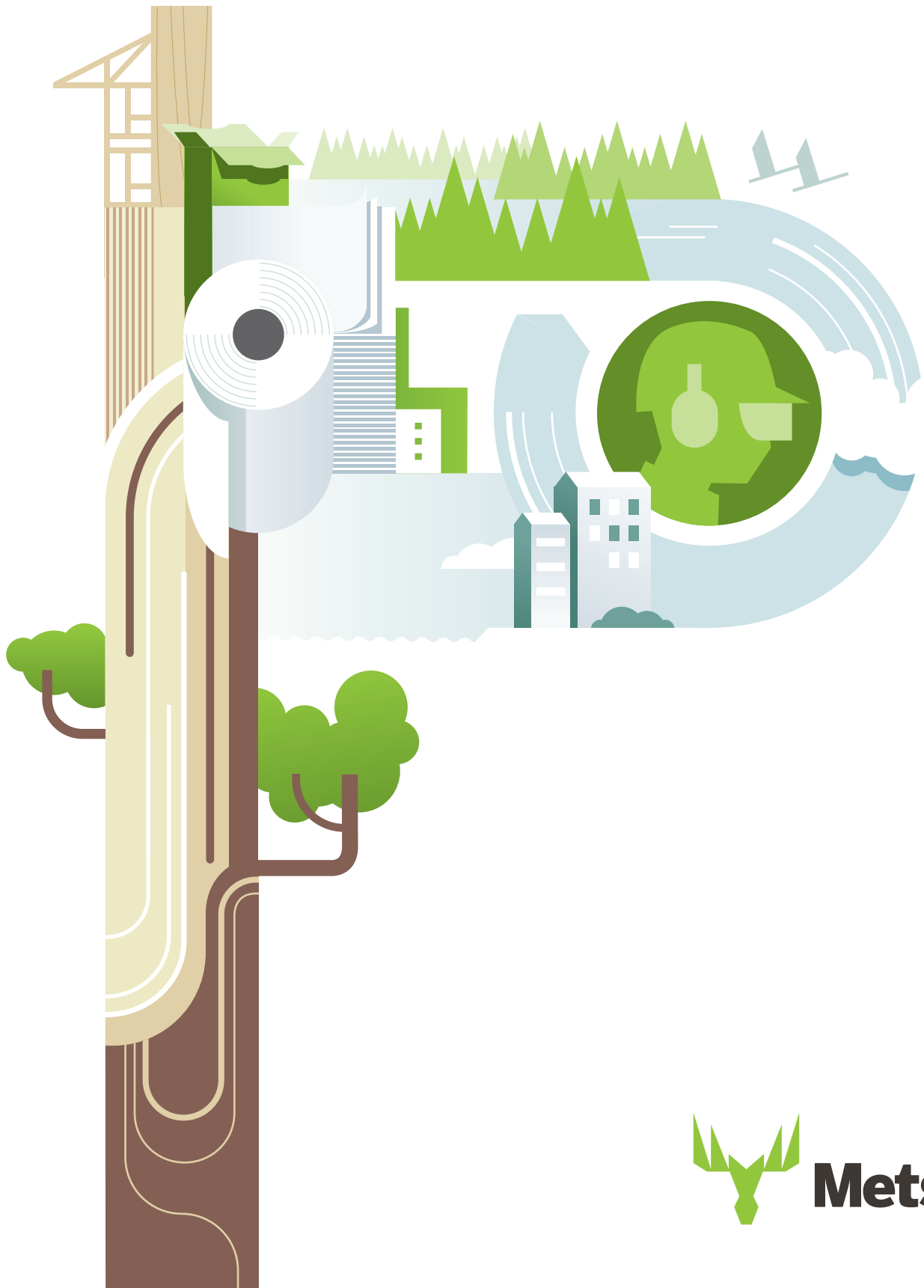


# METSÄ GROUP

SUSTAINABILITY REPORT 2017



# SUSTAINABLE GROWTH FROM METSÄ

Metsä Group is a forerunner in sustainable bioeconomy. Our products are made of renewable raw material and they replace the use of fossil resources. We focus on wood supply and forest services, wood products, pulp, fresh fibre paperboards, tissue and cooking papers.

## RESOURCE EFFICIENCY

We use every part of the tree as efficiently as possible. Our goal is to waste nothing.

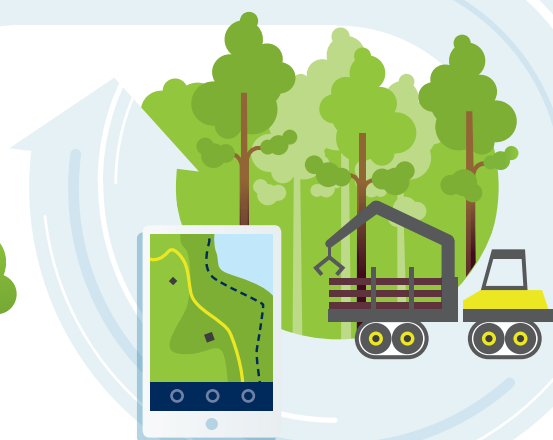
 see pages 38-39



## SUSTAINABLE FORESTRY

We manage forests sustainably, and secure their growth and nature values.

 see pages 26-33



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## RENEWABLE RAW MATERIAL

Our products are made of renewable raw material coming from Northern forests and they support replacing the use of fossil raw materials.

 see pages 16–25

**PUBLISHER:** Metsä Group, Sustainability and Corporate Affairs  
This publication and additional information is available online at [www.metsagroup.com/CSR](http://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.  
Kindly send your feedback to [sustainability@metsagroup.com](mailto:sustainability@metsagroup.com) or discuss with @MetsaGroup on social media.



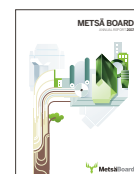
Sustainably from the forest



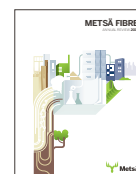
Metsä Group  
Financial  
Statements  
2017



Metsä Group  
Sustainability  
Report  
2017



Metsä Board  
Annual Report  
2017



Metsä Fibre  
Annual Review  
2017

# YEAR 2017 HIGHLIGHTS



**88%**

CERTIFIED  
WOOD

**100%**

TRACEABLE  
WOOD

**72%**

OF THE ENERGY  
USED IN  
PRODUCTION  
WAS RENEWABLE

**-38%**

FOSSIL CO<sub>2</sub>  
EMISSIONS PER  
PRODUCT TONNE  
SINCE 2009

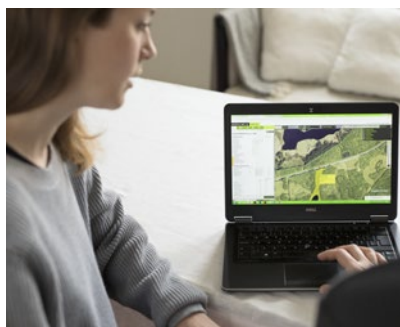
**-15%**

PROCESS WATER  
USE PER  
PRODUCT TONNE  
SINCE 2010

**-20%**

FREQUENCY  
OF ACCIDENTS  
AT WORK (LTA1)



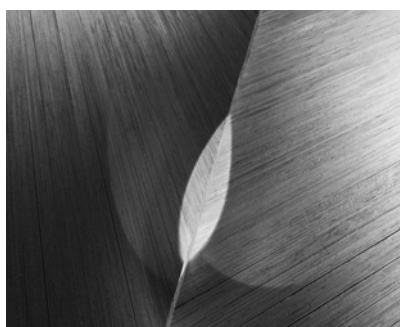
**METSÄ  
FOREST**

## DIGITAL SERVICES ENABLE BETTER FOREST MANAGEMENT

Digital services offer more information about forests. Having more accurate and extensive data about forests enables more sustainable forest management and forest use optimisation.



Read more  
on page 8

**METSÄ  
WOOD**

## INVESTING IN SUSTAINABLE CONSTRUCTION

The benefits of wood construction offer great opportunities in changing city environments. Metsä Wood has recently invested in improving the competitiveness of its Kerto LVL® production.



Read more  
on page 8

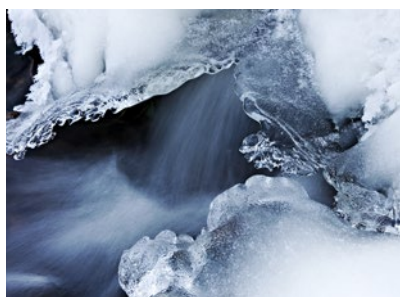
**METSÄ  
FIBRE**

## NEW FOSSIL-FREE BIOPRODUCT MILL

The new bioproduct mill started up in Äänekoski, Finland, in 2017 uses only renewable energy and its self-sufficiency rate in electricity is 240%. The mill produces 2.5% of all the electricity generated in Finland.



Read more  
on page 9

**METSÄ  
BOARD**

## GLOBAL LEADER IN CLIMATE ACTION AND SUSTAINABLE WATER MANAGEMENT

Metsä Board was, once again, included on the CDP Water A List as well as on the CDP Climate A List.



Read more  
on page 45

**METSÄ  
TISSUE**

## PROMOTING GOOD HAND HYGIENE IN SCHOOLS

Metsä Tissue's Katrin brand has a long tradition of working with schools and kindergartens to promote good hand hygiene. In 2017, Katrin introduced a hand hygiene activity pack for Finnish elementary schools.




Read more  
on page 49

OPENING WORDS

# SHARED GOAL BOOSTS COMPANIES FORWARD

 More info on sustainability management pages 10–11

 More info on strategy pages 6–7



2017 was turbulent in terms of combating climate change as the worldwide commitment to the Paris Climate Agreement suffered setbacks. However, it was pleasing to notice that there has been an even stronger stand from the corporate sector with many companies reaffirming their commitment to climate action.

Metsä Group’s stand on combating climate change is clear; we contribute by promoting resource-wise bioeconomy. Our products offer renewable alternatives for fossil-based living and reduce the dependence on fossil-based raw materials. We also continuously work towards improving the environmental performance of our production and we have been able to reduce fossil CO<sub>2</sub> emissions per product tonne by 38% since 2009.

**SUSTAINABLE FOREST MANAGEMENT IS A PRECONDITION**

Recently concerns related to increased use of forests have been on our stakeholders’ agenda. Even though the growth of Northern forests exceeds their use in the area where Metsä Group operates, wood is still a limited natural resource which should be used wisely. In general, we see that wood should primarily be used for added-value products. We use every part of the tree for the most valuable purpose and our goal is to waste nothing. We use also our production side streams efficiently; in 2017, 92% of our production side streams were further utilised as material or in renewable energy production.

For us, sustainable forest management is a fundamental condition for the use of forests. Metsä Group is involved in various joint R&D&I projects focused on enhancing the sustainability of forest operations.

KEY FIGURES	2017	2016	2015	2014	2013
Sales, EUR million	5,040	4,658	5,016	4,970	4,938
Operating result, comparable, EUR million	566	439	537	418	343
Return on capital employed (ROCE), comparable, %	12.3	10.2	13.6	11.4	9.1
Equity ratio, %	45.0	43.9	43.2	37.9	37.9
Net gearing ratio, %	34	40	25	46	77
Investments, EUR million	608	758	492	143	214
Research and development, EUR million	18	18	18	18	18

In addition, we are continuously developing digital services to help forest owners manage their forests sustainably.

Finland is known for its expertise in sustainable forest management and this attracted PEFC (Programme for the Endorsement of Forest Certification) to organise its annual 2017 PEFC Forest Certification Week in Finland for the first time ever. We were pleased to present our new bioproduct mill in Äänekoski, Finland, to the international audience and participated in showcasing how Finnish forests are nurtured and their growth promoted by managing them sustainably. We always know the origin of wood and 88% of the wood we procured in 2017 was PEFC™ and/or FSC® certified (FSC-C014476).

## SUSTAINABLE GROWTH FROM INVESTMENTS

For Metsä Group, the start-up of our new bioproduct mill in Äänekoski was certainly the main event of 2017 from many perspectives. The new bioproduct mill represents the most significant forest industry investment in Europe. It is entirely fossil-free and its value chain offers 1,500 new jobs. Its industrial ecosystem offers a platform for innovating new bioproducts for various end-uses. Through its industrial ecosystem the bioproduct mill offers new business opportunities for SMEs and industrial partners.

During 2015–2017 Metsä Group invested over EUR 2 billion in production, of which EUR 1.2 billion was allocated to building the new bioproduct mill. The other major investments were made for the changing needs of packaging and construction sectors, driven by

urbanisation together with an increasing global population and rising living standards.

## REVIEWING OUR FOCUS

Managing sustainability is a dialogue. Even though we have a clear vision of our role in promoting circular bioeconomy and sustainable business operations, we also need to listen to our stakeholders' views to be able to identify the most relevant issues. In 2017, we sharpened the focus of our sustainability work by initiating an internal sustainability development programme and reviewing our most important sustainability topics. We will start implementing the results of this programme in 2018 and will also set new post 2020 sustainability targets.

Social aspects of corporate responsibility, such as human rights and being a member of the community, are gaining more emphasis among legislators, NGOs and other stakeholders. Social issues were also in focus in our sustainability review and we will direct more attention towards these aspects as well as cooperation with existing and new partners.

It has become evident that the importance of sustainability is continuously increasing. This growing interest is clearly reflected by sustainability surveys, ratings and questionnaires carried out with our customers and investors. We are delighted to see that sustainability has become a common mission. This encourages Metsä Group, together with its stakeholders, to further develop operations and innovate solutions for today and the future.

# METSÄ GROUP

SALES\* **5.0** EUR BILLION

PERSONNEL **9,100**

## METSÄLIITTO COOPERATIVE

GROUP'S PARENT COMPANY

OWNED BY 104,000 FINNISH FOREST OWNERS

### METSÄ FOREST

#### WOOD SUPPLY AND FOREST SERVICES

Sales **EUR 1.6 billion**  
Personnel **850**

Holding  
Metsäliitto Cooperative 100%

### METSÄ WOOD

#### WOOD PRODUCTS

Sales **EUR 0.5 billion**  
Personnel **1,400**

Holding  
Metsäliitto Cooperative 100%

### METSÄ FIBRE

#### PULP AND SAWN TIMBER

Sales **EUR 1.9 billion**  
Personnel **1,200**

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

### METSÄ BOARD

#### PAPERBOARD

Sales **EUR 1.8 billion**  
Personnel **2,350**

Holding  
Metsäliitto Cooperative 41.5%;  
61.4% of votes

### METSÄ TISSUE

#### TISSUE AND COOKING PAPERS

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


Holding  
Metsäliitto Cooperative 100%


\* internal sales eliminated

RENEWABLE ENERGY 24 TWh

# STRATEGY BASED ON CIRCULAR BIOECONOMY

Population growth and scarcity of natural resources have challenged companies to evaluate their businesses and operations from new perspectives; what are their answers to these global megatrends and how do these trends shape their business?

 More info on resource efficiency  
pages 38–39

 More info on utilising production side streams  
pages 22–23

Metsä Group’s strategy is based on being a fore-runner in sustainable bioeconomy and making the most out of opportunities offered by circular economy. Bioeconomy is based on sustainable use of renewable natural resources. Bio-based products help reduce dependence on fossil resources and facilitate economic development and creation of new jobs in rural areas.

Metsä Group’s main raw material, wood, is the most important renewable natural resource in Finland. We know wood and its valuable features and we also have the expertise to work with it. Our business areas form a strong bioeconomic value chain from wood sourcing to end products, such as wood products for industrial construction as well as lightweight paperboards, tissue and cooking papers made of high-quality pulp. This optimised and comprehensive value chain enables us to use every part of the tree for the most valuable purpose. To create added value with bio-based products, the controlled origin and sustainable use of the raw material are of crucial importance. We source most of the wood used in our produc-

tion from Metsäliitto Cooperative’s Finnish owner-members, and we always know its origin.

**PROMOTING CIRCULAR ECONOMY**

Metsä Group’s operations, as well as the entire forest industry, is based on circulations. The manufacturing and use of our products is designed in a manner that minimises waste and allows recycling of the materials as well as retaining their value. All our products are safe and can be recycled, or as a final stage be used for energy production. Over 90% of production side streams are utilised.

We are continuously searching for new ways to convert our production side streams into added-value products. Metsä Group’s new bioproduct mill started up in Äänekoski, Finland, in 2017, is a perfect example of our ambition to make the most value out of the valuable natural resources we use. To boost the resource-wise use of the raw material, we have built an industrial ecosystem engaging many partners from around the bioproduct mill’s locality.

**FOCUSING ON STRENGTHS**

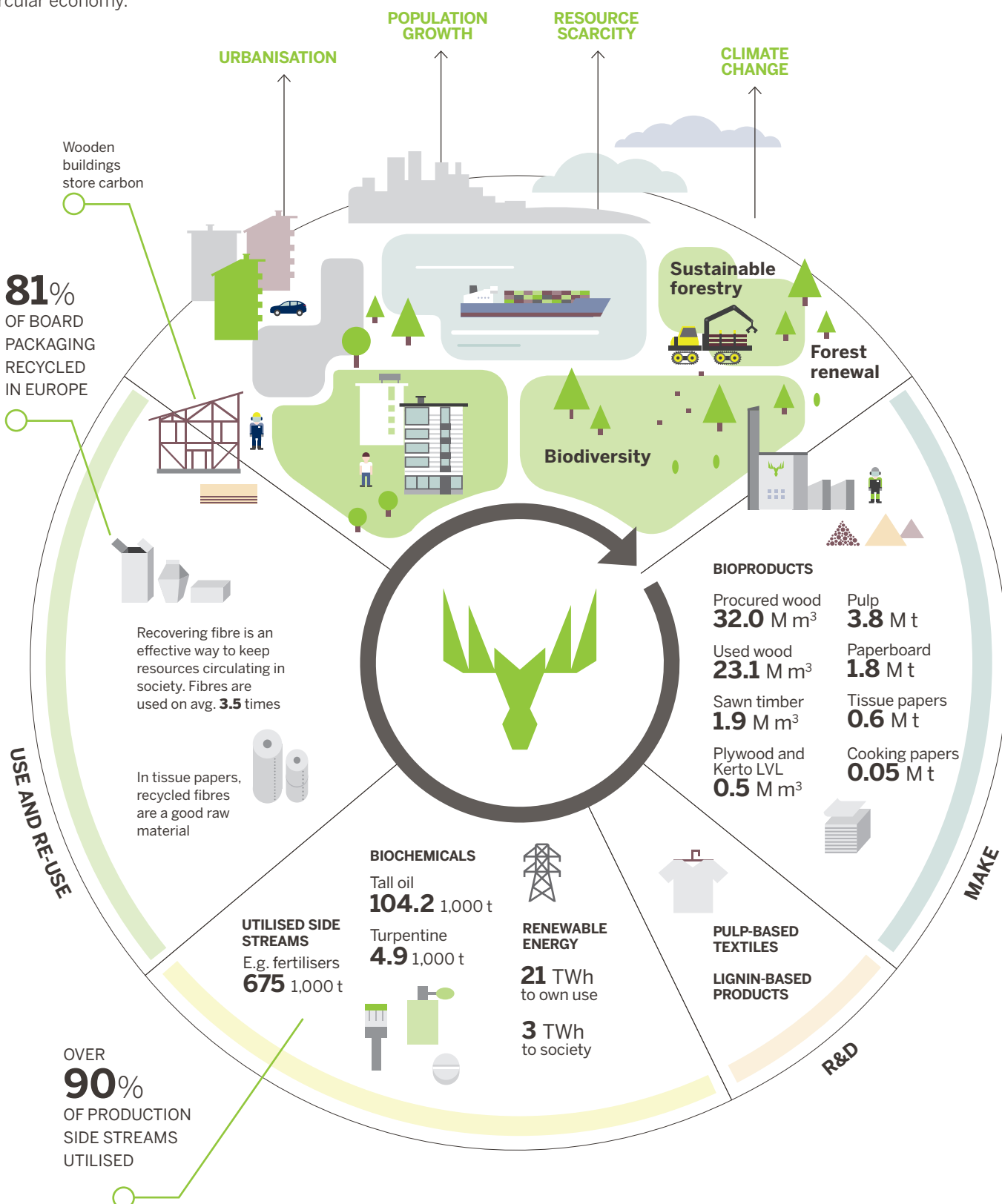
We focus our investments and resources on areas where we have a clear competitive advantage and can create most value. One of our key assets is the ability to provide our customers with products and solutions for global challenges, such as replacing products made of fossil-based materials. Also, our ambition for developing continuously stronger industrial ecosystems around bioproducts offer great opportunities.

We have been systematically developing and investing in our production units making them world-class examples in profitability, energy efficiency and environmental performance. The owner-members of our parent company Metsäliitto Cooperative, 104,000 Finnish forest owners, bring continuity and long-term focus to our operations.



## INDUSTRY BASED ON CIRCULATION


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





SUSTAINABLE GROWTH

# SUSTAINABLE GROWTH FROM METSÄ

Metsä Group is a forerunner in sustainable bioeconomy and our strength grows in Northern forests. The global megatrends, such as urbanisation, population growth, digitalisation, climate change and scarcity of natural resources, create opportunities for sustainable growth. By managing forests sustainably and operating resource-wisely we will ensure that our strengths continue to grow in the future.

- 

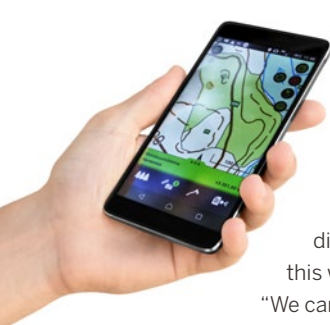
More info on our products  
pages 16–25
- 

More info on sustainable forestry  
pages 26–33
- 

More info on resource efficiency  
pages 38–39



## FORESTS ARE GETTING DIGITAL



Digitalisation is rapidly changing the forest industry. Digital services have been an important area of focus for Metsä Forest, and the company has developed a substantial selection of digital services for forest owners. Metsä Forest has effectively taken advantage of digital opportunities and aims to continue this work.

“We carried out our first online timber trade two years ago, and now approximately 25% of our trades happen via digital services,” states **Juha Jumppanen**, SVP, Member Services, Metsä Forest.

Digital services offer more information about the forests. More accurate and extensive data enables better forest management and optimisation of forest use. Thanks to modern data we will do the right thing at the right time and in the right place. With the help of digital applications forests will be even more sustainably managed than before.



## WOOD CONSTRUCTION OFFERS NEW POSSIBILITIES TO GROWING CITIES

The world’s population is concentrating into big cities at an accelerating pace. This trend creates new requirements for construction materials. Metsä Wood is a leading supplier of wood products and in order to meet the new challenges, the company has recently invested in improving the competitiveness of its Kerto LVL® (laminated veneer lumber) production. In 2017, the company opened a new LVL production line in Lohja, Finland, and decided to invest EUR 52 million in a new LVL production line with a capacity of 65,000 m³ in Punkaharju, Finland.

“The benefits of wood, such as fast construction, lightness and environmental friendliness, offer great opportunities for construction in changing city environments. We believe that the popularity of building with wood will grow in the future,” states **Esa Kaikkonen**, EVP, Metsä Wood.

To develop ideas and promote wood building, Metsä Wood has built a web-based platform called ‘Open Source Wood’, where professionals interested in wood construction can collaborate and share their ideas for modular wood design.





## METSÄ FIBRE

# NEW BIOPRODUCT MILL IS A FORERUNNER IN SUSTAINABLE BIOECONOMY



Metsä Group's new bioproduct mill in Äänekoski, Finland, started up in 2017 and is the largest wood processing mill in the Northern Hemisphere.

"The new mill strengthens our position in the global softwood pulp market and also has a significant effect on the Finnish national economy by providing economic growth and new jobs. Additionally it is boosting the value of exports by approximately EUR 0.5 billion," states **Ismo Nousiainen**, CEO, Metsä Fibre.

In addition to producing high-quality pulp, the new mill expands Metsä Group's product

portfolio with new bioproducts, such as product gas for own energy use. The mill generates excess bio-based renewable energy and does not use any fossil fuels. The mill produces 2.4 times the amount of electricity it consumes, and increases the share of renewable energy in Finland by over two percentage points. The mill's concept is based on the idea of extreme resource-efficiency; in addition to using all parts of the wood raw material, the aim is to also utilise 100 per cent of the production side streams.



## METSÄ BOARD

# URBANISATION DRIVES DEMAND IN PACKAGING

Urbanisation and rising income levels in the emerging markets increase consumption and the need for packaging. Also changes in retailing, especially e-commerce, are boosting the demand for packaging. At the same time there is a global concern about the large amount of fossil-based plastic used in packaging. Unlike paperboard packages, plastic is not compostable and has bigger environmental impact if it ends up in natural environments such as the oceans. All this drives the need for packaging made of renewable and sustainable materials.

Metsä Board is a forerunner in developing lightweight paperboards made from renewa-

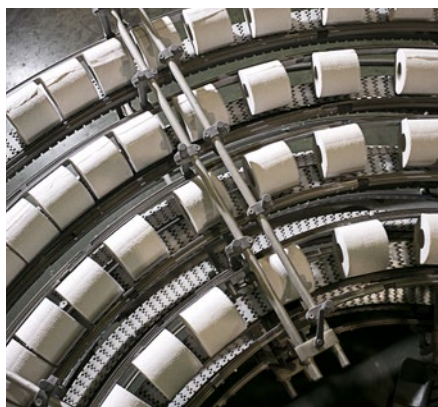
ble fresh fibres. Our lightweight products consume less raw materials, energy and water, and produce less waste at the end of their lifecycle. Metsä Board's paperboards for packaging are compostable as well as recyclable, depending upon local recycling services.

"In addition to developing our products, we also help our customers to achieve 'better with less' by advising them on different solutions for packaging structures. A carefully designed packaging structure reduces material use and can lower the environmental impact notably," states **Cyril Drouet**, Design and Innovation Director, Metsä Board.



## METSÄ TISSUE

# INCREASING THE SHARE OF RENEWABLE ENERGY



During the past couple of years, Metsä Tissue has been investing in increasing the share of renewable energy used at its mills in Sweden and Finland.

All Metsä Tissue mills in Sweden, located in Mariestad, Pauliström and Nyboholm, are now using renewable energy for the steam generation required for tissue production. The latest investment became operational in 2017 when a new bioboiler started up in Nyboholm. Previously the mills have used fossil fuels in heat generation, but the improvements made at the mills have enabled a switch to using

only renewable fuels, such as bark, sawdust and other wood-based fuels as well as fibre sludge, a production side stream generated when using recycled paper.


"An energy-wise future is built on the renewables. Tissue production is very heat intensive and steam is needed for the drying process. Therefore, we have invested in renewable energy production at all our mills in Sweden. In the future, oil will be used only as a reserve fuel for exceptional circumstances," states **Mark Watkins**, SVP, Consumer Nordics, Metsä Tissue.


MANAGING SUSTAINABILITY


# PROMOTING A GLOBAL SUSTAINABILITY AGENDA


Sustainability work at Metsä Group is driven by our values and strategy as a forerunner in sustainable bioeconomy. We aim to do our share in promoting global sustainability goals.



 More info on sustainability targets  
pages 14–15

 More info on UN's SDGs  
page 68

 The UN Global Compact Communication On Progress is included in our GRI index  
pages 63–67

 More info on Global Compact  
[www.unglobalcompact.org](http://www.unglobalcompact.org)

The United Nations’ (UN) Sustainable Development Goals (SDGs) is a global agenda for ending poverty and pursuing a sustainable future which was adopted by 193 Member States of the United Nations in 2015. In 2016, we at Metsä Group, defined the goals to which we can contribute the most through our operations. We have aligned our sustainability themes and targets with the SDGs, and will take this global agenda into consideration when defining our future targets in 2018.

Metsä Group has been a member of the UN Global Compact sustainability initiative since 2003. We are committed to and support the Global Compact’s 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 set the path for our sustainability work. We enhance our sustainability work through an internal development programme consisting of projects focused on our four sustainability themes;

- We offer sustainable choices
- We bring the forest to you
- We work for a better climate and environment
- We create well-being

## RECHECKING OUR DIRECTION AND TARGETS

Metsä Group’s sustainability approach and target setting is based on a comprehensive materiality assessment of the most important sustainability topics, taking into account the social and environmental impacts of our operations as well as our stakeholders’ point of view.

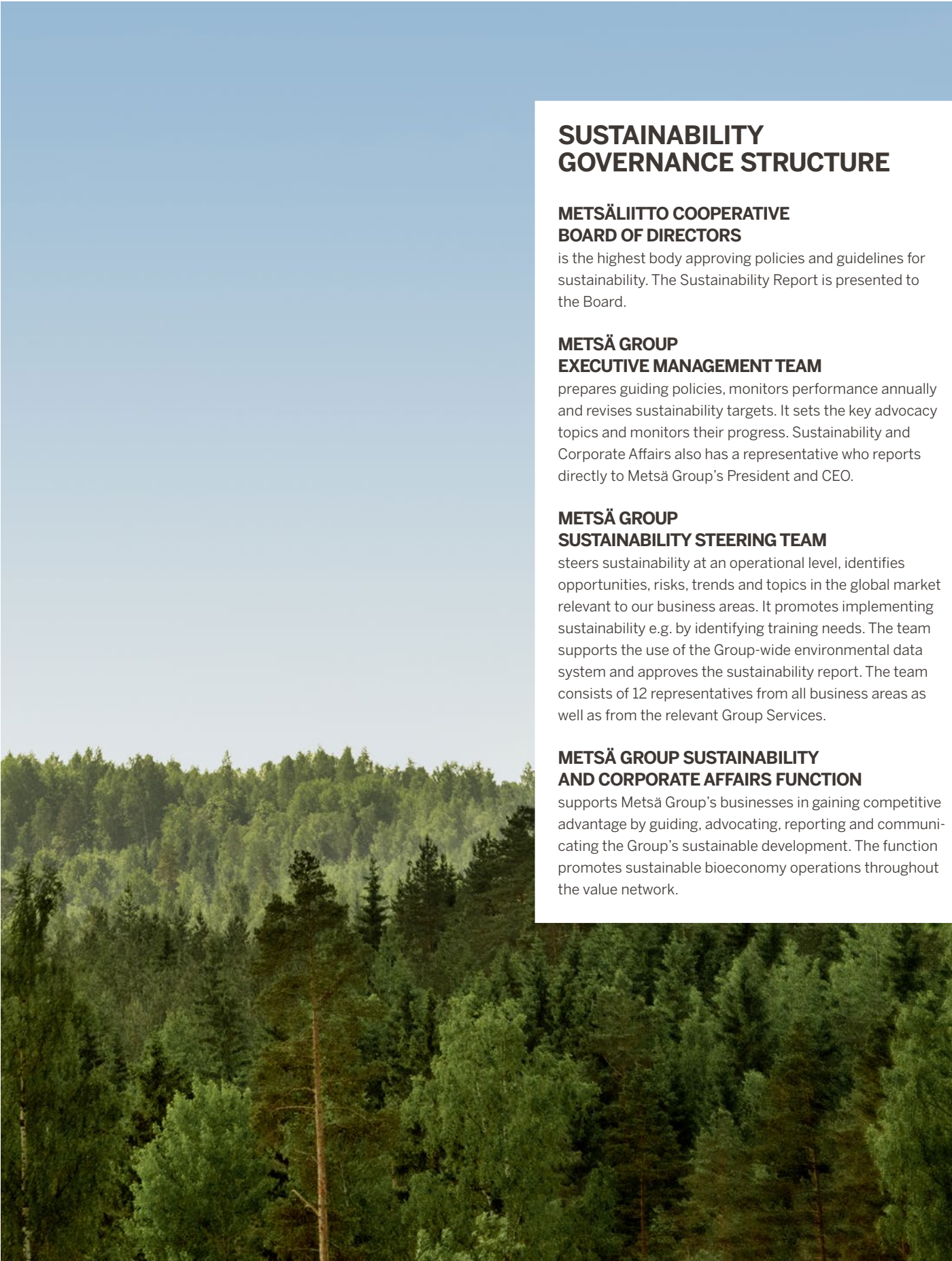
Our principle is to revise our key sustainability topics in three-year-cycles by carrying out a materiality analysis. We started a new revision assessment in 2017. Defining the material topics was supported by background analysis consisting of a study of the operating environment including global megatrends and their implications. In addition, interviews with customers and other stakeholders, such as NGOs, investors, management and experts, were considered. Within the analysis, a particular emphasis was given to social responsibility topics, global supply chains, forests and geographical differences. The revised material topics were defined in an internal management and expert workshop. The results of the new materiality assessment will guide our sustainability work and reporting from 2018 onwards. Also, our sustainability targets will be revised in 2018.

## 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 STRUCTURE

### METSÄLIITTO COOPERATIVE BOARD OF DIRECTORS

is the highest body approving policies and guidelines for sustainability. The Sustainability Report is presented to the Board.

### METSÄ GROUP EXECUTIVE MANAGEMENT TEAM

prepares guiding policies, monitors performance annually and revises sustainability targets. It sets the key advocacy topics and monitors their progress. Sustainability and Corporate Affairs also has a representative who reports directly to Metsä Group's President and CEO.

### METSÄ GROUP SUSTAINABILITY STEERING TEAM

steers sustainability at an operational level, identifies opportunities, risks, trends and topics in the global market relevant to our business areas. It promotes implementing sustainability e.g. by identifying training needs. The team supports the use of the Group-wide environmental data system and approves the sustainability report. The team consists of 12 representatives from all business areas as well as from the relevant Group Services.

### METSÄ GROUP SUSTAINABILITY AND CORPORATE AFFAIRS FUNCTION

supports Metsä Group's businesses in gaining competitive advantage by guiding, advocating, reporting and communicating the Group's sustainable development. The function promotes sustainable bioeconomy operations throughout the value network.

BUSINESS INTEGRITY

# BUSINESS WITH INTEGRITY

Doing things with integrity is the only way of working at Metsä Group and when doing business with us. For us, the respect for human rights and ethical decision making is of the utmost importance and we work persistently to understand more about the impacts our operations have on people and communities.



For more info on sustainability in supply chain  
pages 34–35



More info on governance cases  
Financial Statements page 11

Our operations and way of working are guided by Metsä Group's Code of Conduct and Sustainability Principles. We also require ethical business practices from our partners, and these practices and principles are stated in our Code of Conduct for Suppliers.

We do not accept any form of corruption or bribery in our own operations or 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 within the Group or in Metsä Group's supply chain during 2017.

In 2017, we initiated the assessment process regarding the need to renew Metsä Group's Code of Conduct with the aim to identify the key focus areas and to develop further our personnel's awareness on ethical issues. In our updated Code of Conduct sustainability issues, for example human rights, will be considered more broadly in addition to

a more traditional compliance perspective. Our Group-wide target is that 100% of our employees will be trained in our Code of Conduct. In 2017, the share of personnel that has been trained in our Code of Conduct was 91 (92) %.

## ENCOURAGING EMPLOYEES TO SHARE THEIR CONCERNS

We aim to detect possible ethical misconduct as early as possible. We support an open culture and encourage our employees to always report their ethical concerns by either informing their manager, the Group General Counsel or Compliance Officer or by using Metsä Group's internal compliance channel. All notifications are investigated, and appropriate actions taken whenever necessary.

Metsä Group has also established a Compliance Committee to steer compliance development and to ensure systematic handling of non-compliance investigations. The committee

consists of Group General Counsel, Compliance Officer and SVP Internal Audit. All significant non-compliance notifications are addressed by the Compliance Committee. In 2017, there was a total of 31 non-compliance investigations varying from external fraud attempts and privacy questions to hospitality related topics.

## PROTECTING INDIVIDUALS' PRIVACY

The EU General Data Protection Regulation (GDPR) will come into effect in May 2018. The new regulation offers improved protection of personal data and harmonises practices within the EU member states. Ensuring the privacy of our employees, customers and other stakeholders is very important for us, therefore we have started aligning our operations to the new regulation and will offer training related to this topic to our personnel in 2018.



## ENSURING SUSTAINABILITY AT BIOPRODUCT MILL'S CONSTRUCTION SITE

Metsä Group's bioproduct mill's construction site in Äänekoski, Finland, employed over 13,500 people during 2015–2017, directly or through contractors. Due to the large number of contractors, making sure they operated according to our sustainability and other relevant requirements was of crucial importance. In addition to complying with laws and regulations, our direct contractors working at the site were required to commit to the sustainability principles set out in Metsä Group's Code of Conduct for Suppliers. The Code also obligates contractors to cascade these principles in their own supply chain. Transparency was the key to ensuring the sustainability of our contractors' operations.

"It was crucial to know, at all times, who was working on the site. Being informed is the prerequisite for ensuring sustainable operations and combating a grey economy. We monitored our suppliers systematically and reported regularly relevant information to tax authorities and other relevant authorities. If any misconducts came to our attention, we addressed them immediately," states **Timo Merikallio**, Project Director, Metsä Fibre.

## ASSESSING OUR HUMAN RIGHTS IMPACTS

We are committed to respecting internationally recognised human rights and continuously develop our operations in alignment with the UN Guiding Principles on Business and Human Rights. Metsä Group is also a member of the UN's Global Compact sustainability initiative and supports its ten principles regarding human rights, labour, environment and anti-corruption. Metsä Group has, for example, a zero-tolerance on forced and child labour, and the prohibition of using those forms of labour, including modern slavery in any form, is included in our Code of Conduct for Suppliers. We also respect and follow the legal reporting

requirements of the UK Modern Slavery Act and aim to develop our operations accordingly.

In 2017, we initiated a human rights impact assessment process to deepen our understanding of the actual and potential human rights impacts resulting from our operations. We started this work by mapping the most important interfaces between our operations and stakeholders where actual or potential impacts on human rights may occur. Based on the results of the assessment, we continue developing our operations and processes further in order to be able to prevent, more efficiently, any adverse impacts on human rights as well as promote positive ones resulting from our operations.

Metsä Group's own operations are located in European countries where societal circumstances are relatively stable. Nevertheless, we have recognised that there are actual and potential risks relating to adverse human rights impacts in our own operations, as well as in our supply chain. According to our assessment project, for example, logistics and construction sites have been identified as some of the operations carrying the biggest actual or potential adverse human rights impacts in our supply chain. In 2015, we set a target to ensure the sustainability of our main logistics flows and by the end of 2017 all Metsä Group's 481 main logistics partners included in our sustainability questionnaire fulfilled our sustainability criteria.



## EVALUATING THE ETHICALITY OF OUR COMPANY CULTURE

We aim to continuously develop the way we operate, and as a part of this work, we conducted an evaluation of cultural ethicalness in 2017. The evaluation included interviews with key personnel and a gap analysis between our current practices and processes and best practices.

"The aim of the evaluation was to identify possible development areas for improving the maturity of our ethical culture. Examining cultural ethicalness is becoming an integral part of the agenda of internal auditing," states **Mika Parviainen**, SVP, Internal Audit, Metsä Group.

## GOLD LEVEL RATINGS FROM ECOVADIS

In 2017, Metsä Board and Metsä Tissue achieved a gold level rating from EcoVadis for their continuous sustainability work. Metsä Board was ranked in the top 1% and Metsä Tissue in the top 3% among the overall suppliers assessed.

EcoVadis operates a platform enabling companies to assess the environmental and social performance of its suppliers on a global basis. The criteria include four themes; the environment, labour practices, sustainable procurement and fair business practices.

SUSTAINABILITY  
THEMES AND TARGETS

# OUR SUSTAINABILITY THEMES

Sustainability is a part of everything we do. The foundation of our sustainability work consists of four themes covering all our operations and eight concrete targets that guide our everyday work. Our sustainability work supports reaching the global Sustainable Development Goals (SDGs) set by the United Nations.

## ETHICAL BUSINESS

Coverage of Code of Conduct training:

TARGET	PERFORMANCE 2017
100%	91%

## SAFETY AT WORK

Lost-time accidents frequency annually (LTA1: 5.9):

TARGET	PERFORMANCE 2017
-10%	-20%

## WELL-BEING

Sickness absenteeism:

TARGET	PERFORMANCE 2017
< 3%	3.9%







## WE BRING THE FOREST TO YOU

### RAW MATERIALS AND SUPPLY CHAIN

- Sustainable forest management, biodiversity, multiple use of forests
- Traceability of raw materials
- Sustainable supply chain

## WOOD

Maintain the share of certified wood:

TARGET	PERFORMANCE 2017
>80%	<b>88%</b>

## LOGISTICS

Ensure sustainability of the main logistics flows:

TARGET	STATUS 2017
100%	At the end of 2017, all 481 main logistics partners included in the sustainability survey fulfilled Metsä Group's sustainability criteria.



## WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT

### RESOURCE EFFICIENCY AND ENVIRONMENTAL IMPACTS

- Efficient use of raw materials, energy and water
- Valuable side streams
- Renewable energy
- Emissions to water and air

## CLIMATE

Fossil CO<sub>2</sub> emissions per product tonne 2009–2020:

TARGET	PERFORMANCE 2017
-30%	<b>-38%</b>

## ENERGY

Energy efficiency improvement 2009–2020:

TARGET	PERFORMANCE 2017
10%	<b>7%</b>

## RESOURCE EFFICIENCY

Process water use per product tonne 2010–2020:

TARGET	PERFORMANCE 2017
-17%	<b>-15%</b>

WE OFFER  
SUSTAINABLE CHOICES

# 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 cooking 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



OVER  
**30%**  
LIGHTER PAPER-  
BOARDS COMPARED  
TO COMPETING  
GRADES

## BREAKDOWN OF SALES

### AMERICAS



## 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



**METSÄ  
FOREST**

## RELIABLE WOOD SUPPLY AND EXCELLENT FOREST SERVICES

- Renewable wood raw material
- Sustainable forest management services

**100%**  
TRACEABLE  
AND CERTIFIED  
OR CONTROLLED  
WOOD



**METSÄ  
TISSUE**

## TISSUE AND COOKING PAPERS OFFER IMPROVED HYGIENE

- Tissue papers improve health, hygiene and well-being
- Cooking 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)

**EMEA**



**74%**

**APAC**



**18%**

1M<sup>3</sup> OF WOOD STOCKS  
ABOUT  
**1 tonne**  
OF CO<sub>2</sub>



**METSÄ  
WOOD**

## INDUSTRIALLY EFFICIENT WOOD PRODUCTS

'Fast, light and green'




- Light loads cut traffic
- Lightness of wood enables lightweight and competitive structures
- Using wood products reduces CO<sub>2</sub> emissions generated in building





# CREATING NEW PRODUCTS FROM WOOD USING RESEARCH NETWORKS

Wood is one of the most versatile raw materials in the world and has a variety of uses, many of which are still under development. In this era of increasing global demand for products made of renewable materials, Metsä Group is engaged in several research and development networks and projects to create new solutions to replace the use of fossil resources.

 More info on resource efficiency pages 38–39	 More info on utilising production side streams pages 22–23	 More info on development work with our customers pages 20–21
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Softwood from Northern forests is a renewable, although scarce resource, that has unique and versatile features. In addition to being suitable for buildings that will store carbon for a long time and as raw material in various recyclable paper and packaging products, wood today generates a wide range of other products that are used by both industries and millions of consumers around the world. Thanks to its versatile features slow-growing softwood has a very high potential for product innovations for various end-uses.

## GLOBAL TRENDS DRIVE R&D&I WORK

Metsä Group's research and development work is driven by global trends, such as climate change and changes in consumer behaviour. Our work focuses on three main categories: circular economy and resource efficiency, renewable raw material as a competitive edge,

and added value products and services. Life cycle thinking is an important aspect in our R&D&I work.

Developing new concepts and finding solutions that help mitigate the challenges our society is facing today, such as resource scarcity, demands perseverance and true competence related to R&D&I. Some 80 Metsä Group employees in four key countries are dedicated to R&D&I work. The Group's investments allocated to R&D&I were EUR 18 (18) million in 2017 and at the moment it holds some 70 patent families. Metsä Group has an important role in six EU-based development projects.

The objectives for enhancing circular economy and resource efficiency at Metsä Group's operations are to generate more out of raw materials, further reduce emissions from production activities and minimise generated waste. Metsä Group has applied several new

technologies to improve environmental performance and resource efficiency, for example, at the bioproduct mill in Äänekoski, Finland. The idea of the bioproduct mill concept is to utilise 100% of the raw material as well as the production side streams by producing bioproducts and supporting their further use in the local industrial ecosystem, or with other partners.

In 2017, the European Union granted multi-annual funding for three new development partnerships, in which Metsä Fibre plays a key role. These ongoing partnerships include new technologies to produce lignin-based products and pulp-based textile fibres, as well as the utilisation of bark as a replacement for coal in the production of heat and electricity. These long-term development projects aim to prove the commercial viability of the new concepts.

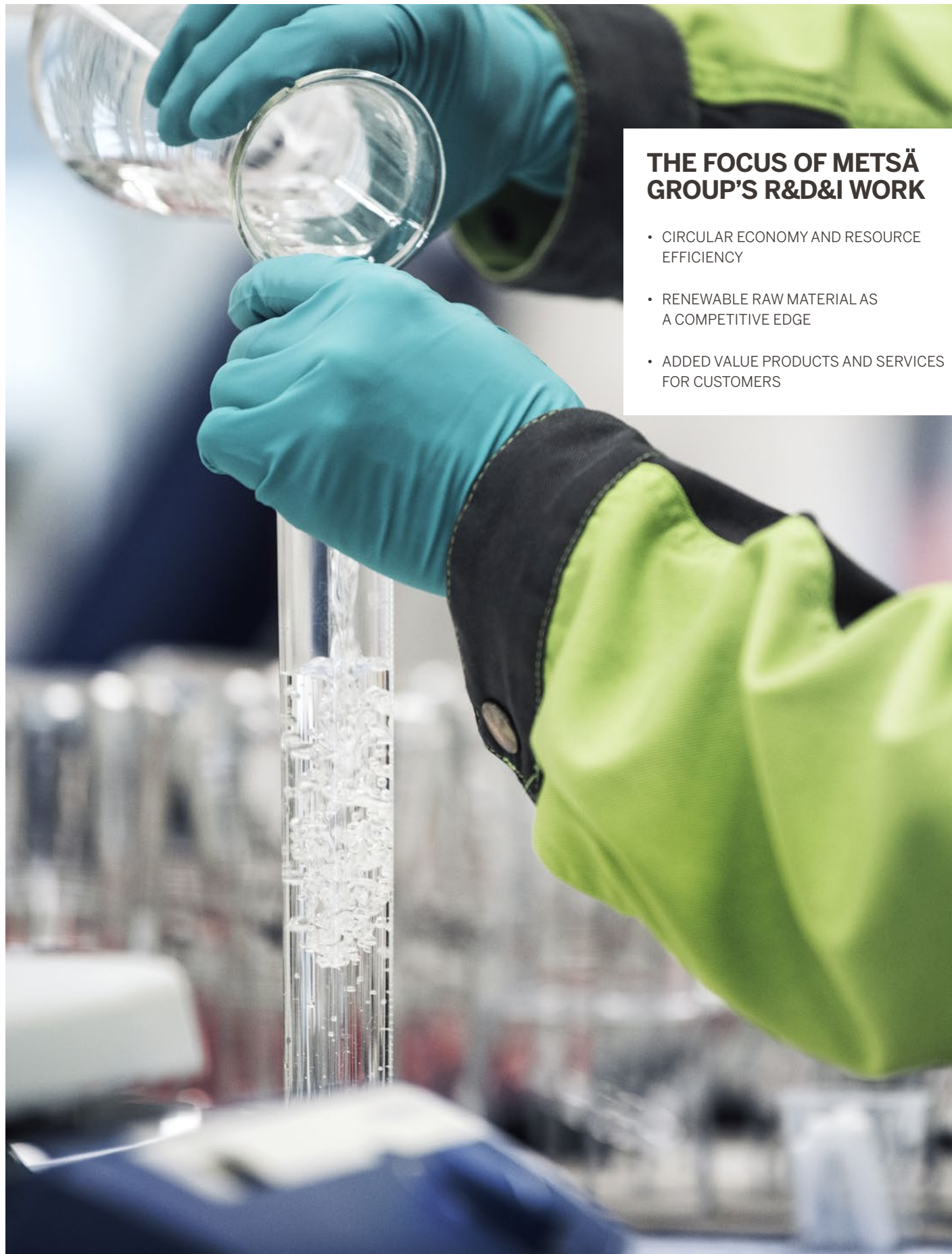


## NEW SOLUTIONS FOR THE AUTOMOTIVE INDUSTRY

Metsä Group is an active player in the Biomotive project aimed at developing new, environmentally friendly biomaterials for example for the automotive industry. Metsä Group's role in the project is to develop a new production method for pulp-based textile fibres, that could be used in clothing as well as in technical textiles, such as seats in vehicles. Biomotive is a four year project supported by Bio-Based Industries, a partnership between the EU and the Bio-based Industries Consortium.








## THE FOCUS OF METSÄ GROUP'S R&D&I WORK


- CIRCULAR ECONOMY AND RESOURCE EFFICIENCY
- RENEWABLE RAW MATERIAL AS A COMPETITIVE EDGE
- ADDED VALUE PRODUCTS AND SERVICES FOR CUSTOMERS



# GOING FORWARD WITH OUR CUSTOMERS

Seeking new ways to add value to our customers is the backbone of everything we do, including our R&D&I work. We approach added value with a wide perspective as our customers have different expectations; for some customers added value might mean easier ways to protect biodiversity or improved product quality and to others more resource-efficient solutions with less environmental impacts.

 More info on R&D&I pages 18–19

 More info on biodiversity pages 32–33

## **METSÄ FOREST** INNOVATION HELPING FOREST OWNERS PROTECT BIODIVERSITY

Since 2016, Metsä Group has offered forest owners a voluntary option to include two high biodiversity stumps per hectare in their harvested forest areas. The idea of the stumps is to offer diverse nesting and living environments to different species, from fungi to birds. Currently 70% of the forest owners choose to have high stumps in their forests.

**Jorma Kukkeenmäki**, Finnish forest owner and steward of an organic beef ranch, chose to have high biodiversity stumps in his forests.

“High stumps are a great example of concrete and easy measures that the forest owner can use to contribute and take part in protecting biodiversity. I believe that when retained consistently in large areas, high stumps will truly improve biodiversity,” states Jorma Kukkeenmäki. In 2017, over 100,000 high stumps were left in forests harvested by Metsä Group.




**METSÄ WOOD**

## METSÄ WOOD INVESTS IN PARTNERSHIPS IN INDUSTRIAL WOOD COMPONENT CONSTRUCTION

The construction industry is undergoing a major transition, with construction moving from building sites to off-site manufacturing. Industrially standardised components increase the quality and efficiency of construction. Metsä Wood has been making long-term efforts to find committed partners for industrial wood construction. The aim is to develop an ecosystem based on Metsä Wood’s Kerto® LVL products.

“We work mainly with Kerto® LVL and I-Joist products which are light, fast and green. We are developing innovative solutions for several applications in the building sector that value ecology and energy-efficiency. Currently we are supplying Kerto® LVL – floor, roof and wall elements to the Central European market,” explains **Marc Cuyvers**, Managing Director, Dupac.

“Partnership with Metsä Wood gives us a unique and excellent position in the market and we are confident about the future. We truly appreciate the support we continuously get from Metsä Wood’s Technical Customer Service Center and sales team,” states Cuyvers.





## CELLULOSE FIBRE REINFORCING PLASTIC

Metsä Group sees great potential in business ecosystems linked to circular bioeconomy. Cooperation with Aqvacom, a Finnish biocomposite and plastic manufacturer, is a great example of the value created through business ecosystems around Metsä Group's operations.

Aqvacom produces a biocomposite by combining softwood pulp with plastic. The composite looks and feels like wood and has a smaller impact on the environment compared to oil-based plastic. Aqvacom's new production facility, started up in 2017, is located at Metsä Fibre's Rauma pulp mill.

"The location is ideal as we can blend the fibre into the plastic directly from Metsä Fibre's pulp production process without drying. This ensures consistent quality and saves energy," says **Jari Haapainen**, CEO, Aqvacom.

In 2017, electronics giant LG chose Aqvacom's biocomposite for its Soundbar SJ 9 loudspeakers. The biocomposite has great acoustic features and about a third of the biocomposite used in the final product is pulp fibre from wood.



METSÄ  
BOARD

## REVOLUTIONISING HERSHEY'S PACKAGING

Hershey's approached Metsä Board to improve its Cookies & Chocolate Bar secondary packaging. They wanted to make the packaging lighter, faster to assemble and more cost-efficient. The package contains fourteen Hershey's chocolate bars with three bars displayed through a window.

"Our in-house design team was able to reduce the packaging parts from five to two pieces, while still maintaining the original appearance. Assembly time was reduced significantly, by 20%, and the total weight of the package was reduced by almost 44%. Lightweight paperboards use less raw materials, water and energy, decrease transport weights and produce less waste after use. In addition, the use of a removable PET sheet makes recycling easier," states **Cyril Drouet**, Design and Innovation Director, Metsä Board.

The material in the package was MetsäBoard Classic FBB 290 g/m<sup>2</sup>. The new and improved packaging was launched for the Chinese market in summer 2017.



METSÄ  
TISSUE

## NEW EMBOSSING PATTERN IS MORE THAN JUST A PRETTY APPEARANCE

Product quality and customer needs are the baseline for Metsä Tissue's product development. In addition to this, we are also very strict with resources; we believe that less is more. These were the drivers for Metsä Tissue's development work on a new embossing pattern for Katrin hand towels.

The new embossing improves the relative absorption capacity and absorption speed of the tissue product and at the same time offers a better hand-feel. Thanks to the upgraded absorption properties you need less paper per hand drying, which means reduced consumption of fibres, energy, glue and chemicals.

"The new embossing is a result of intensive cooperation between the Away-From-Home product category development and marketing teams, Metsä Tissue's Competence Center and the mill in Raubach, Germany, as well as our mill in Mänttä, Finland. Our goal was to achieve more pleasant and more resource-efficient hand drying, and I think we nailed it," says **Valtteri Schildt**, Product Development Manager, Away-From-Home products, Metsä Tissue.



# CREATING VALUE FROM WASTE

Waste management at Metsä Group has transformed into converting production side streams into value-adding products.

- More info on resource efficiency pages 38–39
- More info on renewable energy pages 40–41
- More info on Soilfood online [www.soilfood.fi](http://www.soilfood.fi)

The forest industry’s processes have for long been resource-efficient, but now the utilisation of production side streams is particularly high. In 2017, 92% of Metsä Group’s production side streams were utilised as material or renewable energy. Production side streams make up approximately 5% of our entire production. Our side streams, such as ash, sludge and lime by-products, are mainly used for fertilisers, land construction, landscaping and chemical industry applications.

## AIMING TO BETTER UTILISE THE LESS USED SIDE STREAMS

Metsä Group is actively developing its production and new products to be able to turn the currently less used side streams into valuable

products. In line with the idea of circular economy, our aim is to maintain the value of the raw materials as high as possible through our processes to benefit its further use. By operating even more resource-efficiently we will be able to increase the quality of the less used side streams and decrease even further the amount of generated waste and related environmental impacts.

As utilised side streams are not waste but raw material for value-added products, their quality is an important factor. Side streams are included in our quality control system and quality management protocol.

## VALUABLE CROSS-INDUSTRY NETWORKS

Being able to take advantage of the full potential of production side streams requires

cross-industry cooperation. The value networks developing around production facilities offer efficient growth platforms for innovative cooperation that enable preserving the value of the used raw materials for as long as possible. Metsä Group’s new bioproduct mill in Äänekoski, Finland, is a great example of a network facilitating circular economy through value-preserving use of resources.



## DE-INKING SLUDGE TURNS INTO ENERGY IN MÄNTTÄ

In 2017, Metsä Tissue’s mill in Mänttä, Finland, took a step forward in improving the utilisation of its side product, compressed de-inking sludge. Better utilisation is a result of an improvement project at the mill’s de-inking plant.

De-inking sludge is generated in the purification process for the recycled paper used in tissue production. The sludge is then effectively dried to a compressed form that, thanks to the development project, can now be used in energy production for the mill’s own operations as well as for the needs of the local neighborhood.

“Using compressed de-inking sludge as fuel decreases the power plant’s sulphur emissions and the need for using other fuels as well as the environmental impacts of related logistics,” says **Sanna Pulkkinen**, Development Manager, Sustainability, Metsä Group.





**OVER  
90%  
OF PRODUCTION  
SIDE STREAMS  
ARE UTILISED**

**SIDE STREAMS**  
(~5% OF THE PRODUCTION)

**UTILISED SIDE STREAMS**  
WITH GROWING MARKET POTENTIAL  
92% of side streams  
(675,000 tonnes)



- 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**  
UTILISATION UNDER DEVELOPMENT

8% of side streams  
(62,000 tonnes)



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



## FROM WASTE TO AGRICULTURAL VALUE PRODUCTS

Cooperation between Soilfood and Metsä Fibre is circular economy at its best. Soilfood, a Finnish supplier of recycled fertilisers and soil improvement products, is turning the side streams and by-products from Metsä Fibre's pulp mills in Joutseno, Äänekoski and Kemi, Finland, into something valuable; high-quality agricultural products that help to curb climate change and avoid eutrophication in the watercourses.

Substituting fossil-based virgin nutrients and soil improvement materials with wood-based recycled products helps to curb climate change by avoiding fossil emissions and reducing the leaching of nutrients into watercourses. Improving soil with recycled materials is a cost-effective 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 Group



## 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 ISO 22000 Food Safety Management System and ISO 14001 Environmental 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."

**KATJA TUOMOLA**, Manager, Product Safety, 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. The paperboards are also biodegradable, or they can be used for energy production.

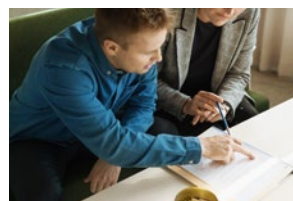
PRODUCT  
TESTING

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.

NO COMPROMISES  
ON PRODUCT  
SAFETY

Metsä Group's product safety work is steered by a product safety network that follows global trends and regulatory development in the long-term.

All Metsä Group's products are manufactured without fluorochemicals and we don't accept any genetically modified raw materials or nanotechnology-based substances in our products. We ensure that all chemicals used in Metsä Group's products are safe for consumers which requires close cooperation with our chemical suppliers.

## Same certification as in the food industry

Product safety is particularly important for materials used in contact with food, pharmaceuticals or products used by children. This leads to strict product safety requirements for Metsä Board and Metsä Tissue's products in particular. All Metsä Board and Metsä Fibre mills, as well as Metsä Tissue mills producing cooking and baking paper, have either ISO 22000 or BRC Food Safety Certificates. Thus they operate according to the same food safety standards as the food industry. In 2017, Metsä Board's mill in Simpele was certified according to the FSSC 22000 food safety standard.

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

We consider the use of pure fresh fibres as the safest choice for packing sensitive products, such as food.

Different requirements for  
different products

Different product categories naturally have a different focus when it comes to product safety. As Metsä Wood's products are used in the construction industry, the indoor air quality is a very important product safety factor. All Metsä Wood's products are CE-marked demonstrating that they meet the required safety, health and environmental protection criteria. All our engineered wood products fall well below the Class E1 requirement for formaldehyde emissions into indoor air.



WE BRING  
THE FOREST TO YOU

# 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 2017
>80%	88%

### COMMENT

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

## LOGISTICS

Ensure sustainability of the main logistics flows:

TARGET	STATUS 2017
100%	At the end of 2017, all 481 main logistics partners included in the sustainability questionnaire fulfilled Metsä Group's sustainability criteria.

### COMMENT

Achieved. We continue integrating sustainability more firmly into our logistics and purchasing management and processes.

## 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

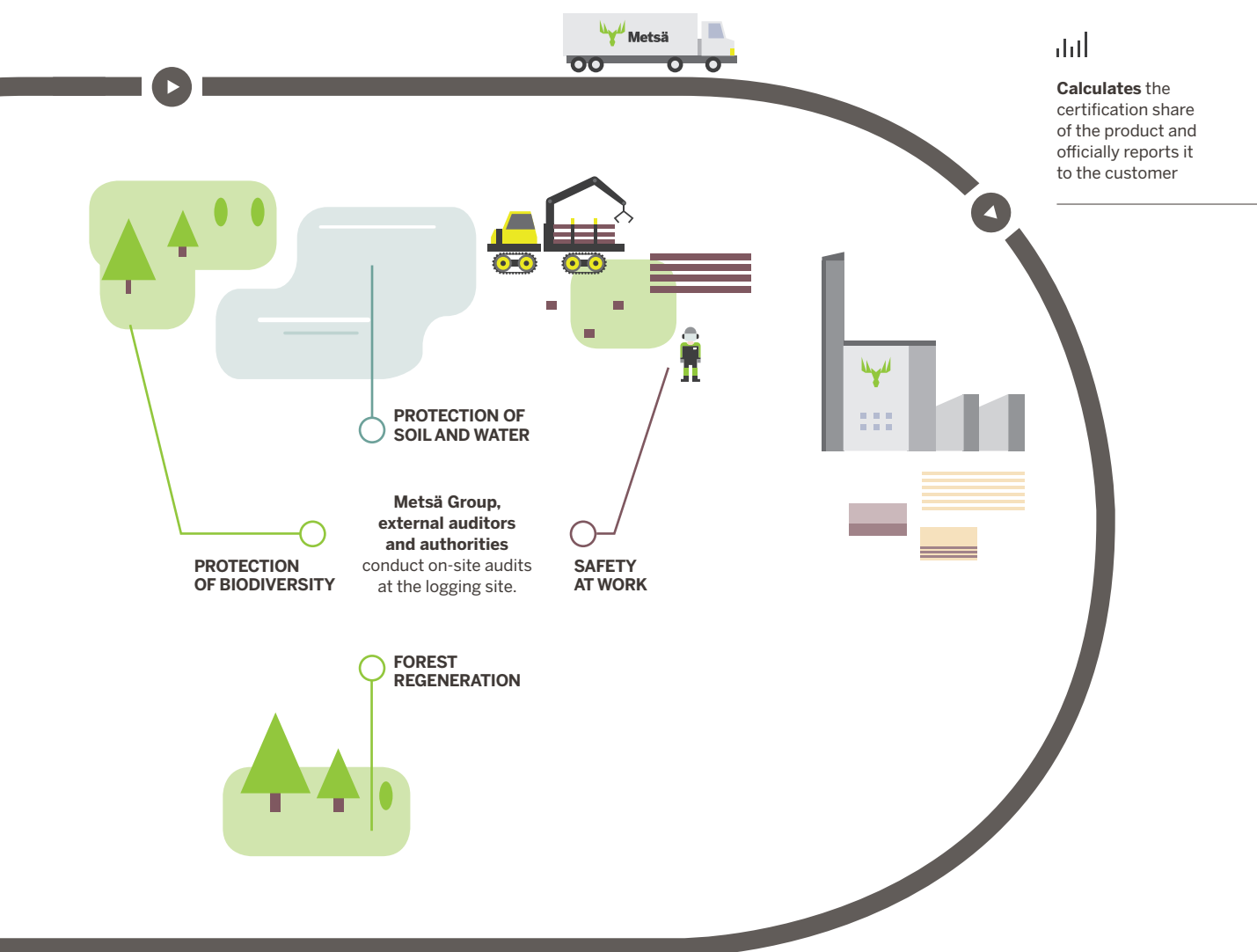


**Calculates the share** of certified wood purchased and sells an equivalent amount as certified

## 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.”



**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.

RUNE ABRAHAMSEN, CEO, MOELVEN MILTRE AS





# FORESTS – HABITATS, LIVELIHOODS AND MORE

Wood procurement volumes are increasing and in Finland forests grow more than ever. As well as giving us wood as a raw material the forests provide recreation, wild berries, mushrooms, game and other ecosystem services that have a positive influence, for example, on the climate.



More info on forest certification  
pages 30–31



More info on biodiversity  
pages 32–33



More info online on our digital forest services  
[www.metsaforest.com](http://www.metsaforest.com)



More info on NFI online  
[www.luke.fi](http://www.luke.fi)



More info on our long-term forest lease areas  
[www.metsagroup.com/csr](http://www.metsagroup.com/csr)

Metsäliitto Cooperative, the parent company of Metsä Group, is owned by around 104,000 forest owners.

We provide the owner-members and other forest owners tailored services for wood trade, forest assets, forestry and nature management.

In Finland, Metsä Forest is the market leader in wood supply delivering round wood and energy wood to Metsä Group's other business units and to other customers. Most of the purchased wood originates from Finland, but wood is procured also from Sweden, North-West Russia and the Baltic countries. Monitoring the logging site quality, as well as nature management in forestry operations, is a regular practice in our whole wood supply area.

Started in 2017, Metsä Group's bioproduct mill in Äänekoski will increase the use of softwood in Finland by about four million m<sup>3</sup>. In total annual harvesting volumes will increase by 6–7 million m<sup>3</sup> as the harvesting will also yield sawmill logs and energy wood. The total amount of the wood procured by Metsä Group in 2017 was 32.0 million m<sup>3</sup> of which 23.1 million m<sup>3</sup> was used in its own production.

many species, from fungi and insects to birds and other groups of species.

Metsä Group is a forerunner in the modernisation of forest data gathering and forest planning. More accurate data enables minimising environmental impacts and improves the possibilities for nature management.

## TAKING CARE OF THE FUTURE GROWTH OF FORESTS

Metsä Group's forestry services help to ensure the future growth of the forests, including 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.

For our long-term forest lease areas in Podporozhye, Russia, Metsä Group has introduced sustainable forestry practices aimed at creating better growth potential. Development of forest management methods has been done in cooperation with a research institute and the Russian authorities and the results have

been shared with interested parties. In 2017, Greenpeace Russia visited Podporozhye to see the new practices first hand and to continue the constructive dialogue covering forest protection issues.

## FORESTS AS AN ECOSYSTEM SERVICE

Carbon absorption and oxygen production are essential ecosystem services provided by forests all around the world. However, in 2017, there has been a lot of discussion relating to the increasing wood usage plans in Finland, with researchers and NGOs expressing their concerns related to biodiversity and climate change. At the same time the EU has nearly finalised its legislation to integrate greenhouse gas emissions and removals from land use, land use-change and forestry (LULUCF) into the 2030 climate and energy framework. This process could result in restrictions or added costs for the use of forests in Finland even though the growing stock in forests is increasing.

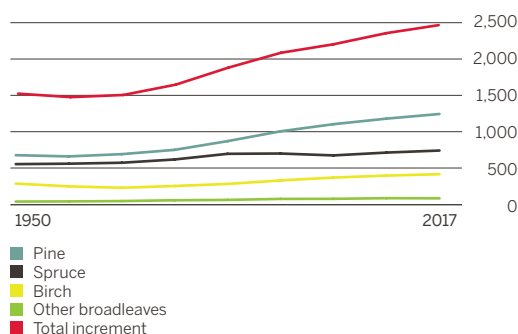
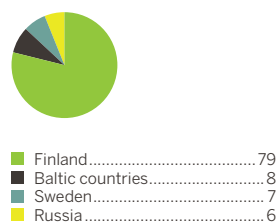
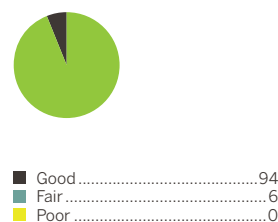
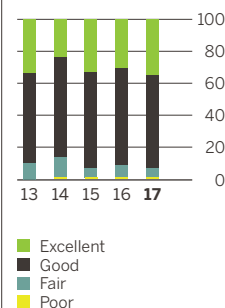
## HISTORICAL DATA AND MODERN APPROACHES

The results of the 12th Finnish National Forest Inventory (NFI) were published in 2017, showing that not only has the amount of growing stock multiplied by 1.7 in total, but the share of tree species has remained the same since the 1920s. This is critical from a biodiversity perspective as natural tree species create the basis for habitats and wildlife. There are also encouraging findings for deadwood as the volume of large-diameter deadwood has risen in Southern Finland. Deadwood is an essential resource for



## GIANT LEAPS IN FOREST PLANNING

In 2017, Metsä Group tested gathering forest inventory data from forest estates by using drones or remote-controlled quadcopters. The new methods under development can revolutionise forest planning and will provide more detailed information about forests than any other service. They will provide detailed information about individual trees and can even reveal the occurrence of pests. The new methods will lower the costs of forest planning in the long run and the information concerning forest properties will be more accurate. In the future, forest owners may have the possibility to visit their forest 'virtually' regardless of the distance, and look at how different forestry operations would affect their forest.

**DEVELOPMENT OF GROWING STOCK IN FINLAND**  
(1950–2017) MILLION M<sup>3</sup>**WOOD PROCUREMENT**  
BY COUNTRY IN 2017, %**LOGGING SITE AUDITS**  
RUSSIA AND BALTICS 2017, %**NATURE MANAGEMENT**  
**IN HARVESTING**  
METSÄ GROUP IN FINLAND,  
%**GROWTH OF  
FINNISH FORESTS  
HAS DOUBLED**

According to the latest results of the National Forest Inventory, the annual increase of growing stock was 110 million m<sup>3</sup>. The growth has doubled compared to the growth rate in the 1970s. Two thirds of the increment is explained by forest management and one third by favourable climate factors for forest growth.

“When the trees grow, they bind carbon. However, it is not the same thing as a carbon sink. Only when the carbon stock of forests grows will the forests act as carbon sinks. This requires that the growth binds more carbon than is removed in wood harvests and released in wood decay and soil respiration. If these factors are in balance, the forest carbon stock remains constant and the sink is zero. Currently, Finnish forests are a net carbon sink,” comments **Sampo Soimakallio**, Senior Scientist at the Finnish Environment Institute.

For more info, see the graph in the upper left corner of the page.



# CERTIFICATION ADVANCES SUSTAINABILITY

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 effective and feasible.



More info on forest use  
pages 28–29



More info on biodiversity  
pages 32–33



More info on PEFC online  
[www.pefc.org](http://www.pefc.org)



More info on FSC online  
[www.fsc.org](http://www.fsc.org)

Forest certification sets a wide range of sustainability requirements, varying 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 2017, 88 (86) % of the wood procured by Metsä Group was PEFC™ (Programme for the Endorsement of Forest Certification) and/or FSC® (Forest Stewardship Council®; Licence Code FSC-C014476) certified.

## NEW APPROACHES NEEDED

2017 has been reported to be the first year when the global area of certified forests declined compared to the previous year (UNECE, The United Nations Economic Commission for Europe). Some have considered this as a first indication that the global certified area has peaked. In 2017, the global share of certified forests was 10.6 (10.7) %. At the same time, PEFC and FSC reported a recorded global combined total area of 495 million hectares, including nearly 69 million hectares of overlap between the certification systems. To increase the global area of certified forests, new approaches are needed, for example enabling 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 over 15 years. The share of PEFC certified forests is currently 80 (75) % equalling 17.7 (16.5) million hectares. FSC certification also continues to increase gradually, covering 7 (6) % or 1.5 (1.2) million hectares of Finnish 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 2017,

5,780 forest owners had already 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 160,000 (150,000) hectares.

Metsä Group's leased forest areas in Russia have been 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 the stakeholder expectation and make the systems more useable. The major changes in the FSC system have gradually started to take effect. As the changes are so comprehensive, the implementation schedules of some of the new requirements needed to be extended. FSC's risk assessment working groups are globally trying to find consensus between different stakeholders. In Metsä Group's wood procurement area, national risk assessment processes were finalised in the Baltic countries while the work is still ongoing in Finland and Sweden. In Russia, updated risk assessment is in finalisation phase. In 2017, Metsä Group passed third-party audits of the updated FSC Controlled Wood and Chain of Custody standards.

## DEGREE OF FOREST CERTIFICATION GLOBALLY

### NORTH AMERICA



34%

### SOUTH AMERICA



2%

88%

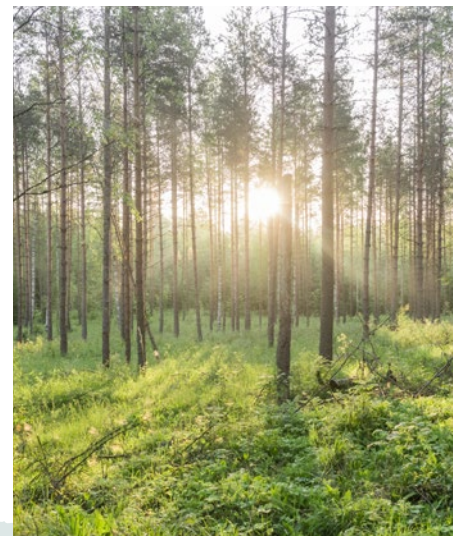
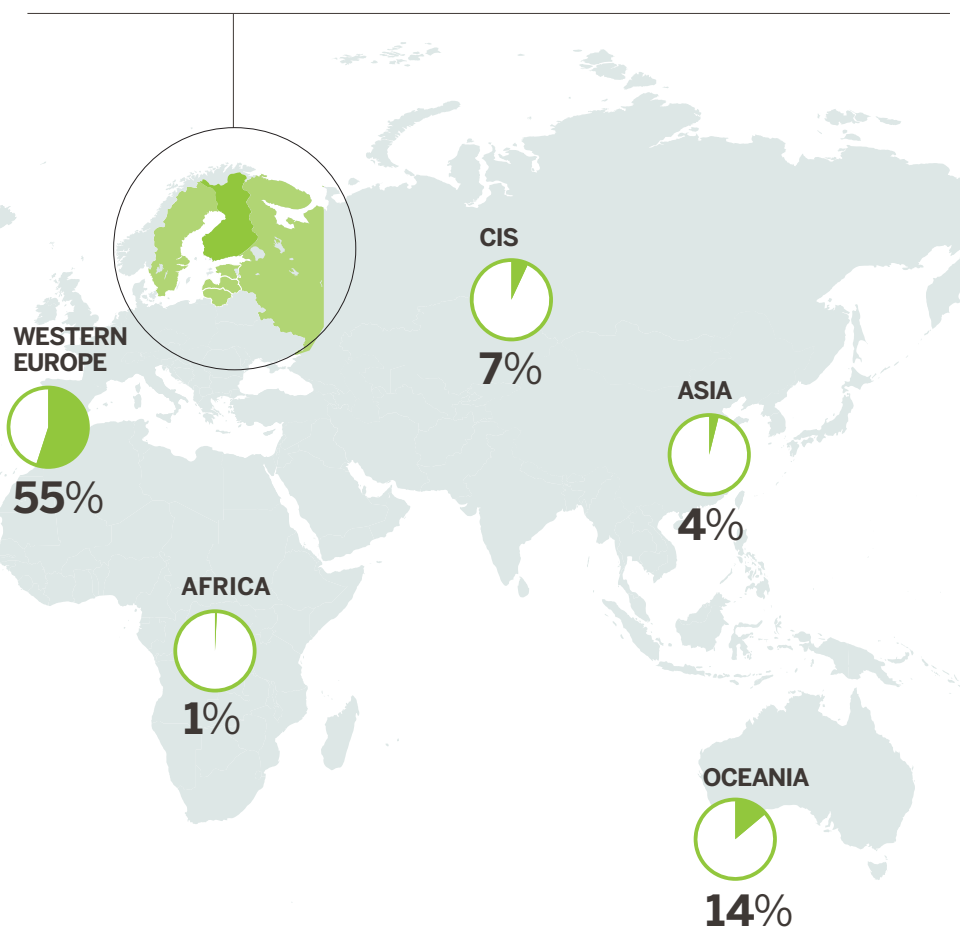
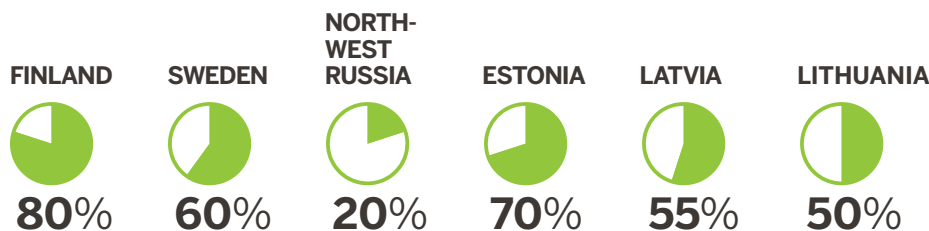
OF THE WOOD  
PROCURED BY  
METSÄ GROUP  
WAS CERTIFIED

PEFC is updating the international standards, including the Forest Management and Chain of Custody requirements. The revision process began in 2016 and was scheduled to finish in 2017, but was extended to 2018.

Metsä Group supports the development of forest certification and actively contributes to different working groups and consultations. Both FSC and PEFC held their General Assemblies in 2017 and Metsä Group participated at both meetings. The PEFC International General Assembly re-elected Riikka Joukio, SVP, Sustainability and Corporate Affairs at Metsä Group, to the PEFC Board of Directors until 2020.



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



## FSC TARGETS SMALLHOLDERS

The FSC General Assembly approved unanimously Metsä Group's proposal regarding the prioritisation of smallholder and community certification on their agenda. As described in FSC's global strategic plan, finding new ways to engage family forest owners and community forests are a top priority for FSC.

"This is an important step for advancing forest certification. Globally there are 550 million hectares of forest owned by individuals and communities and only 7.4 million hectares of them are FSC certified. There is therefore great potential to expand sustainable forest management to smallholder forests," states **Jussi Ripatti**, Environmental Director, Metsä Group.



## PEFC MEETING IN FINLAND

The 2017 PEFC Week was held for the first time in Finland. The event covered PEFC's future strategy, the standards revision process, international updates, the General Assembly and the PEFC Stakeholder Dialogue. During the field visit, the international participants got a first-hand introduction to family-owned and small-scale forestry in Finland, along with the management of the PEFC group certification. The participants also visited Metsä Group's new bioproduct mill in Äänekoski, Finland.

"Finland has a long-standing history in sustainable forest management, and we are proud that Finnish forest owners have opted for PEFC as their forest certification of choice to demonstrate their responsible practices," states **Ben Gunneberg**, CEO, PEFC International.








# BIODIVERSITY IN FOCUS

Biodiversity of forests is best maintained by combining nature management and protection of forests 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 28–29	 More info on forest certification pages 30–31	 Read more about protecting biodiversity with our customers page 20
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Nature management in forestry includes several measures for maintaining and increasing nature values in forests. It is a part of every measure in forestry, including tree retention, leaving a mixture of broadleaved trees in the thinning of young stand, buffer zones to safeguard cleanliness of watercourses and protection of key habitats.

There are also 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 providing them habitats in Finnish nature. Despite the wet summer, Metsä Group managed to conduct controlled burnings as an ongoing annual practice.

## UPGRADING ENVIRONMENTAL PERFORMANCE

Due to varying weather conditions, the challenge for wood supply in Finland is that many forest sites require frozen ground for harvesting during winter time. To tackle this challenge

the Finnish forest sector has started using harvestability maps to forecast the load-bearing capacity of forest ground. The maps help to identify which sites can be harvested with thawed ground and which need frozen ground. By the end of 2017, harvestability maps covered over 4 million hectares equalling about 15% of the forests in Finland.

We work actively to improve environmental performance of forestry operations. Measures include thorough follow-up and analysis, as well as hands-on development. Vehicle track solutions that are suitable for soft soils and minimise soil damage have been developed together with the equipment manufacturers for several years. In recent years new practices have increased the amount of deadwood.

The Forest Environment Programme, launched in 2016 by the Finnish Forest Industry Federation, continues with R&D projects aimed at identifying shortages of biodiversity in present forestry operations and to make improvements based on the findings. The programme focuses on increasing the amount of deadwood in commercial forests and developing sustainable forestry activities on peatlands.

## VOLUNTARY PROTECTION

The share of strictly protected areas accounts for 12% of Finland's total forest area, which is the highest share in Europe. Almost 90% of the protection areas are owned by the state.

The Forest Biodiversity Programme, METSO, introduced a voluntary-based approach to forest protection in 2008 and gained wide support. The programme introduced a scheme, where authorities and forest owners agree on voluntary conservation, fully compensated by the state. Its financing was temporarily decreased, but after appeals from NGOs, forest industry companies and other stakeholders, the funding was increased in 2017.

Most of the endangered species in our wood procurement area are habitat-specific and occur in areas with special status: e.g. areas withdrawn from commercial use or defined as key habitats. In Finland, the habitats of rare species are indicated with GIS maps. This enables taking them into account in forest management as required by local legislation. The most common endangered species in Finland are fungi and insects.



## MORE DEADWOOD FOR BIODIVERSITY

In 2016, Metsä Group started a voluntary practice to leave two high biodiversity stumps per hectare in both thinning and regeneration loggings. Currently 70% 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. In 2017, Metsä Group continued to contribute to the amount of deadwood by leaving more standing deadwood in logging sites. This amount doubles the tree retention and deadwood requirements of the existing forest certification standard.



Photo:Emmi Salonen



## BIODIVERSITY AND RECREATION IN KEMI

The city of Kemi in Finland and Metsä Group cooperated to develop the outdoor recreation area of Kiikeli. The area, owned by Metsä Group, is an outdoor activity and camping site for local people. Forestry operations aiming at maintaining biodiversity and improving recreational values were conducted by Metsä Group. Together with local NGOs and other volunteers, 500 nesting boxes for birds were built, a bridge renovated and guide signs added along the paths. The main investment in the project was building a nature observation tower, equipped with solar-powered technical devices. The project received financial support from the EU.



## TEMPORARY BRIDGES FOR HARVESTERS


Crossing forest ditches is inevitable in forestry operations. Usually harvester drivers temporarily fill the ditch with thin stemwood to cross it without damaging the ditch. Metsä Group is planning to move forward and increase the use of temporary bridges, thus minimising damage to ditches and brooks, as well as to the water quality. Temporary bridges are about 5 meters long, made of wood and used under both tyres. Bridges were used in a harvesting demonstration organised by Metsä Group, where different track solutions minimising soil effects were tested in peatland forests.






# SUSTAINABILITY BEYOND OUR OWN OPERATIONS

We acknowledge that in addition to Metsä Group’s own operations, our suppliers’ operations also have wide impacts on people and the environment. We are committed to acting responsibly and expect the same from our partners operating within our supply chain.

 More info on our sustainability principles pages 12–13

 More info about our policies and principles online [www.metsagroup.com/csr](http://www.metsagroup.com/csr)

 We expect all our suppliers and service providers to commit to Metsä Group’s Code of Conduct for Suppliers, which provides a common ethical guidance for our suppliers. The Code was included in 921 (515) new supplier contracts made during 2017. 82 (77) % of our total spend on purchases was covered by our Code of Conduct for Suppliers by the end of 2017.

## HARMONISED SUPPLIER INFORMATION ENABLES MORE EFFICIENT MONITORING

Metsä Group’s purchasing operations are managed by a cross-functional team serving all business areas. Group Purchasing is responsible

for all Metsä Group’s purchases excluding wood procurement, which is the core business of Metsä Forest. In 2017, Metsä Group spent nearly EUR 3 billion on external purchases. We source from over 20,000 suppliers of which approximately 160 have been defined as our key suppliers. These suppliers made up 40% of our total spend on external purchases in 2017. We aim to use local suppliers if possible. In 2017, 85 (85) % of our purchases came from countries where we have production sites.

In 2017, the focus for promoting sustainable practices in purchasing operations was on developing a centralised management system and practices for supplier monitoring. Implementing a supplier management system will

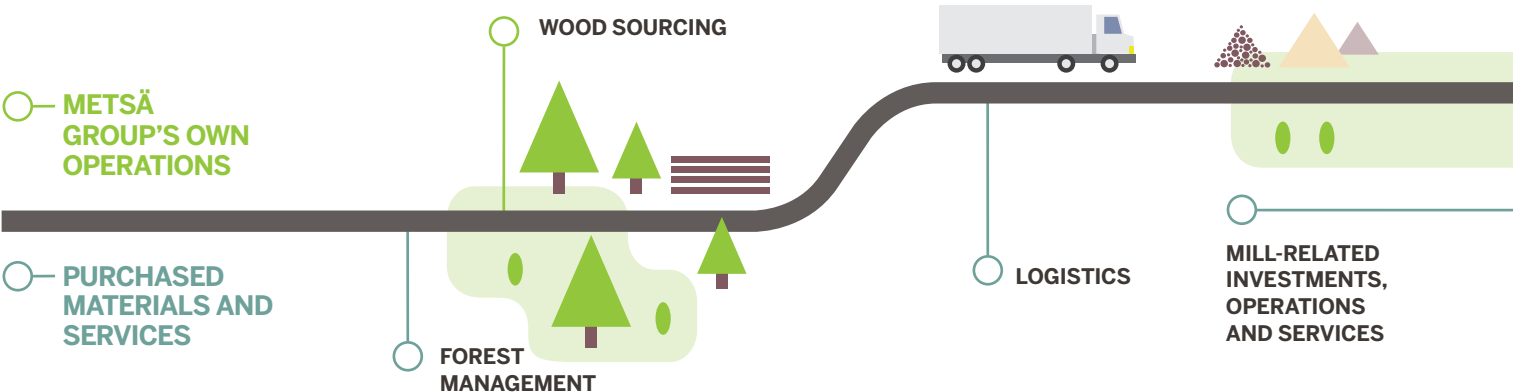
integrate sustainability more firmly into purchasing management and processes as well as create better access to information. In 2017, we also developed further a tool that screens our vendors against strict non-compliances and other sustainability criteria set out in our Code of Conduct for Suppliers.

In order to ensure the quality and sustainability of our purchases, we also conduct supplier audits regularly. The number of supplier audits including sustainability criteria decreased to normal level of 64 (88) in 2017. We also carried out a separate supplier survey including sustainability topics with our production related service providers. To audit the maturity of service suppliers’ HSEQ processes, Metsä Group has joined HSEQ Cluster, an industry network that conducts joint supplier audits in Finland. In 2017, 11 third-party audits were conducted with Metsä Group’s suppliers through this evaluation system.

## EXTENSIVE LOGISTICS NETWORK

Logistics is a crucial part of our supply chain and our aim is to ensure that all our logistics service providers operate according to our sustainability criteria. Metsä Group’s products are transported to approximately 120 countries by road, rail and sea. Most of our main raw material, wood, is procured from Finland. We have an extensive network of over 1,000 logistics service providers and of those approximately 500 are responsible for operating our main logistics flows. A diverse and extensive logistics network helps us ensure the reliability and efficiency of our transportations.

## SUPPLY CHAIN





### COMPOSITION OF PURCHASES IN 2017 % OF MATERIAL AND SERVICE PURCHASES



Wood	25
In-direct materials & services	22
Pulp and recovered paper	16
Logistics	15
Other (incl. packaging)	10
Chemicals, pigments, binders and coatings	7
Energy	5

### PURCHASES BY COUNTRY IN 2017<sup>1)</sup> %



Finland	63
Other EU countries	16
Sweden	11
Germany	7
Outside Europe	3
Other European countries	1

<sup>1)</sup> Wood procurement excluded

### BREAKDOWN OF LOGISTICS MODES\* %



Road	49
Sea	31
Port and warehouse	11
Rail	9

\* Share of total logistics costs



## MORE SUSTAINABLE SERVICES POWERED BY GOOD PARTNERSHIPS



Partnerships play a key role in creating more effective and sustainable services. VR Transpoint's logistics solution for Metsä Group's new bioproduct mill in Äänekoski, Finland, is a great example of an efficient logistics solution powered by cooperation.

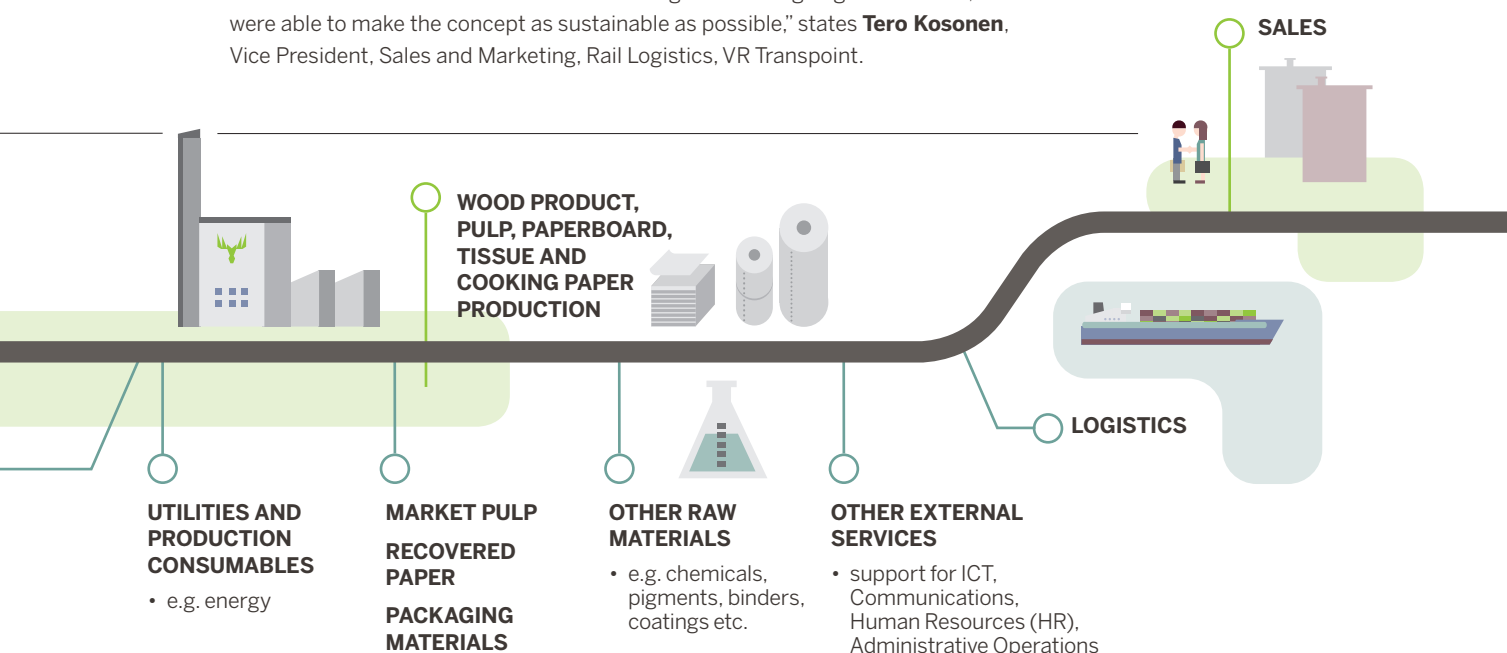
"The pulp transportation from the mill to the Vuosaari port, Helsinki, is operated with new energy efficient electric locomotives with built-in diesel engines which reduce the need for separate diesel-locomotives at the rail yard. The rest of the route is electrified which enables electric traction for the whole route. VR Transpoint uses only electricity produced by hydro-power. By using energy efficient electric locomotives and tailor-made wagons enabling larger train sizes, we were able to make the concept as sustainable as possible," states **Tero Kosonen**, Vice President, Sales and Marketing, Rail Logistics, VR Transpoint.

## ENSURING SUSTAINABILITY IN LOGISTICS

In 2015, we set a target to ensure the sustainability of our main logistics flows by the end of 2017. As a part of pursuing this target, we conducted a large-scale self-assessment sustainability questionnaire with our logistics service providers during 2016–2017. The questionnaire was based on the principles set out in our Code of Conduct for Suppliers and other relevant sustainability criteria. It was tailored for logistics companies operating with different transportation modes, such as maritime and land transportation as well as ports and terminals.

The questionnaire answers were evaluated against our sustainability criteria and suppliers were given feedback on their results. In case of deviations, corrective actions were planned to make sure the sustainability criteria were met. By the end of 2017, 481 main logistics service providers, equaling 90% of our total annual spend on logistics services, had been evaluated against our sustainability criteria related to sustainability management, business ethics, social responsibility, health & safety, risk management and environmental responsibility.

Most of the findings were related to missing or incomplete practices on preventing human trafficking, forced and child labour as well as accident reporting and analysis. All issues identified through the survey were addressed with the relevant suppliers. All evaluated suppliers fulfilled the required criteria by the end of 2017.





WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT

# WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT

## RESOURCE EFFICIENCY AND ENVIRONMENTAL IMPACTS



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

### CLIMATE

Fossil CO<sub>2</sub> emissions per product tonne 2009–2020:

TARGET	PERFORMANCE 2017
-30%	-38%

#### COMMENT

Achieved. Investments in modern technology and renewable energy have steadily reduced fossil CO<sub>2</sub> emissions.

### ENERGY

Energy efficiency improvement 2009–2020:

TARGET	PERFORMANCE 2017
10%	7%

#### COMMENT

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

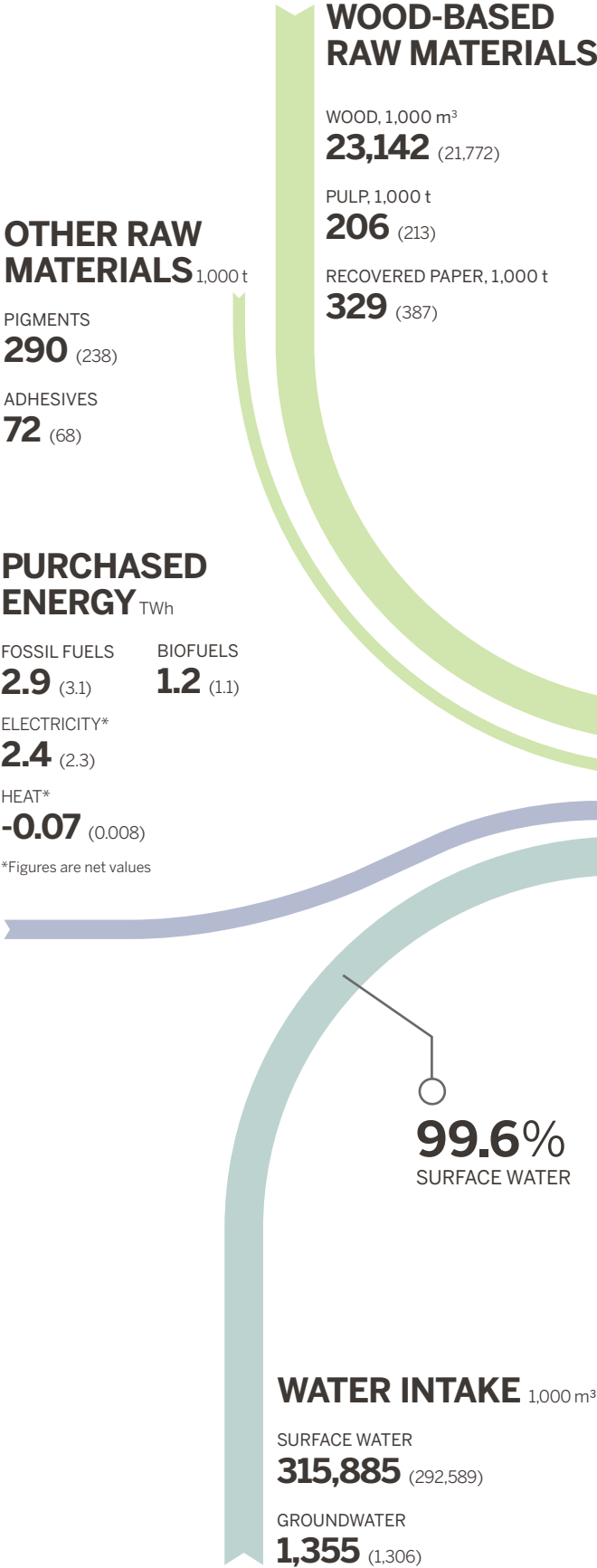
### RESOURCE EFFICIENCY

Process water use per product tonne 2010–2020:

TARGET	PERFORMANCE 2017
-17%	-15%

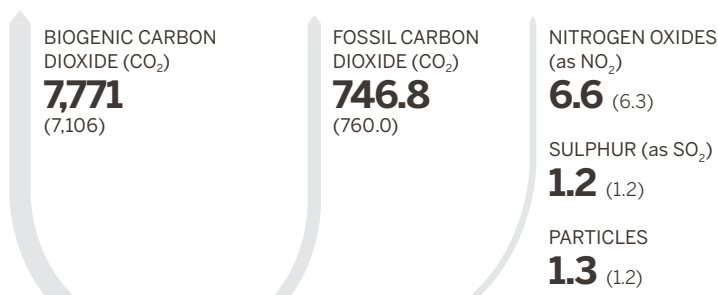
#### COMMENT

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



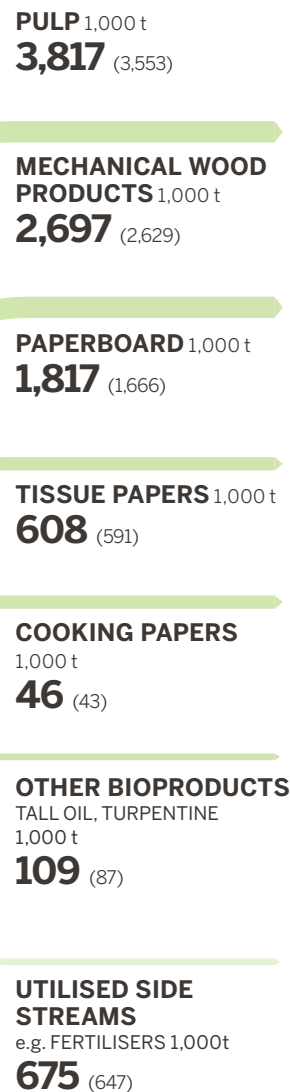
The strength of the line is only an indication of the actual size of each material stream and does not represent accurately the actual size of the stream.

## EMISSIONS TO AIR <sup>1,000 t</sup>



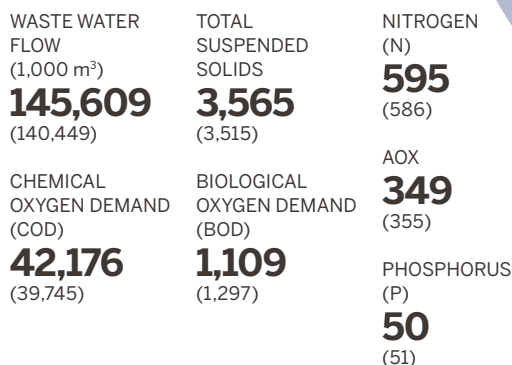
**92%**  
OF PRODUCTION  
SIDE STREAMS  
UTILISED

## PRODUCTS



**21 (19)**  
TWh  
OF RENEWABLE  
ENERGY USED IN  
OWN PRODUCTION

## DISCHARGES TO WATER <sup>t</sup>



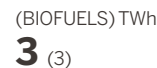
## COOLING WATER

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.

## WASTE



## RENEWABLE ENERGY





# MAKING MORE FROM LESS

The challenge of resource scarcity must be taken seriously. As the global population is estimated to grow to 10 billion people by the year 2050 and the average standard of living continues to rise, we need to do more from less. Utilising wood and other raw materials as well using energy and water efficiently is a fundamental requirement for Metsä Group. As we aim to waste nothing, every stream in production is important.



More info on renewable energy  
pages 40–41



More info on utilising production side streams  
pages 22–23



More info on water use  
page 43

Metsä Group's renewable raw material, wood, comes from sustainably managed Northern forests. Even though our wood comes from forests where 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, 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 better yields and results in cost-efficiency.

## OPTIMISING THE USE OF UTILITIES

In addition to making most of our main raw material, wood, we also aim to optimise the use of utilities and other resources needed for the production, such as water and energy. 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.

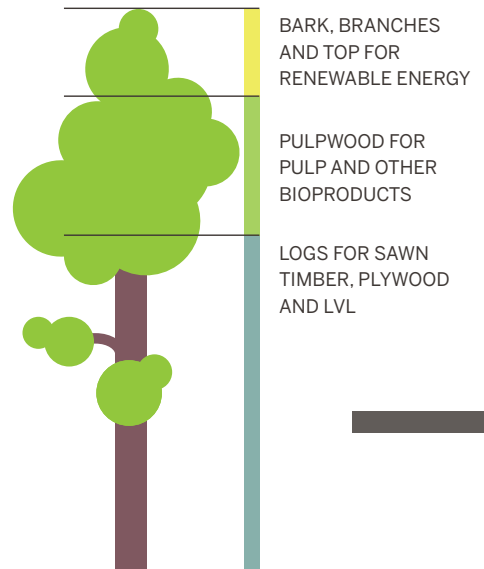
Water is an important resource for Metsä Group's production processes. Despite our intensive water intake, our operations do not limit the water use of other parties as we oper-

ate in areas with vast water resources. We will continue to invest in improving the efficiency of our process water usage even further.

Our commitment to improving energy efficiency and further increasing the share of the renewables is a long-term one. Since 2009 our energy efficiency has improved by 7 (6) %, 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 result of cooperation is usually more than a sum of its parts and this is also true with resource-efficiency. Creating industrial ecosystems around production facilities enables the creation of more added value products from the raw material. It also improves the utilisation of production side streams as often one company's waste is a valuable raw material for another. The benefits of ecosystems also often cover the use of energy and water consumption. Metsä Group's new bioproduct mill which started up in autumn 2017 in Äänekoski, Finland, is a great example of an efficient industrial ecosystem promoting resource efficiency and circular economy as well as generating new value-adding bioproducts.



## SULPHURIC ACID FROM ODOROUS GASES

Metsä Group is aiming to use 100% of the side streams generated at its new bioproduct mill in Äänekoski, Finland. One great example of this resource-wise thinking is the process of producing sulphuric acid out of odorous gases, a side stream of pulp production. Using side streams generated by our own processes decreases the need for sourcing sulphuric acid. The closed chemical circulation lowers environmental impact to air and water. Producing and using the sulphuric acid in the same place also decreases the emissions from logistics as there is no need for transportation.

**THE WOOD USED FOR THE HIGHEST VALUE PRODUCTS**

**Core Products:**

- SAWN TIMBER AND WOOD PRODUCTS
- PULP
- LIGNIN
- TALL OIL, TURPENTINE
- ASH, LIME, DREG
- SULPHURIC ACID
- PRODUCT GAS\*
- BIOGAS
- HEAT
- ELECTRICITY

**Upgrade Products:**

- PAPER-BOARD
- TISSUE PAPER
- COOKING PAPER
- PAPER, speciality products
- Pulp-based textiles (in R&D)
- Bio-composites
- Musical instruments, electronics, car industry
- Glues, filler materials, chemicals
- Perfumes, solvents, paints, tyres, pharmaceuticals
- AGRICULTURE, silviculture, gardening
- Fertilizers, soil improvement
- CHEMICAL industry
- NEW bioproducts (in R&D)

**End-use Products:**

- Buildings, windows, doors, furniture, mouldings, panels, packaging
- Consumer goods, retail-ready, food service packaging
- Households, industry, hotels, healthcare
- Households, professional kitchens
- Media, publishing, construction, food industry
- Textile industry

**Legend:**

- End-use
- Upgrade
- Core

**Footnote:**

All products in **BOLD** are manufactured by Metsä Group.  
All other products are manufactured within the industrial ecosystem.

\*used in own production




\*used in own production





# RENEWABLE ENERGY IN SCOPE

The role of resource-wisely produced renewable energy is increasing globally. Metsä Group is both a significant user and a producer of renewable energy. We use wood for the most valuable purpose and only those residues and side streams that can not be used as material are used for energy production.

 More info on resource efficiency pages 38–39	 More info on utilising production side streams pages 22–23	 More info on emissions to air pages 44–45
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As energy is one of the key resources in Metsä Group’s operations, comprehensive energy management within the company emphasises the need to further increase the share of renewables and continuous investment in new technologies. Continuous improvement of energy efficiency and reduction of fossil CO<sub>2</sub> emissions into the air are monitored on a regular basis throughout the company. Investments are focused on better utilisation of side streams suitable for energy production as well as further reducing the use of fossil fuels, even in exceptional circumstances.

Metsä Group’s increasing energy self-sufficiency and several mills’ surplus energy also supports the surrounding communities’ aims to reach renewable energy targets and mitigate climate change. Metsä Group is committed to the Finnish energy efficiency agreement for the years 2017–2025. Our energy efficiency work at mills across the Group is supported by Energy Management Systems, such as ISO 50001.

In 2017, Metsä Group produced 15 (14) % of the renewable energy in Finland. The fossil CO<sub>2</sub> emissions per product tonne have decreased by 38 (35) % since 2009, already

exceeding the target for 2020 set at 30%. Another target is to improve energy efficiency by 10% for the years 2009–2020, and by the end of 2017 the improvement was 7 (6) %.

## EFFICIENCY THROUGH ENERGY INTEGRATION

Cooperation between the participants in operationally integrated ecosystems tends to improve energy efficiency, as both the production and use can be optimised to maximise the energy utilisation and minimise losses.

For example, at the bioproduct mill ecosystem in Äänekoski, Finland, the energy optimisation for heat surplus usage extends from Metsä Fibre and Metsä Board mills to Metsä Wood and CP Kelco’s operations within the mill integrate itself. In addition, the surplus is used to deliver heat to the town of Äänekoski and the Valio cheese factory. The bioproduct mill is 240% self-sufficient in electricity production and provides about 1 TWh of energy to the national grid after supplying its own operations of 0.75 TWh. In general, the mill produces 2.5% of all the electricity generated in Finland.

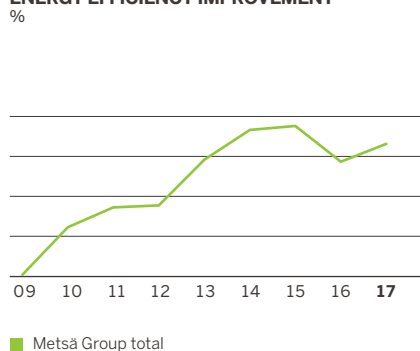
In addition to improved energy efficiency, the optimisation also reduces emissions into

the air. Good progress in these fields has been reported at Kaskinen, Simpele, Tako mills in Finland and Husum in Sweden. The bioheat boiler investments at the mills in Nyboholm, Sweden, and Mänttä, Finland, were taken into use during 2017 according to plan. At Mänttä mill, the use of dried de-inking sludge as renewable fuel further reduces the fossil CO<sub>2</sub> and sulphuric emissions into the air.

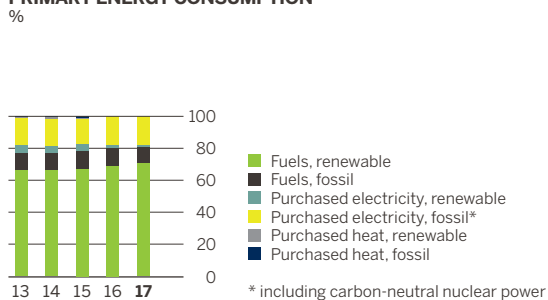
Currently, 23 (23) out of Metsä Group’s 29 production facilities have bioboilers and renewable energy production at on-site, and similar investments will continue. 72 (71) % of the energy used in production was renewable and 88 (86) % of the fuels we used were bio-based. The total energy use of the Group in 2017 was 30.1 (28.4) TWh. At the same time, wood-based renewable fuel production was 24 (22) TWh of which 21 (19) TWh was used in our own processes.

Surplus of wood-based fuels from mill processes and forestry, such as bark and branches, are sold to external partners. In 2017, the energy content of these carbon-neutral fuels represented 3 (3) TWh, which when replacing fossil fuels saved CO<sub>2</sub> emissions of up to 1 million tonne.

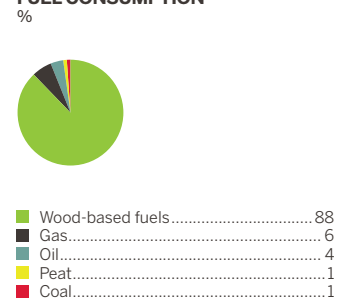
## ENERGY EFFICIENCY IMPROVEMENT



## PRIMARY ENERGY CONSUMPTION



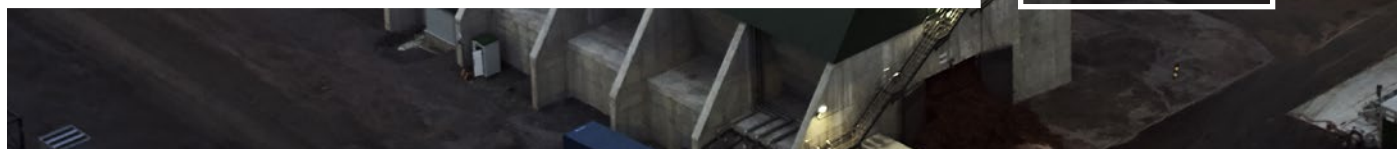
## FUEL CONSUMPTION



## RENEWABLE ENERGY FROM SIDE STREAMS

Wise use of scarce resources drives operations and energy production at Metsä Group. Each part of the wood is primarily used for the best material use: logs for wood products and thinner parts for pulp production. Also the production's side streams are primarily utilised as materials. Only those parts of the tree that generate the most value as energy, such as branches and tree tops from harvesting and saw dust, bark, sludge and black liquor from production, are used for energy production.






**72%**  
OF THE ENERGY  
USED IN  
PRODUCTION  
WAS RENEWABLE



● ● ● WE WORK FOR A BETTER CLIMATE AND ENVIRONMENT

# MAKING THE ENVIRONMENT COUNT

We work actively to control and mitigate the environmental impacts of our production as efficiently as possible. Preventive environmental management is a guiding principle for Metsä Group’s production.

 More on our environmental incidents <b>page 60</b>	 More on climate topics <b>pages 44–45</b>	 Environmental data by unit <b>pages 56–59</b>	 More on calculation principles <b>page 61</b>	 More on environmental costs and expenditures <b>Financial Statements page 68</b>
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Efficient control and reduction of emissions to air and water are the cornerstones of managing the environmental impacts of Metsä Group’s production. Our production operations are regulated by environmental permits and emission limits set and monitored by the authorities. We monitor our compliance with the regulative requirements and continuously aim to reduce

our emissions. All our mills are audited according to the ISO 14001 environmental management system standard. Details about our environmental incidents that took place during 2017 are available on page 60.

Controlling the environmental impacts from Metsä Group’s mills is based on the best available technologies (BAT). All our mills will comply with the EU-level BAT require-

ments for the pulp and paper industry by the end of 2018. To ensure full compliance with BAT requirements also in the future we will continuously develop our operations and invest in our production facilities.



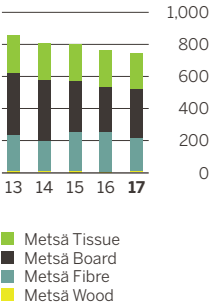
## TAKING CARE OF ENVIRONMENTAL IMPACTS FROM START TO FINISH

Metsä Group’s new bioproduct mill in Äänekoski, Finland, was completed during autumn 2017, which in turn led to the decommissioning of the old pulp mill, which was started up in 1985. The old mill will be dismantled and everything of any value collected to be re-used.

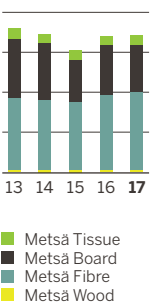
“Some of the machinery has been sold for further use to other industry operators. All metals are sorted and iron scrap will be melted for recycling, even the roofing felt will be re-used. Only small batches, like insulation wool, will end up in landfill. The most important thing is to ensure the proper treatment for the possibly contaminated soil. Also, the draining of waste water ponds must be carried out very carefully,” states **Aimo Konola**, Project Manager, Metsä Group.



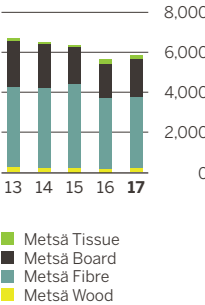
### FOSSIL GREENHOUSE GAS EFFECT (1,000 TONNES OF CO<sub>2</sub>) BY BUSINESS AREA



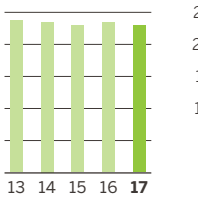
### EUTROPHICATION (P EQUIVALENT TONNES) BY BUSINESS AREA



### ACIDIFICATION (SO<sub>2</sub> EQUIVALENT TONNES) BY BUSINESS AREA



### PROCESS WATER USAGE PER PRODUCT TONNES M<sup>3</sup>



## LESS EMISSIONS TO WATER WITH OPTIMISED CONTROLLING

Metsä Fibre has put a special effort into reducing emissions to water by optimising the way biological waste water treatment plants are controlled at the mills. For example, controlling has been improved with more efficient indicators and calculation models used for analysing the daily performance of the plants. The aim is to stabilise the treatment process, increase treatment efficiency and maintain a high performance level in all conditions. The development project continues until the end of 2018. In order to develop operations at a Group level the best practices found during the project will be shared across Metsä Group's business units.

### AIMING TO REDUCE WATER USE EVEN FURTHER

Using water and treating waste water efficiently are the guiding principles of our water management. Since 2010 the Group's process water usage per product tonne has decreased by 15 (13) %. Our target is to decrease the use by 17% by 2020. The start-up of our new resource-efficient bio-product mill in Äänekoski in 2017, will further decrease our process water usage per product tonne.

Water is needed at every stage of pulp, board and paper production. For example, water is used to keep logs fresh, to carry fibres in the production process, creating bonds between fibres, cleaning, cooling and for generating steam. Water is recycled in the process several times.

Before releasing the water back into nature, it goes through an efficient waste water treatment. Nearly all effluent is treated in biological treatment plants where bacteria uses the waste water's soluble organic matter as their nutritional energy source. A small share of the biologically treated waste water goes through municipal treatment plants. This is the dominant operation mode in tissue and wood product industries where waste water volumes and their organic load

**OVER 99% OF THE USED WATER IS SURFACE WATER**

are low. Waste waters not sent to biological treatment consist of volumes including only small amounts of soluble organic material. The main waste water emissions from Metsä Group's production units are phosphorus, nitrogen, organic matter measured as chemical (COD) and biological (BOD) oxygen demand and solid matter. Emissions from pulp mills also contain organic chlorine compounds (AOX), sodium and sulphates.

### NORDIC WATER RESOURCES

Climate change is accelerating the polarisation of water resources. In the Nordics, where the majority of Metsä Group's operations are located, the water resources are abundant. Metsä Group's operations do not prevent or weaken any parties' access to water now, nor potentially in the future. Over 99% of the water we use is surface water.



## ONLINE WATER MONITORING SYSTEM REDUCES WASTE WATER FLOW

Metsä Board's mill at Simpele, Finland, has been able to decrease its waste water flow by over 10% during 2017. The main reason for the reduction is a new online water monitoring system which enables efficient separation of clean pump sealing waters from waste waters. Previously all sealing waters were directed to waste water treatment as process water leakages might have contaminated them. As the turbidity of sealing water stream is now monitored online, automatic valves turn the water flow to waste water treatment plant only when necessary.

WE WORK FOR A BETTER  
CLIMATE AND ENVIRONMENT

# PAYING ATTENTION TO THE CLIMATE

Caring about the global climate and local air quality are both essential for Metsä Group. Our aim is to minimise all emissions to air.

Environmental data by unit pages 56–59	More on calculation principles page 61	More on environmental topics and water pages 42–43
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Metsä Group's most significant emissions to air are carbon dioxide (CO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) 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 most of our emissions do not cause any noticeable environmental impacts. However, the odorous sulphur com-

pounds are challenging to control and therefore some occasional odours can still be noticed around the 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 fossil greenhouse gas emissions (Scope 1) were 747,000 (760,000) tonnes of CO<sub>2</sub>. Fossil greenhouse gas emissions from the consumption of purchased

electricity and heat (Scope 2) calculated with a market-based method were 727,000 (725,000) tonnes and 666,000 (670,000) tonnes when calculated with a location-based method. The details of the CO<sub>2</sub> calculation method were adjusted in 2017 which resulted in revising the figure from 2016. Emissions of fossil CO<sub>2</sub> have decreased by 38% per product tonne since 2009. Emissions causing acidification increased slightly to 5,830 (5,636) tonnes SO<sub>2</sub> eqv. The total acidification effect has decreased by 26% from year 2010.



## CAPTURING ODOROUS GASES IN HUSUM

Metsä Board's Husum mill has made improvements to the treatment of odorous gases from pulp production. Changes made in the treatment system enable the combustion of all sulphur-containing odorous gases and methanol in the recovery boiler. The old dedicated boiler for these gases will act as a back-up. These changes are expected to reduce NO<sub>x</sub> emissions significantly and ensure a more complete combustion of odorous gases.



FOSSIL CO<sub>2</sub>  
EMISSIONS  
DECREASED BY  
**38%**  
PER PRODUCT  
TONNE FROM  
2009



## BETTER COMBUSTION AND REDUCED EMISSIONS THANKS TO A POWER PLANT REVISION

The power plant at Metsä Tissue's mill in Mänttä, Finland, was revised in 2017. The plant's main boiler was modified to improve combustion and reduce NO<sub>x</sub> emissions. A new flue-gas scrubber was installed to recover heat from the flue-gases and improve emission treatment. New fuel originating from the recovered fibre production of the paper mill is expected to reduce the plant's sulphur emissions. After the modifications the power plant is also expected to comply with the new tighter emission limits coming into force in 2020.



## METSÄ BOARD – A GLOBAL LEADER IN SUSTAINABLE WATER MANAGEMENT AND CLIMATE ACTION

In 2017, Metsä Board, part of Metsä Group, was included on the CDP Water A List for the third time and on the CDP Climate A List for the second time. CDP is a global non-profit environmental disclosure platform and the recognitions were given to Metsä Board for the company's improved sustainable water management, cutting emissions, mitigating climate risk and developing a low-carbon economy.





WE CREATE  
WELL-BEING

# WE CREATE WELL-BEING

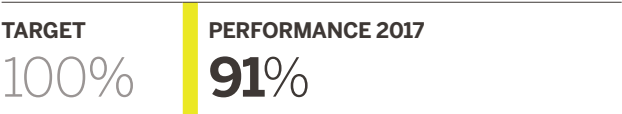
## STAKEHOLDERS AND SOCIAL IMPACTS



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

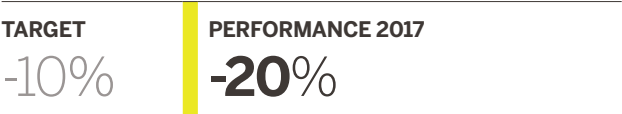
Coverage of Code of Conduct training:



**COMMENT**  
Left behind. We continue to work to ensure that the Code of Conduct training covers all personnel with an emphasis on new employees.

## SAFETY AT WORK

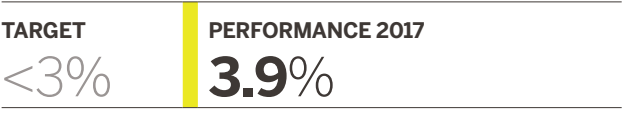
Lost-time accidents frequency annually:



**COMMENT**  
Achieved. The Group's LTA1 was 5.9 (7.4). Our long-term goal is zero accidents and we continue to work towards achieving this target.

## WELL-BEING

Sickness absenteeism:

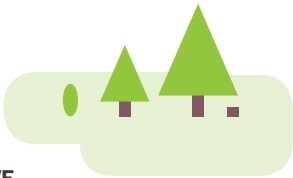


**COMMENT**  
Left behind. An early intervention process is in place as a precautionary method. Additional actions to mitigate absenteeism are introduced.

## CREATING VALUE

### RESOURCES AND COMPETENCES

#### SECURE SUPPLY



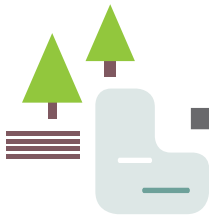
#### COOPERATIVE OWNERSHIP

- Steady wood flow secured by **104,000 forest-owner members**
- Covering about **50%** of Finland's privately owned forests

#### PERSONNEL

- 9,126** employees in **26** countries
- Retention rate **97%**

#### EFFICIENT USE OF RESOURCES



#### WOOD

- Procuring 32 million m<sup>3</sup> of wood with **100% traceability**

#### WATER

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

#### ENERGY

- 72%** of the energy used in production was renewable

#### PRODUCTION

- 29 production facilities** in **7 countries** in Europe using the best available techniques

#### STEADY OUTLOOK FOR FUTURE



#### FINANCIAL

- In liquidity and undrawn credits **EUR 2,091 million**
- Capital employed **EUR 5,033 million**
- Equity ratio **45.0%**

#### RENEWING THE INDUSTRY

- EUR 626 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



**93%**  
permanent  
employees

**over 1,000**  
summer  
jobs

**EUR 621 million** in wages,  
salaries and benefits

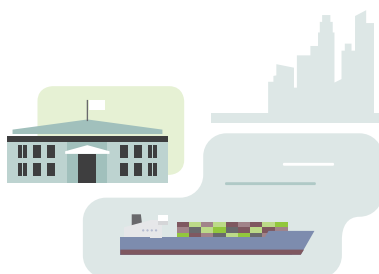
Each forest industry job creates  
**three new ones indirectly**

**EUR 500 million** to Finnish  
forest owners from wood sales

**EUR 330 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 2.8  
billion**, corresponding to **5% of  
Finnish exports**

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

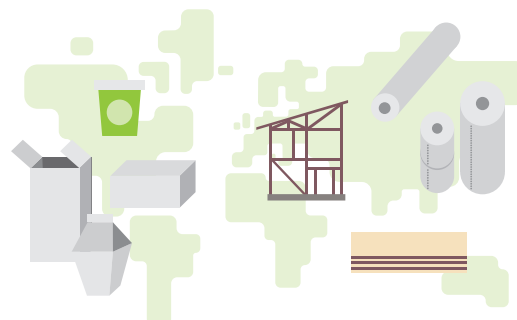
Partnering in circular economy: **92%**  
of production side streams utilised

**92%** of wood and **85%** of other  
purchases from production countries  
in Europe

**Ensuring  
biodiversity** by  
leaving at least 2  
high biodiversity  
stumps per  
hectare in forests

**EUR 63 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 5.0 billion:**

**8%** from  
Americas

**74%** from  
EMEA

**18%** from  
APAC

**EUR 85 million** as interest expenses

**EUR 71 million** of dividends to  
shareholders other than Cooperative's  
owner-members



# BEING A PART OF SOCIETY

Understanding our stakeholders' views and expectations is the key to creating value through our operations locally, nationally and internationally. In 2017, we aligned our approach to societal support and defined young people and children as our primary target group.



More info on value creation  
pages 46–47



More info on advocacy  
pages 50–51



More info on Me & MyCity online  
[www.yrityskyla.fi/en](http://www.yrityskyla.fi/en)

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. Our stakeholder dialogue varies locally and globally as well as depending on the stakeholder group. Stakeholder dialogue is a two-way-street; in addition to listening to 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, visits to our sites and we are continuously open for dialogue through social media. Our aim is to be an easily approachable and open organisation for local people, which is why we arrange open house days at our pro-

duction sites. In 2017, our customers were increasingly interested in our practices relating to the social aspects of our operations. The sustainability of forest use was the most important topic on various environmental NGOs' agendas.

In 2017, we further developed our local stakeholder cooperation and its management in our production regions in Finland and shared related best practices between business areas.

We also continued organising bioeconomy roundtable discussions. The idea of these roundtable events is to gather people from different stakeholder groups, such as NGO's, research institutes, universities, Finnish authorities and decision-makers, together to discuss bioeconomy with us. In 2017, the focus of the discussion was how to create growth and commercialise new innovations resulting from bioeconomy research and partnerships.

## SUSTAINABLE FUTURE FOR THE YOUNGER GENERATION

The focus of our societal engagement is on promoting projects aimed at improving the well-being of children and young people. Every year Metsä Group offers summer jobs as well as thesis work and trainee programmes to hundreds of students. In 2017, we agreed a collaboration focusing on supporting the well-being of young men and boys with The Family Federation of Finland (Väestöliitto), which will start in 2018. In addition, we started a campaign for promoting hand hygiene in elementary schools in Finland. Our employees also regularly visit different junior high schools to share their expertise and experiences about the opportunities the forest industry has to offer.



## NINTH-GRADERS LEARNING BUSINESS SKILLS

Metsä Group is the main corporate partner in the Yrityskylä (Me & MyCity) project in Espoo, Finland, targeting ninth-graders. The project runs from December 2017 to February 2018 and its aim is to develop pupils' knowledge of business and global economy. The learning concept consists of classes and a virtual learning environment where the pupils can step into the shoes of Metsä Group's Corporate Management and simulate managing a corporation.

"Me & MyCity project is a great way to increase ninth-graders' knowledge of business and its various links to society. It also shows them what kind of skills are needed in working life, and what career opportunities the forest industry has to offer," states **Susanna Tainio**, SVP, HR, Metsä Board.





## PROMOTING GOOD HAND HYGIENE IN SCHOOLS

Good hand hygiene is the most efficient way to prevent flu and other infections. Metsä Tissue's Katrin brand has a long tradition of working with schools and kindergartens to promote good hand hygiene. In 2017, Katrin introduced a 'Puhtaasti paras' (Purely best) hand hygiene activity package for Finnish elementary schools.

"The package is designed for 8–10 year-olds. It includes an entertaining and informative set of games and playful activities, for example a UV flashlight and UV concentrate lotion for showing and explaining why, when and how hands need to be washed," states **Tiia Tylli-Aliranta**, Katrin Marketing Manager Finland, Baltics & Russia.



## ENGAGING THE LOCAL COMMUNITY AT THE BIOPRODUCT MILL



Open and timely communications as well as close cooperation with local stakeholders was the baseline for the bioproduct mill project in Äänekoski, Central Finland.

During the project in 2015–2017, stakeholders were able to share their thoughts, for example, through various open events. The aim of the events was to gather together experts and other interested parties to discuss topics such as the mill's emissions into the water, trial runs and the start-up of the mill.

The local community was also largely engaged in the environmental impact assessment conducted before the investment decision. Everyone who would be affected by the project was able to participate in the briefings and stakeholder discussions organised by Metsä Group.

**Mikko Kupari**, a resident of Central Finland, participated in various stakeholder events during the project.

"I am especially interested in the mill's impacts on the surrounding watercourses, and I am very pleased that the communication about the environmental impacts has been very open," states Kupari.



# PARTICIPATION IN POLICY DEBATES

Metsä Group's advocacy focuses on promoting resource-wise bioeconomy 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 circular economy  
pages 6–7



More info online about Uusi Puu (The New Wood Initiative)  
[www.uusipuu.fi](http://www.uusipuu.fi)

Our view is that valuable Northern wood should be used primarily for high-value-added products and, at the end of the life-cycle, for renewable energy. The material use of wood offers unlimited and innovative possibilities compared to one-time-only combustion and is in-line with the resource-wise use of our raw material. Metsä Group is a significant producer and user of renewable energy made from harvesting residues and industrial side streams, without subsidies.

In 2017, the EU legislative debates on climate and energy policy to meet the Paris Climate Agreement commitments continued. The EU institutions reached a deal on sustainable land use (LULUCF) in late 2017. The

proposed legislation promoting renewable energy (RED II) will be discussed by lawmakers well into 2018. On the Finnish policy agenda, the National Energy and Climate Strategy for 2030 with ambitious renewable energy and biofuel targets remains prominent.

## FOR A SUSTAINABLE CIRCULAR BIOECONOMY

Moving towards a sustainable circular economy remains one of the EU's priorities. Metsä Group contributes to the discussion by highlighting the role bioeconomy can play as part of sustainable circular economy.

Metsä Group's new bioproduct mill, started up in 2017, is an example of 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. It has triggered interest in the EU and internationally and Metsä Group participates in various EU-funded cross-sectoral research programmes. This demonstrates how the EU facilitates R&D&I and has had a positive impact on society and local economies.

The European Commission will update its Bioeconomy Strategy in 2018 to promote coherent policies, support further innovation and bring bioeconomy products to the markets.



## EU POLICY MAKERS VISIT FINNISH BIOECONOMY

EU policy makers from the main EU institutions visited Finland in April 2017 to experience Finnish bioeconomy and sustainable forest management in practice. The Finnish government organised this trip together with various stakeholders, including Metsä Group. The visit included a tour at a forest site owned by a member of the Metsäliitto Cooperative.

## WE PROMOTE

- Sustainable forest management and wood mobilisation
- Climate change mitigation
- Resource-wise bioeconomy and use of raw materials
- 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

## MAIN MEMBERSHIPS IN ORGANISATIONS

- National forest industry federations: Finnish Forest Industry Federation (FFIF), The Swedish Forest Industries and The German Pulp and Paper Association (VDP)
- 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)





## DISCUSSIONS ON RENEWABLE ENERGY

In spring 2017, Metsä Group organised a discussion panel on the EU's renewable energy policy with leading Members of the EU Parliament and Commission officials. During the event, the topic of renewable energy was discussed from many perspectives and participants shared their views on how renewable raw materials should be used in the most resource-wise and sustainable way.

**MOVING TOWARDS  
SUSTAINABLE  
CIRCULAR ECONOMY  
REMAINS ONE OF  
THE EU'S PRIORITIES.**



THE EUROPEAN  
COMMISSION  
WILL UPDATE  
ITS BIOECON-  
OMY STRATEGY  
IN  
**2018**



## PRESENTING BIOECONOMY IN BRUSSELS

In September 2017, Metsä Group took part in a European Parliament exhibition showcasing Finnish wood-based innovation. The exhibition presented over 50 wood-based solutions for packaging, textiles, hygiene and construction. The aim of the event was to increase awareness of how wood-based bioproducts can make everyday life choices more sustainable. The event was organised by Uusi Puu (The New Wood Initiative), a community of 20 Finnish organisations promoting wood-based bioeconomy.



# GROWING WITH OUR PEOPLE

We want our personnel to grow with Metsä Group, and vice versa. Our aim is to support our employees' development and well-being at work and at every stage of their careers.



More info on safety  
pages 54–55



Remuneration information  
page 60 and Financial Statements pages 95–97

Motivated and committed personnel are key to success. This is why we strive to develop and support our personnel at every stage of their careers.

During 2017 we provided jobs to 9,126 (9,300) employees and we recruited 218 (147) people in Finland and 291 (272) abroad. We offered summer jobs to over 1,000 employees. 3 (3) % of our employees worked part time.

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 2017, approximately 25,652 (25,146) training days were held with 3,552 (3,440) Metsä Group employees in Finland and 4,040 (3,419) abroad.

We recognise our personnel's freedom to form unions and the right to negotiate repre-

sentative collective agreements. 79 (77) % of all our employees fall within the scope of collective agreements, and a shop steward system is in place in many of our operating countries.

## REGULAR PERSONAL DEVELOPMENT REVIEWS

The performance and future development plans of our employees are regularly discussed in Personal Development Appraisal (PDA) discussions between employees and their managers. Our aim is that every employee should participate in a PDA. 93 (96) % of Metsä Group's employees were covered by the PDA process in 2017. In 2017, we continued harmonising our PDA practices and currently the majority of PDA discussions are held using the common format. In some units the development work is still on-going. Managers are offered training and

support on how to conduct a fruitful PDA discussion and how to support their teams in their personal development.

## IDENTIFYING POTENTIAL ISSUES AS EARLY AS POSSIBLE

We want our employees to be successful and capable in their work. Well-being at work is always a personal experience affected by many different factors; clarity of targets and expectations, good management and supervisory work and a healthy working environment, to mention but a few. Our approach to maintaining and promoting well-being at work is early intervention. We aim to identify threats to working capacity and take the right measures as early as possible. For this we use a model consisting of early support, evaluating working capacity and supporting an employee's future career prospects



## SUPPORT ALONG THE ENTIRE CAREER

### BEGINNING OF THE CAREER



### APPRENTICESHIP

In autumn 2017, Metsä Group launched a new apprenticeship programme for mill operators at Metsä Board and Metsä Fibre mills in Finland. The one and half year programme consists of practical on-the-job training and theoretical studies at a vocational school.

"I enjoy working in the various stages of post-processing where I can see production phases in practice," states programme participant **Nanna Salmi**.

Participants who successfully complete the apprenticeship exam can continue working at Metsä Group mills. Hundreds of people have already participated in the apprenticeship training at Metsä Group.

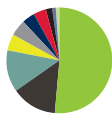
### TRAINING ON SPECIFIC SKILLS

At Metsä Group, developing personnel's skills go hand-in-hand with business needs. Project management is one key factor in achieving business benefits.

"We have developed a new project management model and trained our people on project management. The training has been very popular and 150 people have already participated," states **Tommi Vainio**, VP, Metsä Tissue Project Management Office.

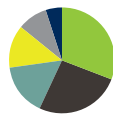


### PERSONNEL BY COUNTRY 31 DEC 2017, %



Finland.....	52
Sweden.....	14
Germany.....	13
United Kingdom.....	5
Poland.....	5
Russia.....	4
Slovakia.....	4
Rest of Europe.....	2
Baltic countries.....	1
Other countries.....	1

### PERSONNEL BY BUSINESS AREA 31 DEC 2017, %



Metsä Tissue.....	31
Metsä Board.....	26
Metsä Wood.....	16
Metsä Fibre.....	13
Metsä Forest.....	9
Group functions.....	5

### DISTRIBUTION OF EMPLOYMENT TYPE %



Permanent employees.....	93
Temporary employees.....	7

by personal planning. Managers are trained to use this model and detect possible threats.

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 2017, the sickness absence rate was 3.9 (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 2017, the overall Group average was 8.2 (8.4) on a scale of 4–10. The results of the survey were discussed with teams and development action plans were created based on these discussions.

#### KEY PERSONNEL DATA

	2017	2016	2015	2014	2013
Number of employees <sup>1)</sup>	9,126	9,300	9,599	10,410	10,741
Share of permanent employees, %	92.7	93.2	93.5	94.1	94.3
Average age, years	44.9	44.8	44.6	44.5	44.4
Average years served, years	16.4	16.6	16.7	16.8	16.7
Employee turnover, % <sup>2)</sup>	6.8	8.0	7.9	7.4	9.5
Ratio between men/women, %	77/23	78/22	78/22	79/21	78/22
Share of women in management, % <sup>3)</sup>	16.1	15.8	15.8	15.0	14.3

<sup>1)</sup> Full-time equivalent (FTE) on 31 Dec <sup>2)</sup> The figure includes also redundancies caused by restructuring of business

<sup>3)</sup> Management includes Board of Directors, Executive Management Team and business areas' management teams

## RE-EDUCATION

Professional re-education supports an individual's career when other factors threaten their working capability. When an upper limb started to limit **Niilo Kinnunen's** working capability as a maintenance expert at Metsä Wood's mill at Punkaharju, he was offered an opportunity to study machinery and production engineering at the University of Applied Sciences. After four years of studying he returned to work as a reliability engineer.

"Being able to continue working makes everyday life meaningful," states Niilo.



## PART-TIME WORKING

It's rare to work part-time in production operations due to the nature of shift work. At Metsä Board's mill in Tampere, Finland, this challenge has been taken as an opportunity to enable longer careers for people who otherwise would have had to retire. 61-year-old process worker **Jari Korsumäki** has been on a part-time disability pension since 2014. Thanks to part-time working, Jari has already been able to prolong his career by four years.

"We had another person approaching the end of his career, and now we share a job. Working part-time gives you more time to recover and still keeps you active," states Jari.

## RETIREMENT



# SAFETY IS A WAY OF WORKING

Safety is everyone's responsibility and largely depends on attitude. It is a sign of professionalism. This is why continuous training on safety issues is crucial.



More info on our personnel  
pages 52–53



Personnel data by unit  
pages 56–59

Metsä Group's long-term safety goal is zero accidents. Our baseline is that everyone, both our own personnel and subcontractors' employees, working at Metsä Group operations have a safe and healthy working environment. Our most important short-term safety target is to reduce the annual lost-time accident rate (LTA1) by 10% compared to the previous year. In 2017, the LTA1 rate was 5.9 (7.4), which is 20% less than in 2016. Four of our five business areas

improved their safety performance compared to the previous year. The biggest improvement was made at Metsä Board as the business area's LTA1 rate decreased by 28% from last year.

In 2017, there was one fatal commuting accident involving a Metsä Group employee in Finland and one fatal accident to an external service provider.

Our approach to safety is preventive. It is always better to be able to prevent accidents rather than try to remediate them. Training is

the most important factor for preventing accidents. For example in 2017, especially Metsä Fibre invested in a large-scale safety training programme. Everyone, including our subcontractors' employees, working at our mills receive an induction in safe working practices. Our personnel also conduct safety tours and have safety talks regularly.

## SAFETY AND WELL-BEING DATA, GROUP TOTAL

	2017	2016	2015	2014	2013
Sickness absenteeism, % <sup>1)</sup>	3.9	3.9	3.9	3.7	3.8
Work accident absenteeism, % <sup>1)</sup>	0.10	0.14	0.20	0.22	0.25
Accident rate <sup>2)</sup>	5.9	7.4	9.5	11.2	13.2
Registered occupational diseases, no. of cases	4	6	6	7	3
Work related fatalities, no. of cases	2 <sup>4)</sup>	1	1 <sup>3)</sup>	0	1

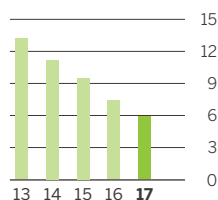
<sup>1)</sup> % of theoretical working time <sup>2)</sup> Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sick leave per million worked hours <sup>3)</sup> External employee <sup>4)</sup> One fatal commuting accident and one fatal accident to an external service provider

## SAFETY AND WELL-BEING DATA BY BUSINESS AREA

	Metsä Forest		Metsä Wood		Metsä Fibre		Metsä Board		Metsä Tissue		Metsä Group total	
	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016
Organisational functionality research index <sup>1)</sup>	8.5	8.4	7.8	8.3 <sup>4)</sup>	8.4	8.4 <sup>4)</sup>	8.1	8.2	8.3	8.5	8.2	8.4
Organisational functionality research response rate, % <sup>1)</sup>	94.4	90.1	82.2	89.0 <sup>4)</sup>	83.5	79.1 <sup>4)</sup>	79.6	87.9	76.0	85.7	81.4	86.6
Sickness absenteeism, % <sup>2)</sup>	1.8	1.6	3.7	3.5 <sup>4)</sup>	3.7	3.7 <sup>4)</sup>	3.9	4.1	5.1	5.1	3.9	3.9
Work accident absenteeism, % <sup>2)</sup>	0.1	0.2	0.1	0.2 <sup>4)</sup>	0.2	0.1 <sup>4)</sup>	0.1	0.2	0.1	0.1	0.1	0.1
Accident rate <sup>3)</sup>	6.8	6.6	6.8	8.2 <sup>4)</sup>	5.1	5.8 <sup>4)</sup>	6.4	9.0	6.2	7.6	5.9	7.4
Registered occupational diseases, no. of cases	0	1	2	4	0	0	2	1	0	0	4	6
Work related fatalities, no. of cases	1 <sup>6)</sup>	1	0	0	0	0	1 <sup>6)</sup>	0	0	0	2	1

<sup>1)</sup> Organisational functionality research covered 100% of Metsä Group employees in 2017. In 2016 it covered 47% of employees: Metsä Wood, Metsä Board and Metsä Tissue indexes were calculated based on responses of white collars. 2016 Metsä Svir was not included in Organisational functionality research.

<sup>2)</sup> % of theoretical working time <sup>3)</sup> Lost time accident 1 frequency rate. Accidents at work resulting to at least one day sick leave per million worked hours. <sup>4)</sup> Finnish sawmills included in Metsä Fibre from November 2016 onwards, before that included in Metsä Wood <sup>5)</sup> One fatal accident to an external service provider <sup>6)</sup> One fatal commuting accident

ANNUAL LOST-TIME  
ACCIDENT RATE (LTA1)SAFE VISITS TO  
THE FORESTS

Metsä Group sources the majority of its main raw material, wood, from Finnish family forest owners. Forests mean a lot to their owners and they like to visit the logging sites on their lands. Logging sites are often dominated by factors that increase the safety risk level of the area, such as darkness or limited visibility.

“We are continuously striving to increase the awareness of the importance of safety during site visits. Safety issues are emphasised in discussions with the forest owners and they also get their own safety vests. We have also recently updated contract terms and instructions relating to the safety of forest visits,” states **Timo Saarentaus**, Development Manager, Metsä Forest.



ACCIDENT  
RATE (LTA1)  
REDUCED BY  
**20%**

SAFETY FIRST AT THE BIOPRODUCT  
MILL'S CONSTRUCTION SITE

Construction of Metsä Group's bioproduct mill began in 2015. First, the focus was on construction with the installation work starting at the beginning of 2016. Production trials started in February 2017 and the mill came into operation as planned in August 2017. Safety was the number one priority in the bioproduct mill project.

The majority of accidents usually result from human error. Thus, preventive safety measures, such as safety inductions and regular safety tours, are of crucial importance.

“Guiding our own and subcontractors' personnel as to how to work safely and prevent accidents is what really counts. During the project over 13,500 workers participated in safety inductions and over 2,000 safety tours were carried out,” states **Ilkka Karvonen**, Safety Manager and Safety Coordinator of the bioproduct mill project.

No serious accidents at work occurred during the project. The total number of accidents was 113. The majority of the accidents resulting in absence were related to slipping, tripping or stumbling while working, or moving around the site.

# SUSTAINABILITY DATA BY UNIT

### METSÄ FOREST

Country	Personnel				Wood procurement	Management systems		Chain of Custody	
	Number of employees <sup>1)</sup>	Accident rate <sup>2)</sup>	Sickness absenteeism % <sup>3)</sup>	Organisational functionality index	1.000 m <sup>3</sup>	ISO 9001	ISO 14001	PEFC™	FSC®
Estonia	28	0.0	0.7	8.8	1,475	x	x	x	x
Finland	580	9.9	1.6	8.4	25,100	x	x	x	x
Latvia	45	0.0	1.1	8.6	1,130	x	x	x	x
Russia, St. Petersburg	18	0.0	1.4	8.9		x <sup>4)</sup>	x <sup>5)</sup>	x	x
Russia, Podporozhye	170	0.0	2.7	8.7	2,022 <sup>6)</sup>	x <sup>4)</sup>	x	x	x
Sweden	2				2,219	x	x	x	x
Others	5				65 <sup>7)</sup>				
Total	848	6.8	1.8	8.5	32,011				

1) Full-time equivalent on 31 December 2017    2) Lost-time accident 1 frequency rate. Accidents at work resulting to at least one day sick leave 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 <sup>3</sup> )		Management systems			Chain of Custody	
		Number of employees <sup>1)</sup>	Accident rate <sup>2)</sup>	Sickness absenteeism % <sup>3)</sup>	Organisational functionality index	Wood products		ISO 9001	ISO 14001 <sup>4)</sup>	OHSAS 18001	PEFC™	FSC®
Lohja <sup>6)</sup>	Finland	122	0.0	3.7	8.1	Kerto® LVL	79	x	x		x	x
Punkaharju <sup>6)</sup>	Finland	366	6.2	5.4	7.7	Kerto® LVL and plywood	189	x	x	x <sup>5)</sup>	x	x
Suolahti <sup>6)</sup>	Finland	387	10.9	3.9	7.8	plywood	218	x	x	x	x	x
Boston	Great Britain	279	5.4	3.1	6.9	further processing	197	x	x	x	x	x
King's Lynn	Great Britain	40	12.6	1.6	7.4	further processing	119	x	x	x	x	x
Widnes	Great Britain	77	12.6	2.2	7.6	further processing	42	x	x	x	x	x
Others <sup>7)</sup>		156										
Total		1,428	6.8	3.7	7.8		845					200,986

1) Full-time equivalent on 31 December 2017    2) Lost-time accident 1 frequency rate. Accidents at work resulting to at least one day sick leave per million worked hours.    3) % of theoretical working time  
4) ISO 14001 standard includes the Energy Efficiency System (EES).    5) OHSAS concerns only plywood production.  
6) Emissions, water use and wastes: Lohja includes 46% of Lohjan Biolämpö, Punkaharju includes 100% of Puskavoima and Suolahti includes 100% of Kumpuniemen Voima.  
7) Includes personnel from sales operations and management. Personnel figures of Others are included in Metsä Wood's total figures.

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

### METSÄ FIBRE

Mill	Country	Personnel				Production		Management systems					Chain of Custody	
		Number of employees <sup>1)</sup>	Accident rate <sup>2)</sup>	Sickness absenteeism % <sup>3)</sup>	Organisational functionality index <sup>4)</sup>	Chemical pulp (1.000 t)	Sawn timber (1.000 m <sup>3</sup> )	ISO 9001	ISO 14001	ISO 50001	OHSAS 18001	ISO 22000	PEFC™	FSC®
Joutseno	Finland	135	4.3	2.8	8.3	655		x	x	x	x	x	x	1,410,388
Kemi	Finland	158	7.3	5.1	8.4	598		x	x	x	x	x	x	1,360,832
Rauma	Finland	120	0.0	4.5	8.1	568		x	x	x	x	x	x	1,110,717
Äänekoski new mill <sup>5)</sup>	Finland	159	8.8	3.5	8.4	362		x	x	x	x	x	x	961,069
Äänekoski old mill <sup>6)</sup>	Finland	28	11.4	3.6	8.4	303		x	x	x	x	x	x	537,763
Eskola	Finland	10	0.0	1.3	8.7		47	x	x	x	x		x	0
Kyrö	Finland	69	16.0	3.9	8.3		232	x	x	x	x		x	24,594
Lappeenranta	Finland	60	9.4	5.5	8.3		253	x	x	x	x		x	25,903
Merikarvia	Finland	74	7.6	6.3	8.3		223	x	x	x	x		x	26,126
Renko	Finland	59	0.0	2.3	8.4		310	x	x	x	x		x	32,021
Vilppula	Finland	77	0.0	4.4	8.3		514	x	x	x	x		x	68,951
Svir	Russia	115	0.0	2.4	8.9		274	x	x	x	x		x	23,656
Others <sup>7)</sup>		151												
Total		1,215	5.1	3.7	8.4	2,487	1,852							5,582,020

1) Full-time equivalent on 31 December 2017    2) Lost-time accident 1 frequency rate. Accidents at work resulting to at least one day sick leave per million worked hours.    3) % of theoretical working time  
4) Organisational functionality indexes of Metsä Fibre mills are calculated based on responses of production personnel.    5) Äänekoski new mill, called also as bioproduct mill, started in August 2017  
6) Äänekoski old mill, operated until August 2017    7) 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 <sub>2</sub> fossil	Sulphur as SO <sub>2</sub>	Nitrogen oxides as NO <sub>2</sub>	Particles	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
577	0.86	14	3.1	1.8	0.27	0.005	0.038	0.3	83	53	591	758	127	Lohja <sup>6)</sup>
3,295	11	76	3.8	33	19	0.01	0.09	0	190	47	136	0	183	Punkaharju <sup>6)</sup>
487	0.16	148	61	27	49	0.57	0.46	22	1,324	48	449	0	94	Suolahti <sup>6)</sup>
0	0	0	0	0	0	0	0	0	0	0	2,864	0	45	Boston
142	0	0.19	0.02	0	0	0	0	0	4.2	0	94	0	21	King's Lynn
58	0	0.1	0	0	0	0	0	0	0	0	498	0	1.0	Widnes
														Others <sup>7)</sup>
<b>4,559</b>	<b>12</b>	<b>238</b>	<b>68</b>	<b>62</b>	<b>69</b>	<b>0.59</b>	<b>0.59</b>	<b>22</b>	<b>1,601</b>	<b>148</b>	<b>4,632</b>	<b>758</b>	<b>471</b>	<b>Total</b>

Emissions to air (t)				Discharges to water (t)						Water use (1.000 m³)		Waste (t)			Mill
CO <sub>2</sub> fossil	Sulphur as SO <sub>2</sub>	Nitrogen oxides as NO <sub>2</sub>	Particles	AOX	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
17,240	225	1,005	253	101	6,838	140	5.7	114	377	74,245	17,503	38,334	8,812	208	Joutseno
62,883	130	1,120	91	62	8,272	132	6.0	133	418	43,394	17,134	26,852	10,041	137	Kemi
76,540	122	801	89	70	9,487	112	4.7	52	280	19,075	15,917	471	14,402	199	Rauma
6,900	18	436	57	32	2,223	35	2.4	26	149	35,511	7,215	580	3,728	1.9	Äänekoski new mill <sup>5)</sup>
41,898	117	593	212	31	2,474	100	4.1	54	278	23,144	7,529	5,102	8,303	93	Äänekoski old mill <sup>6)</sup>
0	0	0	0	0	0	0	0	0	0	0	0	3.0	3.0	0	Eskola
507	3.1	27	21	0	0	0	0	0	0	10	7.3	1,645	0	13	Kyrö
0	1.2	28	18	0	0	0	0	0	0	91	1.3	127	9.1	3.1	Lappeenranta
524	0.038	27	20	0	0	0	0	0	0	16	13	104	53	4.4	Merikarvia
756	0.10	29	10	0	0	0	0	0	0	36	4.9	103	7.8	12	Renko
3,000	18	90	90	0	0	0	0	0	0	20	41	3,277	39	33	Vilppula
114	0.22	44	3.9	0	16	8.1	0.034	1.2	6.9	129	252	12,125	7.0	0.47	Svir
															Others <sup>7)</sup>
210,362	635	4,200	865	297	29,310	527	23	381	1,510	195,670	65,619	88,722	45,404	704	Total

# SUSTAINABILITY DATA BY UNIT

## METSÄ BOARD

Mill	Country	Personnel				Production (1.000 t)		Management systems					Chain of Custody		CO <sub>2</sub> bio
		Number of employees <sup>1)</sup>	Accident rate <sup>2)</sup>	Sickness absenteeism % <sup>3)</sup>	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	11.1	2.9	8.4	333		x	x	x	x	ISO 22000	x	x	0
Kaskinen	Finland	79	7.0	1.9	8.0	341		x	x	x	x	ISO 22000	x	x	121,154
Kemi	Finland	85	19.7	6.1	8.4		410	x	x	x	x	ISO 22000	x	x	0
Kyro	Finland	150	0.0	4.1	7.8		181	x	x	x	x	ISO 22000	x	x	0
Simpele	Finland	260	4.5	3.4	7.8		280	x	x	x	x	ISO 22000, FSSC 22000	x	x	104,901
Tako	Finland	203	8.7	5.6	8.3		209	x	x	x	x	ISO 22000	x	x	0
Äänekoski	Finland	176	0.0	4.7	8.4		226	x	x	x	x	ISO 22000	x	x	169,292
Husum	Sweden	711	3.4	3.6	8.1	656	511	x	x	x	x	ISO 22000	x	x	1,480,943
Others <sup>4)</sup>		634													38,542
Total		2,351	6.4	3.9	8.1	1,330	1,817								1,914,832

1) Full-time equivalent on 31 December 2017    2) Lost-time accident 1 frequency rate. Accidents at work resulting to at least one day sick leave 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 <sub>2</sub> bio
		Number of employees <sup>1)</sup>	Accident rate <sup>2)</sup>	Sickness absenteeism % <sup>3)</sup>	Organisational functionality index	Cooking papers	Tissue papers	ISO 9001	ISO 14001	ISO 50001	OHSAS 18001	ISO 22000 or BRC	PEFC™	FSC®	
Mänttä	Finland	425	6.8	3.4	8.0	19	99	x	x	x		ISO 22000	x	x	0
Düren	Germany	116	14.6	5.0	8.5	28		x	x	x	x	BRC	x	x	0
Kreuzau	Germany	403	1.6	8.5	8.3		147	x	x	x	x	BRC	x	x	8,001
Raubach	Germany	288	2.2	6.3	9.0		57	x	x	x	x	BRC	x	x	0
Stotzheim	Germany	257	0.0	7.2	8.0		23	x	x	x	x	BRC	x	x	0
Krapkowitz	Poland	363	9.1	4.1	7.8		74	x	x <sup>4)</sup>		x	BRC	x	x	0
Žilina	Slovakia	337	3.5	3.2	8.2		79	x	x <sup>4)</sup>		x	BRC	x	x	0
Katrinefors	Sweden	356	3.3	4.9	7.8		72	x	x	x			x	x	46,286
Nyboholm <sup>5)</sup>	Sweden						29	x	x	x			x	x	7,478
Pauliström	Sweden	173	27.1	3.7	8.3		28	x	x	x			x	x	11,329
Others <sup>6)</sup>		77													
Total		2,795	6.2	5.1	8.3	46	608								73,094

1) Full-time equivalent on 31 December 2017    2) Lost-time accident 1 frequency rate. Accidents at work resulting to at least one day sick leave 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.

Emissions to air (t)				Discharges to water (t)						Water use (1.000 m³)		Waste (t)			Mill
CO <sub>2</sub> fossil	Sulphur as SO <sub>2</sub>	Nitrogen oxides as NO <sub>2</sub>	Particles	AOX	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
27,534	0	8.7	31	0	697	4.4	0.18	3.3	12	5,447	553	13,507	0	13	Joutseno
5,660	79	259	6.1	0	1,067	65	1.3	11	162	11,879	4,219	22,478	912	7.9	Kaskinen
6,427	0	2.7	0	0	276	29	1.1	30	77	9,620	7,281	4,391	435	7.6	Kemi
6,603	0	4.7	0	0	129	16	0.44	12	41	4,271	2,969	17,612	0	30	Kyro
92,714	117	118	0.77	0	352	19	1.2	9.3	47	26,207	4,572	44,535	0	39	Simpele
74,868	0.038	45	0	0	228	63	1.1	0.87	32	3,786	2,464	4,414	90	52	Tako
3,987	9.7	108	6.2	0	523	195	0.38	7.0	126	3,852	3,446	12,802	25	108	Äänekoski
64,781	310	1,288	301	52	8,199	- <sup>5)</sup>	17	102	1,406	41,765	42,416	23,687	0	1,037	Husum
18,400	40	38	1.9									2,070	365	2.7	Others <sup>4)</sup>
<b>300,973</b>	<b>556</b>	<b>1,872</b>	<b>347</b>	<b>52</b>	<b>11,470</b>	<b>391</b>	<b>23</b>	<b>175</b>	<b>1,903</b>	<b>106,826</b>	<b>67,920</b>	<b>145,495</b>	<b>1,826</b>	<b>1,297</b>	<b>Total</b>

Emissions to air (t)				Discharges to water (t)					Water use (1.000 m³)		Waste (t)			Mill
CO <sub>2</sub> fossil	Sulphur as SO <sub>2</sub>	Nitrogen oxides as NO <sub>2</sub>	Particles	COD	BOD	Total phosphorus	Total nitrogen	Total suspended solids	Water sourcing	Waste water flow	Utilised	Landfill	Hazardous	
15,005	0	6.3	0	301	30	1.1	18	43	2,966	4,620	52,427	0	35	Mänttä
21,108	0	12	0	38	4.0	0.2	0	4.0	667	396	513	0	76	Düren
86,228	0.32	88	0.17	402	20	1.0	0	20	3,230	1,996	100,827	6,437	19	Kreuzau
24,433	0.0101	14	0	188	5.4	0.27	0	5.4	544	536	36,145	0	7.9	Raubach
10,686	0.018	6.6	0	12	2.4	0.12	0	2.4	288	237	1,336	23	241	Stotzheim
29,911	0.28	17	44	47	3.8	0.54	5.3	4.2	850	632	3,946	3,412	0	Krapkowice
11,910	0.056	10	0.47	113	8.3	0.42	0	8.3	979	834	2,058	1,418	32	Žilina
12,389	5.0	89	0	150	16	0.23	13	32	2,625	1,797	31,650	0	11	Katrinefors
12,036	2.3	19	7.4	22	5.2	0.037	0.48	5.3	592	598	1,279	11	0.12	Nyboholm <sup>5)</sup>
7,208	0.29	26	12	60	27	0.045	0.68	5.1	403	276	1,180	0	2.8	Pauliström
														Others <sup>6)</sup>
230,914	8.3	287	64	1,334	122	4.0	38	129	13,143	11,922	231,362	11,300	425	Total

# ANNEX TABLES

## ENVIRONMENTAL INCIDENTS 2017

All environmental incidents that resulted in major permit violations (monthly or annual limit value), claims, compensations or significant media coverage are detailed in the table below. In addition, minor and short-term non-compliances with no perceptible environmental effects were reported at Joutseno, Rauma, Pauliström, Nyboholm and Kreuzau mills. The authorities were informed and corrective actions taken in all cases. The Svir sawmill in Russia paid EUR 2,530 (246) as a fiscal levy related to discharges to water and air and waste handling.

Business Area	Unit	Incident	Corrective actions
Metsä Fibre	Äänekoski mill, Finland	The monthly permit limit for phosphorus emissions to water was exceeded in May. The main reasons for the non-compliance were a shortage of active sludge in the new biological treatment plant and a broken air compressor in aeration line 2.	The start-up of the new treatment plant has been completed and emissions have returned to a normal level.
	Kemi mill	Particle emissions to air from the recovery boiler exceeded the permit limit for several months due to persistent operational problems at the flue gas treatment system.	Major improvements have been made to the electrostatic precipitator and the emissions have decreased. However, the situation remains unstable and improvements will be continued.
Metsä Board	Tako mill, Finland	The permit limit for suspended solids concentration in waste water emissions was exceeded in January and February, due to operational problems at the board machine's discfilter system.	The mill systems were stabilised back to normal operating conditions and 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	4.9	3.3	4.9	3.8	8.3	9.1	3.1
Ratio of percentage increase of highest individual salaries (highest 1%) to average percentage increase	2.4	0.1	0.5	1.8	0.0	3.2	0.4
Ratio of basic salary and remuneration of women to men, based on comparable average job grades indexes	0.9	0.9	0.9	0.9	1.0	1.0	0.9

\*Including 32% 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 2017 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 2017 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, Mito-pro Oy p. 62.

## 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 CO<sub>2</sub> emission coefficient for wood based fuels of 364 tonnes CO<sub>2</sub>/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 CO<sub>2</sub> 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 uncertain electricity. Location based method uses the total supplier mix emission coefficients by country. Coefficients for total supplier mix and residual mix are taken from the AIB (Association of Issuing Bodies) European Residual Mixes report.

## TECHNIQUES IN MEASURING HR DATA

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

- The coverage of the employee data was 98%. Employee data excludes statistics from Hangö Stevedoring.
- However the number of employees, sickness absenteeism, work accident absenteeism and lost time accident frequency rate (LTA1 fr) cover 100% of the employees. The number of employees is reported as full-time equivalent (FTE). The sickness absenteeism % and work accident absenteeism % are calculated per theoretical working hours. The lost time accident frequency rate (LTA1 fr) includes all accidents at work that have resulted in at least one disability day. The LTA1 fr is calculated as: 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 registered occupational diseases data covers 100% 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. Turnover data covers 98% of 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 2017 (“the Report”). The assurance engagement was conducted in accordance with the AA1000 Assurance Standard (2008) 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 and responsiveness;
- 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 so as 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 and Metsä Fibre Kemi mills and Metsä Forest Kemi wood procurement area 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. 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 and responsiveness.

### Sustainability performance data

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

### GRI in accordance criteria

The Report complies with the GRI Standards: Comprehensive option.

## OBSERVATIONS AND RECOMMENDATIONS

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

- In Metsä Group, there is a solid foundation for sustainability with competent people and integration to day-to-day management. Operational sustainability through tangible actions and targets is a strength of Metsä Group. Metsä Group is well positioned to enhance sustainability in the whole value chain. We encourage Metsä Group to continue utilising this opportunity in the business development and investments on sustainable solutions.
- Metsä Group has a widely-recognised role in progressing circular and bioeconomy. In 2017, 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 and to build sustainable solutions and initiatives for circular bioeconomy.
- Metsä Group has made good progress towards the Group-level sustainability targets. In 2017, Metsä Group started to evaluate the focus of sustainability work and material topics. We recommend that based on this work the Group-level sustainability targets beyond 2020 will be developed to further measure the value chain impacts and Metsä Group’s contribution to sustainable circular bioeconomy.

Helsinki, Finland, 12 February 2018  
Mitopro Oy

**Mikael Niskala**

Independent Sustainability Practitioner

**Tomi Pajunen**

Independent Sustainability Practitioner

# GRI CONTENT INDEX

Metsä Group's Sustainability Report 2017 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. They have 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
<b>GRI 102 GENERAL DISCLOSURES</b>		
<b>ORGANISATIONAL PROFILE</b>		
102-1 Name of the organization	SR p. 4-5	
102-2 Activities, brands, products, and services	SR P. 4-5, 7, 16-17, 20-21, 38-39	
102-3 Location of headquarters	FS p. 88	
102-4 Location of operations	SR p. 16-17, 34-35, 46-47, 56-59	
102-5 Ownership and legal form	SR p. 4-5	
102-6 Markets served	SR p. 16-17, 20-21, 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. 22, 25	
102-11 Precautionary Principle or approach	SR p. 10-11, FS p. 9, metsagroup.com/csr	UNGC P7
102-12 External initiatives	SR p. 10-11, 50-51	
102-13 Membership of associations	SR p. 50-51	
<b>STRATEGY</b>		
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
<b>ETHICS AND INTEGRITY</b>		
<b>UNGC P10</b>		
102-16 Values, principles, standards, and norms of behavior	SR p. 10-13, Metsä Group's brochure (Sustainably from the forest) p. 4	
102-17 Mechanisms for advice and concerns about ethics	SR p. 10-13	
<b>GOVERNANCE</b>		
102-18 Governance structure	SR p. 10-11, Financial Statement p.88-94	
102-19 Delegating authority	SR p. 10-11	
102-20 Executive-level responsibility for economic, environmental, and social topics	SR p. 10-11	
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. 98-103	
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	
102-26 Role of highest governance body in setting purpose, values, and strategy	SR p. 10-11, FS p. 88	
102-27 Collective knowledge of highest governance body	SR p. 10-11. Sustainability is on the Board's agenda annually.	

STANDARD AND DISCLOSURE	References and comments	UN Global Compact
102-28 Evaluating the highest governance body's performance	The Board of Directors prepare a self-assessment annually.	
102-29 Identifying and managing economic, environmental, and social impacts	SR p. 10–11, FS p. 90–91	
102-30 Effectiveness of risk management processes	FS p. 92–94	
102-31 Review of economic, environmental, and social topics	SR p. 10–11	
102-32 Highest governance body's role in sustainability reporting	SR p. 10–11	
102-33 Communicating critical concerns	SR p. 10–13, FS p. 92–94	
102-34 Nature and total number of critical concerns	SR p. 12–13, FS p. 92–94	
102-35 Remuneration policies	FS p. 95	
102-36 Process for determining remuneration	FS p. 95	
102-37 Stakeholders involvement in remuneration	FS p. 95	
102-38 Annual total compensation ratio	SR p. 60	
102-39 Percentage increase in annual total compensation ratio	SR p. 60	
<b>STAKEHOLDER ENGAGEMENT</b>		
102-40 List of stakeholder groups	SR p. 34–35, 46–47, 50–51	
102-41 Collective bargaining agreements	79% of all Metsä Group's employees fall within the scope of collective agreements.	UNGC P3
102-42 Identifying and selecting stakeholders	SR p. 10–11, 46–49	
102-43 Approach to stakeholder engagement	SR p. 10–11, 48–49	
102-44 Key topics and concerns raised	SR p. 4–5, 12–13, 34–35, 48–51	
<b>REPORTING PRACTICE</b>		
102-45 Entities included in the consolidated financial statements	FS p. 35	
102-46 Defining report content and topic boundaries	SR p. 61, <a href="http://www.metsagroup.com/csr">www.metsagroup.com/csr</a>	
102-47 List of material topics	SR p. 10–11. Based on materiality analysis a total of 27 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 2017	
102-51 Date of most recent report	26 Feb 2017	
102-52 Reporting cycle	Annual	
102-53 Contact point for questions regarding the report	SR cover inlet	
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. 63–66, <a href="http://www.metsagroup.com/csr">www.metsagroup.com/csr</a>	
102-56 External assurance	SR p. 62	
<b>GRI 103 MANAGEMENT APPROACH</b>		
103-1 Explanation of the material topic and its Boundary	SR p. 4–7, 10–11, 14–15, 61, <a href="http://www.metsagroup.com/csr">www.metsagroup.com/csr</a>	
103-2 The management approach and its components	SR p. 6–7, 10–11, 12–13, 14–15, 61, FS p. 8–9, <a href="http://www.metsagroup.com/csr">www.metsagroup.com/csr</a>	
103-3 Evaluation of the management approach	SR p. 6–7, 10–11, 12–13, 14–15, 61, FS p. 8–9, <a href="http://www.metsagroup.com/csr">www.metsagroup.com/csr</a>	
<b>GRI 200 ECONOMIC STANDARD</b>		
<b>ECONOMIC PERFORMANCE</b>		
201-1 Direct economic value generated and distributed	SR 4–5, 46–47	
201-2 Financial implications and other risks and opportunities due to climate change	FS p. 10, 68, <a href="http://www.metsagroup.com/csr">www.metsagroup.com/csr</a>	
201-3 Defined benefit plan obligations and other retirement plans	FS p. 46	
201-4 Financial assistance received from government	FS p. 26. Metsä Group's bioproduct mill investment was granted a EUR 32.1 million investment subsidy for renewable energy in 2015 by the Finnish Ministry of Employment and the Economy. EUR 17.3 million of this grant was received in 2017.	
<b>INDIRECT ECONOMIC IMPACTS</b>		
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.	
203-2 Significant indirect economic impacts	SR p. 46–47	
<b>PROCUREMENT</b>		
204-1 Proportion of spending on local suppliers	SR p. 34–35	



STANDARD AND DISCLOSURE	References and comments	UN Global Compact
<b>ANTI-CORRUPTION</b>		<b>UNGC P10</b>
205-1 Operations assessed for risks related to corruption	SR p. 12–13, FS p. 92–94. 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. 12–13, 34–35	
205-3 Confirmed incidents of corruption and actions taken	No confirmed incidents of corruption during the reporting period.	
<b>ANTI-COMPETITIVE BEHAVIOUR</b>		
206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	SR p. 12–13, FS p.11, 63	
<b>GRI 300 ENVIRONMENTAL STANDARD</b>		<b>UNGC P7, P9</b>
<b>MATERIALS</b>		
301-1 Materials used by weight or volume	SR p. 6–7, 36–37	
301-2 Recycled input materials used	SR p. 36–37	
301-3 Reclaimed products and their packaging materials	SR p. 7, 36–37	
<b>ENERGY</b>		
302-1 Energy consumption within the organization	SR p. 40–41, 61	
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. 40–41	
302-4 Reduction of energy consumption	SR p. 40–41	
302-5 Reductions in energy requirements of products and services	Not applicable for Metsä Group	
<b>WATER</b>		
303-1 Water withdrawal by source	SR p. 36–37	
303-2 Water sources significantly affected by withdrawal of water	SR p. 42–43	
303-3 Water recycled and reused	SR p. 42–43. 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.	
<b>BIODIVERSITY</b>		
304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	<a href="https://metsagroup.com/csr">metsagroup.com/csr</a>	
304-2 Significant impacts of activities, products, and services on biodiversity	SR p. 28–33	
304-3 Habitats protected or restored	SR p. 28–33, <a href="https://metsagroup.com/csr">metsagroup.com/csr</a>	
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.	
<b>EMISSIONS</b>		
305-1 Direct (Scope 1) GHG emissions	SR p. 36–37, 44–45, 61	
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. 36–37, 40–41, 44–45, 56–59	
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. 36–37, 44–45	
<b>EFFLUENTS AND WASTE</b>		
306-1 Water discharge by quality and destination	SR p. 36–37, 42–43, 56–59	
306-2 Waste by type and disposal method	SR p. 22–23, 36–37	
306-3 Significant spills	SR p. 60	
306-4 Transport of hazardous waste	Not applicable for Metsä Group	
306-5 Water bodies affected by water discharges and/or runoff	SR p. 42–43	
<b>ENVIRONMENTAL COMPLIANCE</b>		<b>UNGC P8</b>
307-1 Non-compliance with environmental laws and regulations	SR p. 60	
<b>SUPPLIER ENVIRONMENTAL ASSESSMENT</b>		<b>UNGC P8</b>
308-1 New suppliers that were screened using environmental criteria	SR p. 34–35. 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. 28–35	

STANDARD AND DISCLOSURE	References and comments	UN Global Compact
<b>GRI 400 SOCIAL STANDARDS SERIES</b>		
<b>EMPLOYMENT</b>		<b>UNGC P6</b>
401-1 New employee hires and employee turnover	SR p. 52–53	
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	Not applicable. We comply with local labour agreements and legislation and the employment contracts continue unchanged after parental leave.	
<b>LABOUR/MANAGEMENT RELATIONS</b>		<b>UNGC P2</b>
402-1 Minimum notice periods regarding operational changes	We comply with local agreements and legislation redundancy situations.	
<b>OCCUPATIONAL HEALTH AND SAFETY</b>		
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, and absenteeism, and number of work-related fatalities	SR p. 52–55, 56–59	
403-3 Workers with high incidence or high risk of diseases related to their occupation	SR p. 54–55. 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.	
<b>TRAINING AND EDUCATION</b>		<b>UNGC P6</b>
404-1 Average hours of training per year per employee category	SR p. 52–53. Training reported as days/year.	
404-2 Programs for upgrading employee skills and transition assistance programs	SR p. 52–53	
404-3 Percentage of employees receiving regular performance and career development reviews	SR p. 52–53. All Metsä Group's employees are entitled to a Personnel Development Appraisal (PDA).	
<b>DIVERSITY AND EQUAL OPPORTUNITY</b>		<b>UNGC P6</b>
405-1 Diversity of governance bodies and employees	SR p. 52–53, FS p. 90–92	
405-2 Ratio of basic salary and remuneration of women to men	SR p. 60	
<b>NON-DISCRIMINATION</b>		<b>UNGC P6</b>
406-1 Incidents of discrimination and corrective actions taken	No confirmed cases of discrimination in 2017.	
<b>HUMAN RIGHTS ASSESSMENT</b>		<b>UNGC P1, P2</b>
412-1 Operations that have been subject to human rights reviews or impact assessments	SR p. 12–13. In 2016, 15 sites reported in SEDEX and SMETA audits were conducted in several mills. No audits were made in 2017 as audits are done every other year if there are no significant deviations.	
412-2 Employee training on human rights policies or procedures	SR p. 12–13. 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.	
<b>LOCAL COMMUNITIES</b>		<b>UNGC P1</b>
413-1 Operations with local community engagement, impact assessments, and development programs	SR p. 46–51	
413-2 Operations with significant actual and potential negative impacts on local communities	SR p. 12–13, 46–51	
<b>SUPPLIER SOCIAL ASSESSMENT</b>		<b>UNGC P2, P4, P5</b>
414-1 New suppliers that were screened using social criteria	SR p. 12–13, 34–35. 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. 12–13, 34–35	
<b>PUBLIC POLICY</b>		<b>UNGC P10</b>
415-1 Political contributions	None were made, <a href="http://www.metsagroup.com/csr">www.metsagroup.com/csr</a>	
<b>CUSTOMER HEALTH AND SAFETY</b>		
416-1 Assessment of the health and safety impacts of product and service categories	SR p. 24–25	
416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	No incidents reported during 2017.	

STANDARD AND DISCLOSURE	References and comments	UN Global Compact
<b>MARKETING AND LABELLING</b>		
417-1 Requirements for product and service information and labeling	SR p. 16–25, 30–31	
417-2 Incidents of non-compliance concerning product and service information and labeling	No incidents reported during 2017.	
417-3 Incidents of non-compliance concerning marketing communications	No incidents reported during 2017.	
<b>CUSTOMER PRIVACY</b>		
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	No incidents reported during 2017.	
<b>SOCIOECONOMIC COMPLIANCE</b>		
419-1 Non-compliance with laws and regulations in the social and economic area	FS p. 11	

# 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.



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



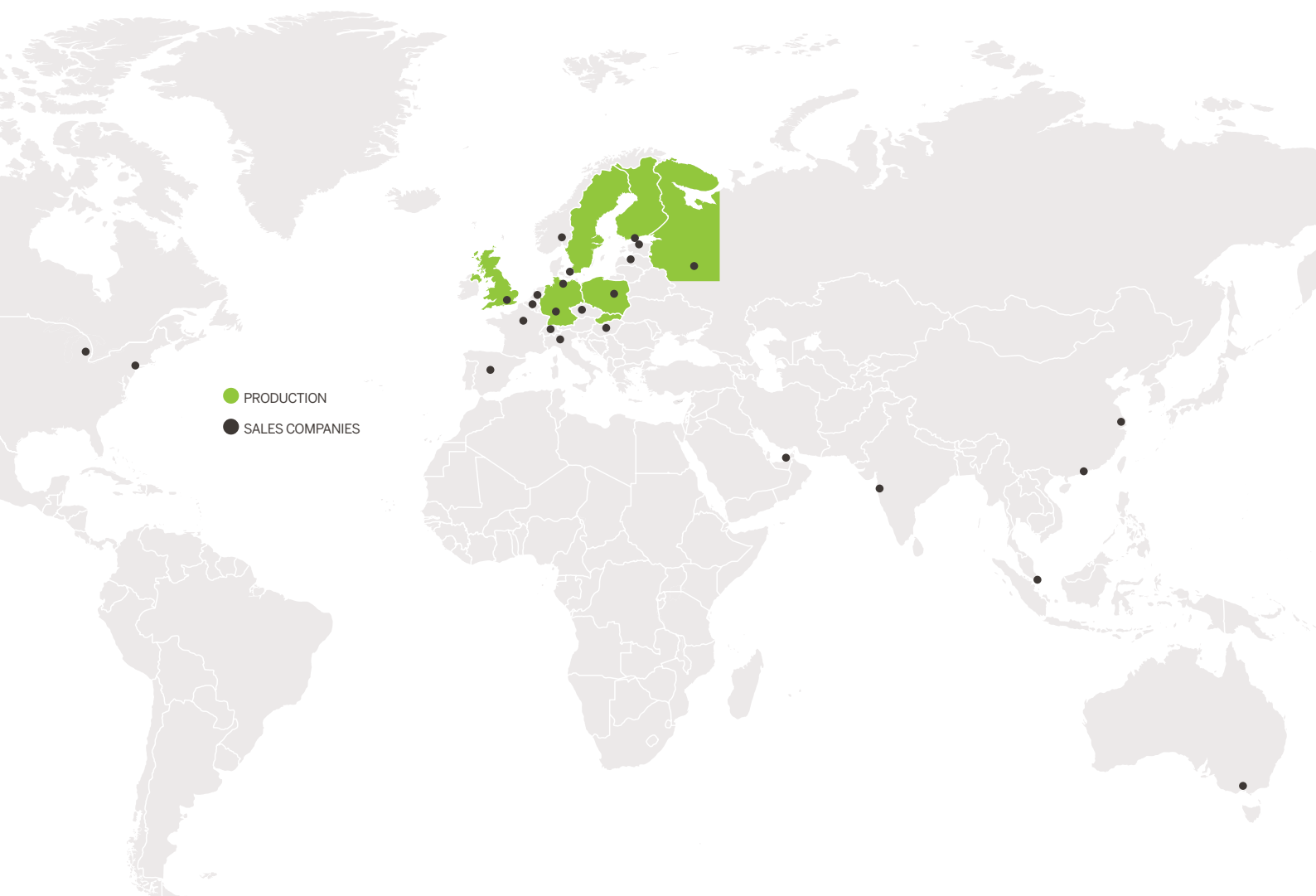
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# INTERNATIONAL METSÄ GROUP

Metsä Group is a Finnish forest industry company that operates on the international market. We have 29 production facilities in 7 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.

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The MetsäBoard Prime FBB Bright folding boxboard used for the cover of this report is manufactured at Metsä Board's Äänekoski mill. The surface layers of the three-layer folding boxboard are made from chemical pulp from Metsä Fibre's Äänekoski bioproduct mill, and the high-yield pulp of the middle layer is manufactured at Metsä Board's Joutseno mill. MetsäBoard Prime FBB Bright is made from pure fresh fibre. It is a fully coated paperboard, suitable for packaging and graphical end uses. The other raw materials come from reliable suppliers who comply with Metsä Group's Supplier Code of Conduct and Sustainability Principles.

# Make the most of Metsä



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# NETS & GROUPS JUST A BITLET REPORT 2017