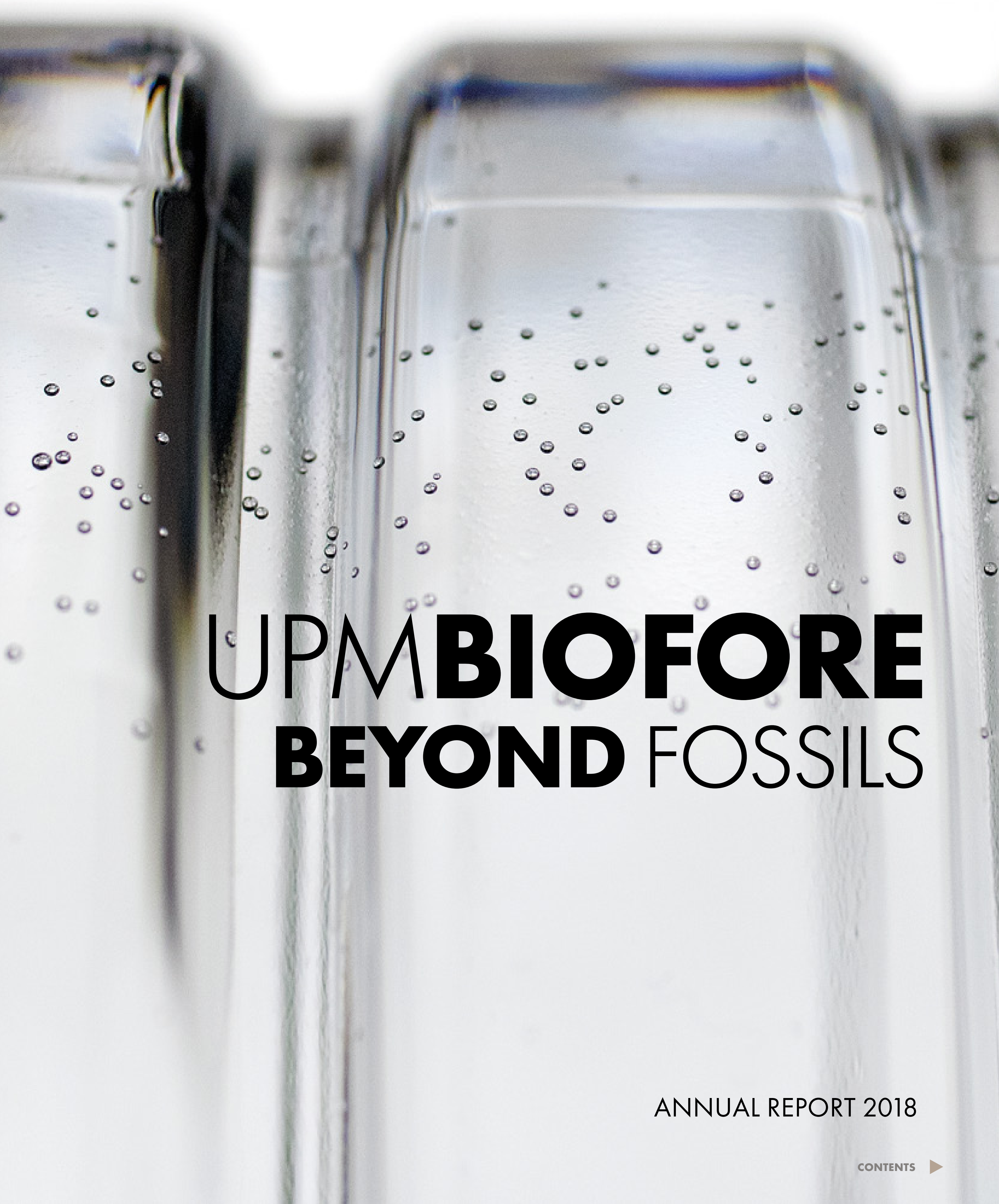
UPM



UPM**BIOFORE**
BEYOND FOSSILS

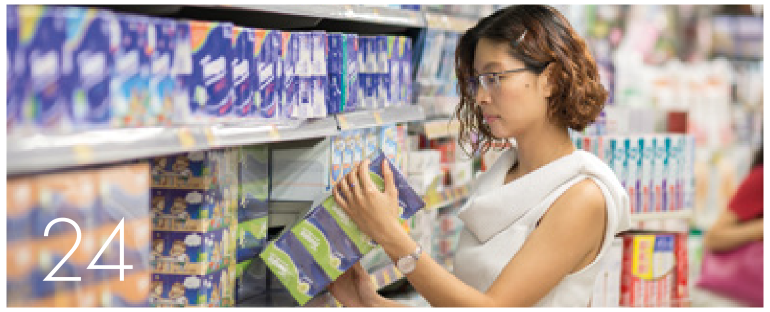
ANNUAL REPORT 2018

CONTENTS ▶

UPM**BIOFORE**–**BEYOND** FOSSILS

Inspired by the limitless opportunities of bioeconomy
Delivering renewable and responsible solutions
Innovating for a future beyond fossils


10



CONTENTS

6 YEAR 2018 IN BRIEF
Key performance indicators and main events.

8 FROM THE CEO
President and CEO reviews the year 2018.

10 FROM FOSSILS TO BIOECONOMY
We lead the forest-based bioindustry into a sustainable, innovation-driven and exciting future beyond fossils.

14 UPM STRATEGY – AIMING HIGHER
We create value by seizing the limitless potential of bioeconomy.

16 FINANCIAL TARGETS
We are aiming higher in financial performance.

18 SPEARHEADS FOR GROWTH
Our transformative prospects provide opportunities for significant earnings growth.

20 INNOVATION FOR GROWTH
Our aim is to create sustainable solutions and to minimise dependency on fossil-based materials.

24 VALUE FROM RESPONSIBILITY
Responsibility is integrated into our Biofore strategy and our operations.

26 RESPONSIBILITY TARGETS
Our 2030 targets are guided by the Biofore strategy with positive contribution to UN Sustainability Development Goals (SDGs).

32 BUSINESSES
The direction and performance of our six business areas.

46 STRATEGY IN ACTION
Our 2018 strategic actions for future growth and what's ahead in 2019.

48 STAKEHOLDERS
Dialogue and stakeholder engagement bring stability to our operations.

54 OUR PEOPLE
Our culture of Aiming Higher sets the tone of everything we do and encourages all UPMers to develop as individuals and as a company.

62 SUSTAINABLE AND SAFE PRODUCTS
Our products help to mitigate climate change and create value to society. Lifelong product stewardship is a key element of our responsible practices.

66 TAXES
UPM's continuous improvement in its financial performance also generates higher tax revenue.

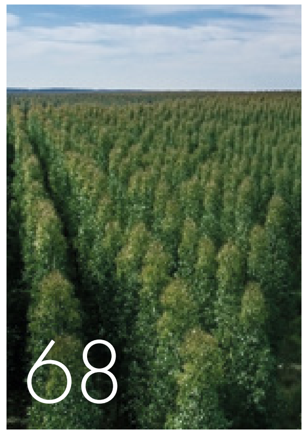
68 ENVIRONMENT
Our sustainable forestry, responsible water use, climate actions and circular economy thinking.

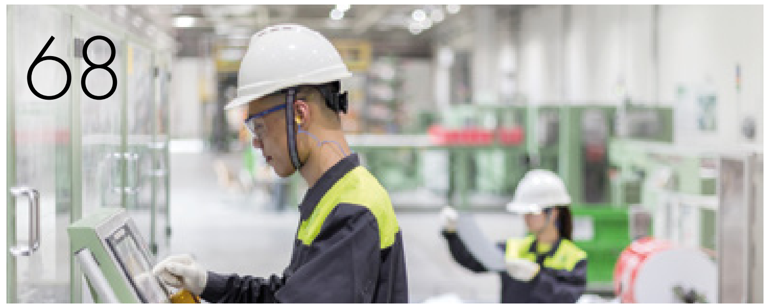
78 SOCIETAL IMPACTS
Comprehensive summary of the societal impacts of our activities and products.

80 OUR GOVERNANCE AND COMPLIANCE
Awareness of our culture of integrity is a prerequisite for compliance.

99 REPORT OF THE BOARD OF DIRECTORS

120 ACCOUNTS FOR 2018
Consolidated financial statements





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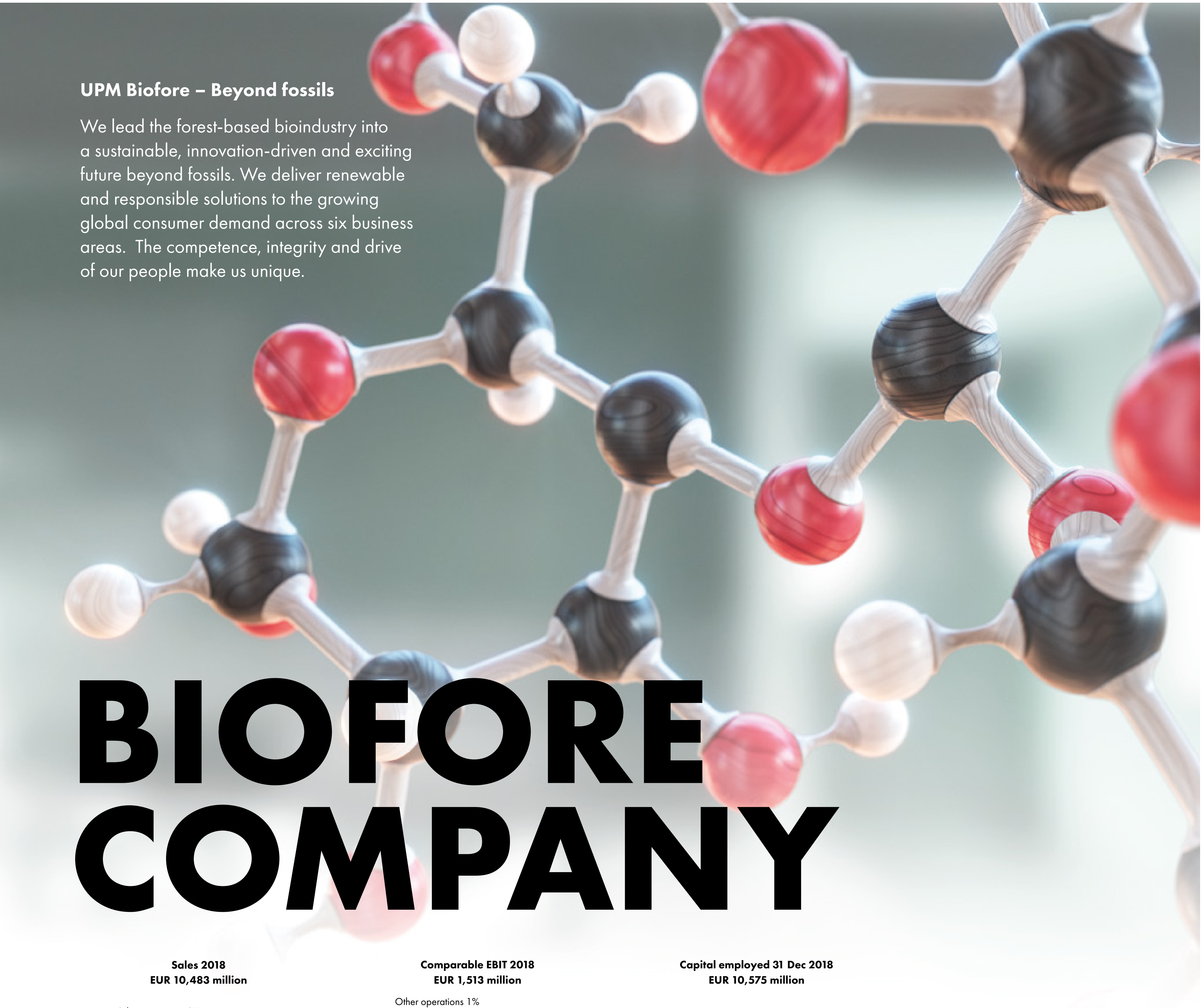
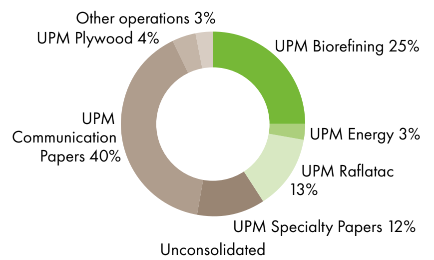


UPM Biofore – Beyond fossils

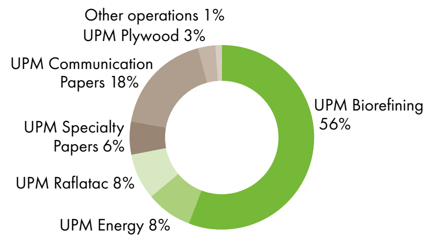
We lead the forest-based bioindustry into a sustainable, innovation-driven and exciting future beyond fossils. We deliver renewable and responsible solutions to the growing global consumer demand across six business areas. The competence, integrity and drive of our people make us unique.

BIOFORE COMPANY

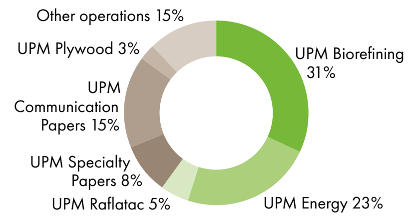
Sales 2018
EUR 10,483 million



Comparable EBIT 2018
EUR 1,513 million



Capital employed 31 Dec 2018
EUR 10,575 million



UPM BIOREFINING

UPM Biorefining consists of pulp, timber and biofuels businesses. UPM Pulp offers a versatile range of responsibly-produced pulp grades suitable for a wide range of end-uses such as tissue, specialty paper, graphic papers and board. UPM Timber offers certified sawn timber for construction, joinery and furniture. UPM Biofuels produces wood-based renewable diesel for all diesel engines and renewable naphtha that can be used as a biocomponent for gasoline or for replacing fossil raw materials in petrochemical industry, for example.

UPM ENERGY

UPM Energy creates value through cost competitive, low-emission electricity generation and through physical and financial electricity trading as well as energy optimisation services for industrial consumers.

UPM RAFLATAC

UPM Raflatac manufactures self-adhesive label materials for product and information labelling in the food, beverage, personal care, pharmaceutical and retail segments, for example.

UPM SPECIALTY PAPERS

UPM Specialty Papers offers labelling materials and release liners, office and graphic papers as well as packaging papers for labelling, commercial siliconising, flexible packaging, wrapping and printing.

UPM COMMUNICATION PAPERS

UPM Communication Papers offers an extensive product range of graphic papers for advertising and publishing as well as home and office uses.

UPM PLYWOOD

UPM Plywood offers plywood and veneer products, mainly for construction, vehicle flooring and LNG shipbuilding as well as other industrial applications.

OTHER OPERATIONS

Wood Sourcing and Forestry secures competitive wood and biomass for UPM businesses and manages UPM-owned and privately-owned forests in North Europe. In addition, UPM offers forestry services to forest owners and forest investors. UPM Biochemicals and UPM Biocomposites business units are also included in Other operations.

KEY PERFORMANCE INDICATORS

TOP PERFORMANCE

Comparable EBIT

EUR 1,513m
+17%

Comparable ROE

12.9%
+1.0pp

4/6
business areas achieved their financial targets

STRONG CASH FLOW

Operating cash flow

EUR 1,391m
−11%

ATTRACTIVE DIVIDEND

Dividend (proposal)

EUR 693m
+13%

Net debt reduction

EUR 485m

Industry-leading balance sheet

Net debt
EUR -311m

FOCUSED INVESTMENTS

Capital expenditure

EUR 303m

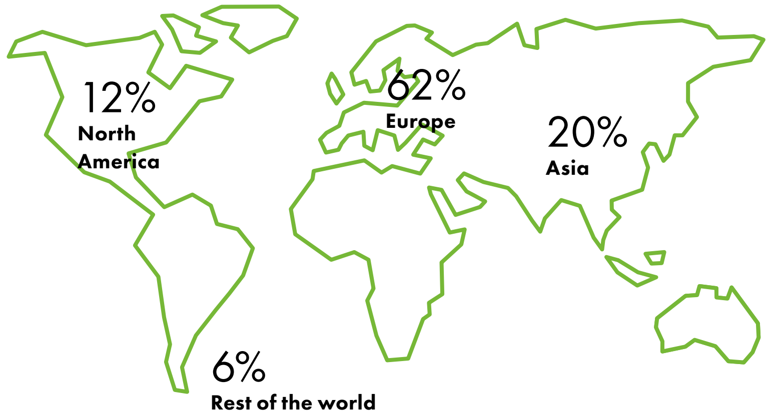
attractive returns with disciplined and effective investments

READ MORE:
upm.com/investors

GLOBAL BUSINESSES – LOCAL PRESENCE

UPM's sales by market 2018

EUR 10,483 million



54 production plants in 12 countries

19,000 employees in 46 countries

12,600 customers in 110 countries

93,600 shareholders in 32 countries

24,000 b-to-b suppliers in 75 countries

Active employees completed Code of Conduct training 99%
+1pp
The UPM Code of Conduct lays the foundation for responsible business operations and continuous improvement.

Employee engagement index 71% favourable
+0pp
Engaged, high-performing people implement the Biofore strategy and drive short- and long-term success.

Total recordable injury frequency 6.9
−16%
Ensuring a safe working environment and safeguarding for employees and everyone working for UPM.

Share of certified wood 81%
−4pp
Forest certification is an excellent tool for ensuring sustainable forestry. Chain-of-Custody requirements ensure 100% supply from controlled sources.

Supplier Code qualified supplier spend 83%
+1pp
Transparent supplier requirements form the basis of responsible sourcing throughout the entire supply chain.

Fossil CO_2 Emissions related to energy use 6.1 million t
−4%
Creating climate solutions and working towards carbon neutrality.

EVENTS IN 2018

01

11 JANUARY
UPM Raflatac opens new slitting and distribution terminal in Santiago, Chile

12 JANUARY
UPM Specialty Papers recognised as a Water Efficiency Frontrunner in China

15 JANUARY
UPM Biofuels receives Uruguay's first RSB sustainability certification for the Brassica carinata crop

22 JANUARY
UPM Biofuels and ZERO environmental organisation cooperate to promote the green shift in the transportation and petrochemical industries

31 JANUARY
UPM announces an expansion of its release liner capacity at the UPM Jämsänkoski mill, Finland

02

1 FEBRUARY
UPM listed in the RobecoSAM's Sustainability Yearbook 2018 with Gold Class and Industry Mover distinctions

5 FEBRUARY
UPM Biofuels starts an environmental impact assessment (EIA) for a possible biofuels biorefinery in Kotka, Finland

03

8 MARCH
UPM Specialty Papers receives Singapore Green Label certification for its sustainable manufacturing, product value chain and environmental practices

11 MARCH
TVO signs a settlement agreement on OL3 EPR project completion and related disputes

14 MARCH
UPM Biofuels enters the bioplastics market with UPM BioVerno renewable naphtha

04

16 APRIL
UPM launches a new biocomposite material for 3D printing

20 APRIL
UPM Plywood announces the replacement project for the boiler and scarf-joining line at the UPM Joensuu plywood mill in Finland

24 APRIL
UPM Biofuels gains the world's first RSB low indirect land use change (ILUC) risk certification for its feedstocks

26 APRIL
UPM decides to increase label paper production capacity at the UPM Changshu mill, China and the UPM Nordland mill, Germany

UPM Paper ENA is renamed UPM Communication Papers

05

21 MAY
The Helsinki Court of Appeal dismisses the claim of Metsähallitus concerning the raw wood market from 1997 to 2004

UPM Kaukas pulp mill expansion in Finland completed

06

07

5 JULY
UPM joins Together for Sustainability (TfS) initiative to enhance sustainability in its supply chains

9 JULY
UPM Raflatac opens new slitting and distribution terminal in Seoul, South Korea

08

09

10 SEPTEMBER
UPM Raflatac acquires a terminal in Seattle, USA

13 SEPTEMBER
UPM recognised for the sixth time as the industry's most responsible company in the global Dow Jones Sustainability Index for 2018–2019

17 SEPTEMBER
UPM launches new brand promise: UPM Biofore – Beyond Fossils

24 SEPTEMBER
UN recognises UPM as one of 34 Global Compact LEAD companies demonstrating world-class commitment to corporate sustainability

10

4 OCTOBER
UPM Biofuels completes its environmental impact assessment for possible Kotka Biorefinery in Finland

UPM Jämsänkoski release liner expansion completed in Finland

11

27 NOVEMBER
UPM launches a new biodiversity target

12

10 DECEMBER
UPM increases the fair value of its forest assets in Finland and changes its accounting policy in relation to forest renewal costs

The new cut-size line completed at UPM Changshu, China

UPMBIOFORE–BEYOND FOSSILS

2018 was a record year for UPM. While the uncertainties in the global economy increased towards the end of the year, we delivered excellent results and achieved our 23rd consecutive quarter of earnings growth.

BEYOND FOSSILS

The year was a commercial success as our sales grew and we were able to mitigate higher input costs. We laid the groundwork for future growth in our current and new businesses and received exceptional recognition for our responsible performance. The results for 2018 demonstrate the impact of many years of transformation. I wish to thank all UPMers and our partners for achieving excellent results together.

Our sales grew by 5% and comparable EBIT increased by 17% in 2018. Our cash flow was strong, and our net debt fell below zero to EUR –311 million.

Our strategic guidance remained unchanged: Our portfolio consists of six competitive businesses with strong market positions and high barriers to entry. Performance, growth, innovation and responsibility continue to be the four cornerstones we build on.

In November, we received news of unspeakable sadness as it was confirmed that Heikki Vappula, Executive Vice President of UPM Biorefining, had died in an accident. We owe a debt of gratitude to Heikki who was a visionary and an inspiring executive. His insights and energy will be greatly missed by colleagues, as well as by business partners around the world.

Future beyond fossils

Looking forward, we are excited about 2019. Future beyond fossils is a key driver for UPM going forward. We have clearly defined the spearheads for our growth: high value fibres, specialty packaging materials and molecular bioproducts will pave our way.

We are building a more sustainable future by replacing oil-based and other non-renewable materials with renewable alternatives, by using them efficiently and creating entirely new kinds of products and services. Through bioeconomy innovation, we have an opportunity to expand into completely new business areas beyond fossil economy.

In the coming decades, changing consumer preferences and new consumers in emerging economies will create significant new demand and a raised bar for businesses, when it comes to responsibility and integrity.

We believe that customers, investors, and other stakeholders value responsible operations that keep risks under control and add to our business opportunities, increasing the company's value.

Our objective is earnings growth. We will maintain our high standards when it comes to return requirements for any growth investments.

In addition to executing various low-risk, focused growth investments, we continue to evaluate our transformative prospects that provide us with unique opportunities for significant long-term earnings growth.

In Uruguay, preparations for the potential new world-class pulp mill are proceeding. The implementation of the investment agreement between UPM and the Government of Uruguay will be at an intensive stage in 2019. For UPM's pulp business, the potential mill would mean a step change in business size and earnings.

In UPM Biochemicals, the basic engineering work for the potential first industrial-scale biochemicals refinery in Germany continues. In UPM Biofuels, we have completed the Environmental Impact Assessment for a possible biofuels refinery in Finland. These molecular bioproducts businesses have the potential to provide UPM with a significant growth platform for decades to come.

Shareholder value at the core

Creating shareholder value is at the core of our strategy, and we believe that this also benefits other stakeholders and society in the long term. Our ongoing transformation and steady progress in financial and responsibility performance has been reflected positively in the share price in recent years. During 2018, we reached a new record share price in the autumn, although the share price decreased towards the end of the year.

> The long-term outlook for our businesses is stronger than ever

UPM's Board of Directors has proposed a dividend of EUR 1.30 (1.15) per share for 2018, up 13% from last year. The proposal, which is above company's long-term dividend policy range of 30-40%, reflects UPM's exceptional financial position and confidence in future cash generation.

Over the next few years, we can allocate more capital to growing and transforming the company while simultaneously increasing the distribution to our shareholders and maintaining headroom in our strong balance sheet. We will also ensure that our employees have the competence, integrity and drive to make our strategy come true.

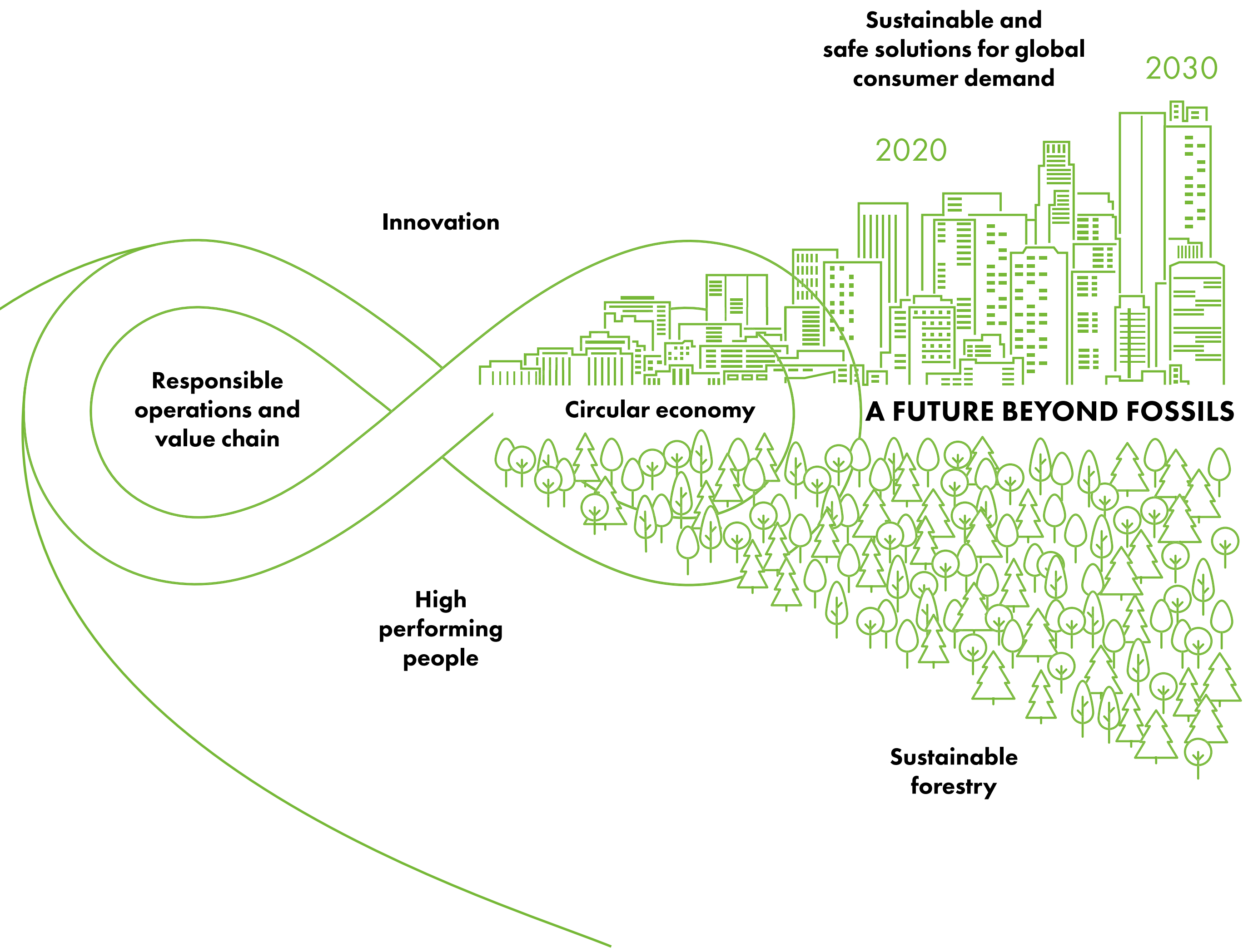
Global economic growth is estimated to continue in 2019, albeit at a slower pace than in 2018. While there are uncertainties in the operating environment, UPM is well-positioned for 2019 and beyond. The long-term outlook for our businesses is stronger than ever. It is driven by global consumer megatrends, more sustainable consumer choices and the need to reduce reliance on fossil resources.

UPM is ready to grasp the limitless opportunities that bioeconomy offers for value creation and business growth.

Jussi Pesonen
President and CEO

FROM FOSSILS TO BIOECONOMY

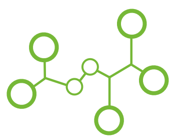
Our products provide sustainable solutions that meet the challenges and opportunities presented by global megatrends. We are developing new innovative and high-quality products as well as renewable and recyclable materials from wood-based biomass. Wood fibre, biomolecules, residues and side streams are becoming increasingly important as the raw materials of the future.



ALTERNATIVES FOR FOSSIL-BASED MATERIALS

FIBRE PRODUCTS

WE RESPOND TO growth in consumer demand with sustainable and safe products. We can replace non-renewable raw materials with sustainably produced fibre-based products that are used in packaging, hygiene and tissue. We also use renewable wood fibre as the main raw material for graphic papers, specialty packaging materials, labelling materials and biocomposite products.

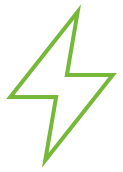


MOLECULAR BIOPRODUCTS

BIOFUELS AND BIOCHEMICALS offer new growth opportunities beyond our current product portfolio. The fuels and chemicals markets are huge, supported by increasing demand for sustainable alternatives. UPM enjoys excellent advantages in developing its biomolecule businesses: competitive forest industry platform, sustainable feedstocks and land use, biomass processing technologies and intellectual property rights.

WOOD PRODUCTS

MOST OF OUR WOOD products are used in construction. UPM's wood products, such as plywood and sawn timber, are also used in furniture and parquet, packaging and vehicle floors and as insulation in carriers used for liquefied natural gas. Wood products offer a solution that is healthy, safe and mitigates climate change. Our wood-based products retain the carbon bound in wood throughout their lifecycle.

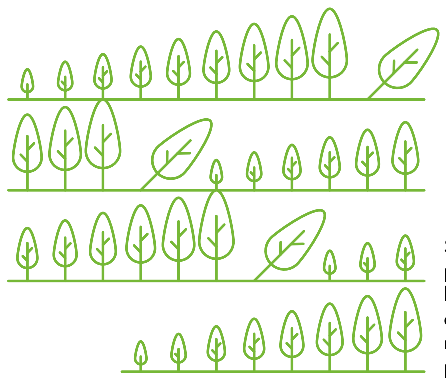


LOW-EMISSION ENERGY

OUR ENERGY PORTFOLIO consists mostly of energy sources that do not cause fossil carbon dioxide emissions. We produce hydropower, nuclear power and biomass-based energy (combined heat and power, CHP) in the mills. Energy efficiency means that energy consumption and emissions are reduced.

SUSTAINABLE RETURNS FROM FORESTRY

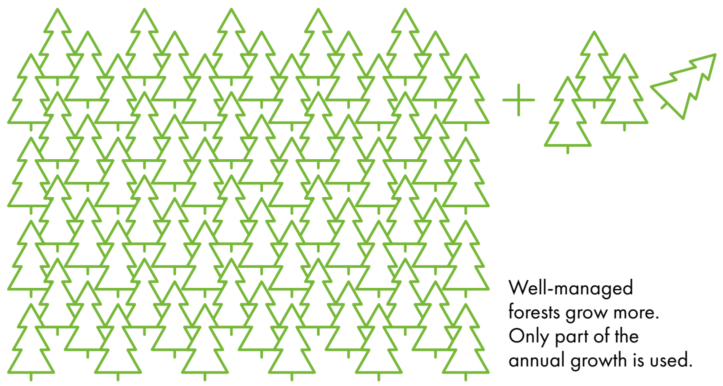
PLANTATION



Sustainable plantations have been planted as a renewable raw material for our products.

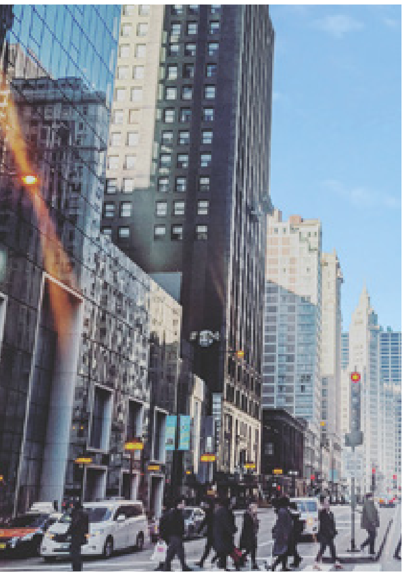
SUSTAINABLE PLANTATIONS were established in Uruguay in the 1990s to replace the impoverished pastures. Plantations now cover one million hectares of land; of this land, UPM owns 258,000 hectares. Approximately 60% of the area consists of eucalyptus plantations. The rest is made up of natural pastures, conservation areas, roads and other infrastructures. UPM's plantations in Uruguay constitute a carbon sink of approximately 24 million tonnes that did not exist 30 years ago.

FOREST



Well-managed forests grow more. Only part of the annual growth is used.

FINNISH FOREST RESOURCES are growing at a record pace. The reason for this is good forestry. Growing forests bind carbon from the atmosphere that is stored in wood, creating a carbon sink. The annual growth rate of trees in Finnish forests has increased from 50 million m³ in the 1960s to 107 million m³ per year. Only about 72 million m³ (3% of the carbon storage) of the growth is used for industrial and other uses, so trees and the stored carbon dioxide increase every year. This increased growth of Finnish forests has created an annual carbon sink of 27 million tonnes.



Megatrends increase consumer demand and the need for sustainable choices

More pressure
We need more renewable solutions and recycling options. Sustainable forestry responds to resource scarcity and climate change and promotes biodiversity, while also creating the prerequisites for financial growth. The benefits of forestry are far-reaching, which also balances out regional disparity.

More customer demand
Population growth, urbanisation and rising living standards, particularly in the emerging markets in Asia, create new consumer demand far into the future. Demographic change creates new kinds of needs. Digitalisation and e-commerce change consumer behaviour.

The demand for daily consumer goods and the need for packaging materials and labelling are increasing. People also move more, use more energy and invest in lifestyle choices, all of which increase the demand for UPM products.

More sustainable choices
While consumer demand grows, natural resources are dwindling. Mitigating climate change and other environmental challenges require sustainable choices.

The demand for sustainably produced renewable materials and products increases as a result of sustainable consumer choices and increasing regulation. Replacing non-renewable materials and products with renewable ones creates new demand. We must make more efficient use of materials and increase the recycling and reusing of materials so that we can respond to these challenges.

More alternatives to fossil-based solutions
Mitigating climate change requires that use of fossil-based resources and fuels be reduced. Traffic emissions can be reduced by using high-quality renewable fuels. Fossil-based plastic can be replaced with sustainable, renewable alternatives in many applications, and plastics must be recycled and used more efficiently.

WE RESPOND TO THIS CHALLENGE IN MANY WAYS, INCLUDING THE FOLLOWING:

- Our products are made of responsibly sourced renewable raw materials and are recyclable.
- Pulp-based packaging products and specialty papers are sustainable alternatives to plastic products or fossil-based materials.
- UPM Raflatac's thin label materials and wash-off adhesives and label materials containg recycled content.
- UPM BioVerno renewable diesel reduces fossil CO_2 emissions by 80% compared with fossil fuels. It also significantly reduces local emissions.
- UPM's wood-based biochemicals can replace plastics and other materials produced from oil, gas and coal.
- Solutions to decarbonise energy systems.

Sustainable forestry preserves forests and increases carbon sinks

More forests
A sustainably managed forest grows more, creates renewable raw materials and is a larger carbon sink. Sustainable forest management requires investment but also increases the economic value of forests.

Increasing demand for sustainable products creates a need to increase forest areas. One solution is the plantations in the southern hemisphere that have been established on naturally degraded grasslands. Investments are required for establishing and maintaining the plantations. These investments are profitable because they respond to the growing demand for sustainable wood-based products and the operations are economically viable for their owners.

More carbon sinks
Natural and sustainably managed growing forests are the second most important carbon sinks after oceans. By increasing forest growth and reducing the use of fossil fuels, we can mitigate climate change and develop sustainable solutions for future needs.

The carbon sinks of the boreal forests are maintained and developed through sustainable felling rates and by ensuring good forest growth potential. The sustainably established plantations in the southern hemisphere constitute additional carbon sinks.

More life
Sustainable forestry as a responsible land use solution secures wood production and safeguards biodiversity, the good status of water bodies and the benefits of forests for humans. This is the foundation of a sustainable bioeconomy. The recreational use of forests has a health-promoting effect. In addition, the berries, mushrooms and herbs found in forests are an important and diverse source of nutrition. In Finland, the unique everyman's right legislation provides an excellent framework for using nature for recreation and hiking.

More added value for society
Sustainable commercial forestry and forest industry create significant economic wellbeing, the positive impact of which can be seen in many ways across society. Often these operations are based in areas that have little economic activity and few job opportunities. The forest industry is a significant source of tax revenue. In addition to the municipal share of corporate tax and real-estate tax, the taxes that UPM employees pay on their wages have a local impact. The purchasing power of employees and contractors maintains and also increases the vitality of local communities.

- We know the origin of the wood we use.
- We plant 70 million trees every year – one hundred trees every minute.
- The company's forests and plantations are certified, as are 81% of the wood we use.
- We create significant economic wellbeing in Finland and Uruguay.
- UPM's global biodiversity programme maintains and promotes biodiversity.
- Our operations do not cause deforestation.

Circular economy for the efficient use of resources

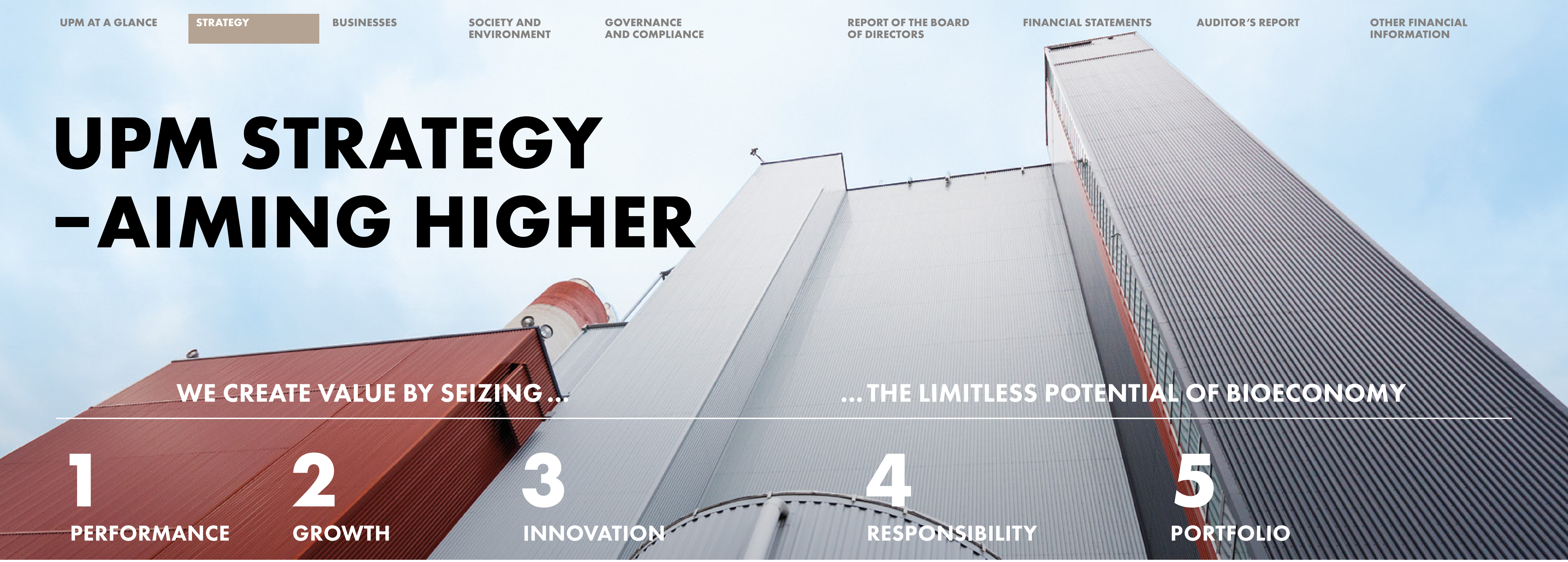
More recycling and resource efficiency, less waste
The circular economy and resource efficiency offer solutions to the scarcity of natural resources, climate change and many other environmental challenges. Many of the challenges we face could be solved entirely or in part if materials and products were recycled and used more efficiently.

Approximately 60% of the wood fibre used in the production of paper and boards are recycled globally. However, only some 14% of plastics and 20% of electronic waste are recycled.

Fewer emissions
The main cause of climate change is the use of fossil fuels. We must reduce their use quickly and move to low-emission or zero-emission energy sources. This requires a versatile fuel portfolio that guarantees a clean and sufficient energy supply for consumers. Being energy efficient and using circular economy solutions that conserve natural resources are two ways in which emissions can be reduced. What's more, part of the side streams of products obtained from forests are already used efficiently as energy. However, other low-emission and zero-emission energy sources are also required.

More new solutions
The product design of sustainable products must cover the entire value chain, from raw material sourcing to end products and their recycling or sustainable disposal. Renewable and recyclable products and innovations based on these are an essential part of the bioeconomy, both now and in the future. Open and transparent product communication supported by ecolabels, certificates and product declarations, for example, increases consumer confidence.

- UPM is the world's largest user of recovered paper in graphic paper manufacturing.
- UPM Raflatac's RafCycle recycling concept collects the paper and plastic used in labelling materials and recycles it as wood-plastic composites.
- Our target is zero solid waste to landfills. We already recycle or recover 90% of the process waste.
- Our target is to use water as efficiently as possible. This also saves energy.
- Biomass-based fuels account for 70% of fuel usage.
- Our target is to improve energy efficiency by 1% every year.



UPM STRATEGY –AIMING HIGHER

WE CREATE VALUE BY SEIZING... ...THE LIMITLESS POTENTIAL OF BIOECONOMY

1 PERFORMANCE

SIGNIFICANCE
- Top performance drives value creation and mitigates risks related to the business environment
- Top performance enables investments in growth, innovation and responsibility

TARGET
- Continuous improvement of performance
- Top relative performance in each business in comparison with peers

OUR WAY
- Right operating model with separate business areas
- Commercial excellence
- Cost efficiency
- High-performing people
- Efficient use of assets and capital

2 GROWTH

SIGNIFICANCE
- Long-term earnings growth requires margin improvement and top-line growth
- UPM's growing businesses have significantly higher margins than its mature businesses

TARGET
- Earnings growth
- Attractive returns

OUR WAY
- Focused growth projects to maintain and grow earnings
- Transformative prospects for significant earnings growth
- Sustainable and safe solutions for growing global consumer demand
- Sustainable competitive advantage
- Talent attraction

3 INNOVATION

SIGNIFICANCE
- Replacement of non-renewable materials with sustainable alternatives presents large value-creation opportunities
- R&D, bioeconomy innovations and new technologies support UPM's transformation

TARGET
- Increase growth with new businesses, products and technologies
- Improve competitiveness with product, service and process development

OUR WAY
- New businesses, products and technologies with focus on bioeconomy
- Product, service and process development, including circular economy and digitalisation
- Development of capabilities
- Extensive partner network

4 RESPONSIBILITY

SIGNIFICANCE
- Global consumers present a large and growing demand for sustainable and safe solutions
- Responsible operations and value chain mitigate risks related to changes in consumer choices and regulation

TARGET
- Provide solutions to global challenges, while creating value for our stakeholders
- Sustainable, innovation-driven and exciting future beyond fossils

OUR WAY
- Compliance
- Responsible operations and value chain
- Value-based leadership
- Renewable raw materials, recyclable and safe products

5 PORTFOLIO

SIGNIFICANCE
- Value creation is driven by performance within each business and synergies within the group
- Long-term value creation is further driven by effective capital allocation and right choice of businesses

TARGET
- Superior long-term shareholder returns
- Attractive value creation

OUR WAY
- Develop businesses with strong long-term fundamentals and sustainable competitive advantage
- Capitalise on corporate benefits and synergies
- Disciplined and effective capital allocation and strong balance sheet
- Continuous transformation

AIMING HIGHER IN PERFORMANCE

UPM is aiming higher in its financial performance. This can be achieved through the right operating model, continuous improvement programmes and effective capital allocation.

SIGNIFICANCE

- Top performance drives value creation and mitigates risks related to the business environment
- Top performance enables investments in growth, innovation and responsibility

TARGET

- Growth in comparable EBIT
- Attractive returns
- Strong balance sheet
- Top performance in each business area

OUR WAY

- Right operating model with separate business areas
- Commercial excellence
- Cost efficiency
- High-performing people
- Efficient use of assets and capital

Business areas target attractive returns

At the business-area level, UPM is targeting top relative performance in the respective markets, compared with key peers. UPM has also set long-term return targets (ROCE %, below) for the six business areas. The return targets apply over business and investment cycles. They have been set at a level that is both ambitious but also enables value-creating growth investments. In 2018, four out of six business areas met or exceeded the targeted returns.

Group targets earnings growth

At the group level, UPM is targeting comparable EBIT growth over the long term. In 2018 comparable EBIT increased by 17% to EUR 1,513 million (1,292 million).

The company is striving to continuously improve its cost competitiveness and develop its business and product mix.

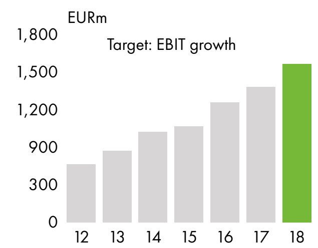
UPM aims to grow its businesses with strong long-term fundamentals. UPM will invest in projects with attractive returns, supported by a sustainable competitive advantage. In 2018, UPM's growing businesses were three times more profitable on average than the mature graphic paper business, based on the comparable EBIT margin.

Strong balance sheet and attractive ROE

UPM aims to maintain a strong balance sheet. Investment grade rating is an important element in UPM's financing strategy. UPM's financial policy on leverage is based on a net debt/EBITDA ratio of approximately 2 or less. At the end of 2018, the net debt/EBITDA ratio was -0.17.

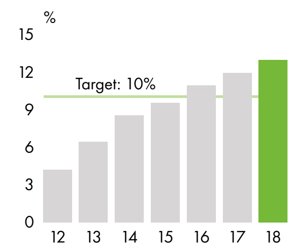
UPM aims for a 10% return on equity. ROE also takes into account the financing, taxation and capital structure of the group. In 2018, the comparable ROE was 12.9%.

Comparable EBIT

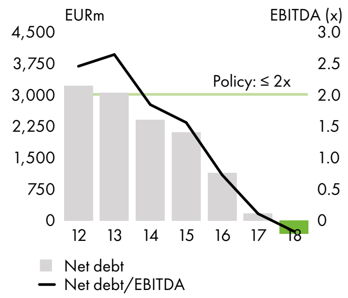


Comparable figures for 2014–2018, excluding special items for earlier years

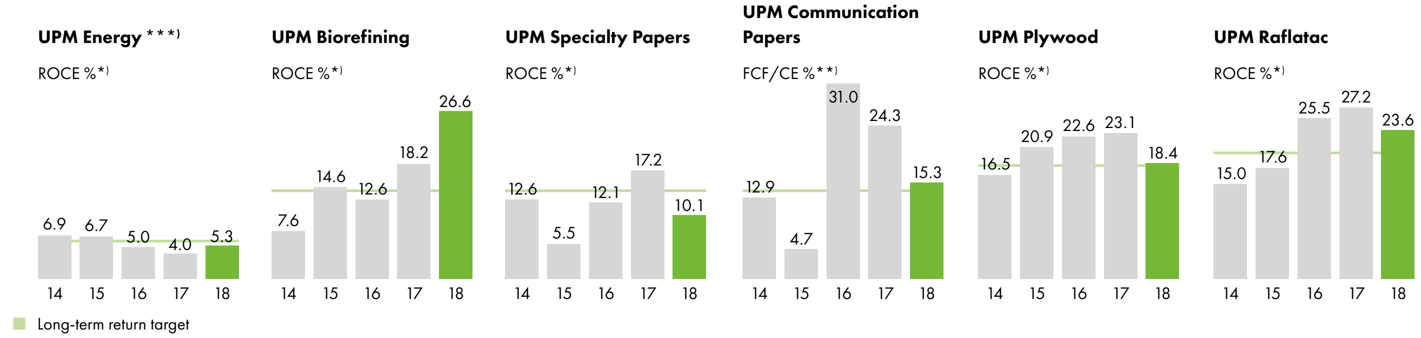
Comparable ROE



Net debt and leverage



BUSINESS AREA RETURNS AND LONG-TERM TARGETS



*) ROCE % = Return of capital employed excluding items affecting comparability.
**) Free cash flow after investing activities (investments and/or divestments) and restructuring costs.
***) Shareholdings in UPM Energy valued at fair value.

Comparable EBIT increase in 2018

+17%

Comparable ROE

12.9%

Shareholder value at the core

Over the coming years, we can allocate more capital to growing and transforming the company, while distributing an attractive dividend and maintaining a strong balance sheet.

1 AIMING HIGHER IN PERFORMANCE
UPM is committed to continuous improvement in its financial and sustainability performance. At a business area level, UPM is aiming for attractive returns and top performance compared with its peers.

2 CAPTURING GROWTH OPPORTUNITIES
UPM invests to expand its businesses with strong long-term fundamentals and a sustainable competitive advantage. Earnings growth is prioritised over top-line growth.

3 INNOVATION FOR GROWTH AND COMPETITIVENESS
UPM's expertise in renewable and recyclable materials, low-emission energy and resource efficiency is the key to developing new, sustainable businesses with high added value and a unique competitive advantage.

4 VALUE FROM RESPONSIBILITY
UPM's responsible operations and value chain, along with its drive to find new sustainable solutions, mitigates risks, creates competitive advantages, opens up new growth opportunities and helps to answer the global challenges.

5 DEVELOP BUSINESS PORTFOLIO
Increasing the share of sustainable growth businesses with higher margin improves the company's long-term profitability and boosts the value of the shares.

Strong cash flow
enables high-return growth investments, new business development as well as attractive dividends to UPM shareholders.

An industry-leading balance sheet
mitigates risks and enables UPM to accelerate its transformation, when the opportunity and timing are right.

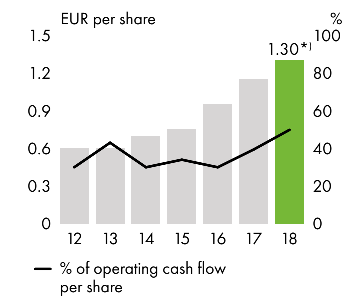
Attractive dividend
UPM aims to pay an attractive dividend, 30–40% of the company's annual operating cash flow per share.

5-YEAR SHARE PERFORMANCE AND VALUATION MULTIPLES

	2018	2017	2016	2015	2014
Share price at 31 Dec, EUR	22.15	25.91	23.34	17.23	13.62
Comparable EPS, EUR	2.24	1.88	1.65	1.38	1.20
Dividend per share, EUR	1.30*)	1.15	0.95	0.75	0.70
Operating cash flow per share, EUR	2.61	2.92	3.16	2.22	2.33
Effective dividend yield, %	5.9	4.4	4.1	4.4	5.1
P/E ratio	7.9	14.2	14.1	10.0	14.2
P/BV ratio 1)	1.21	1.60	1.51	1.16	0.97
EV/EBITDA ratio 2)	6.3	8.6	8.7	8.4	7.5
Market capitalisation, EUR million	11,813	13,818	12,452	9,192	7,266

*) 2018: Board's proposal
1) P/BV ratio = Share price at 31.12/Equity per share
2) EV/EBITDA ratio = (Market capitalisation + Net debt)/EBITDA

Cash flow-based dividend



*) 2018: Board's proposal

SPEARHEADS FOR GROWTH

SIGNIFICANCE

- Long-term earnings growth requires margin improvement and top-line growth
- UPM's growing businesses have higher margins than its mature businesses
- Molecular bioproducts represent large new growth markets

TARGET

- Earnings growth
- Attractive returns

OUR WAY

- Focused growth projects to maintain and grow earnings
- Transformative prospects for significant earnings growth
- Sustainable and safe solutions for growing global consumer demand
- Sustainable competitive advantage
- Talent attraction

UPM has selected three focus areas where it seeks significant growth in the coming years.

High value fibre – transformative growth prospect in Uruguay

Demand growth for market pulp is supported by global consumer megatrends and the need to find more sustainable alternatives in many end uses for fossil-based materials. The requirements for competitive greenfield pulp operations are difficult to meet and provide a sustainable competitive advantage.

Over the past years, UPM Pulp has thrived through focused growth projects, increasing production capacity of its existing pulp mills by more than 500,000 tonnes.

UPM is studying the potential of building a new world-class pulp mill in Uruguay. The possible pulp mill would have an annual capacity of approximately 2 million tonnes of eucalyptus market pulp. The preliminary estimate for a pulp mill investment on site is approximately EUR 2 billion. Two preparation phases need to be successfully completed before UPM would be in a position to initiate its regular process of analysing and preparing an investment decision. (Read more on the right).

Molecular bioproducts – transformative new businesses

For years, UPM has been developing technologies to produce sustainable drop-in alternatives for fossil fuels and fossil-based chemicals. New large value creation opportunities may open by decarbonising traffic and providing consumers with more sustainable products.

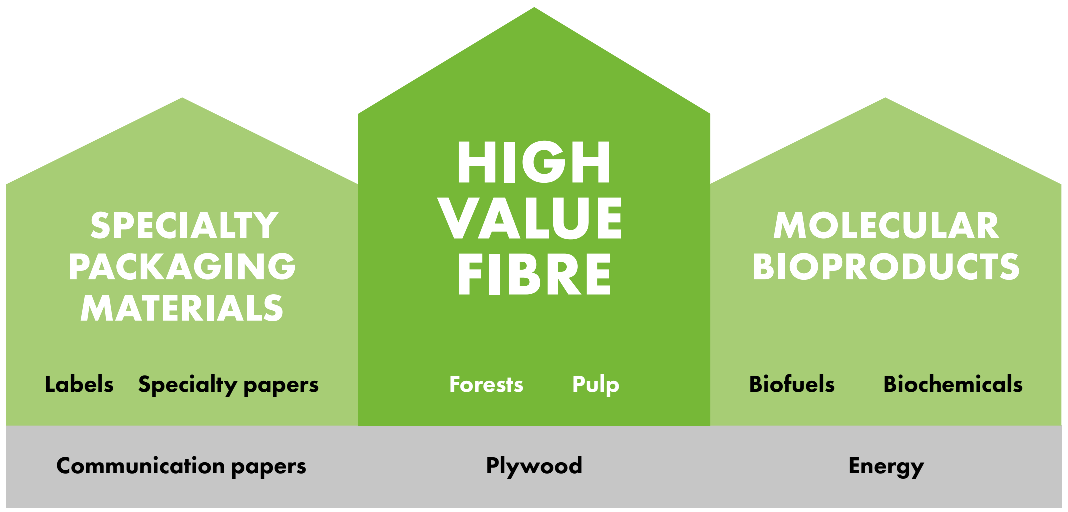
UPM Biofuels has successfully entered the market with its renewable diesel and naphtha UPM BioVerno (page 21). UPM Lappeenranta Biorefinery has proven its proprietary technology, product quality and sustainability, and has achieved commercial success. Now, UPM is exploring opportunities to scale up the business by studying a potential larger biorefinery in Finland (page 34).

UPM Biochemicals is studying entering the market on a commercial scale. UPM is conducting a basic engineering study of a potential biorefinery in Germany (page 21).

Specialty packaging materials – focused growth projects and innovation

Global consumer megatrends are driving demand for appealing and functional, but at the same time sustainable and safe, labelling and packaging solutions.

UPM grows in the attractive specialty paper and self-adhesive label materials segments, expanding its current production units and customer reach, and continuously developing its product portfolio. UPM's strong position and innovations in these technically demanding and fast-growing niche segments of the packaging value chain continue to provide attractive growth opportunities.



THE KEY FACTORS the spearheads have in common are significant growth potential and UPM's competitive advantage based on deep knowhow and high barrier to entry.

UPM is investing also in UPM Plywood and UPM Energy, while maintaining consistently strong cash flow and earnings in UPM Communication Papers.

UNIQUE VALUE-CREATION OPPORTUNITIES IN THE COMING YEARS

	SPECIALTY PACKAGING MATERIALS	HIGH VALUE FIBRE	MOLECULAR BIOPRODUCTS
UPM BUSINESSES	UPM Raflatac UPM Specialty Papers	UPM Pulp	UPM Biofuels UPM Biochemicals
STRONG LONG-TERM FUNDAMENTALS	Demand growth driven by global consumer megatrends	Demand growth driven by global consumer megatrends	Climate commitments and replacing fossil materials open large growing markets
SUSTAINABLE SOLUTIONS	Sustainable and safe solutions for global consumer demand, e.g. labelling, packaging, wrapping	Fibre-based products provide sustainable solutions for global consumer demand, e.g. tissue, hygiene, packaging, specialty	Unique solutions to decarbonise traffic and provide consumers with sustainable products
MARKET GROWTH	+4%	+3%	Strong growth potential
COMPETITIVE ADVANTAGE	Technically demanding segments, where UPM has leading market position, expertise and innovation	Competitive greenfield pulp operations have high requirements (wood supply, location, infrastructure, capital)	Unique value chain position with sustainable feedstocks, right technology and IPR
PROSPECTS UNDER STUDY OR CURRENT PROJECTS	Focused growth projects Product portfolio development	Studying the potential of building a new world-scale pulp mill in Uruguay: preparation phase 2 under way	Exploring scaling up in biofuels: potential biorefinery in Finland Exploring market entry in biochemicals: potential biorefinery in Germany

Planning for future growth in Uruguay

UPM is studying the potential of building a new world-class pulp mill in Uruguay. The site of the potential mill would be close to the town of Paso de los Toros in central Uruguay.

Preparing a competitive operating environment

In November 2017, UPM and the government of Uruguay signed an investment agreement which outlines the local prerequisites for a potential new pulp mill. The agreement details the roles, commitments and timeline for both parties as well as the relevant items to be agreed upon, with infrastructure development and a stable and predictable operating environment among the key prerequisites. The government is committed to developing the rail and road network and promoting concession for a terminal with rail access and specialising in pulp at the Montevideo port. UPM will carry out an engineering study and permitting process for a new world-class pulp mill. A successful project would also require off-site investments.

Positive impacts on local society

The Environmental and Social Impact Assessment, presented in September 2018, concludes that there are solutions to mitigate all identified possible negative impacts of the potential new mill. These include proper planning for the construction period, compliance with best available techniques (BAT) and implementation of the planned actions concerning the quality of the Rio Negro river. When in operation, the potential mill, forestry and related activities would employ 8,000 additional people across its full value chain. It is estimated that the mill would increase GDP by approximately 2% in Uruguay and its operations would have a significant positive impact on the central and north-eastern regions of the country.

Sustainable eucalyptus plantations

Uruguay offers excellent natural conditions for eucalyptus plantations, and UPM has significantly invested in wood quality. UPM has consistently increased its plantation base in Uruguay for the potential new mill. To grow raw material for pulp, sustainable eucalyptus plantations have been established in Uruguayan grasslands, creating totally new carbon sinks. When in operation, the mill would utilise the annual growth of the established plantations for its raw material needs, and the harvested area will be replanted.

READ MORE:
upm.uy/growth, upmpulp.com

UPM BIOFORE–BEYOND FOSSILS

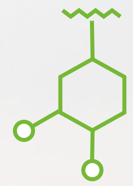
BIOCHEMICALS PRODUCTS ARE SUSTAINABLE AND COMPETITIVE DROP-IN ALTERNATIVES

WOOD COMPONENTS

40%
Cellulose

30%
Hemicellulose

25%
Lignin



Monoethylene Glycol	Monopropylene Glycol	Lignin
Existing fossil-based market Market demand >26 m tonnes Annual growth (CAGR) >3%	Existing fossil-based market Market demand >2 m tonnes Annual growth (CAGR) >5%	Performance chemical Application driven Strong IP position
APPLICATION EXAMPLES:		
Textiles Bottles & Packaging Deicing fluids	Composites Pharma & Cosmetics Detergents	Wood resins Plastics Foams & Coatings

INNOVATIONS FOR GROWTH AND COMPETITIVENESS

We are developing new businesses and new products based on customer needs and renewable raw materials. Our aim is to create sustainable solutions and to minimise dependency on fossil-based materials. Research and development, bioeconomy innovations and new technologies support the transformation and extend our business portfolio.

SIGNIFICANCE

- The demand for renewable and recyclable materials is increasing as we search for alternatives to fossil-based raw materials and increase the efficiency of the use of resources
- Growing consumption in emerging markets requires sustainably produced solutions
- Bioeconomy products offer sustainable solutions to the challenges of global megatrends, such as mitigating climate change

TARGETS

- Renewable and responsible products and innovations that replace fossil-based solutions and create added value and growth
- Utilising the limitless opportunities of bioeconomy

OUR WAY

- Strong expertise in forest biomass processing
- Sustainability and circular economy
- Resource efficiency, product stewardship and ecodesign across the entire value chain
- Technological development
- Leading responsible position across the entire value chain
- Partnerships and networking

80% UPM BioVerno renewable diesel reduces fossil CO_2 emissions compared with fossil fuels

95% The share of renewable materials in UPM Formi 3D

READ MORE:
upm.com/innovations
upm.com/circulareconomy

We are developing new innovative and high-quality products as well as renewable, recyclable and environmentally sound materials from wood-based biomass. Wood fibre, biomolecules, residues and side streams are becoming increasingly important as the raw materials of the future. Our aim is to develop resource-efficient materials, improve competitiveness and expand in new end-use segments.

Innovation and R&D programmes are essential in the development of new products and technologies. They support UPM businesses in ensuring competitiveness in the future.

In 2018, UPM spent EUR 106 (86) million on research and development, making up 7.6% (5.5%) of UPM's operating cash flow. In addition to direct R&D expenditure of EUR 52 (51) million, the figure includes negative operating cash flow and capital expenditure in developing businesses, development of transformative business prospects and digitalisation projects and initiatives. The focus of research and development spend was on studying new technologies and developing businesses and processes. A global network of research centres supports UPM's activities in R&D both in new and existing businesses.

Developing biofuels

An excellent example of an innovative alternative to a fossil-based product is UPM BioVerno, a wood-based renewable diesel and naphtha produced from crude tall oil, a residue of pulp production.

UPM has been producing UPM BioVerno renewable diesel and naphtha from wood-based residues since early 2015. UPM BioVerno drop-in diesel is a unique, competitive and sustainable alternative to fossil fuels and first-generation biofuels.

UPM's renewable naphtha can be used as a biocomponent for gasoline or to replace fossil raw materials in bioplastics.

In 2018, UPM carried out an environmental impact assessment (EIA) for a potential biorefinery in Kotka, Finland. The conclusion from EIA authorities is expected in early 2019. The possible Kotka biorefinery would produce approximately 500,000 tonnes of advanced fuels from many sustainable raw materials, for road and marine transport and air traffic applications. The products can replace fossil-based raw materials also in the chemical industry. (Read more on page 34).

Research on raw materials is based on the efficient use of different residues and by-products of the forest industry. Alongside tall oil, other waste and residue-based raw material alternatives that do not compete with food production are being tested.

UPM Biofuels is developing a new feedstock concept by cultivating Brassica carinata as a sequential crop in South America. The carinata crop produces non-edible oil suitable as feedstock for biofuels and its by-product is used as protein for animal feed. UPM is cultivating and testing Brassica carinata with selected local farmers in Uruguay. (Read more on page 75).

Progress in the biochemical business

UPM Biochemicals is developing wood-based chemicals and strong growth is expected for the market in the coming years. Biochemicals will offer renewable alternatives and mainly replace chemicals made from fossil raw materials.

Product segments include glycols and lignin products. Development is in the pre-commercial phase. UPM is aiming for industrial-scale concepts by actively developing and testing suitable technologies.

In 2018 we continued to assess the potential for building a biorefinery in Germany. This possible industrial-scale biorefinery would produce 150,000 tonnes of bMEG (bio-monoethylene glycol), bMPG (bio-monopropylene glycol) and lignin from hardwood. Potential end-use segments include textiles, bottles, packaging, de-icing products, composites and resins, among others.

RENEWABLE ALTERNATIVES ARE PART OF THE SOLUTION TO THE PLASTICS WASTE PROBLEM

A strong demand for renewable products is created by consumer brands with a great and critical need to replace fossil-based products with renewable ones. In fact, end products already exist which allow raw materials to be replaced with renewables.

In the past two years, the UPM Sustainable Fibre Materials project has focused on finding new ways to utilise renewable and bio-degradable materials in tissue papers, hygiene products, nonwovens, flexible packaging, label products and biocomposites.

We are currently assessing the business potential comprehensively. We gather data about market direction and how technology will develop in the coming years. In this analysis, a thorough lifecycle assessment and use of our ecodesign model play a key role.

Materials are piloted in the laboratory and tested with selected customers. Some areas of activity are completely new to us and some are old. In addition to customers, our partner network includes universities, equipment suppliers and research organisations around the world. Business Finland has supported the project. However, any industrial-scale activity is still a few years away.

READ MORE:
upm.com/innovation

Through commercial and basic engineering studies, we aim to ascertain the technical and economic readiness and attractiveness of the overall concept. Active development work is also carried out with potential customers.

Lignin products replace oil-based materials

We are developing bio-based and sustainable products from lignin obtained from wood raw material, for a variety of end uses. The development and commercialisation of these products continued in 2018.

Lignin can be used in resins, glues, bioplastics and polyurethane, for example. UPM BioPiva lignin is based on technology, developed by UPM, which can replace up to 70% of the oil-based raw materials in resins.

The biomedical product range expands

UPM is continuing to develop biomedical products in collaboration with researchers at Biomedicum in Helsinki, Finland. GrowDex®, a nanocellulose hydrogel, commercialised by UPM, is suitable for 3D cell culturing and related applications, for example, in medical development and research.

GrowDex® is biocompatible with human cells and tissue. UPM is also launching an advanced wound dressing product, based on nanocellulose-based films that are applied to wounds.

Recycled material use is growing in biocomposites

UPM Biocomposites is developing innovative and sustainable composite products for various outdoor building material uses and consumer products.

The patented UPM ProFi production process is a good example of a circular economy: cellulose fibres and polymers from self-adhesive label waste are used to create high-quality composite products.

One of our main targets is to increase the use of recycled materials in products: for example, in the new UPM ProFi Piazza decking, the proportion of recycled materials is already 75%.

UPM Formi composite material, made from cellulose fibres and polymers, is suitable for a variety of applications, from furniture to consumer electronics. UPM Formi complies with the requirements set by the EU for reinforced plastics in relation to the circular economy, and its carbon footprint is up to 50% lower compared with traditional plastics. In 2018, we launched a new UPM Formi 3D biocomposite, developed especially for 3D printing (read more on the right).

Advanced analytics for efficient decision-making

Digitalisation continuously creates new opportunities for UPM to explore new technologies, applications and robotics to gain a competitive advantage. In addition to process automation and industrial robots, which have long been used at production facilities, tools are being created for analytics, optimisation, forecasting and more agile decision-making.

Digitalisation, the extensive use of new and existing data and industrial internet solutions, already form part of the processes at the mills; however, in the future digitalisation will be increasingly visible in customer-facing processes such as supply chain, sales and quality monitoring.

With new digital tools, we can significantly improve the optimisation of sales, production, logistics and inventory management, as well as risk management. Utilising advanced data analytics is a quick and cost-efficient way of gaining a competitive edge and added value.

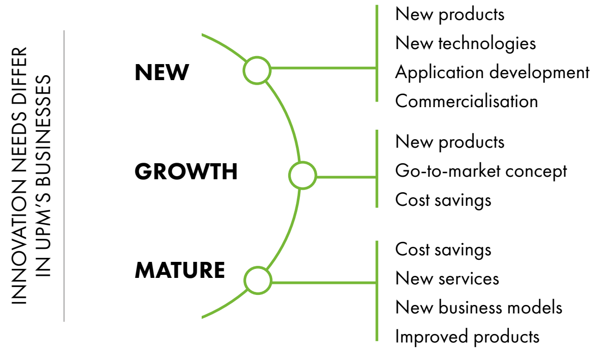
Solid patent portfolio creates value

The significance of the patents, trademarks and intellectual property rights protecting UPM's innovations is even more pronounced in its new businesses. A solid patent portfolio boosts UPM's competitive edge and also provides an excellent basis for value creation in the future.

For example, wood-based biofuels and biochemicals are new UPM businesses where a lot of research and product development is carried out.

371 UPM patent filings and validations in 2018

370 UPM granted patents and patent validations in 2018



Innovations automatically generate a lot of intellectual property. Technical solutions and innovations that use wood, chemicals, energy and water more efficiently are also being patented in existing businesses such as pulp and paper production.

Research to enhance circular economy and efficiency

In the value chain of forest industry products, UPM is involved in creating circular economy solutions. UPM's research into pulp and paper mill side streams aims to find more efficient ways to utilise by-products such as sludge, ash, green liquor dregs and waste heat.

More promising development projects for green liquor dregs and ash are being carried out in the construction sector and aim to replace traditional materials. The projects are part of UPM's Zero Solid Waste target, which aims to develop solutions for recycling surplus materials to ensure that they produce added value.

The More with Biofore in China research programme continued its search for technical solutions to reduce water consumption and emissions, save energy and utilise solid waste at UPM Changshu paper mill. Already, the mill's water consumption and energy efficiency are at a good level – among the best in the world – while their sulphur dioxide, nitrogen oxide and dust emissions are significantly lower than China's most stringent limit values. The mill was awarded High Tech status by the authorities.

Extensive partner network

Our close-knit partner network is comprised of customers, universities, research organisations, suppliers and start-up companies. Collaboration speeds up the development and launch of new solutions, particularly for new businesses.

UPM is involved in the European Joint Undertaking on Bio-Based Industries, (BBI). The partnership programme focuses on the development of bioeconomy, bio-based products and their production, as well as strengthening their competitiveness in Europe.

UPM is a shareholder in the Finnish CLIC Innovation LTD, an open innovation cluster that aims for breakthrough solutions in bioeconomy, circular economy and cleantech as well as in smart energy systems, thus complementing UPM's own R&D efforts.

READ MORE:
upmbiofuels.com, upmbiochemicals.com, upmbiomedicals.com, wisabiobond.com, upmprofi.com, upmformi.com

NEW BIOCOMPOSITE FOR 3D PRINTING

With UPM's new biocomposite material developed especially for 3D printing, architects can conveniently print three-dimensional concept models of buildings. The material can also be used in industrial design, construction and interior design, among others.

UPM Formi 3D contains more than 95% renewable materials, and thus reduces the use of fossil-based materials in 3D printing. Cellulose fibres create matte surfaces that feel natural to the touch. They can be processed by grinding and painting just like wood. The good print quality of UPM Formi 3D makes them ideal for large-scale printing.

The bridge printed from wood composite material was introduced to the public at Pori Housing Fair last summer. Tampere University of Applied Sciences (TAMK) took part as the hardware developer, and the bridge was printed there. Students were involved in equipment development and the printing process.

READ MORE:
upmformi.com

SIGNIFICANCE

- We are building a sustainable future by replacing non-renewable materials with renewable ones, using them more efficiently and creating new responsible solutions
- Responsibility is an integral part of our Biofore strategy and our operations, and seen as a source of competitive advantage

TARGET

- We lead the forest-based bioindustry into a sustainable, innovation-driven and exciting future beyond fossils
- We provide solutions to global challenges, while at the same time creating value for our stakeholders

OUR WAY

- We respect international agreements such as the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, and the OECD Guidelines for Multinational Enterprises
- Our Biofore strategy guides us in achieving our responsibility targets for 2030 and in contributing to the UN Sustainable Development Goals
- Our Code of Conduct and Supplier and Third Party Code provide a foundation for responsible business conduct and continuous improvement
- Corporate responsibility is managed by the Board of Directors and the Group Executive Team, as well as by businesses and functions

ARTIFICIAL INTELLIGENCE MEASURES BUSINESS IMPACT

At the request of UPM, The Upright Project analysed the net impact of the company's operations on the society. In addition to environmental factors, the analysis considered the impact on health, society and the creation and sharing of knowledge. The assessment shows the sum of the positive and negative effects of the company.

"We studied both the impact of UPM's whole operation and of its individual businesses, looking especially at the importance of its products in the everyday life of consumers and the company's significant role in creating jobs," notes **Annu Nieminen**, founder and CEO of Upright.

The business impact analysis developed by The Upright Project is based on machine learning using data from scientific articles. The analysis is used by investors and companies that want to be more aware of how they affect the world around them.

The beginning of the value chain is often well known in companies but Upright also evaluates the effects of a product's end use. "For example, labels on food and medicine packaging provide information on the content and use of the product. This later correlates with the positive health effects of the products. Through our analysis, we strive to understand what the positive and negative effects of the value chain are based on," she says.

READ MORE:
upm.com/responsibility

VALUE FROM RESPONSIBILITY

Creating value for society, both as a company and through our renewable and responsible solutions, is an integral part of our Biofore strategy. The bioeconomy offers new opportunities for value creation and business growth.

Responsibility is integrated into our Biofore strategy

We promote responsible business practices throughout our value chain and actively seek sustainable solutions in co-operation with our customers, suppliers and other stakeholders. Responsibility is integrated into our Biofore strategy as the solid foundation for long-term value creation:

- Compliance
- Responsible operations and value chain
- Value-based leadership
- Renewable raw materials, recyclable and safe products

Compliance is a must in all our activities

Decision-making, management and operations are guided by our values and the UPM Code of Conduct (read more on page 80). Responsible business practices, complemented by credible and transparent reporting, form the basis for responsible business conduct across the whole value chain.

In 2018, UPM worked on strengthening the management of material compliance issues: anti-corruption and anti-bribery, environmental matters, product safety, labour practices, safety, human rights and responsible sourcing. These issues are reported to the Audit Committee on a quarterly basis. In 2019, the UPM Code of Conduct will be revised and all UPM employees trained.

In 2018, UPM was again named a Global Compact LEAD company for its commitment to the UN Global Compact. We were one of only 34 global companies to receive this recognition, and the only representative of the forest industry and Finland. UPM was one of the founding members of the Finnish Global Compact network.

Transparency of reporting was developed further. All UPM pulp and paper mills reported locally relevant information on their societal impact as part of the EU's EMAS (Eco-Management and Audit Scheme). UPM piloted a new approach for net impact analysis in collaboration with the Finnish start-up company (read more above).

A more detailed description of our commitments, impact and corporate responsibility can be found in the Report of the Board of Directors (pages 99–119).

Responsible operations and value chain

Responsible business conduct is integrated into the entire value chain. Efficient operations do not only reduce costs, but also minimise negative environmental impact. Sustainable forest management ensures wood availability while at the same time safeguarding biodiversity and the contribution of forests to mitigating climate change as carbon sinks. Human rights are the focal point of all activities.

In 2018, UPM's businesses worked on how to reach 2030 environmental targets and on developing environmental reporting and best-practice sharing. As a result, environmental deviations reduced from 33 to 26. The More with Biofore in China research programme continued at the UPM Changshu paper mill. The mill was able to further improve its energy efficiency by 2%. All UPM production sites now have a certified ISO 14001 environmental management system in place.

UPM initiated a climate change scenario study with the Finnish Meteorological Institute (FMI) to discover how climate change will affect UPM's business operations in the long run (read more on page 75). To complement our forest-related responsibility targets, we launched a new biodiversity target to continuously improve the diversity of UPM's own forests in Finland (read more on page 69).

UPM continued its human rights due diligence process with a local human rights risk assessment in UPM's operations in Uruguay, focusing on working conditions, community relations and contractors (read more on page 55).

Value-based leadership

Value-based and inspiring leadership ensures high performance and continuous professional development, a safe and healthy working environment and the wellbeing of employees and contractors.

An inclusive and diverse working environment empowers people. Ensuring local commitment and balanced stakeholder engagement is crucial.

A new approach to performance management was put into action for the majority of salaried employees in 2018 and will be expanded to all salaried employees in 2019. The aim is to improve employee motivation and performance. (Read more on page 57).

Sustainable and safe solutions

Renewable raw materials and recyclable products are the essence of a circular economy. Product stewardship ensures that our solutions respond to global challenges and that UPM's product communication is reliable and transparent.

UPM's businesses further enhanced product stewardship in 2018. UPM Raflatac became the first self-adhesive label material supplier whose European factories are all certified according to the ISO 22000 food safety standard. UPM Biofuels received the world's first RSB (Roundtable of Sustainable Biomaterials) low ILUC (indirect land use change) risk certification. UPM was one of the first companies to receive the enhanced Singapore Green Label and the first to receive a new China Green Label certification. UPM Raflatac signed up to the New Plastics Economy Global Commitment, led by the Ellen MacArthur Foundation.

READ MORE about responsibility throughout the Annual Report.

GUIDED BY THE BIOFORE STRATEGY

UPM's Biofore strategy guides us in the achievement of our responsibility targets for 2030 and our contributions to UN Sustainability Development Goals (SDGs).

Our responsibility focus areas are divided into economic, social and environmental responsibility. Targets and key performance indicators have been determined for the respective focus area.

Economic responsibility at UPM includes economic performance, good governance and compliance as well as responsible sourcing. Good governance helps the company to avoid risk, enables growth and opens up new business opportunities. Responsible sourcing not only minimises risk, but also creates significant direct and indirect added value.

Social responsibility focuses on respecting human rights, occupational health and safety, local stakeholder engagement and our role as a responsible employer. Responsible leadership improves employee performance, engages our people and provides a safe working environment.

Environmental responsibility covers sustainable products, climate and use of forests, as well as water and waste reduction.

Positive contribution to SDGs

We have identified the SDGs where we have the most negative impact, or those where we can contribute most positively (others are also relevant to us, but either to a lesser extent or indirectly):

- Goal 3: Good Health and Wellbeing
- Goal 8: Decent Work and Economic Growth
- Goal 9: Industry, Innovation and Infrastructure
- Goal 12: Responsible Consumption and Production
- Goal 13: Climate Action
- Goal 15: Life on Land

UPM's focus areas and targets are reviewed annually based on a materiality analysis (read more on page 51), which identifies issues that either have a significant impact on the company's business performance or issues that influence the assessment and decisions made by our stakeholders.

In November 2018, UPM launched a new target: to have positive impact on biodiversity. It complements our forest-related responsibility targets. Our biodiversity programme has been in place for over 20 years, and this new target represents the next step. Starting with our forests in Finland, we aim to create a methodology to further monitor, analyse and report the biodiversity impacts of our forestry, together with expert stakeholders. (Read more on page 69.)

United Nations Sustainable Development Goals guide UPM targets

UPM RESPONSIBILITY FOCUS AREA	2030 TARGET	2030 FOLLOW-UP / 2018 RESULTS
ECONOMIC		
Profit Creating value to shareholders	• Comparable EBIT growth through focused top-line growth and margin expansion • Comparable ROE: 10% • Net debt/EBITDA: around 2 times or less	• Comparable EBIT increased by 17% to EUR 1,513 million (1,292 million) • Comparable ROE was 12.9% • Net debt/EBITDA was -0.17 times
Governance Ensuring accountability and compliance	• 100% coverage of participation to UPM Code of Conduct training (continuous)	• 99% (98%) of active employees completed the Code of Conduct training
Responsible sourcing Adding value through responsible business practices	• 80% of UPM spend qualified against UPM Supplier and Third Party Code (continuous) • 100% of UPM raw material spend qualified against UPM Supplier and Third Party Code by 2030 [1] • Continuous supplier auditing based on systematic risk assessment practices	• 83% (82%) of supplier spend qualified against UPM Supplier and Third Party Code • 94% (96%) of raw material spend qualified against UPM Supplier and Third Party Code • 210 supplier audits were conducted based on identified risks, including human rights, social and environmental topics
SOCIAL		
Diversity and inclusion Developing organisational culture and local conditions to ensure diverse and inclusive working environment for business success	• People feel that UPM values and promotes diversity. People are treated fairly in their work environment and can advance regardless of personal background or characteristics. 95% favourable in the Employee Engagement Survey Diversity and Inclusion index by 2030 • Diversity and inclusion initiative (continuous)	• Responses to the Employee Engagement Survey's Diversity and Inclusion index 68% (67%) favourable • UPM continued to develop an inclusive and diverse working environment and reviewed the status and actions in businesses
Continuous learning and development Ensuring high performance for business success and continuous professional development for future employability	• Goal setting discussions are held and development plans are created for employees, completion rate 100% by 2030 • Employees perceive good opportunities for learning and development at UPM, 80% favourable in Employee Engagement Survey by 2030	• 89% (89%) of employees had completed individual goal setting or annual discussion. 61% (62%) of employees had a development plan documented • Responses to Employee Engagement Survey's question regarding learning and development were 66% (65%) favourable
Responsible leadership Emphasising value-based and inspiring leadership and integrity Continuous development of working environment	• Employee engagement and enablement indices with favourable score clearly above external high-performing norm by 2030	• Employee engagement index 71% (71%) favourable. This is 3 ppt points below the external high-performing norm. Employee enablement index 72% (73%) favourable. This is 1 ppt point below the external high-performing norm
Working conditions Ensuring safe and healthy working environment and wellbeing of employees	• No fatalities or serious accidents in UPM operations • Continuous improvement in safety: Lost time accident frequency (LTAF) <1 and Total recordable injury frequency (TRIF) <2 levels permanently reached (including contractors) • All operations have certified OHS system by 2030 • Health Promotion Programme is in use at all UPM sites and businesses by 2030 • Absenteeism rate <2% in all organisations by 2030	• No fatalities in 2018, two serious accidents • LTAF was 2.7 (3.3) for UPM workforces and 2.9 (4.3) including contractors • TRIF was 6.9 (8.2) for UPM workforce and 6.6 (8.5) including contractors • All production sites have an OHS management system in place. 44% of the sites have external certification of their OHS system • A majority of the sites with Health Promotion initiatives. Preparations for global UPM Health Concept to be launched in 2019. • The absenteeism rate was 3.9% (3.8%)
Community involvement Ensuring local commitment	• Continuous development of strategic sustainability initiatives with leading NGOs • Continuous sharing of best practices of stakeholder initiatives • UPM's Biofore Share and Care programme brings significant added value	• UPM continued its global strategic partnership with FSC® and its co-operation with BirdLife and Vida Silvestre • Sharing of best practices ensured through well-established operational stakeholder forums, for example • Programme continued with focus on employee volunteering in 2018
ENVIRONMENTAL [2]		
Product stewardship Taking care of the entire lifecycle	• Environmental Management Systems in 100% use (continuous) • Environmental Product Declarations for all products (continuous) [3] • All applicable products eligible for ecolabelling by 2030	• 100% of production sites have a certified environmental management system • Environmental declarations are available for all relevant UPM products • 85% (85%) of UPM sales were eligible for ecolabelling
Waste Promoting material efficiency and circular economy – reduce, reuse and recycle	• No process waste sent to landfills or to incineration without energy recovery by 2030	• 90% (89%) of UPM's total process waste was recovered or recycled. The total amount of waste to landfills decreased by 2% compared to 2017
Climate Creating climate solutions and working towards carbon neutrality	• Fossil CO_2 emissions from its own combustion and purchased electricity (Scope 1 and 2) reduced by 30% by 2030 • Maximise the business benefits of greenhouse gas claims (continuous) • Improve energy efficiency annually by 1% (continuous) • 70% share of renewable fuels (continuous) • Acidifying flue gases (NO_x/SO_2) reduced 20% by 2030 [4]	• Fossil CO_2 emissions reduced by 4% compared to 2017. Without sales of greenhousegas claims of energy used by UPM, the reported emissions (Scope 1 and 2) would have been over 7% lower [7] • UPM sold greenhouse gas claims worth nearly 1.1 million CO_2 tonnes • Energy efficiency target was not achieved • Level of 70% (69%) reached in the use of renewable fuels • 29% reduction achieved since 2008 for the UPM average product
Water Using water responsibly	• Effluent load (COD) reduced by 40% by 2030 [4] • Wastewater volume reduced by 30% by 2030 [4] • 100% of nutrients used at effluent treatment from recycled sources by 2030 [4]	• 29% reduction in effluent load achieved since 2008 for the UPM average product • 14% reduction in wastewater volume achieved since 2008 for the UPM average product • 22% (17%) of nutrients from recycled resources
Forests and biodiversity Ensuring sustainable land use and keeping forests full of life	• 100% coverage of chains of custody (continuous) • All fibre certified by 2030 [5] • Positive impact on biodiversity (continuous): implementing biodiversity programme and developing monitoring system [6]	• Coverage is 100% • 81% (85%) of all wood used by UPM is sourced from certified forests • Target was launched end of 2018

1) Covers all UPM raw material spend including wood and wood-based biomass sourcing and excluding energy
2) Environmental targets: from 2008 levels
3) Includes paper, timber, plywood, pulp and label
4) Numerical targets relevant for pulp and paper production
5) Forest management certification
6) Covers UPM own forests in Finland
7) Scope 2 emissions 2017 were corrected due to sold claims that were not reported

UPMBIOFORE–BEYOND FOSSILS

Megatrends drive demand for renewable and responsible solutions

Our innovations create value and business opportunities beyond fossils. We aim to replace non-renewable materials with renewable, recyclable and low-impact alternatives.

MEGATRENDS	POPULATION GROWTH, URBANISATION, DEMOGRAPHIC CHANGE	RESOURCE SCARCITY AND ROLE OF RENEWABLES	CLIMATE CHANGE	DIGITALISATION	RESPONSIBILITY AND COMPLIANCE
SIGNIFICANCE TO UPM	Value creation by providing sustainable solutions for consumers Reduce the use of non-renewable materials Positive contribution to society	Support the increasing demand for sustainable alternatives Competitive forest industry platform and access to sustainable feedstock enable business success Sustainable land use	Forests and wood-based products have a unique role in climate change mitigation Business opportunities by decarbonisation of traffic and energy Transition to low-carbon economy	Digital innovations to support value creation and growth Customer focus Transforming processes and technology	Responsible operations and value chain Long-term business success, mitigating risks and capturing opportunities High-performing people
OPPORTUNITIES FOR UPM	Significant growth in global consumer demand Growing consumer demand for sustainable and safe solutions New business opportunities with ecodesign Large business opportunities with bioeconomy, molecular bioproducts in chemical and fuel value chains in particular Cost-efficient and responsible supply chains	Growing demand for renewable and biodegradable materials and low-emission energy Competitive advantage from resource efficiency and new circular economy products Healthy forests and safeguarded wood availability Increased forest growth in Northern Europe, sustainable plantations Sustainable land use and ecosystem services Responsible water use and safeguard the natural water cycle in forests	Competitive advantages and growth opportunities with sustainability Growing demand for competitive alternatives to replace fossil materials and energy Prioritising use of low-emission and renewable energy Strong demand growth for renewable fuels to decarbonise traffic Circular economy Forests as carbon sinks Increased forest growth in Northern Europe and new plantations in Uruguay	Growing e-commerce drives growth in demand for labelling, packaging, pulp and transport Increasing efficiency, productivity and change agility Industrial Internet, big data, data analytics, forecasting, robotics and automation Demand trends for different paper end uses and geographical areas UPM's production platform provides continuous optimisation opportunities	Regulation may drive markets for sustainable products Product stewardship Transparency as competitive advantage Cost-efficient and responsible value chains Engaged and diverse workforce, talent attraction Sustainable returns and risk mitigation
CHALLENGES FOR UPM	Fit of UPM's product mix and geographical presence to the future growth outlook Unpredictable regulation and subsidies may distort markets General economic development	Unpredictable raw material costs and availability Unpredictable regulation and subsidies may distort markets Competition for renewable raw materials Competition for land use Threat of deforestation and biodiversity loss globally	Unpredictable regulation and subsidies may distort markets Cost of greenhouse gas emissions Political instability Increasingly common and more severe storms, floods and droughts Unpredictable wood-harvesting conditions	Fit of UPM's product mix and geographical presence to future growth outlook Declining graphic paper consumption New forms of competition Changing needs for skills and competencies Cyber security	Unpredictable regulation and subsidies may distort markets Reputation and financial risks in the event of non-compliance Unpredictable changes in the operating environment Uncertainties regarding global trade, protectionism, tariffs and sanctions

GROWTH DRIVERS

Fibre products
- Global demand growth of consumer goods
- Growth of e-commerce
- Population growth, increasing income levels
- Urbanisation and demographic change
- Environmental consciousness
- Legislation
- Brands and product innovations

Molecular bioproducts
- Climate change mitigation
- Sustainability
- Pressure to reduce greenhouse gas emissions and tailpipe emissions in transport
- Replacement of fossil raw materials and fossil fuels with renewables

Wood products
- Building and construction
- The role of sustainable renewable materials in construction
- Road transportation
- LNG carrier and terminal investments globally

Low-emission energy
- Climate change mitigation
- Pressure to replace fossil fuels with renewables
- Reduction of greenhouse gas emissions
- Regulating the electricity grid as weather-dependent generation increases
- Sustainable consumer choices

Risks and opportunities

The operating environment exposes UPM to a number of risks and opportunities. Many of them arise from general economic activity and global megatrends (see previous page). Execution of strategies exposes UPM and its business areas, functions and production plants to a number of risks and opportunities.

1 PERFORMANCE 2 GROWTH 3 INNOVATION 4 RESPONSIBILITY 5 PORTFOLIO

INFLUENCING TRENDS	RISK DESCRIPTION		IMPACT	MANAGEMENT	OPPORTUNITY	STRATEGIC FOCUS AREAS INVOLVED
	Global economic cycles	OPERATING ENVIRONMENT	Impacts the demand and sales prices of various UPM products and main input costs items, as well as currency exchange rates. UPM's main earnings sensitivities are presented on page 135.	Industry-leading balance sheet. Continuous improvement in competitiveness, resource efficiency and customer offering. Business portfolio development.	UPM's strong balance sheet, focus on competitiveness and responsible operations mitigate risks and may present strategic opportunities (incl. M&A) in an economic downturn.	1 2 3 4 5
	Faster than expected decline in demand for graphic paper	OPERATING ENVIRONMENT	Increased pressure on UPM's graphic paper deliveries and sales prices, scarcity of recycled fibre	Continuous improvement in competitiveness. Focus on more attractive paper end-use segments. Adjust paper production capacity to profitable customer demand. Business portfolio development.	UPM's large paper production platform provides continuous optimisation opportunities. Reliable supplier of high quality products and customer service merits customer loyalty.	1 3 5
	Overcapacity in some of UPM's products due to changes in demand or supply	OPERATING ENVIRONMENT	Temporarily impacts sales prices and deliveries of the product in question	Continuous improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.	UPM's diverse business portfolio, focus on competitiveness and strong balance sheet mitigate risks and may present strategic opportunities (incl. M&A) in a cyclical downturn of a business.	1 2 5
	Significant moves in currency exchange rates relevant for UPM	OPERATING ENVIRONMENT	Impacts UPM's earnings and cash flow directly and competitiveness indirectly. UPM's main currency exposures are presented on page 162.	Continuous hedging of net currency exposure. Hedging the balance sheet. Continuous improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.	UPM's diverse business portfolio and geographical presence, focus on competitiveness and strong balance sheet mitigate risks and may present strategic opportunities in changing currency environment.	1 2 5
	Availability and price of major production inputs like wood, fibre, chemicals and water, potentially due to climate change. Availability and cost of logistics.	OPERATING ENVIRONMENT	Increased cost of raw materials and logistics or delivery and potential production interruptions. UPM's cost structure is presented on page 136 and sensitivity to water prices on page 111.	Continuously improving resource efficiency and optimisation of supply chain. New technologies. Long-term supply contracts and relying on alternate suppliers. Selected ownership of forest land and long-term forest management contracts.	UPM's continuous improvement in resource efficiency and circular economy mitigate risks and offer competitive advantage.	1 3 4 5
	International trade barriers, e.g. protectionist policies	OPERATING ENVIRONMENT	Impacts trade flows and short-term market balances and may directly or indirectly impact sales prices and deliveries of UPM's products.	Monitoring through international trade associations. Compliance. Continuous improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.	UPM's diverse business portfolio, geographical presence and responsible business practices mitigate risks and may present opportunities for optimisation in case of trade barriers in some products and locations.	1 2 4 5
	Changes in regulation, subsidies, taxation and physical impact, e.g. related to climate change	OPERATING ENVIRONMENT	May distort markets for energy or wood raw material, for example. May change relative competitiveness of energy forms. May change relative competitiveness of countries. May create additional competition for wood raw material. Direct and indirect impacts of climate change. UPM's sensitivity to carbon pricing is presented on page 111.	Monitoring for early signals for regulation changes. Communicate the impacts of such policies on employment and creation of value-added clearly. Compliance. Continuous improvement in competitiveness, materials and energy efficiency. Leading environmental performance. Innovation and selected investments in value added renewable products and energy. Business portfolio development. Sustainable forest management and UPM biodiversity programme.	May drive market growth for sustainable products and energy, e.g. renewable fuels. Resource efficiency, circular economy and renewability are increasingly important sources of competitive advantage. In electricity markets, hydropower is an increasingly important form of power generation. Increased wood growth in northern hemisphere.	1 2 3 4 5
	Continuous improvement in competitiveness	OPERATIONS AND STRATEGY	Weakening relative competitiveness impacts profitability and increases risks related to the external business environment (above).	Commercial strategies. Programmes for savings in variable and fixed costs. Culture and track record of continuous improvement in productivity and resource efficiency. Product and service development.	Increasing relative competitiveness improves profitability and mitigates risks related to the external business environment (above).	1 3 4
	Selection and execution of investment projects	OPERATIONS AND STRATEGY	Material cost overruns. Inopportune timing. Return on investment does not meet targets.	Disciplined selection, planning, project management and follow-up processes. Investing in projects with attractive returns and sustainable competitive advantage.	Carefully selected and implemented growth projects improve UPM's ROCE and grow its earnings. UPM's financial targets are presented on page 16.	2 4 5
	Delays in OL3 nuclear plant project completion and start-up	OPERATIONS AND STRATEGY	Adverse impact on PVO's business and financial position, the fair value of UPM's energy holdings and the cost of energy sourced from OL3 when completed.	Ensuring that contractual obligations are met by both parties.	The investment provides a competitive, safe and CO_2 emission-free electricity supply for the long term.	2 4
	Selection and execution of M&A	OPERATIONS AND STRATEGY	Cost of acquisition proves high and/or targets for strategic fit and integration are not met. Return on investment does not meet targets. Damage to reputation.	Disciplined acquisition preparation to ensure the strategic fit, right valuation and effective integration. Environmental and social impact assessments. Stakeholder engagement.	UPM's strong balance sheet and cash flow enable value-enhancing M&A when timing and opportunity are right. Societal value creation.	2 4 5
	Developing and commercialising innovations and new businesses	OPERATIONS AND STRATEGY	Return on investment does not meet targets. Lost opportunity.	Disciplined selection, development and commercialisation processes for innovations. Collaboration and partnerships in R&D and commercialisation. Business model development.	Existing products and services redesigned to bring more value. New value-added products to replace oil-based materials may be a significant source of value creation and growth for UPM.	1 2 3 4
	Compliance risks; competition law, anti-corruption, human rights, securities regulation, taxation	OPERATIONS AND STRATEGY	Damage to reputation. Loss of business. Fines and damages. May impact the value of the company.	Governance, compliance procedures, UPM Code of Conduct, UPM Supplier and Third Party Code, audits, whistleblowing channel, trainings.	Good governance mitigates risks and promotes best practices. High responsibility standards and transparency are a differentiating factor and create long term value.	1 2 4 5
	Supply chain and third party reputation risks	OPERATIONS AND STRATEGY	Damage to reputation. Loss of business. Loss of competitive position. May impact the value of the company.	UPM Code of Conduct, UPM Supplier and Third Party Code, supplier audits, certification.	Good governance and responsible sourcing practices mitigate risks and provide competitive advantage.	1 2 4 5
	Environmental risks; a leak or spill due to malfunction or human error	OPERATIONS AND STRATEGY	Damage to reputation. Sanctions. Direct costs to clean up and repair potential damages to production plant. Loss of production.	Best available techniques (BAT). Maintenance, internal control and reports. Certified environmental management systems (ISO 14001, EMAS).	Industry-leading environmental performance provides competitive advantage, including efficiency gains.	1 2 3 4 5
	Physical damage to people or property	OPERATIONS AND STRATEGY	Harm to employees or contractors and damage to reputation. Damage to assets or loss of production.	Loss prevention activities and systems, incl. One Safety tool. Emergency and business continuity procedures.	Leading health and safety performance strengthens the brand as an employer, as well as improving engagement, efficiency and productivity.	1 4
	Ability to recruit and retain diversely skilled employees	OPERATIONS AND STRATEGY	Business planning and execution impaired, affecting long-term profitability and value creation.	Competence development. Incentive schemes. Workplace safety. Enabling performance, measuring and developing employee engagement. Value-based leadership and integrity.	Engaged high-performing and diverse people enable the implementation of the Biofore strategy as well as commercial success.	1 2 3 4 5
	Availability and security of information systems, malware	OPERATIONS AND STRATEGY	Interruptions in critical information systems cause a major interruption to UPM's business. Damage to reputation. Loss of business.	Technical, physical and process improvements to mitigate availability and security risks.	Sophisticated IT systems enable efficient operations, optimised performance as well as new customer services and data security.	1 3 4

UPMBIOFORE–BEYOND FOSSILS

UPM BIOREFINING

RECORD YEAR

UPM PULP AND UPM TIMBER

OUR DIRECTION

- In Pulp: Provide customers with direct access to the most versatile pulp range and advanced technical service. Maintain cost competitiveness through continuous operational improvement. Grow as a trusted and responsible pulp supplier.
- In Timber: Enhance profitability through efficient use of wood supply, integrated full production and focused commercial strategy. Take consistent steps towards a streamlined business model to secure position in chosen key markets and end-use segments.

OUR STRENGTHS

- Versatile range of sustainably produced pulp grades suitable for a wide range of end uses
- Modern, efficient mills and business committed to growth
- Responsibility integrated into all operations from wood sourcing to logistics
- Competitive sawmills with dedicated skilled global sales and logistics network

Benefits of integrated production

In the UPM Biorefining business area, UPM combines the integrated production of pulp, timber and biofuels with a synergistic supply chain of wood raw materials. Timber residues and side streams are used as pulp raw material. 90% of the raw material that goes from sawmill to pulp mill is wood chips; the rest is sawdust. Pulp mills produce renewable energy in their recovery boilers, provide CO_2-neutral biomass-based electricity and generate useful side streams and residues used for bioenergy and sustainable materials. Crude tall oil, a residue of pulp production, is the raw material used for renewable UPM BioVerno diesel and naphtha.

Long-term commitment to high value fibre

Megatrends such as urbanisation, growing middle class in emerging markets and e-commerce drive pulp demand for tissue, speciality papers and packaging. Customer preferences increasingly tend towards more sustainable, renewable and recyclable products and alternatives to plastics. As well as solid end-use growth, demand for market pulp is increasing due to the declining supply of white recycled fibre. The global demand-supply balance for market pulp is tight, due to increased demand, 1–3 million tonnes of annual capacity closures and the lack of decided pulp projects.

Our annual production capacity of 3.7 million tonnes is produced in Finland and in Uruguay. In May 2018, UPM concluded its latest focused growth investment to improve the efficiency and competitiveness of the UPM Kaukas pulp mill in Finland. The annual production capacity of the mill increased by 30,000 tonnes to 770,000 tonnes.

As an integral part of the value chain, efforts to enhance wood supply continued in 2018. In Finland, UPM sources wood from private landowners, company-owned forests and import wood mainly from Russia and the Baltics. UPM is seeking further improvement in the wood sourcing value chain to secure long-term profitability. In Uruguay, wood is sourced from sustainably managed local eucalyptus plantations that are owned by UPM and third-party land owners as part of the Fomento Programme.

UPM is studying the potential of building a new world-class pulp mill near the city of Paso de los Toros in central Uruguay. The possible pulp mill would have an annual capacity of approximately 2 million tonnes of eucalyptus market pulp. The preliminary estimate for a pulp mill investment on site is approximately EUR 2 billion. This transformative prospect is explained in more detail on page 19.

Sustainability offers competitive advantages

Our pulp mills have certified environmental management systems in place and are operated based on the best available techniques (BAT). This ensures that the production technology enables the efficient use of raw materials, chemicals, energy and water. Our pulp mills have turned from energy buyers to energy sellers and 95% of the energy used in pulp production is renewable.

The global pulp industry must meet the standards of a responsible business when it comes to sourcing raw material, mill technologies and processes, as well as business practices in general. For wood sourcing, we meet the highest sustainability demands in the industry. We continue to engage with our pulp customers to promote sustainability and drive transparent business practices across the value chain.

Over the years, communities and businesses have grown around UPM's industrial operations. UPM plays an active role in the local communities in which it operates, as an employer and business partner, and supporting sustainability, safety and healthy living.

UPM FRAY BENTOS MILL STRENGTHENS COMMUNITY

When the UPM Fray Bentos pulp mill opened, UPM asked Equipos Consultores to study the site's social impact on the community. The ten-year study fulfills a request from DINAMA, Uruguay's national environmental agency, and provides valuable information on the changes in Fray Bentos since then.

The direct and indirect employment impact of the mill accelerated the town's economic growth. As more people moved to the town, new houses were built and neighbourhoods developed. Families with school-aged children increased the student population, and this in turn led to more schools.

When the initial need for workers had subsided, people turned to entrepreneurship. Locals took advantage of the town's location near the bridge, which links Uruguay and Argentina, and of the improved infrastructure and services now available.

The most impactful change has been to the educational sector. The Universidad de la República has opened a campus. Uruguay's new UNESCO World Heritage site, a former meatpacking plant, is home to the regional campus of the University of Labor of Uruguay (the largest by the student population in the country). Fray Bentos hosts the Regional Technological Institute under The Uruguay Technical University (UTEC). The locals appreciate the improvement of the educational sector and collaboration with the private and public sector and the expansion of technical education in particular.

READ MORE:
upmpulp.com

KEY FIGURES	2018	2017
Sales, EURm	**2,892**	2,531
Comparable EBIT, EURm	**847**	587
Capital employed (average), EURm	**3,180**	3,225
Comparable ROCE, %	**26.6**	18.2
Personnel on 31 Dec.	**2,636**	2,628

Profitability increased due to higher pulp prices. Delivery volumes were lower and fixed costs were higher, partly due to several large scheduled maintenance shutdowns in the second and fourth quarter. Market fundamentals remained favourable for the biofuels business. Demand for sawn timber was good and the sales prices increased.

CAPITALS

- Capital-intensive process industry
- All wood from sustainable sources
- Responsible and competitive sourcing
- State-of-the-art production technology
- Active community engagement
- Engaged, high-performing people
- Reliable, well-functioning supply chain

UPM PULP AND TIMBER VALUE CREATED

Safe and sustainable products
Recyclable and carbon-storing products
Renewable energy
Multi-fibre pulp product offering
Certified stable quality timber offering
Reliable pulp and timber deliveries
World-class technical service close to customer
Best-in-class sustainability offering
Modern and efficient integrated production

CUSTOMERS

PULP
- Tissue, board, speciality and graphic paper producers

TIMBER
- Furniture, joinery industries, construction, planing and packaging

OUTCOMES

- Employment, work safety
- Vitality and prosperity in communities
- Tax income
- Low emissions
- ROCE
- High ethical standards and compliance with global norms
- Climate change mitigation

UPM BIOREFINING

UPM BIOFUELS

OUR DIRECTION

- Provide unique, sustainable, advanced biofuels and bio-materials in various markets and segments
- Evaluate opportunities for scaling up the biofuels business

OUR STRENGTHS

- Established producer of low-emission renewable diesel and naphtha for transport
- Sustainable bio-based alternative to fossil feedstock in the petrochemical industry, e.g. bioplastics
- Uniquely certified with international sustainability standards ISCC and RSB

Driving cleaner traffic

UPM has been producing renewable diesel and naphtha from wood-based residue since early 2015 at the UPM Lappeenranta Biorefinery, Finland. The biorefinery's processes transform crude tall oil, a residue of pulp making, into renewable diesel for road transport. The main product, UPM BioVerno drop-in diesel, is a competitive and sustainable alternative to fossil fuels or first-generation biofuels and is well positioned among the most sustainable biofuel alternatives available on the market. The process also generates renewable naphtha, which can be used either as a low-emission biocomponent for petrol or as feedstock for replacing fossil raw materials in bioplastics (read more on the right).

In addition to renewable diesel and naphtha, the biorefinery produces wood-based chemicals. For example, UPM's wood-based turpentine can be used in the production of bio-based aroma chemicals for the fragrance industry. Another residue from the biorefinery, wood-based pitch, can be used to produce inks, bitumen for roads and roofs, or used as bioliquid.

UPM BioVerno renewable diesel reduces 80% of greenhouse gas emissions during its lifecycle compared with fossil diesel and significantly reduces local emissions, such as particulates and nitrogen oxides. Future demand for sustainable, high-quality advanced biofuels is predicted to be strong, driven by climate change mitigation targets, stricter environmental standards and sustainability. In Europe, renewable fuels are needed in the road transport energy mix to meet the EU's greenhouse gas emissions reduction targets. Globally, renewable diesel demand is expected to grow as markets evolve from rural development to decarbonisation.

Planning for growth

In 2018, the UPM Lappeenranta Biorefinery reached a new level of production following an initial turnaround in the second quarter, enabling the further development of our market position. We also continued to evaluate future opportunities for scaling up.

In February 2018, we announced an Environmental Impact Assessment (EIA) for a possible biorefinery in Kotka, Finland with a 500,000-tonne annual production of advanced biofuels made from sustainable raw materials for use in the road transport, marine and aviation sectors. In October, the EIA for the potential new biorefinery was given to authorities for their final conclusions. The new biorefinery would be an innovative and robust concept for scaling up the business with new types of technology. The greenhouse gas emission savings delivered by this facility would be equivalent to removing 16% of the transport emissions generated in Finland. Significant efficiency gains would be enabled by the economy of scale and synergies with Lappeenranta.

The potential new biorefinery would utilise several competitive and sustainable feedstocks, such as solid wood residues and other sustainable wastes and residues. UPM Biofuels has also been developing and testing a new type of sustainable biofuel feedstock by growing Brassica carinata as a secondary crop in South America. The carinata crop produces non-edible oil suitable for biofuel feedstock and protein for animal feed. This sequential cropping concept enables local farmers to make use of agricultural land in winter, generating additional income supplementing existing food production. It does not require any change to the land use, helps to prevent erosion and improves soil quality. (Read more on page 75).

Focus on sustainable value chain

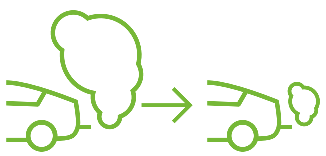
UPM's biofuel production is uniquely certified for sustainability, meeting the RSB and ISCC international sustainability standards. In 2018, UPM received two additional feedstock certificates from RSB (Roundtable of Sustainable Biomaterials). The first of these was granted for the cultivation of Brassica carinata. This is the first RSB certificate to be granted in Uruguay and represents new sustainable practices for agriculture.

The second certificate is the world's first RSB low indirect land use (ILUC) risk certification, granted for both the company's Brassica carinata oil and the crude tall oil already in use at the UPM Lappeenranta Biorefinery.

UPM BIOVERNO DIESEL – A GENUINE FUEL CHOICE FOR THE FUTURE

Up to 80% lower greenhouse gas emissions than fossil diesel

Cleaner combustion than fossil diesel



Lower tailpipe emissions on the road

UPM BIOFUELS ENTERS BIOPLASTICS WITH NEW PARTNERS

The process of making UPM BioVerno renewable diesel at the UPM Lappeenranta Biorefinery also generates renewable naphtha, an excellent raw material for renewable plastics. In March, a new collaboration with two global players signalled UPM Biofuels' leap into the bioplastics industry.

Elopak, a Norway-based supplier of paper-based packaging solutions for liquid food, joined forces with UPM Biofuels and Dow, a specialty chemicals company, to offer 100% renewable cartons that are both recyclable and responsibly sourced. This partnership is especially significant, given that Elopak's global presence in 40 countries translates to supplying 15 billion cartons annually.

Creating a 100% wood-based carton is a great example of collaboration across the value chain to find new sustainable solutions. Dow converts UPM BioVerno naphtha into renewable polyethylene, which Elopak then uses as a coating for their wood-based beverage cartons.

Every tonne of UPM's wood-based naphtha that Dow converts into renewable plastics reduces fossil raw materials use by one tonne. The sustainability of the entire value chain is also ISCC PLUS certified. Using UPM BioVerno naphtha in the production of renewable plastics is just one more example of how UPM creates value from sustainable bioinnovations.

READ MORE:
upmbiofuels.com

CAPITALS

- Capital-intensive process industry
- Engaged, high-performing people
- Responsible raw material sourcing
- Integration in internal raw material
- Community engagement

UPM BIOFUELS VALUE CREATED

Low-emission renewable diesel and naphtha
Renewable energy
Sustainable bioproducts
Competitive and sustainable non-food residue feedstock
Infrastructure synergies
Sustainability leader in biofuel solutions
Intellectual property rights

CUSTOMERS

- Oil refiners and blenders
- Distributors and retailers
- Dedicated heavy-duty fleets
- Petrochemical industry

OUTCOMES

- Low-emission transportation
- Climate change mitigation
- Employment and work safety
- Community wellbeing
- ROCE
- Best available technology

UPM ENERGY

MARKET-AGILE ENERGY

OUR DIRECTION

- Profitable growth in low-emission electricity generation in the Nordic market
- Attractive solutions to support decarbonisation of the energy system
- Exploring opportunities of the new wave of electrification in society

OUR STRENGTHS

- Competitive, low-emission electricity generation asset portfolio
- Strong track record in physical and financial electricity markets
- World-class competence in optimisation of industrial power consumption
- Agile and competent organisation

Value from transformation of the energy markets

The electricity markets are undergoing a transformation, from largely centralised generation towards a more decentralised model with an increasing amount of intermittent renewable generation. This transformation is driven by efforts to mitigate climate change which, alongside other measures, calls for the decarbonisation of the energy system.

UPM Energy is well aligned to support these developments. Our hydro and nuclear generation assets are free of CO_2 emissions and account for 93% of our electricity generation. Hydropower is a valuable balancing asset for an increasingly volatile market, whereas nuclear can provide a stable base load for the system.

An end to the heavy subsidisation of renewable energy is normalising electricity prices and competition. Together with a strengthened CO_2 emission trading scheme, this offers an attractive business position for UPM Energy and its competitive future-proof generation assets. In addition, the Nordic electricity market is increasingly connected to the continental European market, in particular Germany, providing UPM Energy with new business opportunities as the number of interconnections increases and markets become more integrated.

Competitive service concept for new earnings models

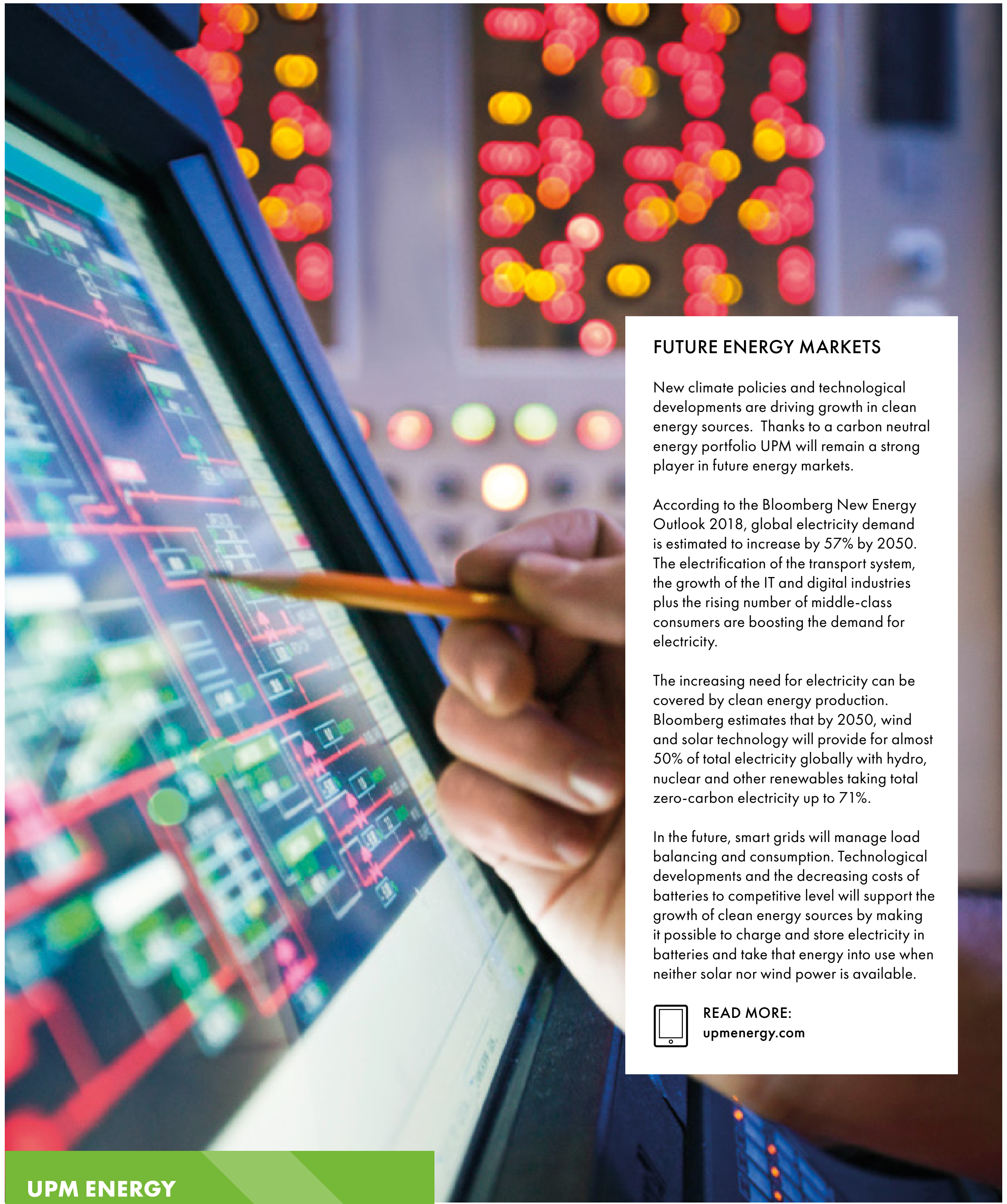
As the share of intermittent energy sources – for example, solar and wind – grows in the energy system, the volatility of the system also increases. This in turn requires increased balancing capabilities in order to ensure the stability in the system. Balancing can be achieved via supply-side or demand-side measures.

UPM Energy's new optimisation services have been further developed to offer large industrial electricity users an opportunity to actively participate in energy markets through demand- side flexibility. In addition to traditional cost-saving scenarios, UPM's service concepts provide customers with more proactive tools for creating value in the energy markets. UPM Energy is experimenting with new earnings models that leverage its long-term experience of supporting industrial-scale energy consumption and optimisation.

Investing in CO_2 emission-free generation

UPM Energy is investing in CO_2 emission-free power generation through its own hydropower assets and co-owned hydro and nuclear power companies.

The main, ongoing project is underway at Teollisuuden Voima (TVO), where its Olkiluoto 3 EPR-type nuclear power unit is on the home stretch and is scheduled to commence regular electricity production in January 2020. UPM's share of the new unit's capacity is approximately 500 MW, through holding in Pohjolan Voima. UPM Energy has taken over Pohjolan Voima's hydro planning, regulation and power plant dispatching operations and also taken the decision to refurbish the Kuusankoski hydropower plant during 2019–2022.



FUTURE ENERGY MARKETS

New climate policies and technological developments are driving growth in clean energy sources. Thanks to a carbon neutral energy portfolio UPM will remain a strong player in future energy markets.

According to the Bloomberg New Energy Outlook 2018, global electricity demand is estimated to increase by 57% by 2050. The electrification of the transport system, the growth of the IT and digital industries plus the rising number of middle-class consumers are boosting the demand for electricity.

The increasing need for electricity can be covered by clean energy production. Bloomberg estimates that by 2050, wind and solar technology will provide for almost 50% of total electricity globally with hydro, nuclear and other renewables taking total zero-carbon electricity up to 71%.

In the future, smart grids will manage load balancing and consumption. Technological developments and the decreasing costs of batteries to competitive level will support the growth of clean energy sources by making it possible to charge and store electricity in batteries and take that energy into use when neither solar nor wind power is available.

READ MORE:
upmenergy.com

KEY FIGURES	2018	2017
Sales, EURm	391	317
Comparable EBIT, EURm	123	91
Capital employed (average), EURm	2,346	2,267
Comparable ROCE, %	5.3	4.0
Personnel on 31 Dec.	63	60

Profitability improved due to higher electricity sales prices, driven by the Nordic hydro situation and commodity prices. Dry weather and low reservoir levels affected hydropower generation.

CAPITALS

- Capital-intensive utility business
- Regulation
- Low-emission energy sources
- Engaged, high-performing people

UPM ENERGY VALUE CREATED

Renewable, flexible and low-emission hydropower
Cost-competitive, reliable and CO_2-free nuclear power
Electricity sales for day-ahead and intraday markets
Hedging activities in financial markets
Active owner in co-owned companies
Centre of excellence for energy services

WHOLESALE MARKET

END USES

- Electricity and services to industrial-scale power consumers
- Electricity to small and medium-sized enterprises
- Electricity to households

OUTCOMES

- Top safety performance
- Flexible power supply
- Demand-side flexibility
- Energy supply security
- ROCE
- Climate change mitigation

UPMBIOFORE–BEYOND FOSSILS

UPM RAFLATAC

LABELING A SMARTER FUTURE

OUR DIRECTION

- Profitable organic growth potentially complemented with acquisitions
- Expanding customer reach through increased distribution, sales and service coverage and sustainable partnerships
- Widening product portfolio, especially in high value-added products
- Innovating new products and solutions to meet the increasing need for sustainable products

OUR STRENGTHS

- End use focused product offering
- Industry leader in sustainability and product safety
- Global delivery network, accurate and efficient supply chain
- Global scale in R&D, quality development and technical expertise
- Modern, strategically located and efficiently scalable production assets

Customer-driven global platform to build on

In the packaging value chain sustainability continues to be one of the main drivers of future growth. As an industry leader in sustainability, we offer innovative solutions to support customers and brand owners in meeting their targets. We operate in 40 countries and serve our customers in 110 countries on six continents.

Clear strategy to continue growth and value creation

Our strategic cornerstones for growth continue to be improved customer reach, wider product portfolio and continuously improving operations. In January, we opened a new slitting and distribution terminal in Santiago, Chile, to serve our customers in the wine and craft beverage segments. In July, we opened a new terminal in Seoul, South Korea, to expand the service network in the Asia-Pacific market. In September, we expanded our service coverage in the Northwestern USA with a terminal acquisition in Seattle. Over the last five years, we have opened seven new slitting and distribution terminals.

In 2018, we continued widening our product portfolio with high value-adding, innovative and sustainable products, especially for food and beverage labelling, as well as for pharmaceutical and health care end-use segments. Our partnerships with label printers and brand owners are an elementary part of building brand and product appeal in end-use markets.

In January 2019, a new special products production line expansion was completed in Tampere, Finland. This investment strengthens our position in the high value-added labels market.

Innovative and sustainable labelling solutions

Global megatrends and growing environmental awareness increase the demand for more sustainable solutions.

UPM's Biofore Site™ concept, which was piloted at UPM Raflatac in 2018, aims to enhance the sustainability culture in factories and terminals. It also provides a platform for continuous improvement towards meeting UPM's 2030 responsibility targets (read more on page 71).

In 2018, we launched several ecodesigned products. Examples include thin and light label solutions that use less raw materials, label products containing recycled content and wash-off adhesives that promote recyclability. Ecodesigned label materials reduce environmental impact on climate, energy, water and waste. This performance can be verified using UPM Raflatac's Label Life tool.

The RafCycle® solution for turning waste into a resource continued its geographic expansion into Southeast Asia and the USA. RafCycle now has over 130 partners globally who recycle their label waste.

Collaboration throughout the value chain

UPM Raflatac builds sustainable partnerships throughout the entire packaging value chain. In 2018, we signed up to the New Plastics Economy Global Commitment along with over 250 organisations. The commitment and its vision for a circular economy for plastic is led by the Ellen MacArthur Foundation (EMF), in collaboration with UN Environment (read more on the right).

UPM Raflatac also joined The Circular Economy 100 (CE100), a precompetitive innovation programme established by the EMF to enable organisations to develop new opportunities and act upon their circular economy ambitions faster.

Overall, UPM Raflatac has more than 20 stakeholder collaboration projects on sustainability with its suppliers, customers, brand owners, environmental organisations and other industry bodies.

KEY FIGURES	2018	2017
Sales, EURm	1,488	1,495
Comparable EBIT, EURm	126	136
Capital employed (average), EURm	535	502
Comparable ROCE, %	23.6	27.2
Personnel on 31 Dec.	3,244	3,186

Profitability weakened due to higher variable and fixed costs, lower delivery volumes and unfavourable currency exchange rates. Sales prices were higher and mitigate the negative impact of cost inflation. Global demand for self-adhesive label materials increased.

UPM RAFLATAC INNOVATES TOWARDS CIRCULAR ECONOMY

UPM Raflatac is committed to developing labelling solutions with other industry leaders to support brand owners in eliminating unnecessary plastic packaging and achieving their target of 100% reusable, recyclable or compostable plastic packaging by 2025. Reaching these targets requires the cooperation of players on the whole packaging value chain.

Innovative solutions such as the RafCycle recycling programme, thin film materials, wash-off adhesives and label materials containing recycled content are some initiatives UPM Raflatac has undertaken to promote a circular plastics economy.

UPM Raflatac signed the New Plastics Economy Global Commitment among 250 organisations, including many of the world's largest packaging producers, brands, retailers, recyclers and NGOs. The Global Commitment is led by the Ellen MacArthur Foundation (EMF) in collaboration with UN Environment.

Targets will be reviewed every 18 months, and become increasingly ambitious over the coming years. Businesses that sign the commitment will publish annual data on their progress to help drive momentum and ensure transparency.

READ MORE:
upmraflatac.com

CAPITALS

- Capital-light converting business
- Engaged, high-performing people
- Responsible sourcing

UPM RAFLATAC VALUE CREATED

Safe and sustainable label materials for everyday use
Global customer reach with sales and service
Efficient and accurate supply chain, responsive distribution network
Modern, efficient and strategically located label stock factories
Technical expertise, product development

CUSTOMERS

- Label printers
- Brand owners

END USES

- Home and personal care
- Food and beverages
- E-commerce and retail
- Transport and logistics
- Pharmaceutical

OUTCOMES

- Employment and work safety
- Sustainable solutions for customers and brand owners
- End-use brand appeal
- Information sharing
- ROCE

UPM SPECIALTY PAPERS

CONFIDENCE DELIVERED

OUR DIRECTION

- Global innovation leader in labelling materials
- The preferred fine paper supplier in Asia-Pacific
- Growth in flexible packaging

OUR STRENGTHS

- Recognised and awarded industry leader in sustainability
- Strong market position, competitive products and world-class assets
- Consistency in the quality of our products, services and performance
- Innovations that broaden our product offering
- Expert partner for our customers, recognised for exceptional service and technical expertise

Innovation driven opportunities for future growth

UPM Specialty Papers grows through its existing product offerings, innovating new applications and investing in new capacity. Presence in Asia is strong, accounting for over 50% of sales. We offer a wide range of sustainable and high-quality labelling materials, release liners, office papers and packaging grades for labelling, commercial siliconizing, flexible packaging, wrapping and printing.

Our key focus in the label value chain is offering high-quality release liner base papers and face papers. Label stock accounts for about 50% of various end-use applications in release liner base paper. Our strategy in labelling is to grow in high-quality labelling materials and innovative release liner applications. Recent innovations include our reactive surface for release liners, new lightweight products with industry-leading material efficiency and recycling based release liners launched in 2018.

In packaging papers, we are a niche player in the growing consumer packaging segment, which is driven by e-commerce and changing consumer trends, such as interest in replacing fossil-based materials. To capture growth, we are developing new innovative packaging solutions. With our barrier ream wrapping products, for example, we can replace traditional packaging materials that are based on fossil raw materials (read more on the next page).

For fine papers, our main markets are office papers in Asia-Pacific, with strong positioning of our brands. In this segment, our growth strategy builds on our strong track record in sustainability.

Growth investments for long-term value creation

In 2018, we announced three new focused growth investments. At UPM Jämsänkoski in Finland, a calender was rebuilt with 40,000 tonnes of additional finishing capacity to serve higher value end uses. This investment was completed in October. At UPM Nordland in Germany, we are converting PM2 for release liner production, with 110,000 tonnes annual impact. This investment will change our product offering and improve our service concept for customers in Europe and the Americas. We expect the investment to be finalised in Q4 2019. At UPM Changshu in China, we are investing in PM3 release liner expansion, with an additional capacity of 40,000 tonnes. This investment is expected to be completed in Q1 2020.

To strengthen our position in office paper, in December 2018, we completed the new cut-size line at UPM Changshu in China, which will increase our capacity to serve growing demand in Asia-Pacific.

Recognised industry leader in sustainability

UPM Specialty Papers products comply with the most demanding responsibility criteria in the industry. Our long record of sustainability at the UPM Changshu mill provides a unique competitive advantage in Asian markets.

In 2018, UPM Changshu received Water Efficiency Frontrunner recognition in China, the first and only company in Jiangsu Province. The Water Efficiency Frontrunner is one of the key initiatives launched by the Chinese government to reduce industrial emissions. Read more about the More with Biofore in China research programme at UPM Changshu on page 72.

In Singapore, we were one of the first companies to receive the enhanced Singapore Green Label, which recognises sustainable manufacturing, the product value chain and environmental practices. This enables our customers to choose green labelled products as part of climate action efforts.

Product safety is a key requirement for customers and our papers are safe to use throughout their entire product lifecycles. Papers with food contact certificates can be in direct contact with dry and non-fatty food.

KEY FIGURES	2018	2017
Sales, EURm	1,429	1,336
Comparable EBIT, EURm	90	152
Capital employed (average), EURm	889	885
Comparable ROCE, %	10.1	17.2
Personnel on 31 Dec.	2,000	1,949

Profitability weakened due to higher pulp costs more than offsetting the positive impact of higher sales prices. Market demand for label and release paper was good. Increased competition in China had an impact on office paper pricing.

BARRIER PAPERS OFFER A MUCH NEEDED ALTERNATIVE TO PLASTIC

One solution to the current plastic waste problem is found in packaging materials made from renewable raw materials that, even when they end up in nature, do not produce plastic waste but break down as part of the natural cycle. Biodegradable papers will be in strong demand in the future.

UPM Specialty Papers is actively developing recyclable and renewable barrier papers for wrapping and packaging. These specialty papers can, among other uses, replace plastic-coated disposable papers in packaging food. Plastic-coated papers have been challenging to recycle.

Consumers encounter these papers for example wrapped around sandwiches at cafés or when buying a hot dog while rushing to catch the train. Food wrapped up in these papers stay fresh and the papers can be recycled in exactly the same way as a newspaper.

READ MORE:
upmspecialtypapers.com

CAPITALS

- Capital-intensive process industry
- Engaged, high-performing people
- Community engagement
- Responsible sourcing
- Chemical pulp with full traceability

UPM SPECIALTY PAPERS VALUE CREATED

Safe and certified products
Recognised and awarded leader in sustainability
Reliable know-how partner that promotes our customers' growth
Operational efficiency
Competitive production platform
Global sales network and service capability
Consistent and technically demanding product quality

CUSTOMERS

- Label stock manufacturers, commercial siliconizers
- Paper converters
- Merchants and distributors
- Packaging customers

OUTCOMES

- Work safety
- Employment and career opportunities
- High ethical standards and compliance with global norms
- Recyclable products that can replace all or parts of plastic materials
- Low emissions
- ROCE

UPM COMMUNICATION PAPERS

CONSISTENT PERFORMANCE

OUR DIRECTION

- Maintain a strong, profitable market position while actively managing capacity in line with market developments
- Evolve business through increasing the efficiency of our operations and the relevance and quality of our portfolio
- Drive digitalisation by focusing on optimisation, building on analytics and robotics solutions, and extending digital solutions for our customer interface

OUR STRENGTHS

- Long-term commitment to paper and reliability of supply
- Broad portfolio and strong geographical presence
- High product and service quality
- Extensive, thoroughly optimised production
- Clear and transparent sustainability agenda based on responsible operations, strong ethical values and a fully traceable supply chain

Maintaining cost competitiveness

Our strategy is to strengthen our role as an industry leader through uncompromising performance, targeted innovation and commercial excellence. We continue to focus on stringent capacity management and continuous improvement in all parts of our operations.

The decline in paper demand has been predictable and steady during recent years. While our focus has been on operational excellence to meet customer demand, we continued our tight cost management measures through fixed-cost reduction programmes across mills and sales offices. We made further improvements to variable cost management, focusing on energy and fibre purchasing. The development programme, which focuses on streamlining process and increasing efficiency through automation, was implemented at our Nordland mill in Germany.

Digitalisation enabling future performance

Our commitment to paper and our ambition to become the leading global supplier of graphic papers demand the evolution of our business and the processes that support it. Our digitalisation agenda supports our operational efficiency, e.g. through digital sourcing solutions, preventive maintenance pilot schemes, and robotics and automation solutions relating to the sales process. At the same time, we have extended our digitalisation roadmap to further develop our customer interfaces.

While we do not expect immediate changes in the technologies and approaches governing our customers' approaches to purchasing, we are conscious of the rapid change driven by the increasing maturity of digital platforms and applications, as well as by generational shifts, that will take place in the coming years. Through an optimal use of digital solutions, we are sure to increase our relevance as an industry leader while continuing to drive efficiency throughout our internal processes.

Sustainability as a differentiating factor

UPM Communication Papers is the world's largest user of recovered paper for the production of graphic papers. Our target is to continuously reduce the emissions and waste related to our production. We focus on high environmental and social standards when sourcing our materials, and our wood raw material comes from sustainably managed forests. We provide our customers with all relevant certificates and offer the most comprehensive range of EU Ecolabel-awarded products in the industry.

Sustainability is increasingly becoming a differentiating factor in the market. We take a holistic approach to sustainability, focusing on raw material sourcing, production, our role in society and the value we generate for our stakeholders and customers. Delivering these targets will enable our and our customers' future business success.

SAFETY IS MORE THAN NUMBERS

"Augsburg mill has developed a comprehensive zero accident action plan, including safety leadership on all levels, commitment and clear role models with exemplary management of changes." This was the message when the mill was selected as the Best Improver in Safety. The mill has had zero UPM lost-time accidents since 2016 – a significant improvement on the previous years' average lost time accident frequency (LTAF) of 5.9.

Teams can get involved in various health and safety activities and collect points in an activity matrix. It is incentivised, which serves as a good initial motivator, and it helps the personnel understand that safety is a team effort.

Clear roles and responsibilities set a framework for the safety culture. Thorough planning and straightforward processes are essential for maintaining and improving safety culture. The mill has implemented several ideas and measures to get closer to the long-term goal of zero incidents.

READ MORE:
upmpaper.com

KEY FIGURES	2018	2017
Sales, EURm	**4,690**	4,615
Comparable EBIT, EURm	**267**	231
Capital employed (average), EURm	**1,602**	1,702
Comparable ROCE, %	**16.7**	13.6
FCF/CE, %	**15.3**	24.3
Personnel on 31 Dec.	**7,929**	8,252

Profitability improved. Higher sales prices and improved product mix more than offset the negative impact of higher pulp and energy costs. Fixed costs were lower. Deliveries decreased in line with overall market demand.

CAPITALS

- Capital-intensive process industry
- Responsible and competitive sourcing
- Strong focus on environmental and social sustainability
- Engaged, high-performing people

UPM COMMUNICATION PAPERS VALUE CREATED

Safe, certified and sustainable products
Industry-leading, committed graphic paper supplier with largest product range
Shared operational platform for production, supply chain and sales
Efficient and cost-competitive production
Market-based, global sales and technical service network

END USES

- Direct marketing
- Advertising
- Magazine publishing
- Newspaper publishing
- Home and office

OUTCOMES

- Safe working environment and practices
- Vital local communities, sustainable business for suppliers
- Reliable deliveries, customer business success
- Reading, learning and communications
- Cash flow return on capital employed

UPM PLYWOOD

EFFICIENCY MADE EASY

OUR DIRECTION

- Profitable growth through superior customer experience and operational excellence
- Strengthen market position in selected businesses by increasing value and service offerings

OUR STRENGTHS

- End-use, market and customer insight and superior customer service
- Leading reliability of supply, with consistent high quality
- Leading supplier in demanding end-use segments
- Strongest brand on the market: WISA®
- Operational excellence through skilled personnel

Megatrends support our commercial strategy

Global megatrends, like urbanisation, digitalisation, increase in living standards and environmental awareness, support UPM Plywood's commercial strategy. The primary end uses are construction, vehicle flooring and liquefied natural gas (LNG) shipbuilding. Construction is the largest end use, accounting for more than half of our production volumes.

Our strategy is to focus on demanding industrial applications and on high- and medium-range standard products. We aim to strengthen our market position in selected businesses by increasing value offerings.

This is supported by our ongoing focused growth investment at the UPM Chudovo mill in Russia to increase its birch plywood production capacity by 45,000 to 155,000 cubic metres. In addition to the production capacity growth, a new bio heat boiler will be built at the mill site. Investment continues according to schedule and is estimated to be completed by the end of Q3 2019.

In April, we announced UPM Joensuu plywood mill's power plant and scarf-jointing line replacement project in Finland. UPM Joensuu is producing WISA plywood mainly for truck and trailer floors and insulation components for LNG carriers.

Sustainability-driven end-use segments

In building and construction, our growth is driven by residential and commercial construction, renovation and civil engineering. We lead in high- and medium-range standard products in Europe. New innovative and sustainable solutions are further strengthening our offerings for construction applications. Responsible operations and certified products are highly valued by our wide customer base.

Road transport is expected to remain the major mode of freight transport in Europe. Fleet replacement need is levelling, while relatively good economic activity is supporting trailer demand. Growing e-commerce volumes are driving growth in light vehicles. As a competitive advantage, WISA birch plywood has a positive ecological impact on fuel consumption, given its excellent weight-to-strength ratio compared with other materials (read more on the right). In the future, we seek growth by expanding to new markets and related end-use segments.

Global environmental awareness promotes the use of gas over coal, and multi-source energy supply policies support LNG use. LNG use is growing, especially in Asia, which accounts for 70% of global LNG trade. We are the leading supplier of birch plywood for large LNG carriers. The LNG plywood manufacturing process is strictly certified, and WISA birch plywood is ideal for insulation in these vessels thanks to its strength and stability at –163°C. Our aim is to secure our leading position and extend our offerings to related applications with the same technology.

Innovations for the products of the future

UPM Plywood started using a new sustainable lignin-based WISA BioBond gluing technology in plywood manufacturing in 2017. In this innovative technology, 50% of the fossil-based phenol has been replaced with lignin, which is obtained as a by-product of pulp production. In 2018, the proportion of this new sustainable bonding solution increased in WISA plywood production.

With our fire-retardant structural plywood for building and construction end uses, we continued our commercial strategy of identifying new end-use applications. Fire-retardant treatment saves construction time, material and costs, as it allows simpler structures that have the required fire-retardant capabilities.

Ecological material from certified forests

Plywood is an environmentally sustainable material because wood raw material stores carbon. PEFC™ and FSC® certificates guarantee that the wood raw material is from sustainably managed forests with responsible logging operations. Compared with other materials, such as aluminium, plastic and steel, plywood manufacturing consumes significantly less energy.

KEY FIGURES	2018	2017
Sales, EURm	480	484
Comparable EBIT, EURm	52	62
Capital employed (average), EURm	283	267
Comparable ROCE, %	18.4	23.1
Personnel on 31 Dec.	2,502	2,454

Profitability weakened. Higher average sales prices more than offset the negative impact of higher variable costs. Impact of currencies was unfavourable throughout the year. The market demand in Europe continued to be good, driven by the building and construction industry.

UNDER EXTREME CONDITIONS

Vehicle flooring in heavy transport is under extreme stress every day. Trailers, trucks and other commercial vehicles require extra strength and durable, non-slip flooring materials. UPM Plywood's new securing solution – WISA-TopGrip Evo2 – helps transportation companies to reduce waste, save time and improve work safety by eliminating the need for disposable friction mats under cargo.

Replacing disposable friction mats with high-friction flooring is more sustainable for the environment and saves costs per truck load. Faster turnaround time directly translates to increased capacity, which improves the profitability of logistic operations. As a result of continued development, the friction properties of the panels have improved by 25% in comparison to the first-generation product.

READ MORE:
wisaplywood.com

CAPITALS

- Labour- and capital-intensive industry
- Engaged, high-performing people
- Community engagement
- Responsibly sourced wood from sustainably managed forests

UPM PLYWOOD VALUE CREATED

Safe and certified products
Carbon-storing products
Thorough customer insight
Professional technical services, supply chain services
High-quality, reliable supplier
Wide distribution and customer service network
Strong brand

END USES

- Construction
- Vehicle flooring
- LNG shipbuilding
- Parquet
- Other industrial manufacturing

OUTCOMES

- Employment and work safety
- Vitality of local communities
- Customer business success
- Renewable energy
- Low emissions
- ROCE

Strategic actions for future growth

In 2018, we focused on improving our performance supported by culture of aiming higher, innovation and responsibility. We continued to grow our current businesses and laid the groundwork for continued transformation in the future.

	STRATEGIC TARGETS	ACTIONS 2018	ACTIONS PLANNED FOR 2019 *)
GROUP AND ALL BUSINESSES	Continuous improvement of financial, social and environmental performance Maintain strong balance sheet and capability for future opportunities Developing Aiming Higher culture for business success Compliance with laws and regulation Mitigate risks and capture opportunities	Continuous improvement programmes Strong cash flow and balance sheet Disciplined capital allocation on focused growth projects Launched a new promise "UPM Biofore – Beyond fossils" Continued building a culture of Aiming Higher A new enabling performance approach adopted Further steps in compliance management Implementation of human rights assessment findings Joined Together for Sustainability (TfS) initiative	Continuous improvement programmes Disciplined and effective capital allocation Strengthen "UPM Biofore – Beyond fossils" mindset Developing Aiming Higher culture further Continue to foster enabling performance approach Promote engaging safety culture and global health concept Renew UPM Code of Conduct and train employees Enhance counterparty risk management Stronger climate change response
UPM BIOREFINING	Grow as a responsible and cost-efficient pulp supplier Provide sustainable, advanced biofuels and biomaterials, evaluate opportunities for scaling up biofuels business Enhance profitability through efficient use of wood supply, integrated full-production and focused commercial strategy	UPM Kaukas pulp mill investment completed Uruguay phase 2: pre-engineering study, permitting process and development of infrastructure for a potential new pulp mill in Uruguay New production level of biofuels reached after the turnaround shutdown at UPM Lappeenranta Biorefinery, entering bioplastics market An environmental impact assessment (EIA) for a possible biorefinery in Kotka, Finland submitted to the authorities Measures to improve efficiency in wood supply chain	Uruguay phase 2: pre-engineering study, permitting process and development of infrastructure Continue evaluation of growth opportunities and new sustainable feedstocks in biofuels Enhance wood supply solutions to improve efficiency and reliability
UPM ENERGY	Profitable growth in low-emission energy generation in the Nordic market Attractive solutions to support decarbonisation of the energy system Exploring opportunities of the new wave of electrinification in society	Development of the service offering to industrial-scale electricity consumers continued Continued OL3 project, started the commissioning tests of OL3 Taking over PVO's hydro planning, regulation and power plant dispatching operations Migratory fish programme continued	Continue developing the service offering to industrial-scale electricity consumers Refurbishment of the Kuusankoski hydropower plant The commissioning tests of OL3 to continue, the first connection to the grid planned
UPM RAFLATAC	Profitable organic growth potentially complemented with acquisitions Expanding customer reach through increased distribution, sales and service coverage and sustainable partnerships Widening product portfolio, especially in high value-added products Innovating new products and solutions to meet the increasing need for sustainable products	Expand service coverage in the North-West US with an acquisition in Seattle Opened new terminals in Santiago, Chile and in Seoul, South Korea Development of product portfolio continued, several ecodesigned products launched The Biofore Site™ concept piloted RafCycle® recycling solution continued its geographic expansion Joined Ellen MacArthur foundation circular economy programme	Expand distribution coverage in attractive markets Capture growth opportunities and develop product portfolio and service offering Continue to develop new sustainability and circular economy concepts
UPM SPECIALTY PAPERS	Global innovation leader in labelling materials The preferred fine paper supplier in Asia-Pacific Growth in flexible packaging	New innovative release liner products launched Release liner expansion at UPM Jämsänkoski in Finland completed Decision of UPM Nordland PM2 conversion to release liner in Germany Decision on release liner expansion at UPM Changshu in China The new cut-size line expansion at UPM Changshu in China completed More with Biofore in China research programme continued	Growth in the Asian, European and American markets Complete release liner conversion at UPM Nordland in Germany Continue release liner expansion at UPM Changshu in China Continue to develop new products to replace fossil-based materials Cost efficiency improvement actions
UPM COMMUNICATION PAPERS	Maintain a strong, profitable market position Evolve business through increasing the efficiency of operations and the relevance and quality of portfolio Drive digitalisation with focus on optimisation building on analytics and robotics solutions, and by extending digital solutions for customer interface	Focus on capacity optimisation at all mills Targeted growth in certain end uses and segments Automation development programme at UPM Nordland in Germany implemented Digitalisation roadmap extended and implementation continued New sustainability agenda implemented Cost management programmes continued	Continue strengthening of market role Capture opportunities in additional end uses and segments Strengthen customer interface Further explore digitalisation opportunities, focusing on customer interface Continue cost efficiency improvement
UPM PLYWOOD	Profitable growth through superior customer experience and operational excellence Strengthen market position in selected businesses	The supply chain service model strengthened Proceeded with Chudovo mill expansion in Russia Production optimisation at Otepää mill in Estonia Boiler and scarf-jointing line replacement project at UPM Joensuu in Finland started Share of WISA BioBond gluing technology in plywood production increased Commercialisation of fire-retardant structural plywood continued	Further enhance effective raw material usage and agile supply chain capabilities Complete Chudovo mill expansion and new boiler Complete boiler and proceed with scarf-jointing line replacement project at UPM Joensuu Leadership skills development and mapping of commercial competence development needs
WOOD SOURCING AND FORESTRY	Secure competitive wood sustainably	Sold 55,880 hectares of forest land in Finland Study availability and quality of competitive wood for UPM's growth projects New biodiversity target (COP14)	Study availability and quality of competitive wood for UPM's growth projects Develop new methodology to monitor biodiversity
UPM BIOCHEMICALS	Evaluate and implement a path towards sustainable biochemicals business Further application development and piloting, product commercialisation	Proceeded with an engineering study and a commercial assessment to assess attractiveness of the potential biochemicals refinery in Germany Commercialisation of biomedicals products	Complete the engineering study, conclude the commercial feasibility and assess the attractiveness of the business growth opportunities Continue to commercialise and search collaboration opportunities for biomedicals
UPM BIOCOMPOSITES	Business creation and continued growth	New UPM ProFi products launched Commercialisation of UPM Formi and UPM Formi 3D continued	Continue to commercialise new UPM ProFi products Expand UPM Formi product portfolio and continue commercialisation

*) Not a complete list

STABILITY THROUGH STAKEHOLDER ENGAGEMENT

Understanding the views and expectations of our stakeholders is key to our success and the acceptability of our operations. Long-term engagement and open dialogue with our stakeholders increases external understanding of our transformation and brings predictability to our operations.

IMPORTANCE

- Stakeholder engagement provides UPM with predictability and a competitive advantage
- Dialogue with stakeholders helps in the identification of risks and improves understanding of key challenges and opportunities in the operating environment

TARGET

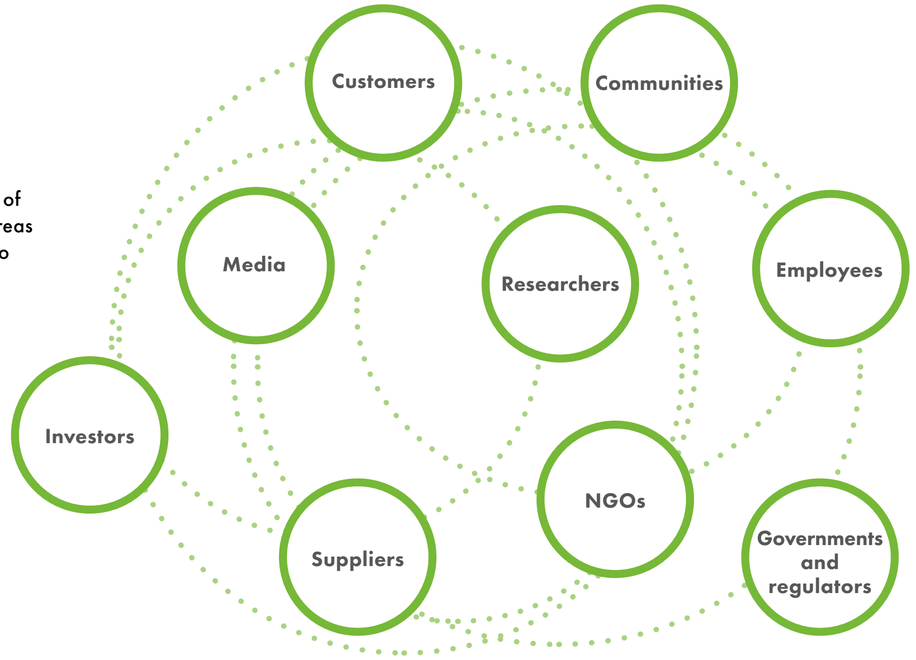
- We aim to understand stakeholder-specific expectations and needs for information and consider them in strategic development and decision-making processes

OUR WAY

- We engage in dialogue with our stakeholders to discuss UPM's operations and targets
- The UPM Code of Conduct sets the standards for responsible behaviour towards stakeholders
- Every year, UPM updates a materiality analysis that highlights the most important responsibility issues for UPM and its stakeholders
- Stakeholder engagement is measured by several indicators
- Stakeholder relations are coordinated globally at the Group level while UPM's businesses are responsible for local engagement activities
- Focus on 2030 responsibility target on community involvement

OUR MOST IMPORTANT STAKEHOLDERS

Our Biofore strategy forms the foundation of our stakeholder dialogue. The key focus areas and activities vary locally and according to stakeholder needs.



The impact of UPM's operations extends from the local level to society at large. That is why it is important that we engage in active and continuous dialogue with our stakeholders.

UPM's most important stakeholders are customers, investors and financiers, employees, suppliers, local communities, authorities and decision makers, the media, non-governmental organisations, and researchers and universities.

The approach for each stakeholder varies depending on business focus, region and specific stakeholder needs. As stakeholders view UPM primarily as an economic operator, financial success, stability, good governance, future outlook and growth are key themes for most stakeholders.

Environmental matters, social responsibility and our role in society are also key to the acceptability of our operations and the long-term success of our businesses.

We aim to provide a balanced view of the economic, environmental and social aspects of our business activities, recognising, however, that expectations vary between stakeholders.

The UPM Code of Conduct sets the standards for responsible behaviour towards our stakeholders. The standards cover topics relating to legal compliance and disclosure, conflicts of interest, anti-corruption and anti-bribery, HR practices, human rights questions and environmental matters.

Careful analysis of stakeholder feedback

Stakeholder mapping is an essential part of stakeholder relations, along with the systematic gathering of feedback and views from different sources. We analyse the feedback carefully to understand the expectations of our stakeholders and take them into consideration in strategic development and decision-making processes.

The level of stakeholder engagement is measured by several indicators, such as customer enquiries, contacts with the mills, investor relations and wood sourcing and forestry as well as number of job applications.

Every year, we conduct a materiality analysis that highlights the most important responsibility issues for UPM and its stakeholders. The analysis is based on several surveys, customer enquiries and feedback from an open web-based tool (see page 51).

A clear picture of UPM's direction and value creation for investors

UPM discloses relevant and accurate information in a timely manner and non-selectively in accordance with market regulations to all participants in the market. Our aim is to provide a clear picture of how we create long-term value for our shareholders, what our future course is and how we implement our Biofore strategy in practice.

At the end of May, we presented our value creation and earnings growth opportunities at UPM's Capital Markets Day in London. During the year, we also arranged investor events, participated in industry conferences and met widely with investors in all our main markets in Europe, North America and Asia. Investors were especially interested in UPM's strategy implementation and capital allocation and the resulting outlook for long-term earnings growth. Interest towards megatrends and responsible products and solutions by UPM to address them also continued to grow.

SUPPLY CHAIN RESPONSIBILITY BOOSTED BY COLLABORATION

UPM joined the Together for Sustainability (TfS) initiative in 2018. Companies belonging to TfS promote sustainability practises within their supply chains and comprehensively share the sustainability information they have on their suppliers.

Global supply chains today are complex and with collaboration everyone has access to information on the suppliers' sustainability performance. The TfS cooperation improves transparency in our supply chains and the efficiency of UPM sustainability assessments.

TfS has a standardised process to assess and develop the sustainability performance of suppliers. The assessment covers company environmental impacts, health and safety, labour and human rights and company management and governance.

"The supplier provides the necessary sustainability information on an online service platform. The answers are analysed and the documents verified. Information on the strong points as well as the areas for improvement are also provided. The TfS assessments are available for all member companies through the online service," says General Manager **Gabriele Unger** from TfS.

Besides document-based online assessments TfS executes on-site audits. The scope of these audits is the same as the audits executed by the companies themselves, or third parties. If necessary, a corrective action plan is created after the audit.

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ROOTED IN CHINA FOR 20 YEARS

In November 2018, UPM celebrated its 20th anniversary in China with a ceremony at the Finland Pavilion at the China International Import EXPO (CIIE) in Shanghai, attended by government officials from Finland and China, as well as business partners and customers.

President and CEO Jussi Pesonen affirmed China's growing strategic importance to UPM. Speaking at the ceremony, Pesonen underlined UPM's long-term commitment to providing the most innovative and responsible forest-based solutions as China continues its transformation into a green economy.

UPM's strong focus on sustainability and innovation was on full display at CIIE, through its cutting-edge Biofore Concept Car, made out of UPM's renewable and recyclable forest-based materials. The car received its biggest welcome and media coverage in China since its unveiling in 2014.

Over the past two decades, UPM has invested over USD 2 billion in China as part of its global growth strategy. Today, its operations include a paper mill with three paper machines, a label stock factory and three slitting and distribution terminals as well as the Asia R&D centre. Its environmental investments in China amount to USD 80 million.

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2030 TARGETS | 17 PARTNERSHIPS FOR THE GOALS

Ensuring local commitment, enhanced co-operation, stakeholder engagement and sustainability initiatives

Forest and climate policies as key themes in public affairs work

Through public affairs work, we aim to foster the necessary prerequisites for operations, particularly in Finland, Uruguay, Germany and China. Active influencing at EU level is also important. UPM co-operates with a number of trade associations on these topics, the most important of which are the Finnish Forest Industries Federation (FFIF) and the Confederation of European Paper Industries (CEPI).

Sustainable forest management and the climate impact of forests were highlighted during 2018, and discussions on forestry were carried out with environmental organisations, certification bodies, authorities and decision makers. The discussion on the climate impact of forests is also essentially linked to the EU regulation on land use, land-use change and forestry (LULUCF).

UPM actively promotes the competitive and consistent regulation of energy and climate policy. One of the key themes in recent years has been the EU Renewable Energy Directive that sets the sustainability criteria for forest-based biomass. It defines, for example, the goals to increase the share of sustainable low-emission biofuels in transport by 2030. Finalisation of the directive proceeded during 2018.

In Finland, we contributed to discussions on the Finnish operating environment that impact the competitiveness of the forest industry in Finland. The discussion focused on different public subsidies and existing tax mechanisms, for example to promote renewable energy generation or the competitiveness of industries exposed to international competition.

In Uruguay, UPM continued discussions with the government regarding the development of logistics infrastructure and other local prerequisites related to a potential pulp investment. An agreement on long-term industrial development and initiatives for infrastructure development was signed in November 2017. The agreement covers areas such as rail and road connections and a connection to a deep sea port that are prerequisites for establishing a large-scale industrial operation in the Uruguayan inland.

Close co-operation to promote responsible business practices

In terms of responsibility, we concentrated on promoting UPM's performance, along with securing the prerequisites for future activities and communicating our future possibilities and competitiveness. Globally, we continued active co-operation with local permit authorities.

Responsibility issues were also raised in customer enquiries, with product safety, ecolabels and the origin of raw materials emerging as key themes.

UPM continued active participation in the LEAD group of the UN Global Compact responsibility initiative. The group represents world-leading companies to promote sustainability through innovation and actions. In September, the UN recognised UPM as one of 34 Global Compact LEAD companies demonstrating world-class commitment to corporate responsibility. In October, the Global Compact Network Finland was established to bring together all Finnish companies and organisations committed to Global Compact. UPM was selected to chair the network.

We also continued our co-operation with different stakeholders in responsibility issues on a voluntary basis around themes such as ecolabels, fish migration and nature conservation. UPM's two-year co-operation agreement with the Forest Stewardship Council FSC® will significantly increase the share of FSC® certified wood in Finland.

More information on local impacts of pulp and paper mills

UPM's mills in Europe, China and Uruguay can be among the biggest employers and taxpayers in the locations in which they operate. Our EMAS (EU Eco-Management and Audit Scheme) statements, extended to cover societal impacts in addition to environmental performance, provide more detailed information on the local impacts of mills.

In addition to economic impact, the extended EMAS statements also include information on co-operation with local stakeholders. UPM sponsors local organisations and works in close co-operation with educational institutions, for example.

Local statements complement UPM's corporate responsibility reporting. Mill-specific EMAS statements are compiled annually and published on the UPM website.

Biofore Share and Care demonstrates commitment to responsibility

UPM's Biofore Share and Care programme demonstrates our dedication to a sustainable and innovation-driven future through sponsorships, donations and employee voluntary work. We share our resources with causes that respect sustainable development and work in line with the company strategy.

UPM directs support to reading and learning projects, responsible water initiatives, bioinnovations and community engagement. UPM does not financially support political parties or individual candidates.

Employee volunteering, initiated in 2018, emphasises local commitment. UPM's salaried employees can use up to 8 hours per year for volunteering work during their working hours.

The focus of the local sponsorship is on supporting the vitality of UPM production locations. UPM spent approximately EUR 1.2 (1.1) million on local sponsorships.

UPM's support for its Uruguayan UPM Foundation continued with USD 400,000. The foundation supports and encourages training, entrepreneurship, employment, healthy living and entertainment in local communities in the Uruguayan countryside.

EUR 499,000 (406,300) was donated to charities or other non-profit causes, including donations to the Central Finland Centre for Economic Development, Transport and the Environment and to the Laurinvirta project to remove barriers to fish migration. UPM has also made donations to the Finnish Olympic Committee to organise children's afternoon sports clubs, the Economic Information Office (TAT) to support the Yrityskylä learning environment and the Finnish Forest Association to provide forest education to pupils. Plant for the Planet Foundation in Germany and China Green House Foundation also received donations in 2018.

UPM'S MATERIALITY ANALYSIS 2018

The materiality analysis (below) of the company's responsibility issues covers topics that directly or indirectly influence the ability to create, maintain or acquire economic, environmental or social value for UPM, its stakeholders and society.

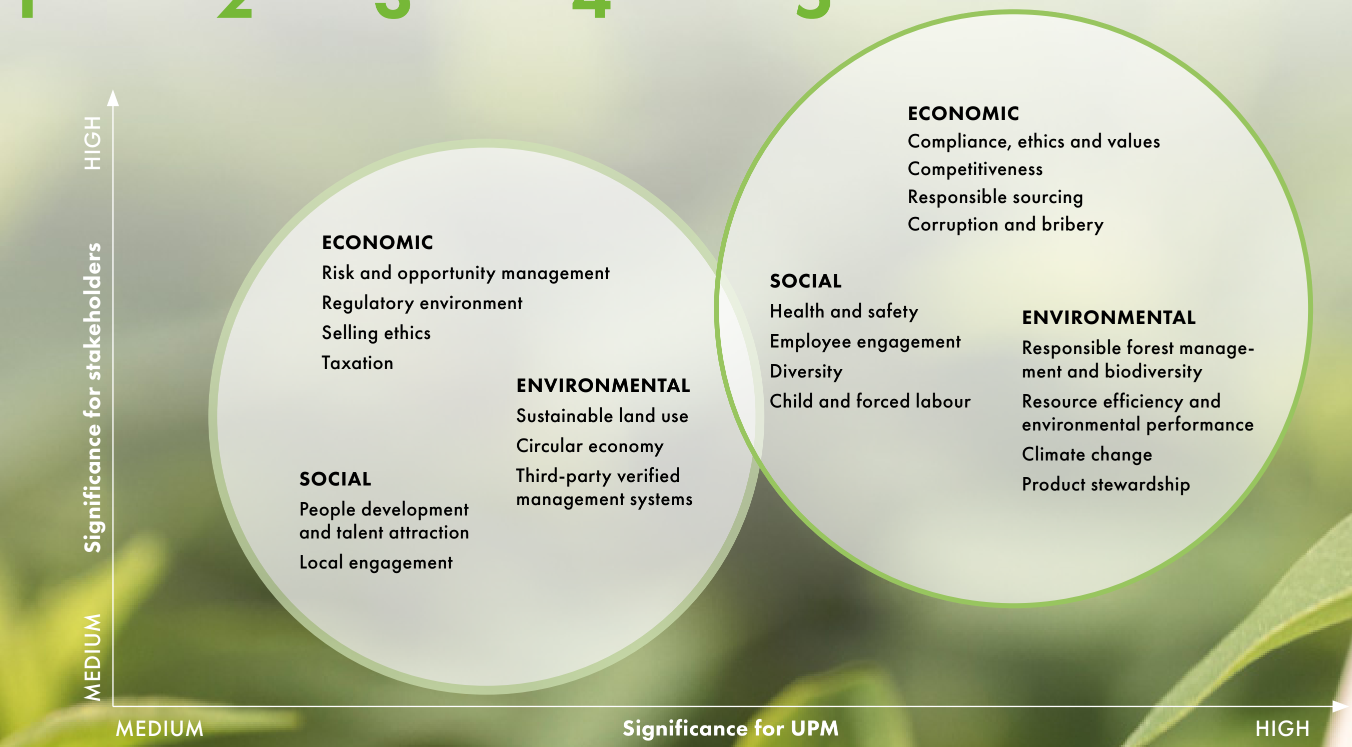
Analysis is carried out annually, based on follow-up of the interests and concerns of various stakeholder groups, including communities, employees, NGOs, customers, suppliers, government and regulators, investors, researchers and media.

All customer questions and stakeholder concerns received during the year are taken into consideration. Additionally, UPM conducts a specific stakeholder survey using a web-based tool that enables stakeholders to answer anonymously.

Results of the survey are gathered and analysed by an independent third party and used to support UPM's wider evaluation. Most material economic, environmental and social responsibility topics identified in UPM's analysis are presented on the right. UPM's responsibility focus areas and targets (page 26–27) reflect these material aspects. UPM does not distinguish between topics within the section and considers them all equally material.

STRATEGIC FOCUS AREAS

1 PERFORMANCE 2 GROWTH 3 INNOVATION 4 RESPONSIBILITY 5 PORTFOLIO



UPM BIOFORE–BEYOND FOSSILS

A CHANCE TO DO GOOD FOR THE LOCAL COMMUNITY

Employee volunteering was introduced as a new form of support under the Biofore Share and Care Programme in 2018. UPMers can use up to eight of their working hours each year to volunteer for locally selected charitable causes. The concept will expand from salaried employees to include all UPMers in 2019.

The idea of employee volunteering is to support societal causes in local communities where we operate, and to provide employees with new experiences and possibilities to find inspiration and motivation. Employee volunteering is also known to increase employee engagement and, at its best, also a team's sense of solidarity.

UPM Raflatac's co-operation project with WWF Poland on the Rivers for Life project encourages citizens to become active stewards to protect and clean 150,000 kilometres of river banks in Poland. UPM Raflatac's volunteers will join this group of guardians in 2019. In Helsinki, the local causes include co-operation with the new Helsinki Central Library Oodi and the Helsinki Lifeboat Association, for example. The first response among UPMers has been very positive.

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INDUSTRY LEADER IN RESPONSIBILITY

Our consistent efforts on responsibility have received recognition from several third parties and have made us one of the industry leaders in several fields.

Global Compact LEAD PARTICIPANT

UN Global Compact LEAD: UPM has been recognised as a Global Compact LEAD company for its strong engagement to the UN Global Compact. UPM is one of 34 global companies and the only forest-industry company and Finnish company participating in the UN Global Compact LEAD.

MEMBER OF Dow Jones Sustainability Indices In Collaboration with RobecoSAM

Dow Jones Sustainability Index: UPM has been listed as the industry leader in the forest and paper sector in the Dow Jones Sustainability World and Europe Indices (DJSI) for 2018–2019 for the sixth time.

RobecoSAM's Sustainability Yearbook: UPM has been listed in the RobecoSAM's Sustainability Yearbook 2018 with the Gold Class and Industry Mover distinctions.

CDP A LIST 2018 FORESTS

CDP Programs: UPM has been recognised as a global leader on the CDP Forest A List for its actions to tackle deforestation in its supply chain with global and sustainable sourcing of key commodities linked to deforestation. With regard climate change CDP recognised UPM with a leadership position A- and with regard water security with B.

Corporate Knights: UPM has been ranked on the 23rd place in the list of 100 most sustainable corporations and as the only company listed in the Paper and Forest Products category.

Water Efficiency Frontrunner: UPM has been recognised as a Water Efficiency Frontrunner in China, in one of the key initiatives launched by the government to reduce industrial emissions.

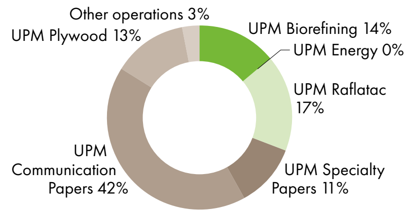
UPM Biofuels: UPM Biofuels has gained the world's first RSB low indirect land use change (ILUC) risk certification for its feedstocks. In addition, UPM Biofuels has received Uruguay's first RSB sustainability certificate for the cultivation of the Brassica carinata crop, a new feedstock for biofuel production.

UPM businesses actively engage with stakeholders

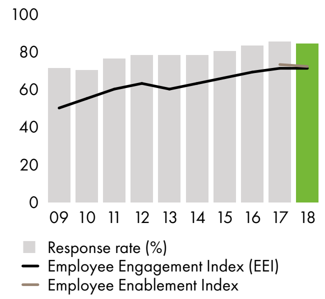
In addition to the group-wide focus areas, our businesses had their additional focus areas in stakeholder dialogue in 2018. Customer collaboration is presented on pages 62–65, employee activities on pages 54–57.

BUSINESS	COMMUNITIES	GOVERNMENTS AND REGULATORS	SUPPLIERS	NGOs	MEDIA
UPM PULP	Finland: Forest trips and tree planting events. Recruitment events and excursions for students. Uruguay: Information-sharing events related to the planned pulp mill in Central Uruguay. UPM Foundation activities. FI & UY: Training programmes, initiatives related to Biofore Share and Care programme and mill visits. Co-operation with universities, schools and research institutes.	Discussions with the Government of Uruguay on the development of logistics infrastructure as a prerequisite for a possible pulp mill investment in Central Uruguay. In Finland, discussions on infrastructure and environmental permits.	Safety training with contractors. Co-operation with machine suppliers.	Uruguay: Aves Uruguay, BioUruguay, DESEM, Vida Silvestre.	Communications on the socio-economic and environmental impact of pulp mills and growth plans in Uruguay and related topics. Mill events and visits.
UPM BIOFUELS	Co-operation with universities and research institutes, associations and certification bodies and auditors. Participation in seminars and conferences.	Discussions with Finnish and EU politicians and authorities on future biofuel policies.	Safety training with contractors. Continuous dialogue and supplier audits.	Co-operation with the Roundtable on Sustainable Biomaterials and Zero Emission Resource Organisation (Norway).	Visits to biorefinery, interviews and communications on mill events.
UPM TIMBER	Active participation in local events and projects, such as DuuniExpo recruitment event. Co-operation with vocational colleges on apprenticeships and education. Forest owner visits at sawmills.	Active co-operation with local authorities on logistics, traffic and permits. Sawmill visits.	Induction and training for maintenance and logistics companies.		Interviews. Press releases on Kaukas educational co-operation and Alholma kiln expansion.
UPM ENERGY	Sponsorships of various energy-related student organisations.	Discussions with Finnish and EU politicians and authorities on energy policy development.	Collaboration related to maintenance of hydropower plants and facilities.		Promoting migrating fish programme and related projects.
UPM RAFLATAC	Partnership with the Packaging School at Clemson University. Local sponsorships, such as Icehearts in Finland, Greenworks and Riverlink in North Carolina, USA and China Women's Development Foundation.	Changshu factory recognised as a Green Company in an Environment Credit rating by the Changshu government in China.	Label Life Awards for suppliers, supplier audits, joint projects and workshops.	Collaboration with Ellen MacArthur Foundation on CE100 and The New Plastics Economy initiatives. Participation in the Sustainable Packaging Coalition. Partnership with WWF Poland.	Regular media coverage and active dialogue around various topics.
UPM SPECIALTY PAPERS	Collaboration with local communities on responsibility programmes: "Green Future" and "Green Lifestyle" in China, "Local Waters" school project in Finland. Tree planting days in Finland and China. China: "Mini Library Project" and "Little Scientist Labs" continued, "Green Bookshelf" started. Finland: local youth sports initiatives. Cooperation with schools and universities.	Co-operation with government departments regarding High-Tech Enterprise Status, and implementation of PM3 expansion at UPM Changshu. Participation in government and industry associations' programmes on environmental protection and industry standards.	Supplier audits and training on compliance, the Code of Conduct, responsibility and safety. Supplier Day in Changshu, China.	Joint events on reporting and transparency with CDP, GRI. Promoting sustainable forest products with FSC®. The enhanced Singapore Green Label under the enhanced Singapore Green Labelling Scheme.	Strong engagement with key medias, mill visits and social media development. China International Import Expo exhibition celebrates UPM 20 years in China and generates extensive media coverage.
UPM COMMUNICATION PAPERS	Partnership with Stiftung Lesen. Community engagement at mill locations through micro-sponsorships. Recruitment activities focused on students. Zero Solid Waste programme. Donation to environmental organisation Plant-for-the-Planet to support educational projects focusing on children.	Discussions on the operating environment and competiveness of the Finnish forest industry. Contribution to industry and government expert groups on energy, RCP and wood sourcing in Central Europe.	Safety training with contractors. Continuous dialogue and development of sustainability related co-operation.	Chairmanship of the board of Biodiversity in Good Company. Member of B.A.U.M. environmental initiative.	Mill visits and background meetings, active dialogue around various topics. Responsible Fibre concept. Promoting sustainable advantages of paper.
UPM PLYWOOD	100-year celebration at UPM Joensuu. Apprenticeship and summer worker programmes at the mills.	Discussions with EU and Finnish politicians and authorities on forest and biomass policies. Discussion with Finnish authorities on sustainable forestry and active forest ownership promotion.	Briefings on supplier compliance.		Working with local media on locally relevant stories, press releases regarding investments, publicity on the UPM Joensuu 100-year celebration.
WOOD SOURCING AND FORESTRY	Local events on modern forestry methods and sustainable forestry. Dialogue on logging plans. Co-operation project with Centre for Economic Development, Transport and the Environment to remove migration barriers of fish. 1,400 forest trips for Finnish 6th grade students.	Discussions with EU and Finnish politicians and authorities on forest and biomass policies. Discussion with Finnish authorities on sustainable forestry and active forest ownership promotion.	Supplier audits. Joint UPM Safety Team. Management training programme for contractors. Nature management training. Griffin e-learning environment.	Joint projects with BirdLife and Osprey Foundation. Meetings and forest visits. Continuous dialogue. FSC® standardisation work. A new biodiversity target presented.	Press conferences and background discussions on new products and services and the wood market.
UPM BIOCHEMICALS	Co-operation with universities and research institutes in Finland and Central Europe and the UK. Development co-operation with start-ups, technology suppliers and SMEs.	Discussions with Finnish and German politicians and authorities about investments. Discussion with EU authorities on bio-based materials.	Continuous dialogue and development of co-operation with key suppliers and service providers. Supplier qualification and audits.		Several interviews and coverage on trade press. Promotion of cancer research and EUROoC participation.
UPM BIOCOMPOSITES	Technology development co-operation with universities. Participation in housing fairs and exhibitions. Closed material circulation in production.	Active participation in national and Europe-wide wood plastic composite standardisation development.	Supplier mapping and categorisation. Supplier qualifications and audits. Continuous dialogue with main suppliers.		Promotion of new products and solutions. Launch of new UPM Formi 3D material.

UPM's personnel by business area 2018



Employee Engagement Survey results, Trend 2009–2018



OUR PEOPLE

Our people and their capabilities, integrity and drive set UPM apart and drive our success. Our culture of Aiming Higher sets the tone for everything we do and encourages all UPMers to develop, as individuals and as a company. Our values – Trust and be trusted, Achieve together and Renew with courage – guide us along the way.

SIGNIFICANCE

- The capabilities, integrity and drive of our people make us unique

TARGETS

- Aim for higher business performance
- Advocate value-based and inspiring leadership
- Continuously challenge the status quo to develop the company
- Provide a safe and healthy working environment and foster the well-being of employees and contractors

OUR WAY

- Encourage learning and continuously aim higher
- Enable performance with agile goal-setting and feedback
- Engage employees to develop the workplace
- Lead with passion, according to UPM values and integrity
- Develop an inclusive and diverse work environment
- Reward and recognise high performance
- Focus on 2030 responsibility targets on diversity and inclusion, working conditions, learning and development and responsible leadership

2030 TARGETS — 5 GENDER EQUALITY — **68%** favourable responses to Employee Engagement Survey's diversity and inclusion index

2030 TARGETS — 8 DECENT WORK AND ECONOMIC GROWTH — **89%** of employees had goal setting or annual discussion completed

Continuously aiming higher

Building a culture of Aiming Higher is essential to our success in today's rapidly changing world. While this sets our tone, our values remain the foundation of who we are. Our strengths are our accountability and performance-driven approach. In the future, we want to focus more on innovation and being even more outward looking, as well as agility and cooperation across boundaries.

A novel approach to performance management was adopted by most salaried employees in 2018 and will be expanded to cover all salaried employees in 2019. Our aim is to increase employee motivation to drive performance. In addition, we want to better differentiate and reward high performance. As a result, we introduced active manager-employee relationships, including more regular, forward-looking manager-employee discussions, agile goal setting and regular feedback from relevant stakeholders.

Engaging employees

We are committed to active employee participation and consultation, organised in accordance with international and national rules and regulations. We offer various forums to facilitate continuous dialogue between employees and business management, and there are new communication tools and channels that ease and enhance dialogue within and across teams.

UPM continues its cooperative body, the UPM European Forum, which focuses on issues related to our business environment in general and changes within the company. The forum organises regular meetings for employee representatives from business units operating in Europe. There are also co-operative bodies in UPM countries, operating based on country-specific rules, regulations and UPM practices. The aim is to promote employee participation, consultation and dialogue between UPM business area and country management and employee representatives and employees on national level.

We continuously measure how our progress, and the results illustrate successful development in engaging our people. The annual UPM Employee Engagement Survey (EES), which invites all employees across the company to evaluate distinct aspects of their working environment every year, has a high participation rate 84% (85%). It indicates that UPMers are keen to improve our common workplace. The survey shows that employee engagement improved steadily over the last ten years, from 50% in 2009 to 71% in 2018.

GOOD FEEDBACK ON HUMAN RIGHTS WORK IN URUGUAY

UPM works systematically to ensure that human rights are respected across the value chain. In 2018, we took an important step forward in Uruguay to identify salient human rights issues specifically relevant for our Fray Bentos site. The work was conducted with the assistance of Shift, the non-profit organisation and the leading center of expertise on the UN Guiding Principles for Business and Human Rights.

Topics such as management systems, working conditions, contractor management and community engagement were included. The impact of UPM's operations on people, society and environment in Uruguay, particularly on human rights, was considered.

"It was positive to observe that UPM has strong commitment to international human rights standards. UPM's participation in a number of certification processes and internal auditing are one element in continuous assessment of human rights risks. Based on our site visit, there seems to be high level of internal awareness and attention to the main aspects of human rights by the local management team, which I was glad to see" says **Lloyd Lipsett**, an advisor with Shift.

In summary UPM received good feedback on embedding human rights in its policies and management systems. Based on Shift's recommendation, UPM has identified areas which require work in Uruguay and continues the dialogue with various stakeholders on how to ensure human rights are respected.

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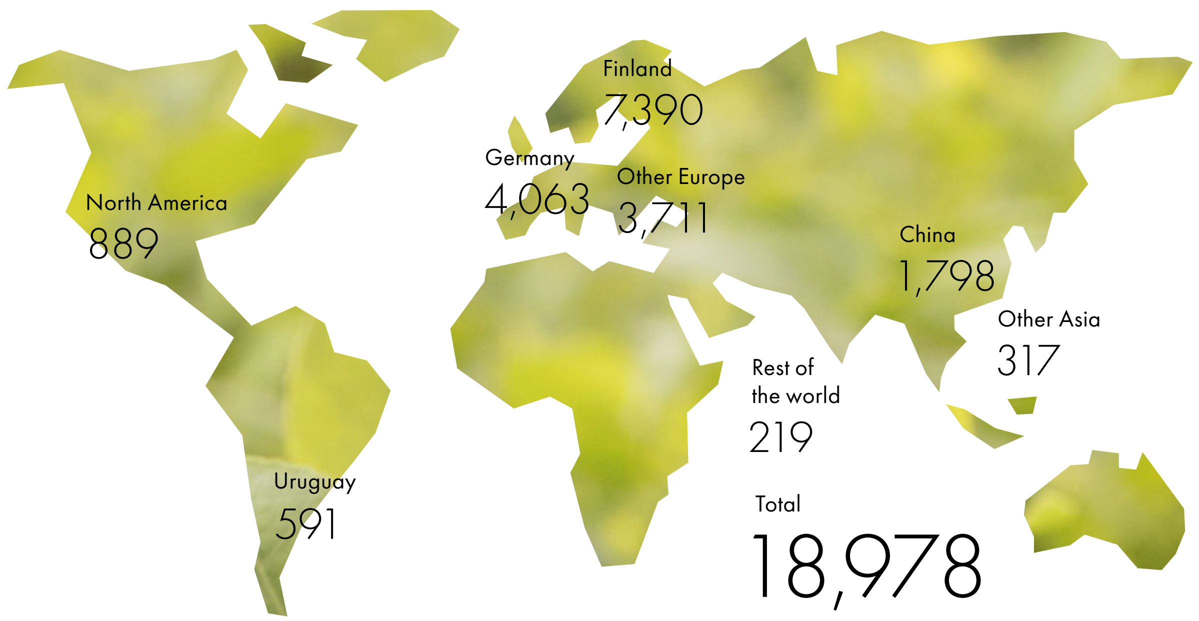
OUR EMPLOYEES BY REGION



Full time
97%

Part time
3%

79%   21%

UPM PERSONNEL IN FIGURES	2018	2017	2016
Turnover %	8.9	9.2	9.0
Turnover % (voluntary)	4.1	3.9	3.2
Average age of personnel	44.0	44.5	43.7
People development			
Average training hours (hours/employee)	12	13 [1]	13 [1]
OHS figures, UPM workforce			
Lost-time accident frequency	2.7	3.3	3.7
Total recordable injury frequency	6.9	8.2	9.3
Absenteeism % [3]	3.9	3.8	3.4
Number of occupational diseases [3]	6	17	12
OHS figures, contractors			
Lost-time accident frequency	3.3	7.0	6.2
Total recordable injury frequency	5.8	9.4	7.5 [2]

1) Reflects active employees
2) Figure for last 9 months of the year, excl. Germany and Austria
3) Reflects own employees

2030 TARGETS 71%

Employee engagement index favourable

Encouraging learning

We encourage our employees to pursue professional growth and support them in learning and developing their skills. Ensuring high performance for business success and continuous professional development are UPM's long-term goals. We are committed to offering our people a skill set fit for the changing business environment.

We aim for all employees to have individual development plan. In 2018, 61% of employees had such a plan. UPM applies the learning and development framework 70-20-10, where 70% of the learning takes place on the job, 20% comes from colleagues and 10% comes from off-the-job training. Digital learning content can be created and shared flexibly in UPM's learning platform, Workday, launched in 2017.

In the changing and ever more complex business environment, enhancing employees' capabilities and well-being is important for both business success and sustained employability. UPM encourages its employees to develop a range of skill sets and offers a variety of training opportunities. We are determined to be a responsible and attractive employer now, as well as in the future.

Enabling renewal through recruitment programmes

UPM's apprenticeship programmes in Finland and Germany, for example, are ways to ensure the required level of expertise for future employees. The programmes are typically targeted at shop floor positions in production or maintenance. UPM conducts the programmes with regional vocational schools. In Finland and Germany, approximately 100 people join the programmes annually. Most of the graduated apprentices have continued to work at UPM.

Being the employer of choice has become crucial when recruiting new employees and especially young professionals. We organised several successful graduate programmes in recent years and will continue to do so annually. We have also started a project on developing employee experience. At first phase, the project focuses on the new employees joining UPM. Its purpose is to create a smooth and engaging onboarding experience that best meets the needs of new employees and managers. Attracting new talent helps us maintain our position now and in the future.

According to 2018 annual research on professionals in Finland, UPM was the most attractive employer among female engineers. Following our systematic employer branding work, our position among students and professionals has been recognised by external parties in Finland and China.

Empowering by inspiring leaders

Achieving our ambitious targets requires the committed input of skilled people and teams, empowered by inspiring leaders. We strive to lead by example, in accordance with company values and with integrity.

UPM continuously invests in developing leadership capabilities and management teams. Our development programmes support our three cornerstones of leadership: leading oneself, leading people and leading business. Dealing with complexity, improving coaching capabilities and promoting inspiring leadership have been the key areas of development in recent years.

Our leadership development solutions are renewed constantly. In 2019, UPM will continue to foster a growth mindset and improve the skills needed to enable performance, such as coaching, conversation and feedback skills. UPM's learning platform offers digital solutions for achieving quality conversation skills and improved feedback to a wide, scalable audience of managers and individual contributors. Leadership development focuses on front-line managers, as they lead most of our employees.

UPM aims to have world-class management teams. In 2018, management teams continued to implement development actions based on their self-assessments and development plans.

Developing a diverse and inclusive workplace

We value diversity and strive for an inclusive culture. We respect the privacy of our employees and promote equal opportunities and objectivity in employment and career development. In addition to building a culture of Aiming Higher, we are committed to developing local conditions that ensure an inclusive and diverse working environment.

UPM addresses diversity as a part of Aiming Higher. It regularly reviews its diversity status and defines intent for each business and function. UPM management teams regularly conduct self-assessments that include diversity and inclusion. We welcome the talent of people with different competencies, backgrounds and experiences, as well as genders, ages and nationalities. This contributes to a richness of views, thereby improving decision-making and business success. Inclusive behaviour is integrated into key UPM leadership development programmes and emphasised in UPM Code of Conduct training.

Rewarding and recognising high performance

UPM rewards and recognises high performance. Our approach to compensation consists of a base salary, benefits and incentives, which are determined by UPM's global rules, local legislation, general agreements, local market practices, the level of the position and individual performance. Gender, age, ethnic origin and nationality play no role in determining salaries and wages.

Intangible recognition is included in the total reward portfolio, which means that UPM provides, for instance, a safe and healthy working environment, interesting and meaningful work and good leadership and career opportunities. UPM designed its reward policy to increase employee commitment to and motivation for high performance.

We want to recognise the performance of all our employees. They all belong to a unified annual Short-Term Incentive (STI) scheme covering group and business-level targets, as well as personal and team performance targets. The annual incentives paid in 2018 for the 2017 STI plan were EUR 62 million and the estimated amount of annual incentives for the 2018 STI plan is EUR 66 million. To recognise significant individual or team success, we have a separate Achievement Award system. It is designed to support UPM's high-performance culture and recognise individuals and teams for outstanding contribution, significant achievements and exceptional performance.

In addition to the Short-Term Incentive scheme, we provide two long-term incentive plans: Performance Share Plan (PSP) for senior executives and Deferred Bonus Plan (DBP) for other key employees. The annually launched plans cover approximately 400 employees.

ACTIVE FEEDBACK CULTURE ENABLES BETTER PERFORMANCE

Being interested in your own work and taking responsibility for what you do increase motivation and encourage personal development. But is there something you could do better? How do your colleagues and managers see your input?

In 2018, UPM introduced a new approach for leading and enabling performance that creates a framework for continuous learning with frequent employee-manager discussions, agile goal setting, and asking, receiving and giving feedback. Active feedback encourages employees to learn how feedback can be harnessed for their personal development.

Multidirectional feedback helps everyone clarify their strengths and understand the overall picture as well as focus on key actions. By asking and receiving comments on your performance you will also develop better skills in giving feedback to others: sharing observations will also help your colleagues to learn. At the same time, you create goals to pursue.

Encouraging everyone to perform at their best is another step on UPM's journey towards becoming a passionate, outward looking, diverse, co-operative over boundaries team, run with world-class management.

READ MORE:
upm.com/careers

CONTINUOUS SAFETY IMPROVEMENTS

2030 TARGETS

2.7 2.9

Lost-time accident frequency for UPM workforce only and UPM workforce including contractors

SIGNIFICANCE

- People are at the core of our business. Ensuring the health and safety of employees, visitors and all people who are impacted by our operations is of paramount importance
- Employee wellbeing is founded upon a supportive working environment, a healthy lifestyle and work-life balance
- Safety and wellbeing have a direct impact on employee engagement and UPM's business success

TARGET

- To ensure a safe and healthy working environment and the wellbeing of employees and contractors

OUR WAY

- Developing a preventive safety culture
- Training personnel and contractors on safe working practices and safety requirements
- Regular audits and evaluations of all safety processes
- Quickly correcting identified safety issues or vulnerabilities
- One Safety – a global UPM OHS tool
- Close co-operation with employees and external occupational health organisations
- Quarterly health-related themes
- Focus on 2030 responsibility targets for preventive safety culture, LTAF, TRIF, health promotion programmes and absenteeism rates

Coverage of One Safety tool

100%

of UPM employees since the beginning of 2018

In 2018, a total of

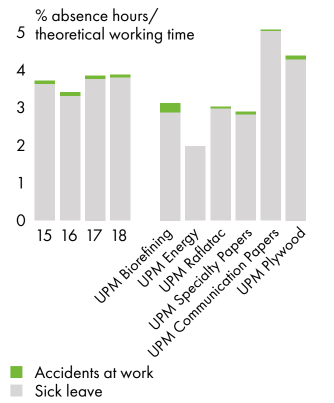
46,000

safety-related near-miss and safety observation reports were recorded

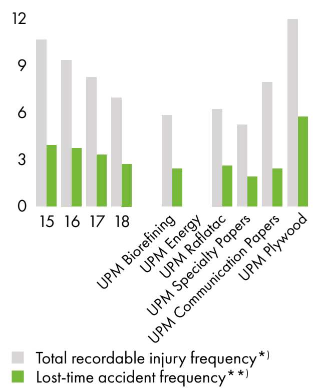
32,000

safety walks and discussions took place

Absenteeism due to sickness and accidents at work, UPM employees



Total recordable injury frequency and lost-time accident frequency, UPM workforce



*) Total injuries/one million hours worked
**) Number of lost-time accidents/ one million hours worked

EXEMPLARY CONTRACTOR SAFETY MANAGEMENT IN URUGUAY

The comprehensive contractor system in Uruguay covers contractor wages, working hours, safety and overall wellbeing. It is an example of working collaboration and open dialogue between UPM and its contractors.

There are more than 200 contractors working at the nurseries, plantations, harvesting, transportation and pulp mill, with more than six million working hours per year. Close collaboration, safety inductions and regular trainings and feedback discussions with contractors play a key role in enhancing safety culture and practices.

UPM's safety requirements also apply to contractors. Similarly, UPM needs contractors' support and feedback in developing work safety practices. Awareness of safe working practices and risks is at the core of security trainings. The performance has been audited regularly already for the past five years.

READ MORE:
upm.com/responsibility

We have adopted a systematic approach to health and safety management. Our proactive safety culture is based on company values, the UPM Code of Conduct and our health and safety policy, UPM Safety Rules. The Safety Rules, which connect UPM's safety vision to everyday activities, were updated in 2018.

We have communicated the key messages, such as UPM safety principles explaining our expectations for employee and contractor priorities and accountability. In 2018, our OHS focus areas were risk management and contractor safety. We have continued our work on the six life-saving standards and identification of the top five risks, as well as OHS auditing.

Annual safety audits are an integral part of our OHS management system. Cross-functional auditing provides valuable feedback about selected OHS processes and daily activities.

Strengthening a proactive safety culture

We actively use the global One Safety tool for proactively reporting safety incidents. All employees of UPM and our contractors are required to report all near-misses and to make safety and environmental observations. This open and transparent tool supports us in achieving the objectives we have set and allows us to proactively share the insights gained from incidents across the company. The UPM One Safety tool also supports effective safety steering and OHS risk management.

In 2018 we developed safety competencies and strengthened OHS processes, and a new e-learning module "Day 1 Safety Challenge" was introduced for new UPM employees. The module explains what is meant by the UPM safety mindset and what is expected of every UPM employee when it comes to safety. Incident investigation training was also organised for every business area.

Promoting employees' health and wellbeing

We are working closely with employees and external occupational health organisations to support the wellbeing of our personnel. Our aim is to support the continuous improvement of employees' health, quality of life and ability to perform.

We continued our quarterly global health and safety themes throughout 2018. These focused on how to stay vigilant and alert at work, how to take care of your personal mental and physical recovery, and how to avoid accidents at home and during your free time.

Based on local need, we also launched several health and wellbeing initiatives at various UPM sites and in various businesses, with positive results. Nearly all UPM sites promote wellbeing and offer gym facilities, with external fitness activities frequently supported. In Finland, Germany and Malaysia, we organised major health and wellbeing campaigns during 2018. In Finland, activities covered topics ranging from physical and mental wellbeing to health and nutrition. More than 20% of UPM personnel participated in these activities in 2018, across all business areas and from almost every site.

Zero-accident target

In 2018, UPM's lost-time accident frequency (LTAF, the number of lost-time work accidents per one million hours of work) was 2.7 (3.3). The total recordable injury frequency (TRIF) improved, reaching 6.9 (8.2). The TRIF includes LTA cases as well as cases of modified duties and accidents requiring medical treatment. A similar positive development was achieved in contractor safety. The frequency of accidents involving UPM's contractors was 2.9 (LTAF) and 6.6 (TRIF) in 2018.

Despite our efforts for continuous improvement, there were two serious accidents in 2018. The accidents were thoroughly investigated and corrective actions were taken. Key learning points were also shared in order to prevent serious accidents in the future.

Our permanent target is to have zero accidents, with good safety performance recognised through company-wide safety awards. In 2018, the UPM Augsburg paper mill in Germany received the UPM Safety Award for making long-term improvements (read more on page 43).

RESPONSIBLE AND EFFICIENT SOURCING IS BASED ON GOOD PARTNERSHIPS

A cost-effective supply chain is a significant part of value creation for our company. The long-term development of materials and services together with our suppliers guarantees a well-functioning and responsible supply chain.

SIGNIFICANCE

- An effective supply chain guarantees our competitiveness and the availability of commodities required for production in all market situations

TARGETS

- We are a reliable and future-oriented partner and we set clear requirements and expectations for our suppliers
- We generate competitiveness together with our suppliers
- Cost leadership, innovation, continuous development and proactive risk management

OUR WAY

- We focus on long-term, co-operative relationships and promote methods for responsible sourcing
- We continuously monitor our suppliers' performance and develop processes together with our key suppliers
- Having responsible practices in the supply chain creates long-term value for UPM and its stakeholders
- The UPM Supplier and Third Party Code sets transparent requirements for the entire supply chain
- Focus on 2030 responsibility targets

UPM buys products, materials and services from over 24,000 suppliers globally. The company's sourcing network includes suppliers from private forest owners to international corporations.

The main sourcing categories are fibre, other raw materials, indirect purchases, logistics and energy. Long-term reliable deliveries, product and service quality, financial stability of the suppliers, social and environmental responsibility, and product safety are taken into consideration when selecting suppliers.

Cost-efficiency and continuous development

Co-operation between UPM and its suppliers is based on mutual commitment and openness. The aim of this is to ensure competitiveness, systematic performance and quality improvement.

A common goal is to ensure that suppliers can provide responsibly produced, cost-competitive and innovative materials and services for UPM business units globally – in all market situations.

The global economy's good growth rate increased the demand for several raw materials in 2018. However, due to good risk management and long-term planning, UPM was able to ensure the availability of the required materials.

The supply chain's long-term development work continued in several projects whereby among others, digital means are used to improve the cost efficiency and practices of the supply chain. A good example of this is the new Source-to-Pay system, which enables a more cost-efficient way of sourcing.

Digital solutions were also increased in supply chain management by using RFID tags in pulp bales for example.

We also try to find new ways to minimise the use of plastic in our supply chain. In this way, we want our suppliers to commit to considering ways of reducing the use of fossil raw materials.

The suppliers are bound by the same rules

UPM is committed to responsible sourcing practices in the company's Code of Conduct. All the minimum requirements for suppliers are defined in the UPM Supplier and Third Party Code. We require that the suppliers promote the same requirements in their own supply chains. All new suppliers are evaluated, and they must meet the requirements set for UPM's suppliers and third parties. In 2018, 83% (82%) of UPM total spend was qualified against the Supplier and Third Party Code.

All contractors working at our production facilities must be aware of UPM's safety requirements. Various additional requirements are applied to wood, chemicals, pulp, packaging materials, safety and logistics.

All UPM's wood, pulp and recovered paper suppliers are continuously evaluated in regard to environmental issues, social responsibility and the local community. These raw materials are either FSC® and PEFC™ certified or comply with the FSC Controlled Wood standard or Due Diligence requirements for PEFC.

A prominent user of wood and recovered paper

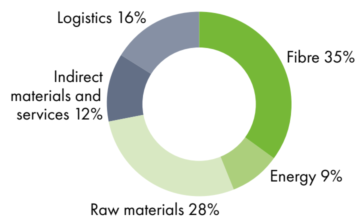
UPM is both a major forest owner and purchaser of wood. Wood is a valuable raw material and we ensure its optimal utilisation by acquiring all types of wood. In 2018, UPM purchased 27.6 (27.4) million cubic metres of wood worldwide.

We are also the world's leading user of recovered paper for the production of graphic paper. In 2018, the company used a total of approximately 2.5 (2.6) million tonnes of recovered paper. The percentage of recycled fibre is approximately 30% of all fibre raw materials used in UPM's paper production.

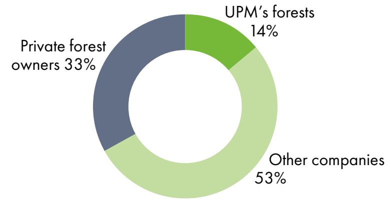
2030 TARGETS

94% of raw material spend is qualified against the UPM Supplier and Third Party Code

UPM's external purchasing spend 2018



Sources of wood to UPM mills 2018



The origin of wood is monitored

All the wood used to produce UPM products is legally logged and comes from sustainably managed forests. UPM does not use wood harvested from tropical rainforests or accept wood from plantations that have been established by destroying natural forests. UPM does not accept wood from regions that do not respect the rights of indigenous peoples. All of UPM's wood supplies are covered by third-party-verified, FSC® and PEFC™ certified chains of custody.

UPM also verifies that the wood supplied to its mills is compliant with the EU Timber Regulation, the U.S. Lacey Act and other regional requirements.

Continuous improvement with raw material suppliers

UPM buys approximately 1.9 million tonnes of chemical pulp from external suppliers. Further requirements are set to pulp suppliers for environmental performance, social responsibility, forestry, wood sourcing and reporting.

Collecting and analysing environmental and social responsibility-related data for UPM's pulp and chemical suppliers is an integral part of the company's supplier risk and performance management. UPM creates development plans together with the suppliers based on these analyses.

UPM also monitors the performance of its other raw material suppliers by performing various surveys. Over the past few years, UPM has organised responsibility-focused Supplier Days and competitions and has granted awards to its best-performing suppliers. With this kind of co-operation, we want to encourage and support suppliers from different fields to further develop their operations.

Proactive risk management and audits

UPM continued to carry out supplier risk assessments, which include supplier-specific financial, qualitative and supply and responsibility-related risks. Country of origin, acquired material and complexity of supply chain are used to determine responsibility risks.

Based on the risk assessment, selected suppliers' activities are evaluated in more detail through annual surveys, supplier audits and joint development plans. Last year, more than 200 audits were carried out. Audits are carried out by both UPM's own trained auditors and external auditors.

If any discrepancies are discovered, the supplier is required to take corrective measures. UPM monitors the implementation of these measures and provides support for improving the suppliers' operations if needed. Despite the chance to implement these corrective measures, some contracts may have to be discontinued due to insufficient measures or the severity of UPM's findings.

CO_2 emissions and water-related risks caused by supply chains are special focus areas for UPM. The company monitors CO_2 emissions and water consumption throughout the supply chain, and constantly encourages suppliers to improve in these areas.

In 2018, we carried out a survey targeted at suppliers of raw materials and logistic services about their CO_2 emissions and related targets. Based on the answers, most of the partners are committed to reducing emissions which helps UPM to set accurate reduction targets for CO_2 emissions from supply chain.

Global co-operation in responsible sourcing

In 2018, UPM joined Together for Sustainability (TfS), a chemical industry initiative that promotes and improves sustainability practices within its supply chains. Companies involved in the initiative also distribute supplier-related information, such as independent audit reports and sustainable development assessments. (Read more on page 49.)

Responsible sourcing is also an important theme in the UN Global Compact. UPM is an active member in the Action Platform promoting decent work in global supply chains.

SUSTAINABLE AND SAFE PRODUCTS

As the population grows, and consumption along with it, the use of renewable raw materials and recycling must be increased to replace fossil materials and other non-renewable natural resources. This brings opportunities to both UPM and its customers.

IMPORTANCE

- Global megatrends are driving demand for sustainable and safe solutions
- Renewable wood and recyclable products reduce the world's dependency on fossil-based and other non-renewable raw materials

TARGET

- Innovating renewable and responsible solutions for a future beyond fossils
- Taking care of the entire lifecycle
- Creating value to customers

OUR WAY

- Products are made of renewable and biodegradable raw materials and are recyclable
- Strong commitment to long-term customer relationships
- Co-operation in value chain
- Circular-economy thinking and ecodesign approach
- Restricted Chemical Substances List and certified management systems
- Open and transparent product communication through ecolabels, certificates and product declarations
- Focus on 2030 responsibility targets

Mitigating climate change and creating value to society

UPM products help to mitigate climate change by replacing fossil-based products with bio-based renewable alternatives. The carbon bound from the atmosphere remains in the product over its lifetime, even when the product is recycled several times. Sustainable management of forests and plantations as the main source of our raw materials ensures their existence as a carbon sink.

UPM actively develops solutions based on the circular economy model, in which materials circulate and products generate added value. The target is to provide customers with solutions that improve customers' business processes, with a special focus on creating mutual benefits and societal value as well as investigating new business opportunities. Biomedicals, as well as pharmaceutical and healthcare labelling solutions, are examples of creation of direct societal value. Rafcycle® and recovered paper recycling are examples of added value by circular economy.

In 2018, UPM Biofuels gained the world's first Roundtable of Sustainable Biomaterials (RSB) low indirect land use change (ILUC) risk certification for its feedstocks. UPM also launched UPM Formi 3D biocomposite, which was specially developed for the 3D printing market. It brings together advanced cellulose fibre and biopolymer technologies and is an alternative to fossil-based 3D printing material.

Continuous dialogue and collaboration with customers

UPM's businesses vary in the products and services that they offer. Each business has its own customer management process and way of interacting with customers. A comprehensive understanding of the markets, knowledge of end uses, and an appreciation of customers' needs form the basis of UPM's customer relationship management.

UPM's interaction with customers is based on continuous dialogue and regular customer satisfaction surveys. In addition, UPM is engaged in various development projects with customers. Many of these projects are linked to product development and to supply chain efficiency, as well as the co-planning of activities.

Customer satisfaction is measured regularly in most businesses through customer satisfaction surveys. Based on results from various business customer satisfaction surveys, the overall total satisfaction with UPM as a supplier is 86% (86%). These surveys act as a tool for further development. Product safety, forest certification, chains of custody, resource efficiency and recyclability are amongst the most important factors for our customers.

2030 TARGETS

85% of UPM sales was eligible for ecolabelling

Lifelong product stewardship

Ecodesign approach

Ecodesign is integrated into UPM's product development in all businesses. the company is committed to minimising the environmental impact of its material usage and manufacturing processes across the entire value chain and during the whole product lifecycle.

Lifecycle assessments (LCAs) are an important part of the Ecodesign tool box. LCAs are used for supporting product and process development to give reliable and documented information of environmental impacts of optional materials and production processes. Results are also used for UPM Raflatac's LabelLife tool, UPM Plywood's Environmental Product Declarations, carbon footprints of pulp and paper products or of UPM Biofuels.

12,600 customers worldwide

6,000 chemicals that are subject to restrictions in our products

Product safety

Since the launch of the UPM Restricted Substances List in 2010, it has been our main tool to communicate product safety requirements to our chemical and raw material suppliers and to our customers.

ISO 9001 quality and ISO 22000 food safety management systems provide a framework for continuously improving performance. Most UPM sites are ISO 9001 certified. In addition, all European sites of UPM Raflatac, UPM Specialty Papers as well as all pulp mills have a certified ISO 22000 food safety management system. Thus, we can offer several products that are designed and produced to meet food packaging requirements.

In 2018, UPM participated in a Pulp & Paper Value Chain Information System development project with several chemical suppliers. The aim is to enhance transparency in the supply chain and speed up the exchange of information.

Ecolabels and product declarations

UPM provides product declarations to grant customers easy access to information on the responsibility of products and the supply chain. Product profiles such as Paper Profile or Plywood's Environmental Product Declarations summarise the central environmental information. Product safety profiles show the compliance with relevant product and chemical regulations. Wood origin statements provide information on countries of origin and wood species used.

Ecolabels help customers make responsible choices and provide stakeholders with important information. Globally, UPM is the largest producer of EU ecolabelled newsprint, office papers and graphic papers and the EU Ecolabel is available for all UPM graphic papers in Europe. In 2018, the renewal of EU Ecolabel criteria was finalised with UPM actively contributing in the process.

UPM also provides its customers with the opportunity to use well-known local ecolabels, such as the German Blue Angel or the Nordic Ecolabel. In 2018, UPM was one of the first companies to receive the enhanced Singapore Green Label under the Singapore Green Labelling Scheme (SGLS). In addition, all UPM businesses have FSC® and PEFC™ chain of custody certification.

UPM's Responsible Fibre™ trademark combines environmental and social responsibility criteria into one entity. It's used to provide information about responsibility of products with a logo on the product and reference to detailed information on the UPM webpage.

READ MORE:
upm.com/responsibility

Active customer collaboration

We serve the global market with a comprehensive product range of responsibly produced renewable products for everyday use.

BUSINESS	PRODUCT RANGE	CUSTOMER INDUSTRIES	COLLABORATION ACTIONS IN 2018	IMPORTANT CORPORATE RESPONSIBILITY TOPICS	MAJOR CHANGES IN CUSTOMER INDUSTRIES
UPM PULP	Softwood, birch and eucalyptus pulp	Tissue, specialty, graphic papers and packaging	• Joint development projects with customers and suppliers on technical and sustainability issues • Sustainability services and training • UPM Pulp Schools • Bi-annual in-depth customer survey	• Product safety • Forest certification, origin of wood, sustainable forestry • Environmental performance of pulp mills, water use • Urgency to find alternatives for plastics driven by consumers, EU and national regulations	• Growth of tissue and packaging board production • Continued decline of printing and writing paper industry in mature markets • Stricter environmental legislation in China resulting in e.g. limitations of recovered paper imports • Increased demand for wood-based solutions to replace plastics
UPM BIOFUELS	Wood-based renewable diesel for transport and renewable naphtha for transport and for bioplastics	Fuel distributors, the transportation, oil and petrochemicals industries	• Opening the bioplastics sector sales of UPM BioVerno naphtha in Europe • Joint development projects with customers • Ensuring product functionality through motor testing • Strengthening sales and technical product support • Customer focus throughout the organisation	• Reducing greenhouse gas emissions and tailpipe emissions • Biofuel-specific sustainability certification (ISCC and RSB) • Social and traceability criteria for targets set by the EU Renewable Energy Directive • Safety and product safety	• Global increase of advanced biofuel volumes and demand • Waste- and residue-based biofuels are favoured by both customers and legislation • Growing petrochemical sector for renewable naphtha as feedstock
UPM TIMBER	Standard and special sawn timber	Joinery, packaging, furniture, distribution and construction industries	• Further focus on strategic markets and market-specific weighting • Customer categorisation and customer-specific account plans • Optimisation of raw material quality and usage • Delivery accuracy • Excellent service throughout the supply chain	• Chain of custody, origin of wood, forest certification, sustainable forest management • Safety	• Growing importance of Eastern Europe as a production area • Instability and financial challenges in markets in Middle East and North Africa region
UPM ENERGY	Electricity and related services	Nordic market and industrial consumers	• Enhanced service portfolio	• Low-emission electricity production • Active grid balance management • Fish migration	• Structural changes in the Nordic electricity market • Increased volatility of the electricity market due to intermittent weather-dependent production capacity • Mitigation of climate change through decarbonisation
UPM RAFLATAC	Self-adhesive paper and film label stock	Label printers, converters, packers, brand owners in food, beverage, home and personal care, pharmaceutical, retail, logistics, durables, tyres and A4 segments	• Expanding customer reach through increased distribution and sales & service coverage • Specials capability investments in Finland and the US • Joint projects with customers and brand owners • Sustainability and product safety solutions	• Product safety, lifecycle analysis, ecodesign and bio-based components • Waste management • Recyclability • Responsible sourcing • Forest certification	• E-commerce increasing label use for packaging and logistics • Increase in automated product labelling and identification • Retailer and distributor network development • Increased need for sustainable label products and solutions • Legislation: Increase in mandatory product information
UPM SPECIALTY PAPERS	Labelling materials, release base papers, flexible packaging materials, office papers, graphic papers	Paper converters, merchants, distributors, retailers, printers, publishers, label stock manufacturers and commercial siliconizers	• Ongoing development work on supply chain performance and service • New value-added solutions • Joint development projects • Sustainability services and training • Supporting copypaper merchants with marketing materials and initiatives	• Product safety • Forest certification, origin of wood • Responsible sourcing, audits by customers at the mills (social responsibility) • Resource efficiency • Compliance with laws and regulations	• Growth in personal care products • Increased interest in renewable and recyclable solutions • Increased share of e-commerce • Increase in automated product labelling and identification • Need for more documentation, and increase in the number of personal printers • Quality upgrade, specialised business services
UPM COMMUNICATION PAPERS	Graphic papers for various end uses	Newspaper and magazine publishers, retailers, print shops, catalogue, directory and book publishers, office, envelope and home suppliers, merchants, brokers, advertising	• Joint product development initiatives • Launch of new products • EU Ecolabel available for all paper products in the EU • Sustainability agenda for a holistic approach focusing on raw material sourcing, production, role in society and the value generation for stakeholders	• Safety culture • Supplier social responsibility and safety performance • Forest certification, ecolabels • Resource efficiency	• Digitalisation • Consolidation • Process streamlining • Efficiency increases through automation
UPM PLYWOOD	Plywood and veneer products, thermoformable wood material	Construction, vehicle flooring, LNG shipbuilding and parquet industries as well as furniture and other industrial applications.	• Launch of WISA®-TopGrip evo2 friction floor cargo securing solution • Introduction of new functional products for construction use • Active customer satisfaction and relationship management • Development of digital end-use marketing concepts	• Safety culture • Forest certification and chain of custody • Product safety • Resource efficiency	• Increased need for services, stocks and short lead time • Requirement for product-related certifications is increasing within on-site construction end use • More customer-driven specifications among industrial end users limiting supplier's opportunity to differentiate with a product • Increased environmental awareness drives LNG demand
WOOD SOURCING AND FORESTRY	Wood and wood-based biomass (logs, pulpwood, chips, forest residues etc.), full forestry service offering	All UPM businesses using wood or wood-based biomass, forest owners	• Focus on creating unique customer experience for forest owners • Development of forestry service offering • Enhanced digital solutions to improve customer service	• Sustainable forestry, forest certification • Income and employment for people living in rural areas, employment of entrepreneurs	• Increasing wood demand and competition due to pulp mill investments in Finland
UPM BIOCHEMICALS	Lignin products for industrial use, nano-cellulose-based products for biomedical applications	Resins and adhesive industry, plastic compounds. Academic, biotech, pharma, research hospitals and CROs (contract research organisations)	• Joint development projects on technical and sustainability issues • Joint development projects on new application and product development	• Forest certification, lifecycle analysis, ecodesign and bio-based components • Safety • Animal-free in-vitro medical research	• Growing customer preference for renewable and sustainable materials • Strong attention on recyclability of materials, namely plastics • New technologies available
UPM BIOCOMPOSITES	UPM ProFi decking products and UPM Formi granules	Distributors of building products in Europe, contract manufacturers for large-scale consumer brands	• Joint development projects with customers on technical and design issues • Customer and stakeholder training • Digital marketing development • Demand chain understanding	• Sustainable alternatives to fossil-based plastic materials • Recycling plastics and label production side streams	• Trend to find renewable alternatives to fossil-based polymers • Trend to increase the content of recycled materials in products

UPM'S VALUE CREATION ALSO GENERATES TAX REVENUE

SIGNIFICANCE

- UPM's continuous improvement in its financial performance also generates higher tax revenue
- UPM is strongly committed to continuously improving its economic and social performance
- UPM's businesses play a leading role in contributing to societal development also through the tax revenue they generate

OUR WAY

- Based on the standards of the UPM Code of Conduct, the UPM Tax Policy describes the main principles and guidelines of UPM taxation.
- Taxes are paid in accordance with local tax laws and regulations of the country in question.
- UPM pays corporate income taxes in the countries where added value is created and profit is generated.

Tax payment by country

In the table below, we report the corporate income taxes and property taxes paid in each country. Based on UPM's corporate and operational structure, UPM reports and pays its corporate income taxes mainly in countries where production activity takes place and where innovations are developed. UPM follows the arm's length principle in related party transactions.

At the end of 2017, the Council of the European Union published for the first time a list of non-cooperative jurisdictions for tax purposes. UPM does not utilise or have any investments in production or services operations in those jurisdictions or in any similar secrecy jurisdictions. In accordance with UPM Tax Policy, the locations of its companies are driven by commercial rationale and business reasoning.

UPM's effective tax rate in 2018 was 18.6% (17.9%) and cash tax rate 13.7% (18.2%). The corresponding corporate income taxes reported in 2018 were EUR 342.5 million (EUR 212.5 million), and corporate income taxes paid in 2018 were EUR 252.0 million (EUR 216.2 million). In addition to the taxes on income, UPM's various production inputs and outputs are also subject to taxation, which is either paid by UPM (e.g. energy taxes and real estate/property taxes) or collected by UPM (e.g. VAT, payroll taxes and social security contributions).

In Finland, UPM has significant production operations through all its six business areas, as well as research and development operations. Accordingly, UPM is one of the major taxpayers in Finland. In 2018, UPM's corporate income taxes in Finland are estimated to be EUR 202 million (EUR 172 million), of which subsidiaries report and pay approximately EUR 80 million (EUR 65 million). The remaining figure of approximately EUR 122 million (EUR 107 million) is reported and paid by UPM-Kymmene Corporation.

In Uruguay, the government granted UPM's pulp mill a permit to operate in a special economic zone, whereby taxes in Uruguay mainly consist of property/real estate taxes and annual tax-like charges paid to the government for the development of the zone.

In China, regarding fine paper production, UPM qualifies as a high-tech enterprise with a reduced corporate income tax rate of 15%. In those countries where UPM's companies are using tax losses from previous years to offset the tax liability of the year in question, such as Germany, there are no or only limited corporate income taxes paid.

Tax compliance

UPM Tax Policy is supported by internal instructions, benchmark analysis of best practices and related internal controls. Tax matters at UPM are managed by UPM's tax function, which is complemented by third-party tax services to comply with local tax reporting, filing and other requirements.

The Audit Committee of the Board of Directors is responsible for the supervision of tax risk management as part of UPM's risk management processes. UPM's internal control and risk management operations review tax risks regularly and update the control framework together with the tax function. More thorough review of the tax practices of customers and suppliers is a part of UPM's counterparty risk management processes. UPM aims to cooperate transparently and proactively with tax authorities and values dialogue with other important stakeholders concerning taxation. In Finland, UPM participates in an enhanced relationship with the Finnish Large Taxpayers' Office.

CORPORATE INCOME TAXES PAID AND PROPERTY TAXES BY COUNTRY

EURm	2018	2017
Finland	215	177
China	17	25
Uruguay	13	12
Germany	13	–1
Russia	5	6
United Kingdom	5	5
France	5	2
Estonia	4	0
United States	1	19
Other countries	5	6
Total	**283**	**251**

DIRECT ECONOMIC VALUE GENERATED AND DISTRIBUTED BY UPM IN 2018 (EUR MILLION)

Direct economic value created		Economic value distributed	
		Operating costs	–7,515
Sales	10,483	Employee wages and benefits	–1,193
Income from sale of assets	33	Payments to providers of loans	–35
Income from financial investments	4	Dividend distribution	–613
Other income	38	Corporate income taxes paid and property taxes	–283
		Donations	–0
Total	**10,558**		**–9,639**

Economic value retained 919

UPM's economic impact is significant in the surrounding communities. The company's operations contribute to local, regional and national economies by generating economic benefits for different stakeholder groups. The related direct monetary flows indicate the extent of added value globally.

LOCAL TAXES

UPM Steyrermühl paper mill, Austria

EUR 17m

incl. income taxes on salaries, social security contributions and employer's contribution to Family Burdens Equalisation Fund, corporate income taxes and real estate taxes.

UPM Changshu paper mill, China

EUR 34m

incl. corporate income taxes, local taxes (real estate taxes, land use taxes, stamp duties and local levies), customs duties on imported materials and equipment, individual income taxes on salaries and social security contributions for employees

UPM Kymi pulp and paper mill, Finland

EUR 30m

incl. real estate taxes, estimated tax on salaries, estimated corporate income tax based on the number of employees.

SIGNIFICANT LOCAL ECONOMIC IMPACTS

Each of UPM's mills helps strengthen the vitality of the local community and support public services. Taxes paid locally – property or real estate taxes, municipal taxes paid from wages, social security contributions and municipal share of corporate income tax – serve also as a basis for valuable dialogue with the municipalities and analysing the local taxes paid help to clarify the differences on country and local levels.

In addition to taxes, the local consumption impact and the indirect employment effect generated by the mills have been calculated for Finnish pulp and paper mills based on a model provided by the Research Institute of the Finnish Economy (ETLA). The six sites in Finland generated a total of EUR 193 million of regional consumption impact and employed over 4,000 persons indirectly in the region.

Since 2018, UPM has included in its EMAS statements relevant tax and societal contributions generated by its pulp and paper mills in Austria, China, Finland, France and Uruguay. EMAS statements are third-party verified. It is important to note that UPM's economic impact spreads not just on the corporate or country level but also in the local communities.

Energy taxation at various levels of the value chain

Taxation of end products

In addition to taxes on income, UPM's various production inputs and outputs are subject to taxation.

Energy taxation is especially relevant to UPM in various countries. This refers to excise taxes on liquid fuels, as well as electricity and some other fuels. Energy taxation is subject to detailed regulation at the country and EU levels.

Most of UPM's electricity production is hydropower or combined heat and power (CHP) production at mill sites, where most of the fuels used in energy production are from renewable sources. The electricity produced by UPM is subject to electricity taxation, regardless of which sources are used.

Renewable UPM BioVerno diesel and naphtha, which are produced from crude tall oil, a residue of the pulp production, are also subject to energy taxation. The taxes are charged by fuel distributors to their customers at service stations for example. The environmental goals of taxation of transport fuels directly impact the business. The energy taxes on transport fuels from renewable sources, like UPM BioVerno, are lower than those of fossil fuels because of their lower carbon dioxide emissions.

Taxation of raw materials and other inputs

UPM is also a significant energy consumer, especially for paper production. Most of the energy used in the production processes is subject to energy taxes, although there are various tax rates and exemptions depending on the type of use.

UPM pays a significant amount of energy tax on fuels as part of logistics costs, especially for road transportation.

Compensation of paid energy taxes for global cost-competitiveness

Within the EU, energy taxation laws allow member states to compensate for the taxes paid or apply lower tax rates for energy-intensive industrial production or other activities. Many of the main countries in which UPM has production facilities, for example, Finland and Germany, offer such tax relief because the level of energy taxation has increased significantly in recent years.

In Finland, electricity is taxed at a lower rate when used in industrial production. Energy-intensive industries receive a retroactive refund of energy taxes paid based on a separate application, if the amount exceeds a threshold dependent on the company's added value.

It is possible to apply for a similar retroactive energy tax refund in Austria, while, in the UK and France, relief is granted upfront in the form of lower tax rates for energy-intensive industrial users fulfilling specific requirements. In Germany, there are energy tax relief schemes that companies can apply for in advance; some are available retroactively if the company meets various eligibility criteria.

UPM also benefits from certain subsidy schemes or feed-in tariffs related to renewable energy production, such as EEG (Erneuerbare Energien Gesetz) compensation for energy-intensive industries in Germany and operating aid for wood fuel power plants in Finland.

READ MORE: UPM's assets and capital expenditure by country on page 133.

UPM Tax Policy is available on the corporate website under www.upm.com/governance.

UPM BIOFORE – BEYOND FOSSILS

COMMITTED TO SUSTAINABLE FORESTRY

We develop our strategic forest assets to secure wood supply to our mills. Finland and Uruguay are the most important countries for UPM's wood sourcing. In both countries, forest sector is significant for national economy and there is clear land ownership. The economic value of forests forms the basis for responsible land use and thus mitigating climate change.

SIGNIFICANCE

- Renewable wood is UPM's most important raw material
- All forest ecosystem services are based on biodiversity
- Forests and wood-based products have a unique role in climate change mitigation
- Forests play an important role in water cycles
- Forests support wellbeing of local communities

TARGET

- Ensure sustainable land use and keep forests full of life
- Secure forest ecosystem services

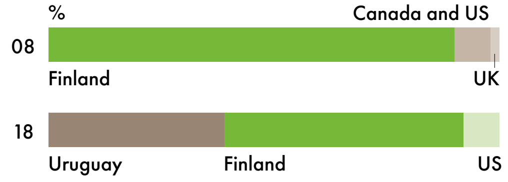
OUR WAY

- Credible certification systems for all our own forests
- Third-party verified chain of custody systems to ensure 100% traceability of wood
- Commitment not to use wood from tropical rainforests or accept wood from forest plantations that have been established by converting natural forests
- No operations in areas where the rights of indigenous peoples are threatened or endangered
- No plantation operations in water-stressed areas
- Strong stakeholder engagement
- Focus on 2030 responsibility targets: All fibre certified and positive impact on biodiversity in company forests

UPM FORESTS AND PLANTATIONS

	2008	2018
Forest and plantation land, own and leased (1,000 ha)	1,012	**971**
Forest growth (million m³)	4.3	**8.8**
Wood harvested from UPM forests and plantations (million m³)	2.2	**4.6**
Value of forests and plantations, including land (EURm)	1,270	**2,514**

FOREST AREA DISTRIBUTION



At the end of 2018, UPM owned 512,000 hectares of forest land in Finland and 76,000 hectares of forest land in the United States. In Uruguay, the company owns 258,000 hectares of plantation land. Forest land owned by UPM house nearly 45,000 protected sites with a total area of 130,000 hectares. The company is also responsible for managing approximately 1.1 million hectares of forest and plantation land owned by private forest owners.

To improve operational efficiency at its forests and to better serve private forest owners, UPM developed a new pine seedling type, Pikkolo in 2018. The small-sized seedling enables more efficient planting and its enhanced root system secures fast growth on-site.

UPM continued to sell forest land that is remote from its production sites. In Finland, UPM and the Ministry of the Environment agreed on the establishment of several private conservation areas on UPM land.

Co-operation with stakeholders

The growing need for food production and wood causes deforestation, especially in the tropics, which is an important concern for the entire forest industry. UPM recognises this challenge and has reacted by taking action in its own operations and by actively participating in international co-operation networks. UPM's wood sourcing and forestry operations do not cause deforestation.

Forest certification is based on standards that have been defined in an open stakeholder process, and compliance with these standards is monitored by an independent third party. All UPM-owned forests are certified. To promote the certification of privately owned forests in Finland, UPM has established the FSC® group certification scheme. In 2018, UPM's Finnish FSC group certification scheme grew to cover approximately 400,000 hectares of forest. 81% of wood consumed in our mills was sourced from certified forests in 2018 and all wood sourced by UPM is FSC Controlled Wood and from PEFC Controlled Sources.

UPM has been recognised as a global leader on the CDP Forest A List for its actions to tackle deforestation in its supply chain with global and sustainable sourcing of key commodities linked to deforestation.

Focus on forest biodiversity

In 2018, UPM became the first forest industry company to announce a target to achieving positive impact on biodiversity in company forests in Finland (read more on the right).

UPM has systematically developed methods for maintaining biodiversity in its eucalyptus plantations in Uruguay. More than one third of the land is left unplanted consisting of grasslands, native forests, wetlands, waterways and ecological corridors. Mafalda is one the most important nature conservation areas and found to have very special flora and fauna, covering up to 1,550 hectares.

UPM has a long tradition of working together with expert stakeholders in various biodiversity projects. In 2018, we partnered with Aves Uruguay and Vida Silvestre in Uruguay and Osprey Foundation in Finland. We have also co-operated with Helsinki University and with the University of Eastern Finland on forestry research.

UPM continued to participate in forest-related stakeholder forums such as roundtable process coordinated by the Finnish government, The Forests Dialogue, FSC Boreal Network and WWF New Generation Plantation Platform. These processes involve forest and environmental organisations, forest owners and representatives from industry, research and public administration, working towards a common goal of identifying and developing responsible forestry practices.

READ MORE:
upm.com/responsibility/forests

BIODIVERSITY FORMS THE FOUNDATION FOR SUSTAINABLE FORESTRY

UPM's new biodiversity target is one of the company's responsibility targets for 2030. The aim is to preserve biodiversity alongside modern forestry in UPM's own forests in Finland. The target was presented at the Conference of the Parties (COP14) of the UN Convention on Biological Diversity, held in Egypt in November.

With this target and through our actions, we seek to open up new opportunities for different land use practises that promote the preservation of natural resources or habitats. Biodiversity helps to protect water resources, promote multiple forest uses and ensure the growth of forests that act as carbon sinks to mitigate climate change.

The biodiversity programme will be carried out according to the annual plan, and the operations and results will be reported transparently.

The key performance indicators for the programme are variation in the forests' successional stages, the number and type of set-asides, diversity of tree species, variation in forest structure, and deadwood, which provides a habitat to as many as one fifth of forest species. An independent group of researchers will monitor the progress the programme.

READ MORE:
upm.com/responsibility

CONTINUOUS IMPROVEMENT OF RESOURCE-EFFICIENCY IN PRODUCTION

We are using materials, water and energy in a responsible and efficient manner, and aim to continuously reduce our environmental impact.

SIGNIFICANCE

- Global megatrends such as population growth lead to resource scarcity and competition for natural resources
- Resource efficiency eases the pressure on resources and the environment and brings competitive advantages

TARGET

- Continuous improvement of efficiency
- Excellent environmental performance
- Accountability and compliance
- Minimising possible negative impacts of operations

OUR WAY

- Certified management systems
- UPM's Clean Run programme
- Use of Best Available Techniques (BAT)
- Credible and transparent reporting
- Focus on 2030 responsibility targets

2,400

preventive environmental observations and near-misses reported

2030 TARGETS

100% Production sites with certified environmental management system

The number of environmental deviations at UPM mills

IMPROVEMENT AND INSPIRATION THROUGH THE BIOFORE SITE™

UPM Raflatac's Biofore Site™ concept engages factory employees and fosters a culture of sustainability by setting factory-specific development goals aimed at contributing toward UPM's 2030 responsibility targets. A multi-parameter Biofore Site scorecard, based on the UN Sustainable Development Goals, is used to monitor each factory's progress.

For many years, UPM Raflatac factories have operated third-party certified environmental management systems in accordance with the ISO 14001 standard. The Biofore Site concept expands on this foundation to include economic and social aspects. Since the piloting in 2017, each factory has created a unique path to improve their scorecard performance. From installing LED lighting on the factory buildings to installing electric car-charging stations, UPM Raflatac factory teams continue to find new ways to further the concept.

Employees are encouraged to suggest improvement ideas on sustainability performance and ways to better engage with local communities. The concept addresses sustainability holistically by measuring leadership, employee engagement, resource consumption, waste generation, community involvement and employee safety.

READ MORE:
upmraflatac.com

Management systems are supporting our continuous improvement process and resource efficiency efforts. Almost all of our production sites and wood sourcing operations have integrated management systems concerning environmental protection, quality management and occupational health and safety in accordance with ISO 14001, ISO 9001 and OHSAS 18001 standards. Joint multi-site management systems are in operation at several production units. This collaboration makes it easy to utilise synergies and to share best practices.

All European pulp and paper mills, as well as the UPM Fray Bentos pulp mill in Uruguay and the UPM Changshu paper mill in China, adhere to the EU's eco-management and audit scheme (EMAS). To improve energy efficiency, many of our mills have energy management systems certified under ISO 50001 or the Finnish ETJ+ system.

In 2018, UPM Raflatac became the first self-adhesive label material supplier to have all European factories certified according to the ISO 22000 food safety standard. ISO 22000 certification is also in use at pulp and paper mills where relevant.

In 2018, UPM expanded the EMAS-compliant environmental statements of its pulp and paper mills to include also verified, local information about societal impacts relating to the company's contribution to employment, tax income and purchasing power, or co-operation with communities, for example.

UPM reached its global target of 100% certified environmental management systems by receiving ISO 14001 certification for its two remaining sites in 2018.

Investments in environmental performance

We invest in maintenance and process improvements in order to continually optimise the environmental performance of our production. In 2018, environmental investments totalled EUR 16 (21) million. The single largest investment was related to air protection in the boiler rebuilt project at the UPM Changshu paper mill in China. UPM's environmental costs, which are mainly attributable to effluent treatment and waste management, totalled EUR 121 (125) million, including depreciation.

Further decline in environmental non-conformances

There has been a significant decrease in the number of environmental non-conformances since UPM's internal Clean Run programme was launched in 2012.

No major environmental incidents occurred at our production plants in 2018 and no significant fines were paid as a result of non-conformances. However, a total of 26 (33) temporary deviations from permit limits or environmental limits set by UPM occurred at the mills over the course of the year. For example, deviations were related to minor contraventions of air and water emission limits, or occasional odours from pulp mills. UPM immediately reported any deviations to the authorities and, where relevant, to local stakeholders. Appropriate measures were taken to normalise the situation and prevent similar occurrences.

All sites systematically follow-up any deviations, proactively report observations and near-misses, carry out walks and discussions, and compile detailed risk assessments. Since 2016, UPM has used a global One Safety reporting tool for the management and reporting of both safety and environment-related operations. The goal of this reporting is to improve environmental performance and awareness and to share best practices. In 2018, approximately 2,400 (2,600) preventive environmental observations and near-misses were reported.

READ MORE about environmental performance on page 109 (Report of the Board of Directors) and at upm.com/responsibility.

UPMBIOFORE–BEYOND FOSSILS

RESPONSIBLE WATER USE

Water flows through every part of our business. It flows in and out of our production processes, it passes through our forests which help to purify and regulate its movement, and we even leverage its flow to create an important source of renewable energy.

SIGNIFICANCE

- Water resources around the world are scarce and each watershed is therefore unique
- Forests have a crucial role in the water cycle
- Water is an essential resource in pulp and paper production

TARGET

- To use water responsibly
- Minimise the negative impact of operations on water resources

OUR WAY

- Operations in areas with sufficient water resources
- Efficient water use with appropriate recycling techniques
- Treatment of used water according to the BAT (Best Available Techniques)
- Water always returned to original watersheds, where possible
- Co-operation with local stakeholders to minimise negative impact and ensure water availability to all
- Focus on 2030 responsibility targets

Driven by our ambitious 2030 responsibility targets, we constantly strive to improve our performance. As a signatory to UN Global Compact's CEO Water Mandate, we follow recognised principles of water stewardship, continually seeking to use water in a way that is environmentally sustainable, socially equitable and economically beneficial. To further promote our approach, we joined the Finnish Water Stewardship commitment in 2018. UPM signed the WBSCD's WASH Pledge for Access to Safe Water, Sanitation and Hygiene back in 2014, and is today globally compliant with the required standards.

Continuous improvement in water management

The water used in pulp and paper production processes is circulated as much as possible, with only a small proportion of the water ultimately leaving the process as effluent and replaced with fresh water. Using less water also means using less electricity, fewer chemicals and less thermal energy. All of UPM's pulp and paper mills run both mechanical and biological effluent treatment processes. To ensure the best possible treatment results and share best practices, UPM operates a global water specialist network.

UPM continues to work towards its 2030 targets for water: reducing effluent load (COD) and wastewater volume and using 100% recycled nutrients for effluent treatment. In 2018, several potential recycled nutrient sources were tested, and testing will continue in 2019 at the UPM Kaukas, UPM Kaipola and UPM Ettringen paper mills, for example.

In summer 2018, UPM Nordland paper mill implemented new water purification technology at its wastewater treatment plant and took a further step towards closing its on-site water circulation system. The quality of the purified water is very good, making it suitable for reuse instead of using fresh water. Optimisation continues at UPM Nordland; today approximately 15% of the effluent volume is reused and the aim is to increase the use of purified wastewater to 25% in 2019. Thanks to the UPM Kymi pulp mill expansion,the mill's COD load per tonne of pulp has decreased by 38% compared to 2017.

At UPM Changshu, the More with Biofore in China programme continued with several pilot trials to recycle effluent water back into the process reducing fresh water intake. The company is also investigating opportunities for some partners in the surrounding area to use part of our effluent after purification. The decision was also taken in 2018 to invest in membrane technology in order to clean paper machine process water and the new equipment will be put into operation in 2019. UPM was recognised as a Water Efficiency Frontrunner in China, in one of the key initiatives launched by the government to reduce industrial emissions.

In 2018 UPM focused on discovering new ways of working, new technologies and new partnerships with potential chemical and machinery suppliers. Some of these technologies are currently being piloted and this work will continue in 2019.

Collaboration with stakeholders

UPM's responsible water use highlights the importance of water resources and good water management all over the world. For example, UPM Raflatac collaborates with WWF Poland in the "Rivers for Life" project and is working with the China Women's Development Foundation to address a shortage of safe drinking water, as well acting as co-partner in a reforestation project at the Jaguari River in Brazil. In Finland, UPM co-operates actively with the Baltic Sea Action Group in order to promote its 2030 responsibility target to use only recycled nutrients in its wastewater treatment plants.

Minimising the impacts of hydropower facilities

UPM has been a hydropower producer for over one hundred years, and UPM Energy is the second-largest electricity producer in Finland. While hydropower represents a cost-effective, renewable and CO_2-free means of generating electricity, it can also have an adverse impact on watercourses and their habitats. In order to minimise these impacts, we work closely with authorities and other stakeholders (Read more about our migratory fish programme on the right).

READ MORE:
upm.com/responsibility

2030 TARGETS

29%

Reduction in effluent load (COD) since 2008

UPM SUPPORTS RESTORATION OF MIGRATING FISH STOCKS

The UPM migratory fish programme aims to dismantle migration barriers and test new ways to restore fish stocks all around Finland. The programme is based on collaboration with stakeholders.

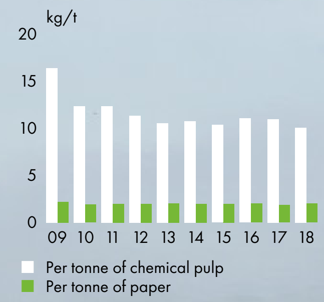
UPM and ELY Centre for Central Finland have dismantled migration barriers in Central Finland to turn the river into a functioning reproduction area for trout between two lakes.

The natural reproduction of the highly endangered landlocked freshwater salmon of Saimaa is promoted in North-eastern Finland. In the project, Kuurnan Voima is building a small power plant on the flood dam, which will keep the water level high enough for the salmon. A network of channels and bars is planned to mitigate the effects of fluctuating water levels on the fish habitat. A dedicated five-hectare area in the Pielisjoki River has been reserved exclusively for spawning.

The effectiveness of the measures will be monitored for several years. The fish migration programme has received significant financial support from UPM's Biofore Share and Care programme.

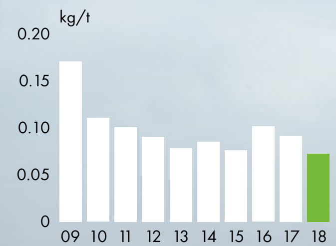
READ MORE:
upm.com/responsibility

UPM's COD load



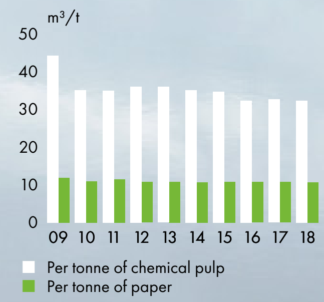
The COD load has decreased by 9% per tonne of paper, and by 39% per tonne of chemical pulp, over the last ten years. Chemical oxygen demand (COD) is an indicator for the effluent quality.

UPM's AOX load per tonne of bleached chemical pulp



AOX indicates the amount of halogens bound to the organic compounds present in the effluent. The AOX load per tonne of bleached chemical pulp has decreased by 57% over the last ten years.

UPM's process wastewater volumes



UPM has reduced wastewater volumes per tonne of paper by 10% and per tonne of chemical pulp by 27% over the last ten years.

UPM BIOFORE–BEYOND FOSSILS

CLIMATE ACTIONS AND ENERGY EFFICIENCY

Our direction – Beyond Fossils – requires transition to a low-carbon economy. Forests, wood-based products and low-carbon energy all play a unique role in climate change mitigation. The use of fossil fuels must be rapidly reduced.

SIGNIFICANCE

- Climate change is creating both risks and opportunities, and requires action
- The global climate agreement aims to keep the average temperature rise at a level that does not threaten nature and society
- Forests that act as carbon sinks and wood-based products have a unique role in climate change mitigation
- UPM is both a significant energy producer and a user of energy

TARGET

- Create climate solutions and innovate for a future beyond fossils

OUR WAY

- Ensure wood supply from sustainably managed forests
- UPM's biodiversity programme and our positive impact make forest ecosystems less vulnerable to the impact of climate change
- Wood-based and recyclable products that replace fossil-based materials
- Efficient use and an increasing share of renewable and low-emission energy
- Continuous improvement of energy efficiency
- Best Available Techniques (BAT)
- Focus on 2030 responsibility targets

We favour the use of renewable and other carbon-neutral energy sources. Biomass-based fuels account for 70% (69%) of our fuel usage.

As the use of weather-dependent energy sources increases, the need for balancing power in energy systems will also grow. In Finland, UPM has significant assets in hydropower, the most effective and sustainable method of producing balancing power.

Paper and pulp mills, which use power and heat in their production processes, represent the majority of UPM's total energy consumption. Most of the energy is consumed in the manufacture of mechanical pulp, pumping and paper drying. Steam and electricity are generated simultaneously by combined heat and power (CHP) plants at all pulp mills, and almost all paper mills. At some mills, all or part of the energy is produced by external and co-owned power plant companies.

Continuous improvement in energy efficiency

We strive to continuously improve energy efficiency across all our operations. With the help of energy audits, innovations and internal campaigns, energy efficiency in production has improved. Electricity consumption per tonne of paper has decreased by 4% over the past ten years. However, UPM did not reach its annual energy efficiency target of 1% in 2018.

As a result of the energy-saving investments carried out in 2018, UPM reduced its energy costs by EUR 3.2 (3.0) million, avoided 23,000 (39,000) tonnes of CO_2 emissions and achieved a 95,000 (92,000) MWh reduction in energy consumption. The annual savings were EUR 4.1 (5.1) million, 28,000 (61,000) t of CO_2 and 118,000 (143,000) MWh.

A climate actions project, established in 2017, continued in 2018 in collaboration with UPM experts from different areas. The aim is to ensure that UPM can reduce its fossil CO_2 emissions and achieve its 30% reduction target by 2030.

Together with the Finnish Meteorological Institute (FMI) UPM began research into how climate change will affect UPM's business operations in the long run (read more on the right). UPM also evaluated the sources of its CO_2 emissions more thoroughly and established an R&D-led decarbonisation working group.

Reducing CO_2 emissions

2018 was the second full year of the More with Biofore in China research programme. The UPM Changshu paper mill has already achieved a 2% improvement in its energy efficiency.

In Russia, UPM Plywood is expanding its Chudovo plywood mill and investing in a new 19 MW biomass boiler. Most of the mill's heat energy will be generated using wood-based by-products from plywood production, such as bark, chips and dust. The project is estimated to be completed by the end of Q3 2019.

In Finland, UPM Plywood replaces the old biomass boiler at its Joensuu mill. UPM Energy will refurbish the Kuusankoski hydropower plant and TVO's Olkiluoto 3 EPR-type nuclear power plant unit is scheduled to commence regular electricity production in January 2020.

In Germany, the project to install a new 80 MW biomass boiler at the UPM Hürth paper mill is underway. UPM's paper mills are also aiming to find new power supply partners, which have lower CO_2 emissions in power production.

CAPACITY TO GENERATE POWER THROUGH OWN POWER PLANTS AND SHAREHOLDINGS

	Nominal MW
Hydropower	732
Nuclear power	587
Condensing power	222
UPM Energy in total	**1,541**
Mill site combined heat and power (CHP)	1,398
Mill site hydropower	7
Mill site power generation in total	**1,405**
Total UPM	**2,946**

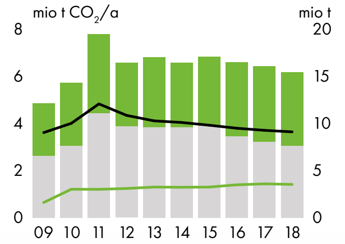
ELECTRICITY GENERATION THROUGH OWN POWER PLANTS AND SHAREHOLDINGS

TWh	2018	2017
Mill CHP	5.6	6.2
Hydropower	2.9	3.3
Nuclear power	4.7	4.4
Condensing power	0.6	0.3
Total	**13.8**	**14.2**

FUELS USED FOR HEAT GENERATION

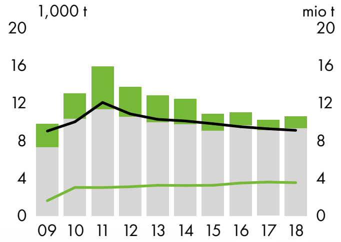
TWh	2018	2017
Black liquor	19.2	19.6
Bark and other biomass	8.3	8.7
Heat recovered from TMP production	1.5	1.3
Renewable fuels total	**29.0**	**29.6**
Peat	1.0	0.9
Purchased heat	0.4	0.6
Natural gas	7.1	7.8
Oil	0.6	0.6
Coal	2.8	3.2
Total	**40.9**	**42.7**

UPM's fossil carbon dioxide emissions



In 2018, on-site CO_2 emissions (Scope 1) decreased due to lower emissions in paper mills. CO_2 of purchased electricity (Scope 2) decreased due to purchases with lower CO_2 factors in Finland, Germany and the US. 2017 figure has been corrected.

UPM's acidifying flue gases



In 2018, the emissions increased slightly at UPM's pulp mills due to increased pulp production.

BRASSICA CARINATA FARMS ABSORB CARBON DIOXIDE FROM THE ATMOSPHERE

Climate change is mitigated by emission cuts and by binding atmospheric carbon dioxide to plants and soil. UPM is doing research to evaluate the size of the carbon sink generated by its Brassica carinata – a potential new feedstock for biofuel production – cultivation areas in Uruguay.

Brassica carinata is an oilseed crop especially suited to the sustainable production of biofuels. The rest of the seed can be used for animal feed while the plant residual biomass can contribute to increasing carbon concentration in soil.

Together with research partners, UPM is building a research agenda to estimate the impact of these carbon sinks. We estimate, for example, the concentration of carbon and biomass in soil. Even a slight increase in soil carbon storage improves carbon capture from the air.

The sustainability criteria of the RSB certification guarantee that we have reduced greenhouse gas emissions, as well as maintain biodiversity and environmental and social responsibility throughout the value chain. The aim is to increase the commercial acreage annually from the current 10,000 hectares of farm land in collaboration with local farmers.

READ MORE:
upmbiofuels.com

NEW ANALYSED DATA ABOUT THE IMPACTS OF CLIMATE CHANGE

Extreme weather conditions will increase globally due to the magnitude of climate change. The change in variables like heavy rain falls, wind and snow damages or drought are posing a threat to the balance of nature. In collaboration with the Finnish Meteorological Institute (FMI), we are now actively doing research on how climate change will affect UPM's business operations in the long run.

Antti Mäkelä, Head of Climate Change and Extreme Weather Group at the Finnish Meteorological Institute, describes that according to the most plausible climate scenario the global reduction of carbon dioxide emissions will be partially achieved. "In South America there will be more rainfall even with rising temperatures, so drought will not be as big a problem in these tropical and subtropical areas."

"Winters in Finland will be warmer and shorter and there will be more rain. Warm winters will make harvesting wood more difficult as the soil will not freeze. Increasing rainfall will increase the potential of hydropower. Climate change also accelerates forest growth. The more carbon there is in the atmosphere, the more efficient is photosynthesis."

Evaluating the impact of different climate scenarios supports us in assessing the risks and opportunities related to climate change. While our operations are vulnerable to physical climate risks, the solutions that reduce emissions and help adapting to this change create new business opportunities in transition to low-carbon economy.

READ MORE:
upm.com/responsibility

STICKING TOGETHER

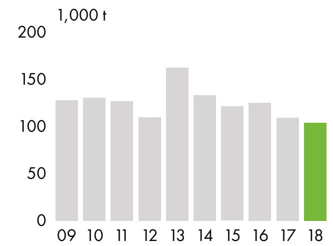
A well-functioning recycling process ensures that all the recovered paper material is used as effectively as possible. Enhancing recyclability was a key target when UPM Raflatac, UPM Communication Papers and UPM's Central European Research Centre joined forces.

The challenge was that the glues used in magazine stickers have caused problems in the paper recycling process. A solution to the problem was found through cooperation, when experts from various businesses developed a new type of adhesive. The new recycling-friendly adhesive ensures that labels are no longer an issue in the paper recycling stream.

The paper recycling and production knowledge of UPM Communication Papers and R&D with the product development knowledge of UPM Raflatac were closely linked in the collaboration. INGEDE, the International Association of the Deinking Industry, was also involved in the product development process.

READ MORE:
upm.com/circulareconomy

UPM's total waste to landfills



The total amount of solid waste sent to landfill has decreased over the last ten years by 19%. However, in 2013 the amount increased significantly because former reuse possibilities for ash ceased at one of the paper mills. Starting from 2014, new methods of recycling were established.

2030 TARGETS 90% of UPM's total process waste recycled or recovered

CIRCULAR ECONOMY AT THE CORE

SIGNIFICANCE

- Circular economy addresses two key global challenges: climate change and resource scarcity
- Demand and competition for raw materials are growing
- Circular economy makes use of materials more efficient and creates a competitive advantage

TARGET

- Promote material efficiency and circular economy – reduce, reuse and recycle

OUR WAY

- Circular economy thinking
- Reuse materials and products several times and create value through smart solutions
- Recycle and reuse production waste and utilise by-products
- Sustainable and innovative new businesses and solutions for a future beyond fossils
- Focus on 2030 responsibility target: no process waste to landfills or incineration without energy recovery

Many of our products are made from side streams, residues and waste. We actively develop new solutions to speed up the transition to circular economy and the responsible use of renewable materials, responding to climate change and resource scarcity.

Recycling is part of a circular economy

We have developed innovative ways to reduce our own waste and residues and to recycle waste into new products. Examples of our efforts to promote circular economy include the following:

- UPM BioVerno renewable diesel and naphtha are produced from crude tall oil, a residue of chemical pulp production.
- UPM Raflatac collects label waste from its customers and partners, and recycles it using a variety of RafCycle® recycling solutions, including UPM ProFi.
- UPM Raflatac has developed innovative solutions such as thin film materials, wash-off adhesives and label materials containing recycled content to promote a circular plastics economy.
- UPM ProFi biocomposite utilises the cellulose fibres and plastic polymers generated as manufacturing surplus from self-adhesive label material production. In 2018, 30% of plastic polymers used in UPM ProFi are based on recycled materials and the share will be increased further.
- UPM is the world's largest consumer of recovered paper for the production of its graphic papers, using 2.5 (2.6) million tonnes of recovered paper in 2018. This means that recycled fibre represents approximately 30% of all fibre raw materials used in UPM's paper production.
- The recycled release base paper product family is the first commercial glassine product of its kind. The release base papers used in the production are collected from end users and desiliconised in a unique process. The pulp is then reused for papermaking.
- Lignin, a by-product from pulp production, is used in WISA BioBond gluing technology, which is used in plywood manufacturing.
- Ash from biomass-based energy generation is used in several product applications from soil stabilisation to the cement industry, or internally replacing caustic soda or PCC (read more on the right).
- The use of recycled nutrients at UPM's effluent treatment plants is increasing steadily.
- A recycled fertilizer was developed and tested together with Yara Suomi in a project co-funded by the Finnish Ministry of the Environment. The sludge from our Finnish pulp and paper mills' manufacturing processes was dried and complemented with mineral nutrients. No profitable business could be generated but collaboration continues to find further end-uses for sludge.

Target of zero solid waste to landfills

We aim to become a Zero Solid Waste to Landfill company globally by 2030. This means that UPM will not deposit any process waste at landfill sites, and no process waste will be incinerated without energy recovery.

Ash originating from bioenergy production forms the most significant proportion of our solid waste, with 94% being recycled. Nearly all organic production residues, including bark and wood residues as well as fibre-containing solids from deinking and effluent treatment, are used in energy generation at mill sites.

UPM's Zero Solid Waste to Landfill target has already been achieved at many of UPM's production sites. In Finland, UPM implemented a Zero Solid Waste project to discover best practice for certain waste streams, which helped mills to reach zero solid waste status. Special effort is put on green liquor dregs as one of the most challenging residues from pulp production, and a new product innovation is currently under development.

A BREAKTHROUGH IN RECYCLING ASH

The UPM Schongau paper mill in Germany and SMI developed together a new process for precipitated calcium carbonate (PCC) from residue ash. Around 30% of traditional calcium carbonate, manufactured by burning natural limestone at a very high temperature, can now be replaced. The new product has had a number of positive impacts at the mill. Annually, it reduces CO_2 emissions by 10,800 t, lowers energy consumption by 13,500 MWh and has led to a reduction in heavy traffic on the roads, cutting the number of truck rides into and out of the mill by 2,500.

"The carbon dioxide that results from the burning process is captured directly within this alternative filler material. This way, it is not released into the environment. For us, this pioneering manufacturing process and the end product are perfect examples of innovation and resource efficiency, leading us towards closing the natural resource circle," says **Heiko Hilbert**, leading the project at UPM Schongau.

READ MORE:
upm.com/responsibility

UPMBIOFORE–BEYOND FOSSILS

Summary of our societal impacts

Indirect inputs and outputs provide a more comprehensive picture of the value chain. Together with the direct inputs and outputs they form the basis for impact evaluation.

Our activities and products have impacts on society. Understanding these impacts is a prerequisite to develop our operations. The evaluation covers our value creation from economic, social and environmental perspective.

INDIRECT UPSTREAM

Number of b-to-b suppliers 24,000

Forest owners in Finland supplying wood to UPM 18,500

Supplier and Third Party Code qualified supplier spend 83%

Certified wood 81%

Percentage of wood origin known 100%

Seedlings planted 70 million

UPM forests available for free recreation use 587,000 ha

Ecosystem services EUR 430m

Fossil CO_2 emissions (scope 2 & 3 upstream) 6.7m t

Water intensive production sites located in water abundant areas 100%

Restricted chemical substances in UPM screening 6,000

New hires 2,600

DIRECT UPSTREAM

RAW MATERIALS

Wood 27.6m m³

Recovered paper 2.5m t

Minerals 2.3m t

Market pulp 1.9m t

Purchased paper for converting 0.4m t

Plastics, adhesives, resins, films 0.2m t

Co-mingled domestic waste 0.2m t

Costs, raw materials EUR 4.8 billion

WATER UPTAKE

Surface water 460m m³

Ground water 17m m³

Communal water 4m m³

ENERGY

Renewable fuels 27,500 GWh

Fossil fuels 11,600 GWh

Purchased electricity and heat 13,600 GWh

UPM

54 production sites in 12 countries

840,000 ha forests and plantations

19,000 employees

Approx. 93,600 shareholders

Capital employed EUR 10,575m

Net debt EUR −311m

Market cap EUR 11,813m

DIRECT DOWNSTREAM

PRODUCTS

Paper 9.1m t

Chemical pulp 3.5m t

Converting materials 0.6m t

Plywood and veneer 1.0m m³

Sawn timber 1.8m m³

Electricity and heat 11,000 GWh

By-products 1.0m t

Sales EUR 10,483m

Comparable EBIT EUR 1,513m

Comparable ROE 12.9%

Dividend distribution EUR 613m

Employee wages and benefits EUR 1,193m

Corporate income taxes paid and property taxes EUR 283m

Payments to providers of loans EUR 35m

370 granted patents and patents validations

PEOPLE

Employee engagement index 71% favourable

Training hours per employee 12

Total recordable injury frequency incl. contractors 6.6

Lost-time accident frequency incl. contractors 2.9

EMISSIONS TO AIR

Nitrogen oxides 9,300 t

Sulphur dioxide 1,200 t

Particulates 920 t

VOC 420 t

Fossil CO_2 emissions (scope 1) 3.0m t

EMISSIONS TO WATER

Process wastewater 210m m³

Cooling water 200m m³

Biological oxygen demand (7days), 7,300 t

Chemical oxygen demand 64,000 t

Adsorbable organic halogens 250 t

SOLID PROCESS WASTE

To landfills 102,000 dry t

To temporary storage 7,500 dry t

To incineration without energy recovery 1,500 dry t

Hazardous waste for special treatment 6,000 t

INDIRECT DOWNSTREAM

Number of customers 12,600

People using UPM products over 230 million

Value of products eligible for ecolabelling EUR 9.0 billion

Virgin materials replaced 3.5m t

Carbon stored in UPM products 18m t

Fossil CO_2 emissions (scope 3 downstream) 3.5m t

Biofore Share and Care donations and sponsorships EUR 2.1m distributed to 340 groups

OUTCOME & IMPACTS

Impact evaluation is a continuous process for UPM. In 2017, UPM initiated a pilot study to assess the monetary value of certain impacts. This study provided us with examples shown on the right (*). In 2018, UPM piloted a new approach for net impact analysis. Read more on page 25.

Purchase power of workforce and shareholders EUR 1.8b

Multiplicative effects of value added EUR 3.0 billion

Increasing knowledge and quality of life through our products

Enhanced business practices in the value chain

Vitality and prosperity for sphere of influence

Health impact on employees and contractors

Employee skills enhanced

Climate change mitigation through UPM's climate actions

Impact valuation of net carbon binding of UPM forests EUR 13m*

Impact valuation of GHG emissions EUR −200m*

Biodiversity enhanced

Impact valuation of recreational use of UPM forests EUR 80m*

Impact valuation of ash used as raw material EUR 20m*

Impact valuation of landfilled waste EUR −16m*

99%
of active employees had completed the UPM Code of Conduct training "Every choice matters" by the end of 2018

18
the number of languages in which the UPM Code of Conduct is available on the UPM Intranet and on the corporate website www.upm.com/governance

86%
Integrity index based on Employee Engagement Survey results

OUR GOVERNANCE AND COMPLIANCE

Our decision making, management and operations are guided by our values and the UPM Code of Conduct. Our leading principle is that we do not compromise our standards of integrity under any circumstances.

We also aim higher in our governance. We are committed to good governance and compliance with the guiding principles of the UPM Code of Conduct and with applicable laws and regulations. We trust that our governance structure supports good governance, responsible business operations and compliance at all levels, with clear responsibilities and reporting lines. Accountability for compliance extends from the Board of Directors and senior management down to every employee (read more on page 109).

Responsibility is one of our strategic focus areas and compliance is an integral part of it.

Our compliance system is embedded in our governance model and is designed to support company performance and a culture of integrity at all levels. Our integrity index figure highlighted above is an average calculated on the basis of favourable responses to integrity-related questions in our annual Employee Engagement Survey (EES) (2017: 85%). These questions are:

1. I understand the UPM Code of Conduct and ethical standards.
2. If I had to report unethical behaviour or misconduct, I am confident that it would be handled effectively by UPM.
3. UPM operates in an ethical manner and in accordance with the UPM Code of Conduct.

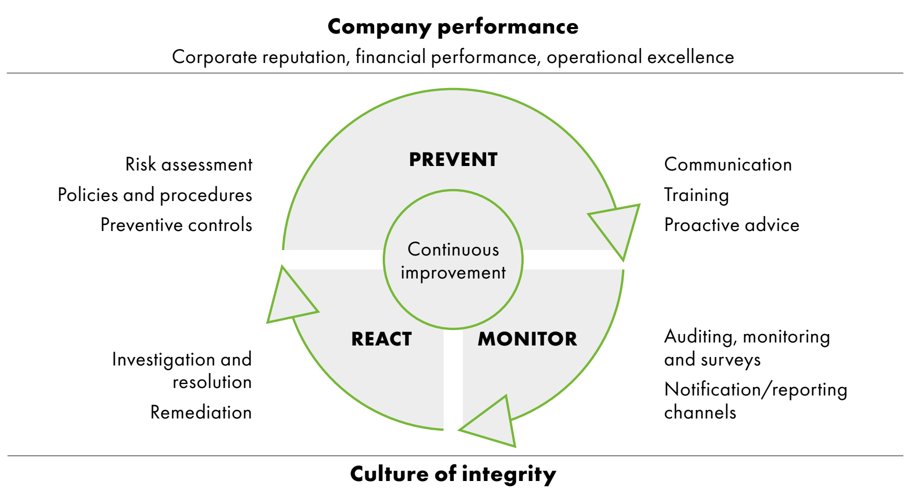
The main emphasis of our compliance system is on preventive actions, which are based on the annual risk management cycle and risk assessments conducted in all businesses and operations. Our compliance system and actions within this system are presented in the illustration on the right. Read more on our governance structure and risk management processes on the corporate website.

READ MORE:
upm.com/governance
upm.com/responsibility

OUR PRINCIPLES UNDER UPM CODE OF CONDUCT

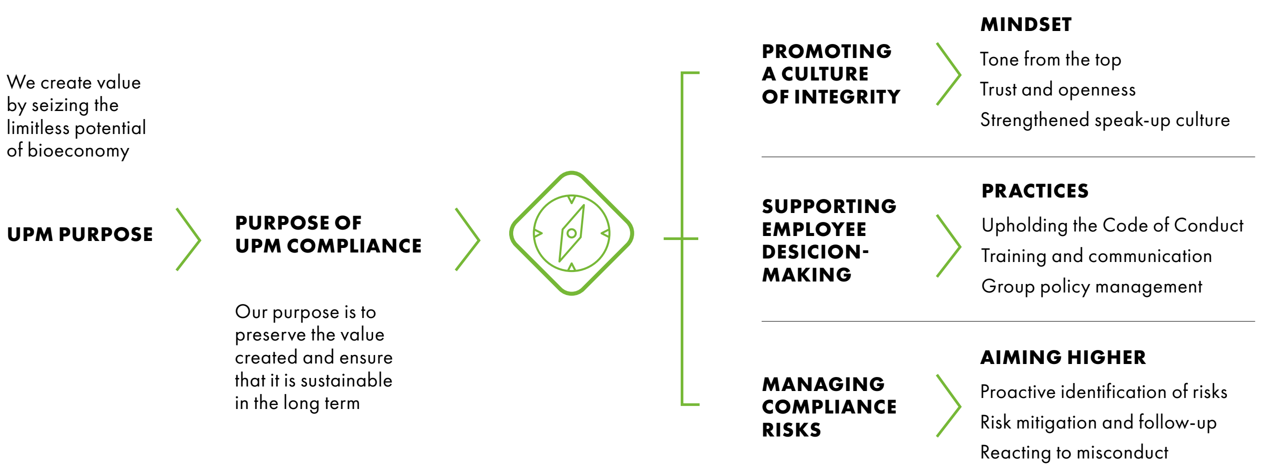
We are committed to integrity
We respect people and human rights
We take care of our environmental impact and product safety
We have zero tolerance for corruption and bribery
We know with whom we trade
We comply with competition law
We protect our assets and information
We source responsibly
We engage with our stakeholders and society
We voice our concerns

UPM COMPLIANCE SYSTEM



RESPONSIBILITY:

COMPLIANCE, SUSTAINABILITY AND INTEGRITY IN EVERYTHING WE DO



Actions to ensure compliance

We strive to ensure compliance with our values and commitments by training employees, raising awareness through active communication and developing our risk management, monitoring and reporting processes.

Training and communication

We arrange compliance trainings, including face-to-face trainings to specific target groups, which are defined based on risk assessments. Over the year, we improved our training tools and processes so that all e-learning modules are now available under the same HR platform and easily accessible by our employees. Thanks to this platform we are now able to manage our trainings more effectively through automated reminders and escalation processes and we can also produce training reports more easily.

Our implementation project related to the General Data Protection Regulation (GDPR), which began in 2016, was completed on schedule and the target group was trained over the course of the year. More detailed, risk-based training was provided to specified target groups such as employees in HR, IT and Legal functions. The processes and tools, as well as post-project organisation, were set up during the implementation project to ensure GDPR compliance by May 2018 and thereafter.

The UPM Code of Conduct was last amended in February 2016; in 2018 we initiated a project to refresh the UPM Code of Conduct in order to ensure that it continues to reflect our transformed business operations, evolving business environment and stakeholder expectations. We plan to present a revised version of the Code of Conduct for the Board approval in April 2019, followed by extensive communication and training to enhance our employees' awareness and understanding of the Code of Conduct.

Our compliance trainings are supported by active communication and since our employees' awareness of our culture of integrity is a prerequisite for compliance, and therefore we allocated even more resources to this.

Risk management

Our counterparty risk management project continued in 2018. The project was initially launched in 2017 and it is now in its implementation phase with a planned go-live in 2019. The purpose of the project is to provide a new tool and improved processes for the management of risks relating to our numerous counterparties in different continents and countries. We want to know with whom we trade and to source even more responsibly. We also want to be able to manage uncertainties relating to trade sanctions more effectively. The new tool will support us in preventive decision-making with automatic screening and alert functionalities and will provide us with improved tracking and documentation trails.

Monitoring

Our group company risk matrix, which is based on country risk and complexity and extent of our operations in each country, forms the basis for monitoring activities aimed at ensuring compliance at all levels of the organisation. Our compliance team, which is headed by the Chief Compliance Officer, has a three-year-monitoring plan for its compliance reviews based on this matrix. The reviews to be performed each year are agreed with the businesses during the annual risk assessment process and coordinated with Internal Audit. Findings and recommendations of the compliance reviews are reported to the Audit Committee and businesses and implementation of the recommendations are executed together with the businesses.

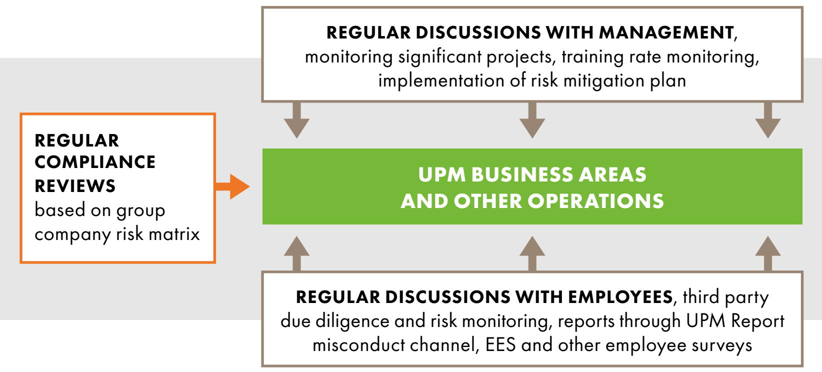
Reporting

The UPM Report Misconduct channel is available on the corporate website for all stakeholders and on the UPM Intranet for our employees. Stakeholders and employees may use this channel to report any complaints or concerns they have in relation to violations against the UPM Code of Conduct, any policies or rules thereunder or applicable laws to our Head of Internal Audit and Security Director.

- Number of submissions through the channel or directly to Internal Audit in 2018: 32
- Number of other inquiries or concerns: 215

In order to strengthen the speak-up culture and to harmonise our procedures, principles, roles and responsibilities with regard to the reporting and investigation of misconduct and other concerns, the Group Executive Team approved an updated version of our misconduct investigation protocol in November. Updated rules under the UPM Code of Conduct approved by the Group Executive Team in 2018 include the Safety Rules and HR Rules.

COMPLIANCE MONITORING



COMPLIANCE TRAININGS TO SPECIFIC TARGET GROUPS IN 2018	COMPLETION RATES AS AT 31 DECEMBER 2018	SIZE OF TARGET GROUP
Code of Conduct e-learning	99%	18,500
Personal data protection e-learning	96%	7,200
Anti-corruption e-learning	96%	7,200
Competition law e-learning*)	84%	3,400
Confidentiality e-learning	99%	7,200
Insider Policy e-learning	100%	360

*) Refreshment training launched in 2018

NUMBER OF REPORTED CASES RELATING TO	2018
Fraud	4
Discrimination	3
IPR/Confidential data	2
Conflict of interest	5
General human resources	17
Environment	1

None of the cases was related to corruption. Three cases led to disciplinary action, including warnings and terminations of employment.

READ MORE:
upm.com/compliance

Governance guidelines

We comply with all recommendations of the Finnish Corporate Governance Code for listed companies issued by the Finnish Securities Market Association. This Code is available on the association's website at www.cgfinland.fi/en. In accordance with the Code, we have published our Corporate Governance Statement for the financial year 2018 and this statement is available on the corporate website at www.upm.com/governance. We refer to this statement for information on our governance structure and guidelines, Board and committee duties and responsibilities, and our management and control procedures related to internal control, risk management, internal audit, insider administration and related party transactions.

In the following, we report on the decisions taken at our Annual General Meeting, changes in the Board of Directors, Board diversity and independence, Board and committee work, executive management, Board and management remuneration, auditor and auditor remuneration in 2018.

General meeting of shareholders

Our Annual General Meeting (AGM) took place in Helsinki, Finland on 5 April 2018. A total of 3,386 shareholders were present or represented at the meeting, representing 52.2% of the company's registered shares and votes. We were pleased to have a record number of shareholders present or represented at the meeting.

The AGM adopted the company's Financial Statements and decided to distribute a dividend of EUR 1.15 (for the year 2016: EUR 0.95) per share and discharged the members of the Board of Directors and the President and CEO from liability for the financial year 2017. The dividends, totalling EUR 613 million, were paid on 19 April 2018 to shareholders who were registered in our shareholders' register on 9 April 2018. The year 2017 marked the fourth consecutive year of increased dividend (read more on page 17 of this report). For the year 2018, the Board of Directors has proposed a dividend of EUR 1.30 per share.

Amendments to the Articles of Association

Our Articles of Association were amended during the year as the AGM approved the Board of Directors' proposals for the amendments to Articles 2, 8 and 10 of the Articles of Association and resolved to remove Article 12 regarding a shareholder's obligation to make a mandatory bid.

Article 2 was amended to reflect the Company's businesses more closely, Article 8 to correspond to the statutory responsibility for the auditor oversight, and Article 10 to the effect that the entire notice of the general meeting will be published only on the corporate website. Article 12 was removed from the Articles of Association as obsolete and difficult to apply in practice as it coincided with a shareholder's statutory obligation to make a mandatory bid. The amended Articles of Association are available on the corporate website.

Information on other decisions taken at the AGM is available later in this report and on the corporate website at **www.upm.com/agm2018**. The AGM approved all Board proposals and all decisions were taken without voting.

Board of Directors

The Board carries the main responsibility for the governance of the company, with the focus on overseeing the long-term value creation of UPM. To fulfil its role effectively, the Board:

- Sets the company's strategic objectives;
- Reviews and approves financial and other plans relevant to the achievement of these objectives; and
- Reviews the management's performance in meeting these objectives.

The Board's other main responsibilities relate to the integrity of the company's financial reporting, effectiveness of internal control and risk management systems, and the appointment, remuneration and succession planning of the senior management of the company.

Board composition

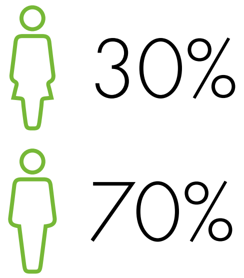
The composition of the Board changed in 2018 when Wendy E. Lane, UPM's director since 2005, did not stand for re-election. Having

BOARD COMPOSITION IN 2018

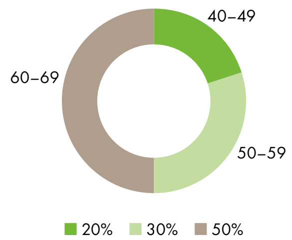
DIRECTOR	DIRECTOR SINCE	NO. OF TERMS	AGE (AT THE END OF 2018)	INDEPENDENCE OF THE COMPANY	NON-EXECUTIVE / EXECUTIVE DIRECTOR
Björn Wahlroos (Chairman)	2008	11	66	Independent	NED
Berndt Brunow (Deputy Chairman)	2002	17	68	Independent	NED
Henrik Ehrnrooth	2015	4	49	Independent	NED
Piia-Noora Kauppi	2013	6	43	Independent	NED
Marjan Oudeman*)	2018	1	60	Independent	NED
Jussi Pesonen	2007	12	58	Non-independent	ED
Ari Puheloinen	2014	5	67	Independent	NED
Veli-Matti Reinikkala	2007	12	61	Independent	NED
Suzanne Thoma	2015	4	56	Independent	NED
Kim Wahl	2012	7	58	Independent	NED

*) Succeeding Wendy E. Lane, who stepped down from the Board on 5 April 2018.

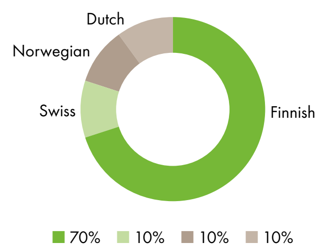
BOARD DIVERSITY – GENDER



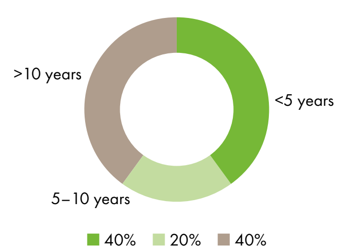
Board diversity – age



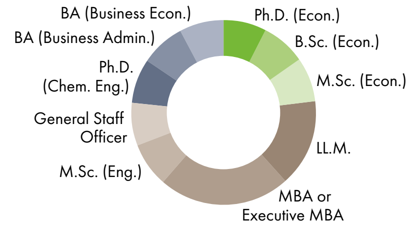
Board diversity – nationality



Board diversity – tenure



Board diversity – education



INDUCTION OF NEW DIRECTOR MARJAN OUDEMAN

Marjan Oudeman was elected to our Board of Directors in April 2018. Her induction into UPM began prior to her election, when she was provided with information on our business operations, management system and organisation, as well as our governance principles, corporate policies and charters relevant for board work.

Her post-election induction sessions began soon after the Annual General Meeting and continued throughout the year. Since April, Marjan Oudeman has had nine sessions with our executives and other members of the senior management team.

In September, she had a two-day trip to Lappeenranta, Finland, where she visited our integrated operations at UPM Kaukas and took a tour of the forest. Following her trip, Ms Oudeman said that it had been a great way to experience and get a good understanding of UPM's core activities and meet people in the organisation. Pirkko Harrela, Executive Vice President, Stakeholder Relations, hosted her visit to Kaukas.

Marjan Oudeman's induction will continue in 2019 in accordance with our director induction plan, which is available on our corporate website.

READ MORE:
upm.com/governance

served as a non-executive director for 13 years and having played a part in UPM's remarkable transformation from a global paper producer to a versatile Biofore company, she felt that the Board would benefit from some refreshment. We thank Wendy E. Lane sincerely for her valuable contribution in the company's transformation.

Following Ms Lane's announcement that she would step down from the Board, the Nomination and Governance Committee started its annual review of the Board composition and assessment of the Board's performance, effectiveness, competences, diversity and qualifications in relation to UPM's strategy, business operations, risk management and governance needs, and decided to initiate a search for a new director candidate. Recognising the challenges related to the search for a new director and in order to widen its net in finding candidates who could meaningfully contribute to the Board's competences, diversity and effectiveness, the Nomination and Governance Committee decided to retain an executive search firm. As a result of these search efforts, the Nomination and Governance Committee proposed that Ms Marjan Oudeman be elected to the Board at the AGM 2018.

As proposed by the Nomination and Governance Committee, the AGM elected ten members, including Marjan Oudeman, to UPM's Board of Directors for a one-year term. As this is, unlike in many other countries, a market practice in Finland, the shareholders were asked to vote on a single slate of directors. The Nomination and Governance Committee also believes that this practice helps to ensure that the Board works well as a whole and comprises sufficiently diverse members with mutually complementing experience and versatile expertise, and thereby the qualifications and competence to discharge Board duties effectively. The directors elected to the Board are presented on pages 92–93. Their term will end upon closing of the AGM 2019.

The new director Ms Marjan Oudeman (born 1958) is a Dutch citizen and holds master's degrees in law (LL.M.) and business administration (MBA). Ms Oudeman has extensive professional experience in leading multinational business operations for AkzoNobel NV, Tata Steel Europe, Corus Group Plc. and Hoogovens Group NV. During her over 30-year career in these corporations, she has gained valuable experience in performance improvement, financing and financial reporting, restructuring, strategic planning, organisational development and corporate governance.

Ms Oudeman ended her work career as President of the Executive Board of the Utrecht University in 2017 to concentrate on her non-executive director positions in SHV Holdings NV, Solvay SA and Aalberts Industries NV, where she also chairs the Audit Committee. Currently she is also a Board member in Novolipetsk Steel PJSC and a member of the Supervisory Board in Het Rijksmuseum. Ms Oudeman's previous positions of trust include Board membership in Statoil ASA (now Equinor ASA) and Supervisory Board memberships in ABN AMRO Bank, the Dutch Railways and Concertgebouw.

Björn Wahlroos, Chairman of UPM's Board of Directors and the Nomination and Governance Committee, stated that Ms Oudeman contributes to the Board's competence base and diversity and has helped the Board to implement its refreshment strategy. Mr Wahlroos also said that he has "full confidence that Ms Oudeman will augment the Board's ability to address the needs of UPM's evolving businesses and strategy with her versatile expertise and long professional experience".

Board diversity

The Board diversity aspects are defined in its Diversity Policy and include relevant professional experience and education, gender, age, nationality and length of tenure. This policy is available at www.upm.com/governance. Information on the directors' professional backgrounds and other significant commitments is available on pages 92–93 of this report. Information on the other aspects of Board diversity is available enclosed. Read more on UPM Board diversity,

RELEVANT PROFESSIONAL EXPERIENCE

- √ Financial expertise
- √ Relevant industry knowledge
- √ International experience
- √ Risk management experience
- √ Governance and leadership experience
- √ Experience in the planning and implementation of company strategies

related objectives and results obtained in our Corporate Governance Statement 2018, available at www.upm.com/governance.

Director independence

The Board of Directors evaluates the independence of its members annually and, in addition to this, on a continuous basis with the assistance of the Board's Nomination and Governance Committee. The directors' independence is assessed based on the Finnish Corporate Governance Code's independence criteria and other factors and circumstances to be taken into account in the overall evaluation from both the standpoint of the company and the directors. The majority of directors shall be independent of the company, and at least two directors of this majority shall be independent of significant shareholders.

Evaluation of director candidate independence is an important factor when the Nomination and Governance Committee prepares its annual proposal for the composition of the Board. The committee assesses directors' independence continuously and reviews a report on any changes in the directors' professional engagements and other commitments in every meeting to ensure compliance with the independence criteria. It also assesses potential effects of such changes on the directors' availability for Board work, and reports to the Board on the outcome of such assessments. The committee pays special attention to directors' positions in other publicly listed companies to make sure that the directors adhere to best practices related to overboarding. According to the committee's assessments, the changes that took place in 2018 had no effect on the directors' independence or availability for Board work. The directors' commitment and availability for Board work is evidenced by the directors' high attendance at the Board and committee meetings (see the table on the following page).

According to the evaluation carried out by the Board with the assistance of the Nomination and Governance Committee, all Board members are independent of the company's significant shareholders, as the company has no controlling shareholder and none of the company's shareholders has announced a holding of 10% or more of the company's shares or votes attached thereto. The Board has also assessed that all non-

ATTENDANCE AT BOARD AND COMMITTEE MEETINGS 2018

DIRECTOR	ATTENDANCE/ NO. OF BOARD MEETINGS	ATTENDANCE %	ATTENDANCE/NO. OF COMMITTEE MEETINGS	ATTENDANCE %	AVERAGE ATTENDANCE %
Björn Wahlroos (Board and NGC Chairman)	8/8	100	4/4	100	100
Berndt Brunow (Deputy Chairman, NGC member)	8/8	100	4/4	100	100
Henrik Ehrnrooth (RC member)	8/8	100	4/4	100	100
Piia-Noora Kauppi (AC Chairman)	8/8	100	6/6	100	100
Marjan Oudeman (Board and AC member from 5 April)	7/7	100	4/5	80	91.6
Wendy E. Lane (Board and AC member until 5 April)	1/1	100	1/1	100	100
Jussi Pesonen	8/8	100	–	–	100
Ari Puheloinen (NGC member)	8/8	100	4/4	100	100
Veli-Matti Reinikkala (RC Chairman)	8/8	100	4/4	100	100
Suzanne Thoma (RC member)	8/8	100	4/4	100	100
Kim Wahl (AC member)	8/8	100	6/6	100	100

NGC – Nomination and Governance Committee, RC – Remuneration Committee, AC – Audit Committee

executive directors are independent of the company, including Berndt Brunow, Veli-Matti Reinikkala and Björn Wahlroos, who have been the company's non-executive directors for more than ten consecutive years. Based on the Board's overall evaluation of these directors' independence, their independence is not compromised due to their long service history, and no other factors or circumstances have been identified that could impair their independence. As the President and CEO of the company, Jussi Pesonen is not independent of it.

Board work in 2018

The Board held eight meetings in 2018. There is no minimum attendance requirement for directors' attendance at the meetings. Instead, directors are expected to attend all meetings unless there is a valid reason for non-attendance. The directors' average attendance at the Board meetings was 100% (96.7% in 2017) and at the committee meetings 97.6% (100% in 2017). Directors' personal attendance rates are presented in the table above. In connection of its meetings, the Board also held non-executive sessions and sessions with the auditor without executives present.

Strategic focus areas in 2018

In line with its main duties and responsibilities, the Board reviewed and approved updated strategic plans in its strategy session in May. The main elements of UPM Biofore strategy continue to be performance, growth, innovation, responsibility and portfolio development. In 2018, this strategy was enhanced by a new brand promise: UPM Biofore – Beyond Fossils (read more on pages 8–15). An essential part of the Board's annual strategy work is the review and consideration of strategic and operational risks and opportunities. These risks and opportunities and their impact on operations and strategy are described on pages 30–31.

In 2018, the Board's strategic considerations focused on the operating platform development in Uruguay. This development plan was initiated in 2015 and discussions with the Government of Uruguay relating to logistical infrastructure and the operating environment took place in 2016. The purpose of these discussions was to outline the local prerequisites for a possible pulp mill investment in central Uruguay. In November 2017, UPM and the Government of Uruguay signed an investment agreement detailing the roles, commitments and timelines for both parties, as well as the relevant items to be agreed on prior to the potential investment decision, which is subject to significant progress in the implementation of the agreed infrastructure initiatives. The Board monitored the progress of these initiatives throughout the year. Read more on these initiatives and the planned strategic investment amounting to approximately EUR 2 billion on pages 18–19.

READ MORE:
upm.uy/en/growth

Strategic focus areas in 2019

The Board has recognised that the strategic risk assessment is even more relevant with potential major investments ahead and growing economic and political uncertainties in several markets.

In 2019, the Board will continue to closely monitor the progress of the infrastructure initiatives in Uruguay. The second preparation phase of the operating platform development, which is expected to take some 1.5 to 2 years, has proceeded according to plan, meaning that the investment decision, if any, can be expected in 2019 at the earliest.

The Board will also follow two other interesting strategic business opportunities relating to the company's biochemicals and biofuels businesses and the potential construction of industrial scale biorefineries in Germany and Finland. If all preparation phases of these business platform opportunities are concluded successfully, the company will initiate its standard analysis procedure and prepare investment proposals for Board approval. (Read more on pages 21 and 34.)

The third nuclear power plant unit in Olkiluoto has been a matter of concern for the Board throughout the seriously delayed construction project as the company is involved in this project through its energy shareholdings (read more on these holdings and on this project on pages 107 and 171–172). As the construction project is approaching completion and production start-up is expected in 2020, Olkiluoto 3 will be one of the Board's focus areas in 2019.

Board evaluation

The Board conducts an annual evaluation of its performance and working methods, including an evaluation of the performance and working methods of its committees. In addition, the committees evaluate their performance and working methods on an annual basis. The Nomination and Governance Committee assists the Board in the annual evaluation and in the review of the survey results and takes the results into consideration when preparing the Board's proposal for the composition of the Board to the Annual General Meeting.

In 2018, the evaluation was conducted as a self-assessment and its results were reviewed and discussed at the Board meeting in December. Directors evaluated the performance of the Board and of the committees in relation to their duties and responsibilities, Board and committee composition and structure, Board culture, effectiveness of Board and committee meetings, individual director contribution, and performance of the Chairman of the Board.

The overall results of the 2018 self-evaluation survey were very favourable and indicated that the Board, Chairman of the Board and the Board committees are functioning very effectively. The Board's review of the company's financial targets and monitoring of the company's financial performance received very high scores. The Board members also found that the Board is effective in its pursuit of a value-driven and performance-oriented culture that aligns management's compensation with long-term performance. In 2019, the Board will allocate more time to the review of management succession plans and will emphasise the oversight of strategic priorities.

COMMITTEE MEMBERS 2018

AUDIT COMMITTEE	REMUNERATION COMMITTEE	NOMINATION AND GOVERNANCE COMMITTEE
Piia-Noora Kauppi (Chairman)	Veli-Matti Reinikkala (Chairman)	Björn Wahlroos (Chairman)
Marjan Oudeman*)	Henrik Ehrnrooth	Berndt Brunow
Kim Wahl	Suzanne Thoma	Ari Puheloinen

*) Succeeding Wendy E. Lane, who stepped down from the Board on 5 April 2018.

Board committees

The Board has three committees assisting it in the preparation of matters to be decided by the Board:

- Audit Committee
- Remuneration Committee, and
- Nomination and Governance Committee.

The committees also assist the Board in its oversight and monitoring responsibilities. The Board is always responsible for the performance of any duties assigned to the committees.

The Nomination and Governance Committee assisted the Board in reviewing the composition, qualification criteria and duties of the Board committees, and made a proposal to the Board for the appointment of committee members and chairmen. The directors appointed to the Board committees in the Board's constitutive meeting on 5 April 2018 are shown in the table above. Neither the President and CEO nor other company executives may be members of any Board committees.

The written committee charters approved by the Board of Directors set forth the purposes, composition, operations and duties of each committee, as well as the qualifications required for committee membership. The charters are available on the corporate website. Each committee is responsible for carrying out the duties assigned to it in its charter.

The committees hold their meetings prior to Board meetings in order to prepare matters to be decided by the Board. In the Board meeting following the committee meetings, the Committee Chairmen report to the Board on matters discussed and actions taken by the committees. Furthermore, minutes of committee meetings are kept and submitted to the Board members for their information. All committee meeting materials are available to the Board members before and after the meetings.

READ MORE:
upm.com/governance

UPMBIOFORE–BEYOND FOSSILS

Committee work in 2018

The importance and extent of the committee work has increased in recent years and will continue increasing following the upcoming changes in the regulatory framework. However, the Board evaluation results for 2018 indicate that the distribution of tasks between the full Board and its committees is deemed appropriate and that the committees contribute effectively to the Board's work and focus on the right issues.

Audit Committee

The duties and responsibilities of the Audit Committee are related to the oversight of the company's financial reporting processes and financial reporting, internal control, internal audit and risk management, and to monitoring the company's audit and compliance procedures. In 2018, the committee held six meetings. In addition to its regular duties, the committee reviewed, for example, the following topics in these meetings:

- Revision of UPM Risk Management Policy (approved by the Board in January)
- Global settlement agreement related to the completion of the Olkiluoto 3 construction project
- Internal control development plan
- Revision of UPM Approval Policy (approved by the Board in April)
- Valuation of forest assets
- Valuation of energy assets
- Auditor rotation in peer companies (auditor rotation mandatory in 2024)
- Implementation of IFRS 16 Leases (new standard applicable from 1 January 2019)
- IT compliance, cybersecurity and data privacy
- UPM misconduct investigation protocol
- Implementation of UPM Disclosure Policy
- Lead audit partner rotation (lead audit partner rotation mandatory in 2021)

The lead audit partner attended all committee meetings and reported to the committee on the interim procedures and findings and quarterly audit and non-audit fees and services. The committee also held quarterly non-executive sessions with the internal and statutory auditors and held sessions with the members of the executive management, and among the committee members, at every meeting.

The Audit Committee has prepared the Board's proposal to the AGM 2019 for the election and remuneration of the auditor. In this connection, the committee evaluated the qualifications and independence of the auditor, and the auditor's provision of audit-related and non-audit services. The evaluation included an assessment of the effectiveness of the audit process, quality of audit, performance of the lead auditor and the audit team, and co-operation with the auditor's international audit network. As a result of this evaluation, the committee recommended to the Board the re-election of PricewaterhouseCoopers Oy as the company's auditor and the Board concurred with this proposal and has made a corresponding proposal to the AGM 2019.

According to PricewaterhouseCoopers Oy, Authorised Public Accountant Mikko Nieminen would succeed Authorised Public Accountant Merja Lindh as the lead audit partner. Mr Nieminen is the CEO of PwC Finland and acts as the lead audit partner for two other public companies: Kesko Corporation and Finnair Plc.

Remuneration Committee

Duties and responsibilities of the Remuneration Committee are related to the remuneration of the President and CEO and of senior executives who report directly to the President and CEO, and to the review of the company's talent and succession planning procedures for senior management. In 2018, the committee held four meetings. In addition to its regular duties, the committee was occupied, for example, with the following topics in these meetings:

- Implementation of EU Shareholders' Rights Directive
- Remuneration market trends
- Achievement award payments
- Payments related to EVP UPM Biorefining (see the next page)

Transposition of the EU Shareholders' Rights Directive into Finnish legislation and its implications for the company will be on the committee's agenda in 2019.

Nomination and Governance Committee

Duties and responsibilities of the Nomination and Governance Committee are related to the composition, diversity and remuneration of the Board of Directors and to corporate governance. When needed, the committee also identifies individuals qualified to serve as the President and CEO. In 2018, the committee held four meetings. In addition to its regular duties, the committee reviewed, for example, the following topics during the year:

- Amendments to the Articles of Association (2018 AGM approved the proposed amendments)
- Review of the Board and committee charters
- Board training

The Nomination and Governance Committee has proposed to the AGM 2019 that all the incumbent directors be re-elected to the Board. This proposal is based on the committee's careful and thorough consideration of the Board's effectiveness, independence, diversity and balance of relevant director qualifications and competences in relation to the requirements set by the company's strategic direction, evolving operations and development stage.

COMPOSITION OF MANAGEMENT BODIES

GROUP EXECUTIVE TEAM	BUSINESS AREA BOARDS	STRATEGY TEAM
President and CEO (Ch.)	President and CEO (Ch.)	President and CEO (Ch.)
CFO	CFO	CFO
General Counsel	General Counsel	General Counsel
Business area EVPs	Business area EVP	EVP Strategy
EVPs of global functions	EVPs of global functions	EVP Technology

Executive management

Jussi Pesonen has been the President and Chief Executive Officer of UPM-Kymmene Corporation since January 2004. He has also been a member of the company's Board of Directors since March 2007. The President and CEO manages and oversees the company's day-to-day business operations. In practice, the President and CEO chairs the Group Executive Team, Strategy Team and Business Area Boards and makes decisions on matters that are relevant to the company's daily business operations at the meetings of these management bodies. The compositions of these management bodies are presented in the table above.

Read more on our management system in the Corporate Governance Statement 2018 and at www.upm.com/governance.

Members of the Group Executive Team, including information on the executives' biographical details, professional and educational backgrounds, other significant commitments and shareholdings in the company, are presented on pages 94–95 of this report.

Management responsibilities

Members of the Group Executive Team carry the main responsibility for the business areas and global functions that they lead. These areas of responsibility are shown in the illustration below. Heikki Vappula, Executive Vice President of UPM Biorefining Business Area, died in a plane crash while on a private trip in Zimbabwe on 23 November 2018 (stock exchange release on 24 November 2018). Heikki Vappula is greatly missed by his colleagues and business partners globally. The President and CEO Jussi Pesonen has assumed temporary responsibility as the Head of UPM Biorefining as of 26 November 2018 (investor news on 26 November 2018). UPM has initiated a process for permanent management arrangements in UPM Biorefining.

RESPONSIBILITY AREAS OF THE MEMBERS OF THE GROUP EXECUTIVE TEAM

PRESIDENT AND CEO JUSSI PESONEN

CFO [1)]	Tapio Korpeinen	Jussi Pesonen (temporarily)	**UPM Biorefining**
General Counsel	Juha Mäkelä	Tapio Korpeinen	**UPM Energy**
Strategy	Kari Ståhlberg	Antti Jääskeläinen	**UPM Raflatac**
Technology [2)]	Jyrki Ovaska	Bernd Eikens	**UPM Specialty Papers**
Human Resources	Riitta Savonlahti	Winfried Schaur	**UPM Communication Papers**
Stakeholder Relations [3)]	Pirkko Harrela	Mika Sillanpää	**UPM Plywood**

1) Incl. Finance & Control, Treasury, IR, IT, Sourcing and Real Estate (incl. Finnish forest assets)
2) Incl. Investment Management, R&D, new business development (biochemicals, biocomposites)
3) Incl. Brand & Communications, Responsibility, Public & Media Relations

Remuneration

In accordance with the Finnish Corporate Governance Code, we have published our Remuneration Statement for the financial year 2018 and this statement is available on the corporate website at www.upm.com/governance. We refer to this statement for information on our remuneration principles, remuneration decision-making procedures, short and long-term incentive schemes, termination payments and pension benefits. Please see also pages 138–140 of this report.

In the following, we report on the directors' and executives' actual remuneration in 2018.

Remuneration of the Board of Directors

The AGM 2018 resolved that the remuneration of the Board of Directors remain unchanged. The AGM 2017 decided to raise the annual Board fees, which had remained the same since 2007. It also adopted annual committee fees, which had not been paid previously. The Nomination and Governance Committee proposed the adjustment of the fees due to the increased workload of the Board and its committees – as a result of expansive regulatory requirements and UPM's ongoing transformation – combined with the need to enhance the Board's ability to attract competent and diverse talent.

The approved annual fees and each director's total remuneration and the number of purchased shares are presented in the tables below. No annual fees are paid to the President and CEO for his role as a member of the Board.

Board members did not receive any other financial benefits for their Board or committee membership than the annual base and committee fees. Shares purchased for the Board members in 2018 may not be transferred within two years from the purchase date (27 April 2018) or until the director's Board membership ends, whichever occurs first.

The payment of board remuneration in shares and cash has long been a practice at UPM. Board members are encouraged to own company shares on a long-term basis and most of them have substantial holdings, indicating a close alignment of directors' interests with those of shareholders.

BOARD REMUNERATION AND PAYMENT MECHANISM

ANNUAL BASE FEE (EUR)	2018	2017	PAYMENT MECHANISM
Chairman	190,000	190,000	Approx. 40% in company shares, rest in cash to cover taxes
Deputy Chairman	135,000	135,000	
Members	110,000	110,000	Two-year lock-up period

COMMITTEE FEES AND PAYMENT MECHANISM

ANNUAL COMMITTEE FEES 2017–2018 (EUR)	CHAIRMAN	MEMBERS	PAYMENT MECHANISM
Audit Committee	35,000	15,000	
Remuneration Committee	20,000	10,000	Cash
Nomination and Governance Committee	20,000	10,000	

BOARD REMUNERATION IN 2018

DIRECTOR	ANNUAL BASE FEE (EUR)	40% FOR SHARES (EUR)	60% IN CASH (EUR)	ANNUAL COMMITTEE FEE	TOTAL REMUNERATION (EUR)	NO. OF PURCHASED SHARES	UPM SHARES 31 DEC. 2018
Björn Wahlroos	190,000	76,000	114,000	20,000	210,000	2,539	262,283
Berndt Brunow	135,000	54,000	81,000	10,000	145,000	1,804	310,465
Henrik Ehrnrooth	110,000	44,000	66,000	10,000	120,000	1,470	7,821
Piia-Noora Kauppi	110,000	44,000	66,000	35,000	145,000	1,470	17,706
Marjan Oudeman	110,000	44,000	66,000	15,000	125,000	1,470	1,470
Jussi Pesonen	–	–	–	–	–	–	418,859
Ari Puheloinen	110,000	44,000	66,000	10,000	120,000	1,470	9,846
Veli-Matti Reinikkala	110,000	44,000	66,000	20,000	130,000	1,470	42,642
Suzanne Thoma	110,000	44,000	66,000	10,000	120,000	1,470	7,821
Kim Wahl	110,000	44,000	66,000	15,000	125,000	1,470	19,620
Total	**1,095,000**	**438,000**	**657,000**	**145,000**	**1,240,000**	**14,633**	**1,098,533**

Remuneration of the executive management

The aim of the company's management remuneration is to promote the company's long-term financial success, competitiveness and shareholder value. Remuneration comprises fixed and variable components. These components are shown in the table on the right.

The variable components are linked to predetermined and measurable performance and results criteria, and maximum levels have been set for their payment. The payable amounts of incentives are linked to the executive's position and achievement of annually set business and individual targets. The company has the right to recover any rewards under the variable components if they have been awarded under false pretences or erroneously.

Salaries, benefits and incentives paid to the President and CEO and members of the Group Executive Team in 2018 are shown in the enclosed tables.

In 2018, costs under the Finnish statutory pension scheme for the President and CEO amounted to EUR 471,000 (EUR 413,000 in 2017), and payments under the voluntary pension plan amounted to EUR 923,000 (EUR 1,170,000).

In 2018, costs under the Finnish and German statutory pension schemes for GET members (excluding the President and CEO) amounted to EUR 988,000 (EUR 899,000 in 2017) and payments under the voluntary pension plan were EUR 880,000 (EUR 850,000).

COMPONENTS OF MANAGEMENT REMUNERATION

COMPONENT	PAYABLE IN	BASIS OF PAYMENT	TIME OF PAYMENT
Base salary	Cash	Executive contract	Monthly
Fringe benefits	For example, company car and phone	Executive contract	Monthly
Short-term incentives	Cash	Short-Term Incentive Plan	Annually *)
Long-term incentives	Shares	Performance Share Plan	Annually following a three-year earning period *)

*) If targets are met.

REMUNERATION OF THE PRESIDENT AND CEO IN 2018

SALARIES AND BENEFITS (EUR 1,000)	2018	2017
Salary	1,094	1,049
Short-term incentives	1,416	1,119
Share rewards	2,966	2,656
Benefits	31	31
Total	**5,507**	**4,854**
Income tax withholding *)	2,739	2,380

*) Income taxes withheld from salaries and benefits and remitted to tax authorities by UPM.

REMUNERATION OF THE GROUP EXECUTIVE TEAM IN 2018 (EXCLUDING THE PRESIDENT AND CEO)

SALARIES AND BENEFITS (EUR 1,000)	2018	2017
Salaries	3,971	3,934
Short-term incentives	2,387	2,088
Share rewards	9,014	8,174
Benefits	131	251
Total	**15,502**	**14,446**

Auditor and auditor's fees

The AGM 2018 re-elected PricewaterhouseCoopers Oy, a firm of Authorised Public Accountants, as the company's statutory auditor for a one-year term, with Authorised Public Accountant Merja Lindh as the lead audit partner. Ms Lindh has held this position since 8 April 2014.

The latest tendering process for audit services was carried out in 2013. The last year that PricewaterhouseCoopers Oy can act as the company's auditor is 2023.

The AGM further resolved that the audit fee would be paid against invoices approved by the Board of Directors' Audit Committee. The amounts paid to the auditor, as approved by the Audit Committee, are shown in the enclosed table.

AUDITOR'S FEES

EUR MILLION	2018	2017	2016
Audit fee	2.4	2.3	2.3
Audit-related services	0.0	0.1	0.1
Tax services	0.3	0.3	0.7
Other services	0.5	0.5	0.5
Total	**3.2**	**3.2**	**3.6**

Board of Directors

Björn Wahlroos

Chairman
Chairman and member since 2008
Chairman of the Nomination and Governance Committee
Independent of the company and significant shareholders

Born 1952, Finnish citizen
Ph.D. (Econ.)
UPM shares 262,283

President and CEO of Sampo plc 2001–2009. Chairman of the Board of Mandatum Bank plc 1998–2000, CEO and Vice Chairman of the Board of Mandatum & Co Ltd 1992–1997. Executive Vice President and member of the Executive Committee of the Union Bank of Finland 1989–1992.

Chairman of the Board of Sampo plc, Nordea Bank Abp and Hanken School of Economics.

Berndt Brunow

Deputy Chairman
Member since 2002,
Deputy Chairman since 2005
Member of the Nomination and Governance Committee
Independent of the company and significant shareholders

Born 1950, Finnish citizen
B.Sc. (Econ.),
UPM shares 310,465

President and CEO of Oy Karl Fazer Ab 2002–2007. President and CEO of Sanitec Corporation 2000–2002. Prior to this, over 20 years of experience in executive positions at Finnpap and UPM Group.

Chairman of the Board of Oy Karl Fazer Ab. Board member of Hartwall Capital Oy Ab.

Henrik Ehrnrooth

Member since 2015
Member of the Remuneration Committee
Independent of the company and significant shareholders

Born 1969, Finnish citizen
M.Sc. (Econ.)
UPM shares 7,821

President and CEO of KONE Corporation since 2014 and KONE Corporation's Chief Financial Officer and Executive Board member 2009–2014. Earlier worked for Goldman Sachs International 1998–2009, most recently as a Managing Director in the Investment Banking Division. Prior to this, various positions at UBS Limited 1994–1998.

Member of the Foundation Board of the International Institute for Management Development (IMD, Switzerland) and member of the European Round Table of Industrialists (ERT).

Piia-Noora Kauppi

Member since 2013
Chairman of the Audit Committee
Independent of the company and significant shareholders

Born 1975, Finnish citizen
LL.M.
UPM shares 17,706

Managing Director of Finance Finland (FFI) since 2009. Member of the European Parliament and member of various parliamentary committees 1999–2008, Head of the Finnish Delegation in the EPP-ED Group 2004–2008. Legal advisor for the Parliamentary Group of the National Coalition Party Kokoomus 1997–1999.

Board member of Sulava Oy and the Finnish Financial Ombudsman Bureau. Member of the Supervisory Board of Helsinki Deaconess Institute and Helsinki School of Economics Support Foundation. Member of the EBF Executive Committee.

Marjan Oudeman

Member since 2018
Member of the Audit Committee
Independent of the company and significant shareholders

Born 1958, Dutch citizen
LL.M., MBA
UPM shares 1,470

President of the Executive Board of Utrecht University 2013–2017. Executive Committee member of AkzoNobel NV, responsible for HR and organisational development 2011–2013. Executive Director of Strip Products Division and Executive Committee member in Tata Steel Europe (previously Corus Group Plc) 2007–2010. Managing Director positions in Corus Group Plc 2000–2007, latest Executive Director responsible for Corus Strip Products business and CEO of Corus Nederland BV. Various positions in Hoogovens Group NV 1982–1999, latest Managing Director of Hoogovens Packaging Steel business.

Board member of SHV Holdings NV, Solvay SA, Aalberts Industries NV and Novolipetsk Steel PJSC. Supervisory Board member of Het Rijksmuseum.

Jussi Pesonen

Member since 2007
Independent of significant shareholders, non-independent of the company

Born 1960, Finnish citizen
M.Sc. (Eng.)
UPM shares 418,859

President and CEO of UPM-Kymmene Corporation since 2004. COO of UPM Paper Divisions and Deputy to the President and CEO 2001–2004. Several management positions in UPM Paper Divisions 1987–2001.

Chairman of the Board of the Finland Chamber of Commerce and ICC Finland. Deputy Chairman of the Board of the Finnish Forest Industries Federation (FFIF). Board member of the Confederation of European Paper Industries (CEPI) and East Office of Finnish Industries Oy.

Ari Puheloinen

Member since 2014
Member of the Nomination and Governance Committee
Independent of the company and significant shareholders

Born 1951, Finnish citizen
General Staff Officer, General (ret.)
UPM shares 9,846

Commander of the Finnish Defence Forces 2009–2014. Chief of Finnish Defence Command 2007–2009 and Commander of the Eastern Command 2004–2007. Deputy Chief of Operations of the Finnish Defence Staff 2000–2003 and Brigade Commander 1999–2000. Principal Secretary of the Defence Council 1997–1999. Assistant Defence Attaché in Moscow 1986–1990.

Board member of Patria Plc.

Veli-Matti Reinikkala

Member since 2007
Chairman of the Remuneration Committee
Independent of the company and significant shareholders

Born 1957, Finnish citizen
eMBA
UPM shares 42,642

President of ABB Region Europe during 2015 and member of the Group Executive Committee of ABB Ltd 2006–2015. President of ABB Process Automation Division 2006–2014 and Business Area Manager for ABB Process Automation 2005. Automation Technologies Division Manager in ABB China 2003–2004. ABB Drives & Power Electronics, Business Area Manager 2002 and Manager for ABB Drives 1996–2001. CFO of ABB Industry Oy 1994–1996. Prior to 1994, various positions in paper and packaging companies in Finland.

Chairman of the Board of Cramo Plc and Board member of Fortum Corporation.

Suzanne Thoma

Member since 2015
Member of the Remuneration Committee
Independent of the company and significant shareholders

Born 1962, Swiss citizen
Ph.D. and M.Sc. (Chem. Eng.),
BA (Business Admin.)
UPM shares 7,821

Chief Executive Officer of BKW Ltd. since 2013. Head of BKW Group's Networks Business Unit 2010–2012. Head of WICOR Group's Automotive Division 2007–2009. Chief Executive Officer of Rolic Technologies Ltd 2002–2007. Various positions at Ciba Specialty Chemicals Corp. (former Ciba-Geigy) 1990–2002.

Board member of Schaffner Holding AG and Beckers Group.

Kim Wahl

Member since 2012
Member of the Audit Committee
Independent of the company and significant shareholders

Born 1960, Norwegian citizen
MBA (Harvard)
BA (Business Econ.)
UPM shares 19,620

Chairman of the Board of Strømstangen AS since 2009. Deputy Chairman and Cofounder of the European private equity firm IK Investment Partners 1989–2009. Associate, Corporate Finance, Goldman, Sachs & Co. 1987–1989.

Board member of DNB Bank ASA. Chairman of the Board of Voxtra AS and Voxtra Foundation.

Group Executive Team

Jussi Pesonen

President and CEO
M.Sc. (Eng.)
Born 1960, Finnish citizen

Member of the Group Executive Team since 2001, employed by UPM Group since 1987
UPM shares 418,859

President and CEO of UPM-Kymmene Corporation since 2004. COO of UPM Paper Divisions and Deputy to the President and CEO 2001–2004. Several management positions in UPM Paper Divisions 1987–2001.

Chairman of the Board of the Finland Chamber of Commerce and ICC Finland. Deputy Chairman of the Board of the Finnish Forest Industries Federation (FFIF). Board member of UPM-Kymmene Corporation, the Confederation of European Paper Industries (CEPI) and the East Office of Finnish Industries Oy.

Tapio Korpeinen

Chief Financial Officer,
Executive Vice President,
UPM Energy
M.Sc. (Tech.), MBA
Born 1963, Finnish citizen

Member of the Group Executive Team since 2008, employed by UPM Group since 2005
UPM shares 147,064

CFO since 2010. President, Energy and Pulp Business Group 2008–2010. Vice President, Corporate Development and Senior Vice President, Strategy, UPM 2005–2008. Several management positions at Jaakko Pöyry Consulting in Finland and North America 1991–1998 and 1999–2005. A.T. Kearney in Finland 1998–1999 and McKinsey & Company in Sweden 1988–1990.

Chairman of the Board of Pohjolan Voima Oy. Vice Chairman of the Board of Kemijoki Oy. Board member of Teollisuuden Voima Oyj. Supervisory Board member of Varma Mutual Pension Insurance Company.

Bernd Eikens

Executive Vice President,
UPM Specialty Papers
Ph.D. (Eng.)
Born 1965, German citizen

Member of the Group Executive Team since 2013, employed by UPM Group since 1998
UPM shares 65,462

Executive Vice President, UPM Paper ENA 2013–2016. Senior Vice President, Supply Chain, Paper Business Group 2008–2013. President, UPM-Kymmene Inc. North America 2005–2008. Several management positions at UPM Nordland Papier 1998–2005. Senior Process Engineer, International Paper Co. 1996–1998.

Supervisory Board member of Johann Bunte Bauunternehmung GmbH & Co. KG. Advisory Board member of Meyer Turku Oy.

Pirkko Harrela

Executive Vice President,
Stakeholder Relations
M.A.
Born 1960, Finnish citizen

Member of the Group Executive Team since 2004, employed by UPM Group since 1985
UPM shares 80,837

Executive Vice President, Corporate Communications 2004–2013. Vice President, Corporate Communications of UPM 2003. Several positions in Communications in Finnpap and UPM Paper Division 1985–2002.

Member of S-Group's CSR Advisory Group. Supervisory Board member of WWF Finland. Board member of Deutsch-Finnische Handelskammer, Satalinna Foundation and UPM-Kymmene Cultural Foundation. Member of the Board of Governors of the Association for Finnish Work.

Antti Jääskeläinen

Executive Vice President,
UPM Raflatac
M.Sc. (Eng.), M.Sc. (Econ.), MBA
Born 1972, Finnish citizen

Member of the Group Executive Team since 2016, employed by UPM Group since 2014
UPM shares 14,178

Senior Vice President, EMEIA, UPM Raflatac 2014–2016. Senior Vice President, Head of Global Operations, Amer Sports 2012–2014. Chief Development Officer, member of the Group Executive Board, Amer Sports 2009–2014. Several management positions at Stora Enso in Finland, Sweden and the UK 2004–2009. Engagement Manager & Associate, McKinsey & Company 2002–2004. Business Operations Manager, Nokia Networks in Finland and Italy 1998–2001. Financial Analyst, Enso Group 1997–1998.

Juha Mäkelä

General Counsel
LL.M.
Born 1962, Finnish citizen

Member of the Group Executive Team since 2008, employed by UPM Group since 2005
UPM shares 62,467

Group General Counsel since 2005. Positions as legal counsel and senior legal counsel in KONE Corporation 1997–2004. Several positions in law firms 1991–1996.

Supervisory Board member of Kemijoki Oy.

Jyrki Ovaska

Executive Vice President, Technology
M.Sc. (Eng.)
Born 1958, Finnish citizen

Member of the Group Executive Team since 2002, employed by UPM Group since 1984
UPM shares 87,627

President, Paper Business Group 2008–2013. President, Magazine Paper Division 2004–2008. President, Fine and Speciality Papers Division 2002–2003. Several management positions at United Paper Mills Ltd and UPM Group in the Printing Papers Division 1984–2001.

Chairman of the Board of CLIC Innovation Oy. Member of the Finnish Research and Innovation Council.

Riitta Savonlahti

Executive Vice President,
Human Resources
M.Sc. (Econ.)
Born 1964, Finnish citizen

Member of the Group Executive Team since 2004, employed by UPM Group since 2004
UPM shares 15,354

Senior Vice President, Human Resources at Elcoteq Network Corporation 2001–2004. Senior Vice President, Human Resources at Raisio Group 2000–2001. Human Resources Manager at Nokia Mobile Phones, Salo Operations 1995–2000. Human Resources positions at ABB 1990–1994.

Supervisory Board member of Ilmarinen Mutual Pension Insurance Company. Member of Labour Markets Committee of the Finnish Forest Industries Federation (FFIF). Member of Work, Education and Skills Committee of the Finland Chamber of Commerce.

Winfried Schaur

Executive Vice President,
UPM Communication Papers
Dipl. Ing. (FH)
Born 1965, German citizen

Member of the Group Executive Team since 2016, employed by UPM Group since 2001
UPM shares 30,969

Senior Vice President, Newspaper Publishing, UPM Paper ENA 2013–2016. Several leadership positions in the UPM paper business 2001–2013. Project Manager, Investments, Haindl Papier GmbH 1993–2001. Project Engineer, Hoerbiger Automotive 1991–1992.

Chairman of the Board of the German Pulp and Paper Association (VDP). Vice Chairman of the Board of the Bavarian Industry Association (vbw). Board member of the Confederation of European Paper Industries (CEPI) and the Federation of German Industries (BDI).

Mika Sillanpää

Executive Vice President,
UPM Plywood
M.Sc. (Eng.)
Born 1958, Finnish citizen

Member of the Group Executive Team since 2013, employed by UPM Group since 1985
UPM shares 39,388

Vice President, Sourcing, UPM Raflatac Group 2008–2013. Senior Vice President, Strategic Development, UPM Raflatac Group 2003–2008. Vice President, UPM Raflatac Europe 2001–2003. Several management positions at UPM Raflatac in Finland and in France 1985–2000.

Board member of the Federation of the Finnish Woodworking Industries.

Kari Ståhlberg

Executive Vice President,
Strategy
M.Sc. (Eng.)
Born 1971, Finnish citizen

Member of the Group Executive Team since 2013, employed by UPM Group since 2007
UPM shares 30,544

Senior Vice President, Corporate Strategy 2010–2013. Director, M&A, UPM-Kymmene Corporation 2007–2010. Investment Manager at Finnish Industry Investment Ltd 2006–2007. M&A Advisor at JP Capital International Limited in the UK 2000–2006. Management Consultant at Jaakko Pöyry Consulting Oy 1998–2000.

Heikki Vappula

Executive Vice President, UPM Biorefining until 23 Nov. 2018
M.Sc. (Econ.)
Born 1967, Finnish citizen

Member of the Group Executive Team 2010–2018, employed by UPM Group since 2006

President, Energy and Pulp Business Group 2010–2013. Senior Vice President, UPM Sourcing 2006–2010. Several management positions at Nokia Group in Finland, Denmark, UK and Hungary 1993–2006.

Board member of the Finnish Forest Industries Federation (FFIF) 2012–2018.

GRI content index – short version

UPM follows the Global Reporting Initiative's (GRI) Sustainability Reporting Standards in its corporate responsibility reporting. The reporting has been prepared in accordance with the GRI Standards: Core option.

This shortened version of the GRI index shows where the disclosures of material topics are addressed in the Annual Report and UPM's internet pages. More information on the general disclosures as well as on omissions, further explanation and disclosures on the management approach can be found in the actual GRI content index which is available at www.upm.com/responsibility.

AR = Annual Report 2018

GRI index = GRI content index, published as pdf on **upm.com**

The English version of the corporate responsibility information for 2018 has been assured by an independent third party, PricewaterhouseCoopers Oy (see the Independent Assurance Report on page 98), and identified as assured in the GRI content index. Congruence between the English and Finnish versions has been checked.

The company is committed to the principles of inclusivity, materiality and responsiveness as defined in the AA1000 AccountAbility Principles Standard (2008). UPM provides comprehensive environmental information, verified by third parties, on all aspects from corporate level to the mills and individual products. Ecolabelled products, product declarations and certified operations inform stakeholders about the company's sustainability, transparency and risk management (read more about UPM's product stewardship on page 62–63).

GRI STANDARD	DISCLOSURE	LOCATION	OMISSION [1]	ASSURANCE [2]
GRI 100: Universal standards [1]				
GRI 102: General Disclosures 2016	102–1 to 102–13 Organizational Profile	AR, web		102–8
	102–14 to 102–15 Strategy	AR		
	102–16 to 102–17 Ethics and integrity	AR		
	102–18 to 102–31 Governance 102–33 to 102–36	AR, web		
	102–40 to 102–44 Stakeholder Engagement	AR, web		102–41
	102–45 to 102–56 Reporting practice	AR, GRI index		
GRI 103: Management Approach 2016	103–1 Explanation of the material topic and its boundary	GRI index		
	103–2 The management approach and its components	GRI index		
	103–3 Evaluation of the management approach	GRI index		
GRI 200: Economic Standard Series [1]				
GRI 201: Economic Performance 2016	201–1 Direct economic value generated and distributed	AR 66		x
	201–2 Financial implications and other risks and opportunities due to climate change.	AR 12–13, 24-31, 74–75	x	x
	201–3 Defined benefit plan obligations and other retirement	AR 140–143		x
	201–4 Financial assistance received from government	AR 136–137		x
GRI 202: Market Presence 2016	202–2 Proportion of senior management hired from the local community	GRI index		x
GRI 203: Indirect Economic Impacts 2016	203–2 Significant indirect economic impacts	AR 66–67, 78–79		x
GRI 204: Procurement Practices 2016	204–1 Proportion of spending on local suppliers	GRI index		x
GRI 205: Anti-corruption 2016	205–1 Operations assessed for risks related to corruption	AR 110		x
	205–2 Communication and training about anti-corruption policies and procedures	GRI index	x	x
	205–3 Confirmed incidents of corruption and actions taken	AR 82		x
GRI 206: Anti-competitive behaviour 2016	206–1 Legal action for anti-competitive behaviour, anti-trust, and monopoly practices	GRI index		x
GRI 300: Environmental Standard Series [1]				
GRI 301: Materials 2016	301–1 Materials used by weight or volume	AR 78, web		x
	301–2 Recycled input materials used	AR 60, web		x
GRI 302: Energy 2016	302–1 Energy consumption within the organization	AR 75, 78, 193, web		x
	302–3 Energy intensity	web		x
	302–4 Reduction of energy consumption	AR 74		x
GRI 303: Water 2016	303–1 Water withdrawal by source	AR 78		x
	303–2 Water sources significantly affected by withdrawal of water	AR 72–73, web		x
GRI 304: Biodiversity 2016	304–1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	AR 68–69, web		x
	304–2 Significant impacts of activities, products, and services on biodiversity	AR 68–69, web		x
	304–3 Habitats protected or restored	AR 68–69, web		x
	304–4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	web		x
GRI 305: Emissions 2016	305–1 Direct (Scope 1) GHG emissions	AR 79, 193, web		x
	305–2 Energy indirect (Scope 2) GHG emissions	AR 193, web		x
	305–3 Other indirect (Scope 3) GHG emissions	AR 193, web		x
	305–4 GHG emissions intensity	AR 193		x
	305–5 Reduction of GHG emissions	AR 74		x
	305–7 NOx, SOx, and other significant air emissions	AR 75, 79		x
GRI 306: Effluents and Waste 2016	306–1 Water discharge by quality and destination	AR 73, 79		x
	306–2 Waste by type and disposal method	AR 79, web		x
	306–3 Significant spills	AR 71		x
	306–5 Water bodies affected by water discharges and/or runoff	GRI index		x
GRI 307: Environmental Compliance 2016	307–1 Non-compliance with environmental laws and regulations	AR 71		x
GRI 308: Supplier Environmental Assessment 2016	308–1 New suppliers that were screened using environmental criteria	AR 60		x
	308–2 Negative environmental impacts in the supply chain and actions taken	GRI index	x	x

GRI STANDARD	DISCLOSURE	LOCATION	OMISSION [1]	ASSURANCE [2]
GRI 400: Social Standard Series [1]				
GRI 401: Employment 2016	401–1 New employee hires and employee turnover	AR 56, web		x
GRI 402: Labor/Management Relations 2016	402–1 Minimum notice periods regarding operational changes	web		x
GRI 403: Occupational Health and Safety 2016	403–1 Workers representation in formal joint management-worker health and safety committees	web		x
	403–2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	AR 27, 56,58–59, web	x	x
	403–3 Workers with high incidence or high risk of diseases related to their occupation	web		x
GRI 404: Training and Education 2016	404–1 Average hours of training per year per employee	AR 56	x	x
	404–2 Programs for upgrading employee skills and transition assistance programs	AR 56–57, web		x
	404–3 Percentage of employees receiving regular performance and career development reviews	AR 27, 54–55	x	x
	UPM–1 Human Capital Return on Investment (UPM indicator)	GRI index		x
GRI 405: Diversity and Equal Opportunity 2016	405–1 Diversity of governance bodies and employees	AR 56, 84–85, 192, web		x
	405-2 Ratio of basic salary and remuneration of women to men	AR 192		x
GRI 406: Non-discrimination 2016	406–1 Incidents of discrimination and corrective actions taken	AR 82		x
GRI 407: Freedom of Association and Collective Bargaining 2016	407–1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	GRI index		x
GRI 408: Child Labor 2016	408–1 Operations and suppliers at significant risk for incidents of child labor	GRI index		x
GRI 409: Forced or Compulsory Labor 2016	409–1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	GRI index		x
GRI 411: Rights of Indigenous People 2016	411–1 Incidents of violations involving rights of indigenous peoples	GRI index		x
GRI 412: Human Rights Assessment 2016	412–1 Operations that have been subject to human rights reviews or impact assessments	AR 55, 110		x
	412–2 Employee training on human rights policies or procedures	GRI index		x
	412–3 Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	GRI index		x
GRI 413: Local Communities 2016	413–1 Operations with local community engagement, impact assessments, and development programs	GRI index	x	x
	413–2 Operations with significant actual and potential negative impacts on local communities	GRI index		x
GRI 414: Supplier Social Assessment 2016	414–1 New suppliers that were screened using social criteria	AR 60		x
	414–2 Negative social impacts in the supply chain and actions taken	GRI index	x	x
GRI 415: Public Policy 2016	415–1 Political contributions	AR 51		x
GRI 416: Customer Health and Safety 2016	416–1 Assessment of the health and safety impacts of product and service categories	AR 62–63		x
GRI 417: Marketing and Labeling 2016	417–1 Requirements for product and service information and labeling	AR 62–63		x
GRI 419: Socioeconomic compliance 2016	419–1 Non-compliance with laws and regulations in the social and economic area	GRI index		x

[1] See actual GRI content index for general standard disclosures as well as for omissions, explanations and reporting principles.
[2] The assurance report by PricewaterhouseCoopers Oy can be found on page 98.

AA1000
Licensed Assurance Provider
000-29

Independent Practitioner's Assurance Report

To the Management of UPM-Kymmene Corporation

We have been engaged by the Management of UPM-Kymmene Corporation (hereinafter also "the Company") to perform a limited assurance engagement on selected corporate responsibility information for the reporting period 1 January 2018 to 31 December 2018, disclosed in UPM-Kymmene Corporation's Annual Report 2018 and on its website in section "Responsibility" (hereinafter "the CR Reporting"). The assured information is indicated in the Company's GRI Content Index 2018 on the Company's website. Furthermore, the assurance engagement has covered UPM-Kymmene Corporation's adherence to the AA1000 AccountAbility Principles with moderate (limited) level of assurance.

Management's responsibility

The Management of UPM-Kymmene Corporation is responsible for preparing the CR Reporting in accordance with the Reporting criteria as set out in the Company's reporting instructions and the GRI Standards Sustainability Reporting Guidelines of the Global Reporting Initiative. The Management of UPM-Kymmene Corporation is also responsible for such internal control as the management determines is necessary to enable the preparation of CR Reporting that is free from material misstatement, whether due to fraud or error.

The Management of UPM-Kymmene Corporation is also responsible for the Company's adherence to the AA1000 AccountAbility Principles of inclusivity, materiality and responsiveness as set out in AccountAbility's AA1000 AccountAbility Principles Standard 2008.

Practitioner's responsibility

Our responsibility is to express a limited assurance conclusion on the CR Reporting and on the Company's adherence to the AA1000 AccountAbility Principles based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised) "Assurance Engagements Other than Audits or Reviews of Historical Financial Information". That Standard requires that we plan and perform the engagement to obtain limited assurance about whether the CR Reporting is free from material misstatement.

In addition, we have conducted our work in accordance with the AA1000 Assurance Standard 2008. For conducting a Type 2 assurance engagement as agreed with the Company, the AA1000AS (2008) requires planning and performing of the assurance engagement to obtain moderate (limited) assurance on whether any matters come to our attention that cause us to believe that UPM-Kymmene Corporation does not adhere, in all material respects, to the AA1000 AccountAbility Principles and that the CR Reporting is not reliable, in all material respects, based on the Reporting criteria.

In a limited assurance engagement the evidence-gathering procedures are more limited than for a reasonable assurance engagement, and therefore less assurance is obtained than in a reasonable assurance engagement. An assurance engagement involves performing procedures to obtain evidence about the amounts and other disclosures in the CR Reporting, and about the Company's adherence to the AA1000 AccountAbility Principles. The procedures selected depend on the practitioner's judgement, including an assessment of the risks of material misstatement of the CR Reporting and an assessment of the risks of the Company's material nonadherence to the AA1000 AccountAbility Principles.

Our work consisted of, amongst others, the following procedures:

- Interviewing senior management of the Company.
- Interviewing employees from various organisational levels of the Company with regards to materiality, stakeholder expectations, meeting of those expectations, as well as stakeholder engagement.
- Assessing stakeholder inclusivity and responsiveness based on the Company's documentation and internal communication.
- Assessing the Company's defined material corporate responsibility topics as well as assessing the CR Reporting based on these topics.
- Visiting the Company's Head Office as well as one site in Finland and conducting one video interview with one site in Poland.
- Interviewing employees responsible for collecting and reporting the information presented in the CR Reporting at the group level as well as at the site level.
- Assessing how group employees apply the reporting instructions and procedures of the Company.
- Testing the accuracy and completeness of the information from original documents and systems on a sample basis.
- Testing the consolidation of information and performing recalculations on a sample basis.

Limited assurance conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that UPM-Kymmene Corporation does not adhere, in all material respects, to the AA1000 AccountAbility Principles.

Furthermore nothing has come to our attention that causes us to believe that UPM-Kymmene Corporation's CR Reporting for the reporting period ended 31 December 2018 is not properly prepared, in all material respects, in accordance with the Reporting criteria, or that the CR Reporting is not reliable, in all material respects, based on the Reporting criteria.

When reading our assurance report, the inherent limitations to the accuracy and completeness of sustainability information should be taken into consideration.

Our assurance report has been prepared in accordance with the terms of our engagement. We do not accept, or assume responsibility to anyone else, except to UPM-Kymmene Corporation for our work, for this report, or for the conclusions that we have reached.

Observations and recommendations

Based on the procedures we have performed and the evidence we have obtained, we provide the following observations and recommendations in relation to UPM-Kymmene Corporation's adherence to the AA1000 AccountAbility Principles. These observations and recommendations do not affect the conclusions presented earlier.

Regarding Inclusivity: UPM-Kymmene Corporation has processes in place for stakeholder inclusivity and engagement. Stakeholder Relations coordinates stakeholder engagement at the group level, while businesses are responsible for local activity. We recommend that the Company continues collaborating and sharing knowledge with its stakeholders acknowledging different segments within stakeholder groups.

Regarding Materiality: UPM-Kymmene Corporation has a systematic process in place to evaluate and determine the materiality of corporate responsibility topics. Materiality analysis is updated annually. We recommend that the Company continues to enhance the use of different methods for obtaining stakeholder feedback on the materiality analysis as well as on the responsibility focus areas, performance and reporting.

Regarding Responsiveness: UPM-Kymmene Corporation has processes in place for responding to stakeholder needs and concerns. We recommend that when enhancing its processes the Company acknowledges changing stakeholder needs and expectations.

Practitioner's independence, qualifications and quality control

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our multi-disciplinary team of corporate responsibility and assurance specialists possesses the requisite skills and experience within financial and non-financial assurance, corporate responsibility strategy and management, social and environmental issues, as well as the relevant industry knowledge, to undertake this assurance engagement.

PricewaterhouseCoopers Oy applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Helsinki 18 February 2019
PricewaterhouseCoopers Oy

Sirpa Juutinen Partner Sustainability & Climate Change	Jussi Nokkala Director Sustainability & Climate Change

Report of the Board of Directors

UPM introduction and business model

UPM leads the forest-based bioindustry into a sustainable and innovation-driven future across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. These business areas are competitive, with strong market positions.

UPM provides sustainable and safe solutions to the growing global consumer demand. Products are made from renewable materials and are recyclable.

UPM group creates value to its stakeholders by operating separate businesses with a focus on:

- Competitive and sustainable wood sourcing, forestry and plantation operations
- Value added, efficient and responsible global functions
- Continuous improvement (Smart) programmes
- Technology and intellectual property rights
- A global platform to build on
- Disciplined and effective capital allocation
- Compliance with applicable laws and regulations, UPM Code of Conduct and corporate policies

Clear roles and responsibilities

Group	Businesses	Outcomes
Portfolio strategy	Business area strategies	Top performance
Capital allocation	Commercial excellence	Competitive advantage
Business targets	Operational excellence	Value creation
Code of Conduct	Cost efficiency measures	Stakeholder and societal value
Responsibility targets	Focused growth projects	License to operate
	Innovation	

Each business area is responsible for executing its own strategy and achieving targets. Group direction and support from global functions enable the businesses to capture benefits from UPM's brand, scale and integration, while navigating the complex operating environment. Capital allocation decisions take place at the group level.

Corporate responsibility is an integral part of all of our operations and a source of competitive advantage. UPM is committed to continuous improvement in financial, social and environmental performance. UPM promotes responsible practices throughout the value chain and is active in finding sustainable solutions, in co-operation with its customers, suppliers and partners.

Market environment in 2018

Global growth in 2018 started at a healthy level following the strong growth experienced in 2017. However, increasing uncertainty surrounding the global economic outlook, decelerating growth in international trade and effects of trade measures imposed by the United States against China led to deteriorating business and investor confidence. Overall global real GDP growth remained strong for 2018 at 3.2%.

US economic growth of 2.9% accelerated in 2018, with tax cuts and an increase in consumer spending stimulating demand. This combined with higher US interest rates led to the US dollar performing strongly against most other currencies in 2018. On average, the euro remained stronger than in 2017. As many emerging economies rely on dollar-dominated financing, the economic outlook of those regions weakened.

In Europe, cyclical upturn moderated early in the year and economic growth returned to a normal pace of around 2.0%. Employment improved from the previous year and inflationary pressures strengthened moderately. Brexit negotiations were concluded between the UK and the EU, but the results were rejected by the UK Parliament. Political uncertainty also increased gradually in Germany and France.

In China, economic growth slowed to 6.6% and investment activity was modest. The trade dispute with the US increased uncertainty during the second half of the year. China implemented a tight monetary policy to drive financial deleveraging but announced stimulation measures towards the end of the year.

Overall inflation increased modestly in 2018, mainly due to higher energy prices. In the summer of 2018, the price of oil was some 50% higher compared to the previous year. However, the peak was followed by a dramatic drop in oil prices in November resulting from oversupply and uncertainties in global economic growth. Costs for of UPM's main inputs, such as wood, chemicals, adhesives, films and logistics, increased compared to those of the previous year.

Market demand was mostly favourable for UPM's businesses and products. Sales prices increased in all businesses and mitigated the impact of higher input costs.

Global chemical pulp demand was strong in H1 2018. Market balance was further tightened as supply was restricted due to production outages in the industry. In H2 2018, uncertainties in the global economy, gradually slowing growth in China and destocking in the value chain reduced global pulp shipments somewhat. Pulp prices continued to increase to record levels in Q3 2018 but moderated towards the end of the year.

Demand for advanced renewable diesel and naphtha continued to be strong, driven by sustainability targets and stricter environmental requirements. European institutions agreed on the Renewable Energy Directive (REDII), which will increase the use of renewable energy to 32% by 2030 and requires 14% bioenergy to be used in transport.

Electricity consumption in Finland increased. From March 2018, the Nordic hydrological balance was noticeably below the long-term average level. Electricity sales prices were significantly higher due to Nordic hydro situation and increased commodity and CO_2 prices.

Demand for both self-adhesive label materials and label and release papers increased during the year, particularly in Asia. Demand grew also in Europe and North America although slowed down during H2. Demand was driven by strong e-commerce growth and increasing private consumption. Office paper demand continued to grow in Asia in H1 2018 and prices increased. However, in H2 2018, office paper shipments were impacted by the slowing growth and destocking in China.

In Europe, demand for graphic paper grades was 6.0% lower than in the previous year. The decline in demand was steady, while capacity conversions and exits kept the market balance tight. Prices increased across all paper grades.

The market environment for plywood was favourable in Europe. Demand growth was driven by further improvements in the building and construction industry. Demand for plywood-related industrial applications, such as vehicle floors and LNG carrier insulation materials, were strong. Demand for construction-driven sawn timber was also good.

Key figures

	2018	2017	2016
Sales, EURm	10,483	10,010	9,812
Comparable EBITDA, EURm	1,823	1,631	1,560
% of sales	17.4	16.3	15.9
Operating profit, EURm	1,895	1,259	1,135
Comparable EBIT, EURm	1,513	1,292	1,143
% of sales	14.4	12.9	11.6
Profit before tax, EURm	1,839	1,186	1,080
Comparable profit before tax, EURm	1,457	1,218	1,089
Profit for the period, EURm	1,496	974	880
Comparable profit for the period, EURm	1,194	1,004	879
Earnings per share (EPS), EUR	2.80	1.82	1.65
Comparable EPS, EUR	2.24	1.88	1.65
Return on equity (ROE), %	16.2	11.5	10.9
Comparable ROE, %	12.9	11.9	10.9
Return on capital employed (ROCE), %	18.4	12.5	10.5
Comparable ROCE, %	14.6	12.8	10.6
Operating cash flow, EURm	1,391	1,558	1,686
Operating cash flow per share, EUR	2.61	2.92	3.16
Equity per share at end of period, EUR	18.36	16.24	15.43
Capital employed at the end of period, EURm	10,575	9,777	10,657
Net debt, EURm	−311	174	1,131
Net debt to EBITDA	−0.17	0.11	0.73
Personnel at the end of period	18,978	19,111	19,310

» Refer Other financial information Alternative performance measures for definitions of key figures.
As of 26 April 2018, UPM Paper ENA is renamed as UPM Communication Papers. The change has no impact on reported figures.

Results

2018 compared with 2017

Sales in 2018 totalled EUR 10,483 million, 5% higher than the EUR 10,010 million for 2017. Sales grew in UPM Biorefining, UPM Specialty Papers, UPM Communication Papers and UPM Energy, and remained broadly unchanged in UPM Raflatac and UPM Plywood.

Comparable EBIT increased by 17% to EUR 1,513 million, 14.4% of sales (1,292 million, 12.9%). Sales prices increased across all UPM business areas. The positive impact of higher sales prices was clearly larger than the negative impact of increased variable costs and changes in currency exchange rates.

Fixed costs increased by EUR 69 million from the previous year, mainly due to higher maintenance costs. Delivery volumes in UPM Energy were higher, in other UPM business areas lower than in the previous year.

Depreciation, excluding items affecting comparability, totalled EUR 422 million (447 million). The increase in the fair value of forest assets net of wood harvested and excluding items affecting comparability was EUR 107 million (103 million).

Operating profit totalled EUR 1,895 million (1,259 million). Items affecting comparability in operating profit totalled EUR 382 million (−33 million). This included a EUR 345 million increase in the fair value of the forest assets in Finland, mainly due to higher forest growth estimates. In addition, the company adjusted its long-term wood price estimates slightly. The sale of UPM Communication Papers' hydropower facilities in Schongau and Ettringen, Germany, resulted in a sales gain of EUR 30 million. Items affecting comparability also included EUR 9 million charge in UPM Energy, related to restructuring of ownership in the Meri-Pori power plant, and reversals of previous years' restructuring provisions, totalling EUR 18 million for UPM Communication Papers.

Net interest and other finance costs were EUR 60 million (57 million). The exchange rate and fair value gains and losses resulted in a gain of EUR 3 million (loss of EUR 12 million). Income taxes totalled EUR 342 million (212 million). Items affecting comparability in taxes totalled EUR 80 million expense (2 million income).

Profit for 2018 was EUR 1,496 million (974 million) and comparable profit was EUR 1,194 million (1,004 million).

Financing and cash flow

In 2018, cash flow from operating activities before capital expenditure and financing totalled EUR 1,391 million (1,558 million). Working capital increased by EUR 209 million during the period (decreased by EUR 91 million), driven by an increase in the price of UPM's products and raw materials and higher wood inventories compared with the very low level at the end of the previous year.

A dividend of EUR 1.15 per share (totalling EUR 613 million) was paid on 19 April 2018, in respect of the 2017 financial year.

Net debt decreased to EUR −311 million at the end of the year (174 million). The gearing ratio as of 31 December 2018 was −3% (2%). The net debt to EBITDA ratio, based on the latest 12 months' EBITDA, was −0.17 at the end of the period (0.11).

On 31 December 2018, UPM's cash funds and unused committed credit facilities totalled EUR 0.9 billion.

Capital expenditure

In 2018, capital expenditure totalled EUR 303 million, 2.9% of sales (329 million, 3.3% of sales).

Total capital expenditure in 2019, excluding investments in shares, is estimated to be approximately EUR 350 million, excluding any impact of UPM's potential transformative prospects.

In April 2017, UPM announced plans to strengthen its position in the label market and invest approximately EUR 6 million in capacity for special labels in Tampere, Finland. A new special label product line has been built, focusing on small series of production runs. In addition, internal logistics have been strengthened. The new product line was completed in January 2019.

In June 2017, UPM announced plans to further improve the efficiency and competitiveness of the UPM Kaukas pulp mill, with a EUR 30 million investment to upgrade the mill's fibre lines, recovery boiler, evaporation, bailing and wood handling. The project was completed in Q2 2018. The annual production capacity of the UPM Kaukas pulp mill increased by 30,000 tonnes to 770,000 tonnes of softwood and birch pulp.

In October 2017, UPM announced plans to expand its Chudovo plywood mill in Russia. The project will raise the mill's production capacity by 45,000 cubic metres to 155,000 cubic metres, while also broadening the mill's product portfolio. In addition to the production capacity growth, a new bio-heat boiler will be built at the mill site. The total investment will be approximately EUR 50 million and will be completed by the end of Q3 2019.

In January 2018, UPM announced that it intended to expand its glassine and supercalendered kraft (SCK) paper manufacturing capacity by rebuilding a calender at the UPM Jämsänkoski mill in Finland. The project increased annual capacity by approximately 40,000 tonnes and was completed during Q4 2018.

In April 2018, UPM announced that it would rebuild paper machine 2 at its Nordland mill in Dörpen, Germany and convert it from fine paper to glassine paper production. The machine will be equipped with new finishing equipment and will start producing glassine paper as of Q4 2019. The planned capacity after the rebuild will be 110,000 tonnes per year. The total investment in Nordland is EUR 116 million.

In April 2018, UPM announced plans to increase the release liner base paper capacity at the UPM Changshu mill in China. Installing a second supercalender on paper machine 3 will create an additional capacity of more than 40,000 tonnes of glassine paper a year, as of Q1 2020. The total investment in Changshu is EUR 34 million.

Personnel

In 2018, UPM had an average of 19,271 employees (19,489). At the beginning of the year the number of employees was 19,111 and at the end of 2018 it was 18,978.

Further information about personnel is available in » Our People section in UPM Annual report 2018.

Uruguay platform development

UPM is studying the potential of building a new world-class pulp mill in Uruguay. The possible pulp mill would have an annual capacity of approximately 2 million tonnes of eucalyptus market pulp. The preliminary estimate for a pulp mill investment on site is approximately EUR 2 billion. The site of the potential mill would be close to the city of Paso de los Toros, located in the department of Durazno in central Uruguay. Two preparation phases need to be successfully completed before UPM would be in a position to make an investment decision.

Phase 1

The first preparation phase started in July 2016, when UPM commenced discussions with the Government of Uruguay regarding the prerequisites for long-term industrial development, as well as initiatives for infrastructure development in Uruguay. The investment agreement was signed on 7 November 2017, completing the first phase.

Phase 2

The second preparation phase is proceeding. The rail tendering process is in its final stages and the port concession tendering has started. UPM is taking part in the port concession tendering process and has submitted the Environmental and Social Impact Study of the mill to the authorities. To keep local communities, media and other stakeholders updated on the progress, the company has organised several public information sessions. The next main items are related to tangible progress in infrastructure construction, and labour protocols.

Achieving significant progress in the implementation of the agreed infrastructure initiatives by the State and any relevant items are to be agreed prior to the possible final investment decision. This second phase is expected to last 1.5 to 2 years.

If the second preparation phase is concluded successfully, UPM will initiate the company's regular process of analysing and preparing an investment decision about the potential pulp mill.

The investment agreement

The investment agreement outlines the local prerequisites for a potential pulp mill investment. It details the roles, commitments and timeline for both parties, as well as the relevant items to be agreed prior to the final investment decision.

A long-term industrial operation requires a stable and predictable operational environment. This will be supported by several measures in the areas of regional development, environment, forestry and land planning, as well as labour and energy conditions.

The Government will develop the rail and road network by tendering the construction and long-term maintenance of the network. The Government will also promote concession for a terminal specialising in pulp in the Montevideo port with rail access, ensuring a reliable and competitive outlet to export markets.

Once the permitting requirements are fulfilled, the Government will grant the mill the status of a free-trade zone to ensure competitiveness in international markets.

UPM will carry out an engineering study and permitting process for a new world-class pulp mill with an annual capacity of about 2 million tonnes of eucalyptus market pulp. The preliminary estimate for a pulp mill investment on site is approximately EUR 2 billion.

In addition, a successful project requires off-site investments in plantation land and forestry, road network and nursery capacity, harvesting and transport equipment, rolling stock for the rail, port and export facilities and human development.

Biochemicals business development

UPM formed UPM Biochemicals in 2013 by combining its biochemical-related business initiatives. UPM Biochemicals offers and develops innovative, sustainable and competitive wood-based biochemicals. The product segments are biochemicals, lignin products and biomedical products. Development is at the pre-commercial phase, with UPM actively developing and testing industrial applications to create industrial-scale mill concepts.

In October 2017, UPM announced that it was evaluating the potential of building a biorefinery in Germany. UPM is proceeding with detailed commercial and basic engineering studies to confirm the attractiveness of the business opportunity. The estimated duration of this phase is about 1 to 1.5 years. If all preparation phases are concluded successfully, UPM would initiate the company's regular process of analysing and preparing an investment decision.

OL3 power plant project

Teollisuuden Voima Oyj (TVO) is in the process of constructing a third nuclear power plant unit, OL3 EPR, at the Olkiluoto site (OL3). UPM participates in OL3 through its shareholding in Pohjolan Voima Oyj (PVO), which is the majority shareholder in TVO. UPM's indirect share of OL3 is approximately 31%. The OL3 plant supplier, a consortium consisting of AREVA GmbH, AREVA NP SAS and Siemens AG (the Supplier), is constructing OL3 as a turnkey project.

UPMBIOFORE–BEYOND FOSSILS

The start of regular electricity production, originally scheduled for April 2009, has been revised several times by the Supplier. As announced by TVO in November 2018, TVO received from the Supplier an updated schedule for the commissioning of OL3 and, in accordance with the Supplier's updated schedule, the regular electricity generation at OL3 will commence in January 2020. As disclosed by TVO, fuel will be loaded into the reactor in June 2019, and the first connection to the grid will take place in October 2019. According to TVO, OL3 will produce 2–4 TWh of electricity, at varying power levels, during the period of time between the first connection to the grid and the start of regular electricity production in accordance with the Supplier's plant ramp-up programme.

When completed, OL3 will increase UPM Energy's electricity generation capacity significantly. The new power plant unit is expected to be highly efficient and meet the highest safety standards. Its power generation will be CO_2-free and Olkiluoto will have a secure solution for the deposit of used fuel.

Events during 2018

On 1 January, UPM completed the sale of UPM Communication Papers' hydropower facilities in Schongau and Ettringen, Germany, to erdgas schwaben GmbH. The cash flow impact was booked in Q4 2017, and the sales gain of EUR 30 million was booked in Q1 2018 as an item affecting comparability.

On 5 February, UPM announced that it was studying biofuels development opportunities by conducting an environmental impact assessment (EIA) for a possible biorefinery in Mussalo, Kotka, in south-eastern Finland. The UPM Kotka Biorefinery would produce approximately 500,000 tonnes of advanced biofuels made from sustainable raw materials for use in the road transport, marine and aviation sectors. The biorefinery's products could also be used for replacing fossil raw materials in the chemical industry. The EIA was completed and given to the authorities for their final conclusions on 4 October. The consideration of the possible Kotka Biorefinery is in the early stages.

On 11 March, Teollisuuden Voima Oyj (TVO) announced that it had signed a comprehensive settlement agreement concerning the completion of the OL3 EPR project and related disputes with OL 3 EPR (OL3) plant supplier consortium companies Areva NP, Areva GmbH and Siemens AG, as well as with Areva Group parent company Areva SA, a company wholly owned by the French State.

On 29 November, TVO published a stock exchange release announcing that it had received an updated schedule from the Supplier for the commissioning of the OL3 EPR plant unit. According to the received information, the first connection to the grid will take place in October 2019 and the regular electricity production will start in January 2020.

On November 26, Executive Vice President of UPM Biorefining Business Area, Heikki Vappula, was confirmed to have died in a plane crash while on a private trip in Zimbabwe. Jussi Pesonen, President and CEO, assumed, on top of his regular duties, temporary responsibility as Head of UPM Biorefining. A process for permanent management arrangements was initiated.

On 18 December, UPM announced it had signed a contract on a forest estate transaction and long-term partnership with United Bankers. UPM sold over 21,000 hectares of land, located mainly in Kainuu region, to United Bankers forest funds. As part of the long-term partnership, UPM committed to manage United Bankers forest property and United Bankers committed to sell a significant amount of wood to UPM annually.

Events after the balance sheet date

On 9 January, UPM announced it is taking part in the international public tendering process in the port of Montevideo organised by the National Ports Administration (ANP) of Uruguay. The scope of the concession tender is the building and operation of a port terminal specialising in the storage and shipping of pulp, chemicals and other inputs related to pulp production, with the capacity to handle approximately 2 million tonnes of pulp annually. The tender includes the design, financing, engineering, construction, operation and maintenance of the pulp terminal. The tenure of the concession would be for 50 years.

If awarded a concession in the Montevideo port, UPM's financial commitment in the form of a performance bond would be USD 20 million at this stage. At the time of the potential investment decision on the pulp mill project described earlier in this report, UPM would proceed with the port investment decision and start of the construction of the port facilities. The preliminary UPM investment estimate for the port facilities would be approximately USD 260 million.

On 31 January, UPM announced it will invest in the refurbishment of Kuusankoski hydropower plant in Finland. The average annual production of the Kuusankoski plant is expected to increase from the current 180 GWh to 195 GWh. The investment will be completed by the end of 2022.

Outlook for 2019

The global economic growth is estimated to continue in 2019, albeit at a slower pace than in 2018. There are, however, significant uncertainties related to this, including trade negotiations between China and the US, growth in China, the undefined nature of Brexit and political uncertainties in several countries. These issues may have an impact on the global economic growth and on UPM's product and raw material markets during 2019.

UPM reached record earnings in 2018. UPM's business performance is expected to continue at a good level in 2019.

In 2019, favorable demand is expected to continue for most UPM businesses. Demand decline is expected to continue for UPM Communication Papers.

In the beginning of the year 2019, pulp prices are expected to be lower and graphic paper prices in Europe are expected to be higher than in Q4 2018.

Input costs are expected to stabilise after the significant increases seen in 2018. UPM will continue measures to reduce both variable and fixed costs.

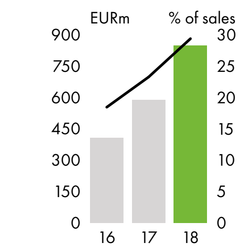
Fair value increases of forest assets are not expected to contribute meaningfully to comparable EBIT in 2019.

Business area reviews

UPM Biorefining

UPM Biorefining consists of pulp, timber and biofuels businesses. UPM has three pulp mills in Finland and one mill and plantation operation in Uruguay. UPM operates four sawmills in Finland. UPM's biorefinery producing wood-based renewable diesel started up in early 2015. The main customers of UPM Biorefining are tissue, specialty paper and board producers in the pulp industry, fuel distributors in the biofuel industry and construction and joinery industries in the timber sector.

Comparable EBIT



	2018	2017
Sales, EURm	2,892	2,531
Comparable EBITDA, EURm	970	714
% of sales	33.5	28.2
Change in fair value of forest assets and wood harvested, EURm	30	33
Share of results of associates and joint ventures, EURm	2	2
Depreciation, amortisation and impairment charges, EURm	−155	−162
Operating profit, EURm	847	557
% of sales	29.3	22.0
Items affecting comparability in operating profit, EURm 1)	–	−30
Comparable EBIT, EURm	847	587
% of sales	29.3	23.2
Capital employed (average), EURm	3,180	3,225
Comparable ROCE, %	26.6	18.2
Pulp deliveries, 1,000 t	3,468	3,595

1) In 2017, items affecting comparability relate to the reorganisation of pension schemes.

2018 compared with 2017

Comparable EBIT increased due to significantly higher pulp sales prices. Variable costs increased and delivery volumes were lower. Fixed costs increased, partly due to several large scheduled maintenance shutdowns in Q2 and Q4 2018.

The average price for UPM's pulp deliveries in euros increased by 22% .

Market environment

Global chemical pulp demand was strong in H1 2018. Market balance was further tightened as supply was restricted due to production outages in the industry. In H2 2018, uncertainties in global economy, gradually slowing growth in China and destocking in the value chain reduced growth in market pulp shipments somewhat.

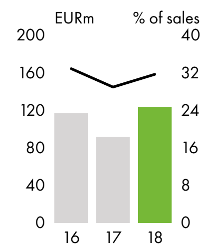
In 2018, the average European market price in euros was 27% higher for NBSK and 21% higher for BHKP compared to the previous year. In China, the average market price in US dollars was 19% higher for NBSK and 26% higher for BHKP compared to the previous year.

Demand for advanced renewable diesel and naphtha remained strong.

UPM Energy

UPM Energy creates value through cost competitive, low-emission electricity generation and through physical electricity and financial trading. UPM Energy is the second largest electricity producer in Finland. UPM's power generation capacity consists of hydropower, nuclear power and condensing power.

Comparable EBIT



	2018	2017
Sales, EURm	391	317
Comparable EBITDA, EURm	132	100
% of sales	33.7	31.6
Depreciation, amortisation and impairment charges, EURm	−9	−9
Operating profit, EURm	114	91
% of sales	29.2	28.8
Items affecting comparability in operating profit, EURm 1)	−9	–
Comparable EBIT, EURm	123	91
% of sales	31.5	28.8
Capital employed (average), EURm	2,346	2,267
Comparable ROCE, %	5.3	4.0
Electricity deliveries, GWh	8,608	8,127

1) In 2018, items affecting comparability of EUR 9 million relate to restructuring of ownership in Meri-Pori power plant.

2018 compared with 2017

Comparable EBIT increased due to higher electricity sales prices. Hydropower generation was lower due to weaker hydrology.

UPM's average electricity sales price increased by 17% to EUR 38.1/MWh (32.6/MWh).

Market environment

The Nordic hydrological balance has been below the long-term average since March 2018. The hydrological balance improved temporarily at beginning of Q4, but the year ended significantly below the long-term average level.

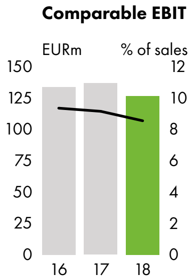
Coal prices increased in 2018 compared to the year 2017. The CO_2 emission allowance price of EUR 25.0/tonne at the end of 2018 was higher than at the end of year 2017 (EUR 8.2/tonne).

The average Finnish area spot price on the Nordic electricity exchange in 2018 was EUR 46.8/MWh, 41% higher than in 2017 (33.2/MWh).

UPM BIOFORE – BEYOND FOSSILS

UPM Raflatac

UPM Raflatac manufactures self-adhesive label materials for product and information labelling for label printers and brand owners in the food, personal care, pharmaceutical and retail segments, for example. UPM Raflatac is the second-largest producer of self-adhesive label materials worldwide.



	2018	2017
Sales, EURm	1,488	1,495
Comparable EBITDA, EURm	156	168
% of sales	10.5	11.2
Depreciation, amortisation and impairment charges, EURm	–30	–32
Operating profit, EURm	126	136
% of sales	8.5	9.1
Items affecting comparability in operating profit, EURm	–	–
Comparable EBIT, EURm	126	136
% of sales	8.5	9.1
Capital employed (average), EURm	535	502
Comparable ROCE, %	23.6	27.2

2018 compared with 2017

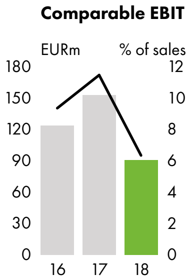
Comparable EBIT decreased. Higher sales prices more than offset the negative effects of higher raw material costs and lower delivery volumes. Fixed costs were higher and changes in currency exchange rates were unfavourable.

Market environment

Global demand for self-adhesive label materials continued to grow, although at a lower pace in H2 2018 than H1 2018.

UPM Specialty Papers

UPM Specialty Papers serves growing global markets with label papers and release liners, fine papers in Asia and flexible packaging in Europe. The operations consist of the UPM Changshu and UPM Tervasaari mills in China and Finland, as well as label and packaging papers production lines at the UPM Jämsänkoski mill in Finland. The main customers are retailers, printers, publishers, distributors and paper converters.



	2018	2017
Sales, EURm	1,429	1,336
Comparable EBITDA, EURm	167	232
% of sales	11.7	17.3
Depreciation, amortisation and impairment charges, EURm	–77	–80
Operating profit, EURm	90	152
% of sales	6.3	11.4
Items affecting comparability in operating profit, EURm	–	–
Comparable EBIT, EURm	90	152
% of sales	6.3	11.4
Capital employed (average), EURm	889	885
Comparable ROCE, %	10.1	17.2
Paper deliveries, 1,000 t	1,554	1,573

2018 compared with 2017

Comparable EBIT decreased due to higher pulp costs more than offsetting the positive impact of higher sales prices.

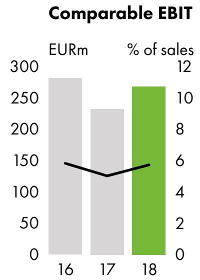
Market environment

In the Asia-Pacific region, office paper demand was solid. Market prices increased during H1 2018, but decreased during H2 2018 due to capacity additions in the market and destocking in the value chain. The cost environment remained unfavourable due to higher pulp costs.

Label and release paper demand was good in 2018 and sales prices increased.

UPM Communication Papers

UPM Communication Papers offers graphic papers for advertising, magazines, newspapers and home and office. The business has extensive low-cost operations consisting of 15 efficient paper mills in Europe and the United States, a global sales network and an efficient logistic system. The main customers are publishers, cataloguers, retailers, printers and merchants.



	2018	2017
Sales, EURm	4,690	4,615
Comparable EBITDA, EURm	381	356
% of sales	8.1	7.7
Share of results of associates and joint ventures, EURm	2	1
Depreciation, amortisation and impairment charges, EURm	–116	–130
Operating profit, EURm	312	247
% of sales	6.7	5.4
Items affecting comparability in operating profit, EURm [1]	46	16
Comparable EBIT, EURm	267	231
% of sales	5.7	5.0
Capital employed (average), EURm	1,602	1,702
Comparable ROCE, %	16.7	13.6
Paper deliveries, 1,000 t	7,442	7,856

[1] In 2018, items affecting comparability include EUR 30 million capital gain relating to sale of hydropower assets located in Schongau and Ettringen mill sites in Germany, EUR 18 million income relating to reversal of unused restructuring provisions in Finland and Germany, EUR 1 million loss relating to sale of Myllykoski mill site in Finland and EUR 1 million expense relating to prior capacity closures. In 2017, items affecting comparability include gain amounting to EUR 43 million and EUR 11 million relating to sale of hydro power assets located at mill sites in Madison and Steyrermühl, correspondingly. In addition, EUR 13 million restructuring charges and EUR 4 million impairment charges relate to Blandin paper machine 5 closure in the United States. EUR 21 million charges relate to optimisation of operations in Germany.

2018 compared with 2017

Comparable EBIT increased. Higher sales prices and improved product mix more than offset the negative impact of higher pulp and energy costs and lower delivery volumes. Fixed costs were lower.

The average price in euros for UPM's paper deliveries increased by 7%.

Market environment

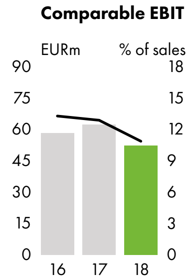
In 2018, demand for graphic papers in Europe was 6% lower than last year. Newsprint demand decreased by 6%, magazine paper by 4% and fine paper by 7% compared with 2017.

In 2018, publication paper prices in Europe were on average 10% higher and fine paper prices on average 2% higher than in the previous year.

In 2018, demand for magazine papers in North America decreased by 5% compared to last year. The average price in US dollars for magazine papers in 2018 increased by 13% compared to 2017.

UPM Plywood

UPM Plywood offers plywood and veneer products, mainly for construction, vehicle flooring and LNG shipbuilding, as well as other manufacturing industries. Production facilities are located in Finland, Estonia and Russia.



	2018	2017
Sales, EURm	480	484
Comparable EBITDA, EURm	75	85
% of sales	15.6	17.6
Depreciation, amortisation and impairment charges, EURm	–23	–23
Operating profit, EURm	52	62
% of sales	10.8	12.8
Items affecting comparability in operating profit, EURm	–	–
Comparable EBIT, EURm	52	62
% of sales	10.8	12.8
Capital employed (average), EURm	283	267
Comparable ROCE, %	18.4	23.1
Plywood deliveries, 1,000 m^3	791	811

2018 compared with 2017

Comparable EBIT decreased, due to unfavourable changes in currencies and lower deliveries, mainly due to strikes in Finland. Higher average sales prices more than offset the negative impact of higher variable costs.

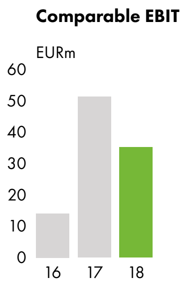
Market environment

The market demand in Europe continued to be good. Demand growth for spruce plywood was good, driven by the building and construction industry. Demand in birch plywood-related industrial applications was solid.

UPMBIOFORE–BEYOND FOSSILS

Other operations

Other operations include wood sourcing and forestry, UPM Biocomposites and UPM Biochemicals business units and group services.



	2018	2017
Sales, EURm	326	281
Comparable EBITDA, EURm	–31	–5
Change in fair value of forest assets and wood harvested, EURm	422	69
Share of results of associates and joint ventures, EURm	2	2
Depreciation, amortisation and impairment charges, EURm	–13	–15
Operating profit, EURm	380	51
Items affecting comparability in operating profit, EURm [1]	345	–
Comparable EBIT, EURm	35	51
Capital employed (average), EURm	1,392	1,465
Comparable ROCE, %	2.5	3.5

[1] In 2018, items affecting comparability of EUR 345 million relates to increase in the fair value of the forest assets in Finland, mainly due to higher forest growth estimates.

2018 compared with 2017
Comparable EBIT decreased. The increase in the fair value of forest assets net of wood harvested was EUR 422 million (69 million). The increase in the fair value of forest assets was EUR 474 million (132 million), including gains on forest sales. The cost of wood harvested from UPM forests was EUR 52 million (63 million).

In 2018, UPM sold a total of 55,880 (73,000) hectares of forests.

Board of Directors and the Group Executive Team

At the Annual General Meeting held on 5 April 2018, the number of members of the Board of Directors was confirmed as ten, and Berndt Brunow, Henrik Ehrnrooth, Piia-Noora Kauppi, Jussi Pesonen, Ari Puheloinen, Veli-Matti Reinikkala, Suzanne Thoma, Kim Wahl and Björn Wahlroos were re-elected to the Board. Marjan Oudeman was elected as a new director. The directors' term of office will end upon the closure of the next AGM. Wendy E. Lane, member of UPM's Board of Directors since 2005, stepped down from the Board.

At the meeting of the Board of Directors held following the AGM, Björn Wahlroos was re-elected as Chairman, and Berndt Brunow as Deputy Chairman of the Board of Directors. In addition, the Board of Directors elected the chairmen and other members to the Board committees from among its members. Piia-Noora Kauppi was re-elected to chair the Audit Committee. Kim Wahl was re-elected and Marjan Oudeman elected to the committee as a new member. Veli-Matti Reinikkala was re-elected to chair the Remuneration Committee, and Henrik Ehrnrooth and Suzanne Thoma were re-elected as other committee members. Björn Wahlroos was re-elected to chair the Nomination and Governance Committee, and Berndt Brunow and Ari Puheloinen were re-elected as other committee members.

Shares held by the Board of Directors and the Group Executive Team

At the end of the year, the members of the Board of Directors including the President and CEO owned a total of 1,098,533 (1,055,532) UPM-Kymmene Corporation shares. These represent 0.21% (0.20%) of the shares and 0.21% (0.20%) of the voting rights. At the end of the year, President and CEO Jussi Pesonen owned 418,859 shares. At the end of the year, the other members of the Group Executive Team owned a total of 573,890 shares.

» Refer Note 3.2 Key management personnel, of the consolidated financial statements 2018 for further information on remuneration and shares held by the members of the Board and the President and CEO and remuneration of the members of Group Executive Team.

Litigation

» Refer Note 9.2 Litigation, of the consolidated financial statements 2018 for information on legal proceedings.

Risks

Risk management

UPM regards risk management as a systematic and proactive means to analyse and manage opportunities and threats related to its business operations. This also includes risks that can be avoided through careful planning and evaluation of future projects and business environments.

UPM seeks to transfer insurable risks through insurance arrangements for any risks that exceed the defined tolerance.

UPM strives to ensure compliance with the UPM Code of Conduct and other corporate policies. To enhance compliance and mitigate risks, UPM performs risk assessments, training and monitoring at regular intervals.

UPM has developed and implemented a comprehensive internal control system that covers business and financial reporting processes. Internal control is aimed at ensuring that the company's operations are efficient and reliable, and in compliance with statutory requirements, and that the company's financial reporting is accurate and reliable, and reflects operational results. Internal control pertaining to financial reporting is described in the Corporate Governance Statement available in the corporate website.

The main risk factors that can materially affect the company's business, financial results and non-financial performance are set out below. They have been classified as strategic risks, operational risks, financial risks and hazard risks. Risks may also arise from legal proceedings incidental to UPM's operations.

Strategic risks

TYPE OF RISK	RISK DESCRIPTION
Competition, markets, customers and products	Energy, pulp, timber, paper, label, plywood and biofuels markets are cyclical and highly competitive. In all of these markets, the price level is determined as a combination of demand and supply, and shocks to either demand (decrease/increase in end-use demand, change in customer preferences, etc.) or supply (e.g. new production capacity entering the market or old capacity being closed) may impact both the volume and price level. Also competitor behaviour influences the market price development. UPM's performance is also impacted by the performance of substitute or alternative products. Most notably, the demand in graphical papers in the mature markets is forecasted to continue to decline, due to the shift away from print media to digital media. Similarly, several raw materials used by UPM have competing end uses. Consumers' environmental awareness has also increased, and depending on the product area this may have either a positive or negative impact on the consumption of UPM's products and may impose further requirements for those products. UPM sells a proportion of its products to several major customers. The largest customer in terms of sales represented approximately 3% of UPM's sales in 2018, and the ten largest customers represented approximately 15% of such sales.
M&A and changes in the business portfolio	UPM's strategic direction is to grow in businesses with strong long-term fundamentals and sustainable competitive advantage. This may result in acquisitions of new businesses or divestments of existing businesses. Participation in M&A involves risks relating to successful implementation of a divestment and the ability to integrate and manage acquired operations and personnel successfully, as well as to achieve the economic targets set for an acquisition/divestment.
Regulatory changes	UPM is exposed to a wide range of laws and regulations globally. The performance of UPM's businesses, for example the biofuels business, the paper businesses and the energy business, are to a high degree dependent on the current regulatory framework, and changes in regulation, direct and indirect taxation or subsidies would have a direct impact on the performance of UPM and its relative competitiveness. In addition, regulation may structurally restrict or exacerbate UPM's ability to compete for raw material.
Political and economical risks	UPM has significant production locations in Finland, Germany, the UK, France, Poland and the US. In these countries, the slow development of the individual economies and/or of Europe as a whole may influence adversely UPM's performance. Furthermore, policies (on European and/or national level) that hamper economic growth or lower the competitiveness of UPM (for example through adverse regulation or increase in direct or indirect taxation) may have an adverse impact on UPM's performance. In the developed countries, the unpredictability of regulation may lead to an increasing uncertainty and risk level when investing in or operating in these countries. UPM has significant production operations also in a number of developing economies, such as China, Uruguay and Russia. In the emerging market countries, the lack of transparency and predictability of the political, economic and legal systems may lead to an increasing uncertainty and risk level when investing in, or operating in these countries. These uncertainties may materialise as unfavourable taxation treatment, trade restrictions, inflation, currency fluctuations and nationalisation of assets.
Shareholdings	Teollisuuden Voima Oyj (TVO) is in the process of constructing a third nuclear power plant unit, OL3 EPR, at the Olkiluoto site (OL3). UPM participates in OL3 through its shareholding in Pohjolan Voima Oyj (PVO), which is the majority shareholder in TVO. UPM's indirect share of OL3 is approximately 31%. The OL3 plant supplier, a consortium consisting of AREVA GmbH, AREVA NP SAS and Siemens AG (the Supplier), is constructing OL3 as a turnkey project. The consortium companies have under the plant contract joint and several liability for the contractual obligations. The start of regular electricity production, originally scheduled for April 2009, has been revised several times by the Supplier. As announced by TVO in November 2018, TVO received from the Supplier an updated schedule for the commissioning of OL3 and, in accordance with the Supplier's updated schedule, the regular electricity generation at OL3 will commence in January 2020. TVO announced in March 2018 that the business restructuring plan announced by Areva in 2016 was implemented at the beginning of 2018. The majority of Areva NP's business was transferred to a company named Framatome, of which 75.5% is owned by Electricité de France (EDF). According to TVO, the OL3 project and the means required to complete the project, as well as certain other liabilities, remained within Areva NP SAS and Areva GmbH, within the scope of Areva SA. In March 2018 TVO announced it had signed a comprehensive settlement agreement with the Supplier and Areva Group parent company, Areva SA, a company wholly owned by the French State. The settlement agreement concerns the completion of the OL3 project and related disputes. The contents of the settlement agreement are described *» in Note 9.2 Litigation*, in the consolidated financial statements 2018. According to TVO the settlement agreement stipulates, among other things, that to provide and maintain adequate and competent technical and human resources for the completion of the OL3 project, Areva will source the necessary additional resources from Framatome S.A.S., whose majority owner is EDF. The supplier consortium companies undertake that the funds dedicated to the completion of the OL3 project will be adequate and will cover all applicable guarantee periods, including setting up a trust mechanism funded by Areva companies to secure the financing of the costs of completion of the OL3 project. The agreement also noted the plant Supplier's schedule at the time the agreement was signed, according to which regular electricity production in the unit would have commenced in May 2019. According to public statement by TVO, no assurance can be given that further delays, which could have a material adverse effect on TVO's business and financial position, will not occur prior to completion of the OL3 project. Further delays could have an adverse impact on PVO's business and financial position, the fair value of UPM's energy shareholdings in PVO and/or the cost of energy sourced from OL3 when completed. It is possible that the cost of energy sourced from OL3 at the time when it starts regular electricity production will be higher than the market price of electricity at that time.

Operational risks

TYPE OF RISK	RISK DESCRIPTION
Earnings uncertainty	The main short-term uncertainties in UPM's earnings relate to sales prices and delivery volumes of the group's products, as well as to changes in the main input cost items and exchange rates. Most of these items are dependent on general economic developments. There are significant uncertainties related to the global economic growth in 2019. Economists continue to expect solid GDP growth in 2019 but have in recent months gradually revised down their estimates for many regions. Trade negotiations between China and the US, the undefined nature of Brexit and political uncertainties in several other countries add to the uncertainty. There are uncertainties regarding the growth outlook in developing economies, including China, which may significantly influence the overall global economy and many of UPM's product markets in particular. Uncertainties related to trade tariffs and other possible protectionist policies add to the risks. China accounted for 11.3% of UPM's sales in 2018. The UK has decided to leave the EU, and this is scheduled to take place at the end of March 2019. However, the nature of the exit is yet unknown. This represents increased uncertainty and risks related to economic growth, especially in the UK and the EU. The EU is the most significant market for UPM, representing 57.6% of the company's sales in 2018. The UK accounted for 6.3% of UPM's sales. Changes to the monetary policies of major central banks may significantly impact various currencies that directly or indirectly affect UPM.
Supply chain management, availability and price of major inputs	UPM's business operations depend on a large number of suppliers and contractors. Majority of UPM's need of wood is covered by suppliers. Other production inputs, such as chemicals, fillers and recovered paper, are obtained from suppliers. Disruptions in the supply of key inputs would impact upon manufacturing operations, for example, by interrupting or resulting in the downscaling of production or a change in the product mix. They could also cause price increases for critical inputs or shifts in the availability and price of wood. It is also uncertain how the EU energy policies may impact upon the availability and costs of fibre and energy.
Project execution	Investment projects in UPM's businesses such as energy, pulp, paper or biofuels are often large and take one or more years to complete. UPM has experience in such projects in various businesses and locations around the world, and applies vigorous planning, project management and follow-up processes. Participation in large projects involves risks such as cost overruns or delays, as well as non-achievement of the economic targets set for the investment.
Partnerships	UPM currently works together with many partners without control over strategic direction and operational output. The highly competitive market situation and, for example, new developments in biofuels, bioenergy or biochemicals are likely to increase the importance of partnerships in the search for higher efficiency or new products and businesses. Partnerships, however, may create risks to the profitability, for example, through changes occurring within the partner entity or changes in how the partnership operates.
Ability to recruit and retain diversely skilled employees	UPM's success requires a skilled workforce and diversity in thinking. UPM is continuously developing its leadership culture, evaluating its recruitment, compensation policies and career development opportunities and taking measures to attract and retain diversely skilled personnel, thereby seeking to avoid shortages of appropriately competent and diverse personnel in the future.
Availability and security of information systems	UPM's production and business operations depend on the availability of supporting information system and network services. Unplanned interruptions in critical information system services can potentially cause a major damage in UPM's businesses. UPM has implemented numerous administrative and technical improvements to mitigate the availability and security risks and to reduce the service interruption related recovery time to acceptable level.
Climate change	Climate change exposes UPM to variety of risks. Unpredictable regulation and subsidies may distort raw material and final product markets, and costs of greenhouse gas emissions may influence UPM's financial performance. It may cause exceptional weather conditions and more severe storms, floods and draughts resulting in e.g. unpredictable wood harvesting conditions. However, transition to low-carbon economy should bring business opportunities to UPM's renewable and recyclable products.
Risks related to non-compliance in own operations and supply chain	Breach of applicable laws and regulations or corporate policies by UPM employees may lead to legal processes or serious reputational damages impacting the value of the company. The UPM Code of Conduct sets the standards of responsible behaviour. These standards apply to every UPM employee. The Code covers topics relating to legal compliance and disclosure, anti-corruption, competition law, HR practices, human rights, responsible sourcing and environmental matters. UPM's environmental performance and social responsibility play a significant role in UPM's ability to operate and influence the long-term success of its businesses. UPM strives to ensure that employees are aware of the legal requirements, the Code and corporate policies by regular trainings and communication. The company maintains a Report Misconduct channel on its website. Non-compliance in the supply chain may also lead to legal processes or serious reputational damages impacting the value of the company. The UPM Supplier and Third Party Code defines the minimum level of performance that UPM requires from its suppliers and third party intermediaries. UPM performs due diligence on third party intermediaries and carries out regular audits in its supply chain.

Financial risks

Financial risks are described in consolidated financial statements 2018.

TYPE OF RISK	CONSOLIDATED FINANCIAL STATEMENT NOTE
Credit risk	4.6 Working capital
Liquidity and refinancing risk	5.1 Capital management
Interest rate risk	6.1 Financial risk management
Foreign exchange risk	6.1 Financial risk management
Electricity price risk	6.1 Financial risk management

Hazard risks

TYPE OF RISK	
Accident, natural event and site security	UPM operates a significant number of manufacturing facilities globally, mostly UPM owned, and is also the largest private owner of forest land in Finland. UPM also owns a significant plantations area in Uruguay. UPM is exposed to risks in areas such as occupational health and safety, environment, fire, natural events and site security. These risks are managed through established management procedures and loss prevention programmes. UPM's insurance programme also provides coverage for insurable hazard risks, subject to insurance terms and conditions.

Non-financial information

Global megatrends represent many long-term opportunities and challenges for UPM towards 2030 and beyond. They are also driving demand for sustainable solutions and responsible business practices.

To steer its responsibility activities, UPM has established a set of responsibility focus areas with targets and key performance indicators. They are reviewed every year based on a materiality analysis (page 51). The focus areas cover economic, social and environmental responsibility. Economic responsibility at UPM covers economic performance, good governance and compliance, as well as responsible sourcing. Social responsibility focuses on respecting human rights, occupational health and safety and UPM's role as a responsible employer. Environmental responsibility includes sustainable products, the climate and use of forests, as well as water use and waste reduction. Product stewardship is a key element of UPM's responsibility practices.

UPM's Biofore strategy guides the company in achieving its responsibility targets for 2030 and in contributing to the Sustainable Development Goals (SDG) of the 2030 Agenda for Sustainable Development published by the UN.

Based on international frameworks and commitments

UPM respects international human rights agreements and agreements concerning labour rights, including the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, and the OECD Guidelines for Multinational Enterprises.

UPM is also a signatory of the UN Global Compact initiative, whose ten universal principles are derived from international agreements in the areas of human rights, labour standards, the environment and anti-corruption. In 2018, UPM was again named a Global Compact LEAD company for its commitment to the UN Global Compact. We were one of only 34 global companies to receive this recognition, and the only representative of the forest industry and Finland.

UPM follows the Finnish Corporate Governance Code issued by the Securities Market Association and complies with all of its recommendations.

UPM Code of Conduct and other corporate policies

UPM's decision making, management and operations are guided by UPM values and the UPM Code of Conduct. Legal compliance and responsible practices are the foundation of all of UPM's businesses and create long-term value for both UPM and its stakeholders. The UPM Code of Conduct emphasises UPM's commitment to business integrity and responsible business operations, manifesting the company's guiding principles.

The UPM Code of Conduct is complemented by more detailed policies approved by the Board of Directors, rules approved by the Group Executive Team, and our business areas and global functions. These policies and rules cover such topics as the treasury, disclosures, insider matters, anti-bribery, competition law, confidentiality, contract management, human resources, the environment, forestry, information security and data protection, and safety.

UPM requires its suppliers, third party intermediaries and joint venture partners to apply the same principles as in the UPM Code of Conduct and to fulfil criteria concerning social and environmental responsibility. These requirements are defined in the UPM Supplier and Third Party Code.

Roles of the group management and functions in leading non-financial matters

The Board of Directors, with the assistance of the Audit Committee, is responsible for monitoring compliance with applicable legal and regulatory requirements and with the UPM Code of Conduct and other corporate policies. In addition, the Audit Committee oversees procedures for treatment of complaints and concerns received by the company, anonymous or otherwise. As part of the committee's compliance review, the committee is provided with a quarterly report by the company's Chief Compliance Officer, and a report of submissions under the company's Report Misconduct channel by the Head of Internal Audit.

The Group Executive Team, headed by the President and CEO, is in charge of the management of corporate responsibility, determining courses of action and guiding development work. In practice, corporate responsibility efforts take place in businesses and functions, and in the Group's Responsibility team, which co-ordinates the projects carried out by businesses and functions.

UPM Legal Function and its Compliance team manage legal compliance programmes and arrange related training at regular intervals for specific target groups, which have been defined based on risk assessments. UPM Sourcing organisations follow clearly defined selection and follow-up processes when evaluating suppliers. Strategic fit, service range, product performance, quality, price and sustainability are the key factors when selecting and evaluating suppliers.

While executing strategies, UPM and its business areas, functions and production units are exposed to a number of risks and opportunities. Each business area, function and unit is responsible for identifying, measuring and managing risks related to its own operations, and for reporting on risk exposures, risk management activities and results to its own management team and to the Risk Management Function.

Management of non-financial matters
UPM's responsibility thinking starts with anticipating, mitigating and managing risks, and extends to creating a competitive advantage and long-term value.

UPM continually strives to reduce its risk exposure and improve its performance by using tools such as certified management systems. The majority of UPM's production sites, as well as its forestry operations, are covered by quality, environmental and health and safety systems, which are certified in accordance with the ISO 9001, ISO 14001 and OHSAS 18001 standards, respectively. All European pulp and paper mills, as well as the UPM Fray Bentos pulp mill in Uruguay and the UPM Changshu paper mill in China, also adhere to the EU's eco-management and audit scheme (EMAS).

Should stakeholders have any concerns or suspect misconduct, they are encouraged to contact UPM or to use the UPM Report Misconduct channel. This channel is available on UPM's intranet for UPM employees, and also on the corporate website for the company's external stakeholders. In 2018, 32 (34) cases were reported either through the UPM Report Misconduct channel or directly to internal audit. The complaints related mainly to suspected failures to adhere to the company's HR Rules or compliance procedures. None of the cases was related to corruption. Three cases led to disciplinary action including warnings and terminations of employment.

Reporting framework used
UPM uses the GRI Standards reporting guidelines published by the Global Reporting Initiative to measure and report on corporate responsibility at group level. UPM's corporate responsibility reporting has been compiled in accordance with the GRI Standards: Core option.

Committed to anti-corruption
The UPM Code of Conduct underlines the company's zero tolerance attitude towards corruption and bribery in any form. UPM Anti-Bribery Rules explain prohibited conduct and expected ethical behaviour in further detail.

UPM performs anti-corruption risk assessment on a regular basis. The annual risk-assessment process includes a top-down risk discussion with the management of each business area. All UPM group entities are also assessed on the basis of country risk and complexity of operations. UPM operates globally and has significant manufacturing operations in several emerging market countries. Such operations require a number of permits and other licenses from the relevant authorities. Some of the countries where UPM operates are perceived as highly corrupt or corrupt according to Transparency International. In these countries, there is an increased risk of corruption, for example in relation to interaction with government officials and in the use of intermediaries when applying for permits and licences requiring governmental approval.

Due diligence of suppliers and third parties with whom UPM does business is an essential part of UPM's anti-bribery compliance programme. UPM requires that due diligence is performed before entering into or renewing any contract with a third party that meets specified criteria. UPM requires anti-bribery contract terms to be included in agreements with such third parties outlining the third party's commitment to compliance with applicable anti-bribery laws and UPM's right to audit the third party to verify compliance with these terms. The company also has corresponding due diligence procedures for joint ventures, including mergers and acquisitions.

The company's anti-bribery training covers all white-collar employees. In 2018, the company launched new Gifts and Hospitality Rules applicable in the APAC region and organised 35 training workshops across the region. UPM also continued the implementation of its initiative, launched in 2017, to further enhance due diligence procedures, launched a project aimed at updating its Code of Conduct in 2019 and performed risk-based compliance reviews in selected jurisdictions and operations.

Respect for human rights
UPM is committed to respecting human rights. UPM has assessed all its operations and activity and has identified the potential human rights issues and impacts. When considering both the severity and likelihood of these potential issues and impacts, UPM considers the salient human rights issues in the company's sphere of influence to be environmental pollution, occupational health and safety (OHS), working conditions, protection of children, and forced labour.

In 2018, UPM continued its human rights due diligence with site-level human rights assessment in UPM's operation in Uruguay focusing on working conditions, community relations and contractors. For the assessment UPM co-operated with Shift, the leading centre of expertise on the UN Guiding Principles.

Responsible sourcing
UPM requires its suppliers, third-party intermediaries and joint venture partners to apply the same principles as in the UPM Code of Conduct including commitment to anti-corruption, environmental and social responsibility, safe products, human rights and occupational health and safety practices.

Transparent supplier requirements are the basis for responsible sourcing. These supplier requirements are defined in the UPM Supplier and Third Party Code (available on the corporate website). A number of additional requirements are in place for the sourcing of wood, chemicals, pulp and packaging materials, as well as for safety and logistics. All contractors working on site go through UPM's safety requirements and a web-based safety induction training.

UPM's supplier risk assessment covers financial, quality, environmental, social and delivery related risks. Based on the risk assessments, UPM selects suppliers, whose performance is then assessed in more detail. UPM then uses tools such as annual questionnaires, audits and joint development plans to monitor compliance.

In 2018, UPM joined Together for Sustainability (TfS), a chemical industry initiative that enhances sustainability within in its supply chains. UPM also continued training its key personnel on supplier auditing related to aspects of responsibility.

Social and employee-related matters
UPM's responsibility focus areas in social and employee-related matters are: learning and development, responsible leadership, diversity and working conditions.

UPM promotes active employee participation and consultation, organised in accordance with international and national rules and regulations. UPM aims to empower and engage employees at all levels through responsible leadership. UPM encourages its employees to pursue professional growth and supports them in learning skills and developing them further.

UPM respects the privacy of employees and promotes equal opportunities and objectivity in employment and career development. All UPM employees are treated as individuals regardless of gender, age, ethnic origin, nationality, etc.

UPM promotes employees' health and wellbeing. Safety is an essential part of UPM's activities and business management system. Equal safety requirements are applied to all employees, visitors and contractors working at UPM's premises.

In its People Strategy, UPM has focused on value-based leadership and integrity, aiming higher in business performance and development of agility and competitiveness. In 2018, UPM adopted a new approach to enable our people to perform and achieve business results. An integral part of enabling performance is feedback culture, setting goals in an agile manner and having better one-to-one conversations, and thus several development programmes have been launched. UPM has continued to develop an inclusive and diverse working environment. The proactive safety of employees and contractors has remained an important focus area.

Product stewardship
Majority of UPM's products are made from renewable raw materials and are recyclable. Product stewardship covers the entire lifecycle of all UPM products from the development phase to the end-use and beyond.

Ecodesign and product safety measures, such as UPM's Restricted Substance List, ensure that impacts on products and the environment are considered and minimised. UPM provides product declarations to provide customers with easy access to information concerning the responsibility of products and the supply chain. UPM is the world's largest producer of EU ecolabelled newsprint, graphic and office papers.

Since 2018, all European sites of UPM Raflatac and UPM Specialty Papers have implemented ISO 22000 food management systems and the respective products are designed and produced to meet food packaging requirements. UPM Biofuels has also been developing and testing a new type of sustainable biofuel feedstock in 2018, by growing Brassica carinata as a secondary crop in South America.

Environmental matters
UPM's responsibility focus areas in environmental matters are forests and biodiversity, climate, water-use and waste. UPM uses raw materials, water, energy and other resources in a responsible manner and continuously improves its energy, resource and cost efficiency.

UPM is committed to sustainable forestry, and the company uses third-party-verified FSC® and PEFC™ chain of custody certification to ensure that the wood it procures is legally sourced from sustainably managed forests. All UPM owned forests are certified.

In November 2018, UPM launched a new commitment to continuously improve the diversity of its own forests in Finland. UPM has had its biodiversity programme in place for over 20 years, and with its new commitment, the next steps will be taken. Starting in 2019, the aim is to create a methodology to further monitor, analyse and report the impacts of forest management on biodiversity, in collaboration with expert stakeholders.

UPM favours the use of renewable and other carbon-neutral energy sources. Biomass-based fuels make up 70% (69%) of fuels used by UPM worldwide. If UPM needed to buy certificates to cover its whole direct fossil CO_2 emissions, and if the price of CO_2 certificates were to rise by EUR 5 per tonne, it would mean additional costs of approximately EUR 15 million annually.

All of UPM's largest production plants are located in areas where there is sufficient water available. The water used by UPM plants comes from rivers, lakes or groundwater resources. UPM uses water responsibly in terms of the company's water consumption and effluent quality. If the price of raw water were to increase by EUR 0.01 per cubic metre, it would mean additional water costs of approximately EUR 5 million annually.

UPM has developed innovative ways to reduce its own waste and to recycle waste or residues with new products such as UPM BioVerno, UPM's renewable diesel and naphtha, as well as UPM ProFi composite, which partly utilises waste from the production of self-adhesive label materials. Furthermore, residues are used in external products, e.g. ash is used in applications ranging from landscaping to road building. Regulatory changes can have an impact on the options for waste or residue use, thus causing higher costs for alternative solutions.

In 2018, UPM's environmental investments totalled EUR 16 million (21 million). The single largest investment was related to air protection in the boiler re-built project at the UPM Changshu paper mill. UPM's environmental costs, which were mainly attributable to effluent treatment and waste management, totalled EUR 121 million (125 million), including depreciation.

There has been a significant decrease in the number of environmental non-conformances since UPM's internal Clean Run programme was launched in 2012. No major environmental incidents occurred at UPM production plants in 2018. However, a total of 26 (33) temporary deviations from permit limits or limits set by UPM occurred over the course of the year. Approximately 2,400 (2,600) preventive environmental observations and near misses were reported in 2018. The goal of the Clean Run programme and the related reporting is to improve environmental performance and awareness and to share best practices.

In 2018, UPM's environmental performance improved compared to 2017 for the absolute amount of emissions with a 4% reduction of fossil CO_2 emissions (scopes 1 and 2), a 2% reduction of waste sent to landfills and a 3% reduction of wastewater volume.

Material non-financial topics and key performance indicators

TOPIC	MANAGEMENT	KEY PERFORMANCE INDICATOR	2018 RESULTS
Governance/ Anti-Corruption	Corruption related risks are identified and assessed in connection with the company's risk management process. These risks are managed and mitigated by training, communication, due diligence procedures, audits and practical guidelines specifically targeted at anti-corruption and anti-bribery. UPM Code of Conduct training is mandatory to all employees and anti-bribery training to all salaried employees.	100% coverage of participation in UPM Code of Conduct training (continuous)	99% (98%) of active employees completed UPM Code of Conduct training.
Human rights	UPM is committed to respecting human rights based on its Code of Conduct. UPM has a process for assessing human rights at UPM site level, including community relations and local sourcing, as well as for risk assessments and audits for suppliers.	Continuous supplier auditing based on systematic risk assessment practices	Approximately 210 supplier audits were conducted based on identified risks, including human rights topics
Responsible sourcing	UPM requires its suppliers, third party intermediaries and joint venture partners to apply the same principles as in the UPM Code of Conduct. These supplier requirements are defined in the UPM Supplier and Third Party Code.	80% of total supplier spend qualified against UPM Supplier and Third Party Code (continuous)	83% (82%) of supplier spend qualified against UPM Supplier and Third Party Code.
Responsible leadership	UPM continuously develops leadership capabilities, management teams and working environments. UPM measures work environments, team work and leadership with an annual engagement survey and has a leadership development programme portfolio that supports self-leadership, leading people and leading businesses. Programmes cover topics such as inspiring leadership, coaching, conversation and feedback skills, innovations and leading complexity.	Employee engagement and enablement indices overall favourable score above external high performing norm by 2030	The employee engagement index is 71% favourable. This is 3 percentage points below the external high performing norm. The employee enablement index is 72% favourable. This is 1 percentage point below the external high performing norm.
Learning and development	UPM has a systematic process for goal setting and creating development plans for all employees globally to ensure high performance and continuous professional development.	Goal setting discussions are held and development plans created for employees, completion rate 100% by 2030	89% (89%) of employees had completed individual goal settings or annual discussions, and 61% (62%) had a development plan documented.
Safe working conditions	UPM has a comprehensive safety management system which promotes a proactive and engaging safety culture. UPM uses means such as safety audits and reporting on safety related near-misses and safety observations.	No fatalities or serious accidents in UPM operations Total recordable injury frequency (TRIF) <2 levels permanently reached including contractors	No fatalities in 2018, two serious accidents TRIF was 6.9 for UPM workforce and 6.6 including contractors.
Diversity	UPM wants to develop organisational culture and local conditions to ensure an inclusive and diverse working environment. UPM has committed to, and promotes, diversity and inclusion in its policies. UPM reviews the diversity status of all its businesses and functions regularly. The composition of UPM key management teams and inclusiveness is discussed and development actions planned and implemented.	95% favourable in the Employee Engagement Survey's Diversity and Inclusion index by 2030	Responses to the Employee Engagement Survey's Diversity and Inclusion index 68% (67%) favourable
Product stewardship	Ecolabels help customers make responsible choices and provide stakeholders with important information. Third-party verified environmental certificates and labels tell customers about the environmental performance of our products.	All applicable products eligible for ecolabelling by 2030	85% (85%) of UPM sales were eligible for ecolabelling.
Climate	UPM favours the use of renewable and other carbon-neutral energy sources and strives to continuously improve its energy efficiency across all its operations.	Fossil CO_2 emissions from its own combustion and purchased electricity (Scope 1 and 2) reduced by 30% by 2030 (compared to 2008)	Fossil CO_2 emissions reduced by 4% compared to 2017. However, the increase in 2011 due to Myllykoski acquisition has not been compensated yet.
Water	UPM's goal is to minimise the impact of its operations on water resources, safeguard the natural water cycle in forests, and maintain the functioning of aquatic ecosystems.	Wastewater volume reduced by 30% by 2030 (compared to 2008)	14% reduction in wastewater volume achieved since 2008 for the UPM average product.
Waste	Circular economy means both financial and environmental efficiency. UPM aims to reuse materials and products, reduce the amount of solid waste and increase recycling and recovery in its operations.	No process waste sent to landfills or to incineration without energy recovery by 2030	90% (89%) of all UPM's process waste was recovered and recycled. The total amount of waste to landfills decreased by 2% compared to 2017.
Forest	UPM is committed to sustainable forestry and uses third-party verified chains-of-custody to ensure that wood is legally sourced from sustainably managed forests.	All fibre certified by 2030	81% (85%) of all wood used by UPM is sourced from certified forests.

Material risks and their management is described on pages 106–109 of the Report of Board of Directors and in the Annual Report on pages 30–31. Information on the company's risk management system is available on the corporate website in the governance section and in the Corporate Governance Statement 2018, which is also available as a separate report on the corporate website ***upm.com/governance****. More information about performance related non-financial topics is available in the general section of the Annual Report and on the UPM website* ***upm.com****.*

Research and development

New growth and competitiveness through innovations

Innovation and R&D programmes are essential in the development of new products and technologies. They support UPM businesses in ensuring competitiveness in the future.

In 2018, UPM spent EUR 106 million (86 million) on research and development, making up 7.6% (5.5%) of UPM's operating cash flow. In addition to direct R&D expenditure of EUR 52 million (51 million), the figure includes negative operating cash flow and capital expenditure in developing businesses, development of transformative business prospects and digitalisation projects and initiatives. The focus of research and development spend was on studying new technologies, developing businesses and processes development. A global network of research centres supports UPM's activities in R&D both in new and existing businesses.

Developing biofuels

An excellent example of an innovative alternative to a fossil-based product is UPM BioVerno, wood-based renewable diesel and naphtha produced from crude tall oil, a residue of pulp production.

UPM has been producing UPM BioVerno renewable diesel and naphtha from wood-based residues since early 2015. UPM BioVerno drop-in diesel is a unique, competitive and sustainable alternative to fossil fuels and first-generation biofuels.

UPM's renewable naphtha can be used as a biocomponent for gasoline or to replace fossil raw materials in bioplastics.

In 2018, UPM carried out an environmental impact assessment (EIA) for a potential biorefinery in Kotka, Finland. The conclusion from EIA authorities is expected at the beginning of 2019. The UPM Kotka biorefinery would produce approximately 500,000 tons of advanced fuels from many sustainable raw materials, for road and marine transport and air traffic applications. The products can replace fossil-based raw materials also in the chemical industry.

Research on raw materials is based on the efficient use of different residues and by-products of the forest industry. Alongside tall oil, other waste and residue-based raw material alternatives that do not compete with food production are being tested.

UPM Biofuels is developing a new feedstock concept by cultivating Brassica carinata as a sequential crop in South America. The Carinata crop produces non-edible oil suitable as feedstock for biofuels and as protein for animal feed as a by-product. UPM is cultivating and testing Brassica carinata with selected local farmers in Uruguay.

Progress in the biochemical business

UPM Biochemicals is developing wood-based chemicals and strong growth is expected for the market already in the coming years. Biochemicals will offer renewable alternatives and mainly replace chemicals made from fossil raw materials.

Product segments include glycols and lignin products. Development is in the pre-commercial phase. UPM is aiming for industrial-scale concepts by actively developing and testing suitable technologies.

In 2018 UPM continued to assess the potential for building a biorefinery in Germany. This brand new industrial-scale biorefinery would produce 150,000 tons of bMEG (bio-monoethylene glycol), bMPG (bio-monopropylene glycol) and lignin from hardwood. Potential end-use segments include textiles, bottles, packaging, de-icing products, composites and resins, for example.

Through commercial and engineering studies, UPM ascertains the technical and economic readiness and attractiveness of the overall concept. Active development work is also carried out with potential customers.

Lignin products replace oil-based materials

Bio-based and sustainable products are developed from lignin obtained from wood raw material, for a variety of end uses. The development and commercialisation of these products continued in 2018.

Lignin can be used in resins, glues, bioplastics and polyurethane, for example. UPM BioPiva lignin is based on technology, developed by UPM, which can replace up to 70% of the oil-based raw materials in resins.

The biomedical product range expands

UPM is continuing to develop biomedical products in collaboration with researchers at Biomedicum in Helsinki, Finland. GrowDex®, a nanocellulose hydrogel, commercialised by UPM, is suitable for 3D cell culturing and related applications, for example in medical development and research.

GrowDex® is biocompatible with human cells and tissue. UPM is also launching an advanced wound dressing product, based on nanocellulose-based films that are applied to wounds.

Recycled material use is growing in biocomposites

UPM Biocomposites is developing innovative and sustainable composite products for various outdoor building material uses and consumer products.

The patented UPM ProFi production process is a good example of a circular economy: cellulose fibres and polymers from self-adhesive label waste are used to create high-quality composite products.

One of the main targets is to increase the use of recyclable materials in products: for example, in the new UPM ProFi Piazza decking, the proportion of recyclable materials is already 75%.

UPM Formi composite material, made from cellulose fibres and polymers, is suitable for a variety of applications, from furniture to consumer electronics. UPM Formi complies with the requirements set by the EU for reinforced plastics in relation to circular economy, and its carbon footprint is up to 50% lower compared with traditional plastics. In 2018, we launched a new UPM Formi 3D biocomposite, developed especially for 3D printing.

Advanced analytics for efficient decision-making

Digitalisation continuously creates new opportunities for UPM to explore new technologies, applications and robotics to gain a competitive advantage. In addition to process automation and industrial robots, which have long been used at production facilities, tools are being created for analytics, optimisation, forecasting and more agile decision-making.

Digitalisation, the extensive use of new and existing data and industrial internet solutions already form part of the processes at the mills; however, in the future digitalisation will be increasingly visible in customer-facing processes such as supply chain, sales and quality monitoring.

With new digital tools, we can significantly improve the optimisation of sales, production, logistics and inventory management, as well as risk management. Utilising advanced data analytics is a quick and cost-efficient way of gaining a competitive edge and added value. UPM's advanced analytics team is developing modern tools based on applied mathematics for use cases across the company.

Solid patent portfolio creates value

The significance of the patents, trademarks and intellectual property rights protecting UPM's innovations is even more pronounced in the new businesses. A solid patent portfolio boosts UPM's competitive edge and also provides an excellent basis for value creation in the future.

UPM files approximately 360 patent applications around the world every year.

For example, wood-based biofuels and biochemicals are new UPM businesses where a lot of research and product development is carried out. Innovations automatically generate a lot of intellectual property. Technical solutions and innovations that use wood, chemicals, energy and water more efficiently are also being patented in existing businesses such as pulp and paper production.

Research projects to enhance circular economy and efficiency

In the value chain of forest industry products, UPM is involved in creating circular economy solutions. UPM's research into pulp and paper mill side streams aims to find more efficient ways to utilise by-products such as sludge, ash, green liquor dregs and waste heat.

More promising development projects for green liquor dregs and ash are being carried out in the construction sector and aim to replace traditional materials. The projects are part of UPM's Zero Solid Waste project, which aims to develop solutions for recycling surplus materials to ensure that they produce added value.

The China More with Biofore research programme continued its search for technical solutions to reduce water consumption and emissions, save energy and utilise solid waste at UPM Changshu paper mill. Already, the mill's water consumption and energy efficiency are at a good level - among the best in the world - while their sulphur dioxide, nitrogen oxide and dust emissions are significantly lower than China's most stringent limit values. The mill was awarded High Tech status by the authorities.

Extensive partner network

Our close-knit partner network comprises customers, universities, research organisations, suppliers and start-up companies. Collaboration speeds up the development and launch of new solutions, particularly for new businesses.

UPM is involved in the European Joint Undertaking on Bio-Based Industries, (BBI). The partnership programme focuses on the development of bioeconomy, bio-based products and their production, as well as strengthening their competitiveness in Europe.

UPM is a shareholder in the Finnish CLIC Innovation LTD, an open innovation cluster that aims for breakthrough solutions in bioeconomy, circular economy and cleantech as well as in smart energy systems, thus complementing UPM's own R&D efforts.

R&D's role in different businesses

BUSINESS AREA	DESCRIPTION
UPM Biorefining UPM Pulp	In 2018, the focus was on supporting pulp quality development actions across UPM pulp mills in Finland and focusing on information for plantations development in Uruguay. The Pulp R&D team continued to support the mills on process-related development topics according to the needs in creating further understanding of pulp quality impact on different end uses, and consolidating the research done over years on new uses for solid waste streams from pulp mills. In this respect, work has begun in 2017 and will continue in 2019 in order to utilise the research results for business development opportunities in both Finland and Uruguay. The pulp experts from UPM's Research Centres in Finland, Germany and China were integrated into UPM Pulp's technical customer service process, providing new added-value services for selected Pulp customers.
UPM Biofuels	Collaboration and product development across the whole value chain allowed UPM Biofuels to enter the petrochemicals market with UPM BioVerno naphtha as a raw material for bioplastics. The first application is wood-based plastic coating for liquid cartons that reduces the use of fossil raw materials and the carbon footprint. Operational efficiency at UPM's Lappeenranta biorefinery was improved by targeted development projects during the turnaround. Piloting, research and process development continued at the UPM Biorefinery Development Center (BRDC) where UPM's biofuels development started 10 years ago. In sustainability development, UPM Biofuels took a step further in gaining the world's first Roundtable of Sustainable Biomaterials (RSB) low indirect land use change (ILUC) risk certification for crude tall oil, the feedstock used for UPM BioVerno renewable fuels production, and for UPM's cultivation of the Brassica carinata oil crop in Uruguay. RSB is one of the world's most trusted, valued and peer-reviewed standards for biomaterials. UPM Biofuels completed the Environmental Impact Assessment for a possible new Kotka Biorefinery in Finland and submitted it to the authorities for their final conclusions. UPM is also studying and testing the use of several new feedstocks that fulfil sustainability criteria, such as wood residues and cultivation of Brassica carinata as possible raw materials for the potential Kotka Biorefinery.
UPM Energy	The focus was on improving the cost competitiveness and environmental performance of hydro and biomass-based energy production assets and developing competencies and business operations related to the optimisation of industrial power consumption and demand-side management. UPM Energy participated in several research programmes and undertook development work with the aim of improving UPM's operations relating to energy generation and consumption in a changing energy market.
UPM Raflatac	Research centres in four sites (Finland, Poland, China, USA) support the product development of paper, film and special products in the global self-adhesive labelling business operations. Cost efficiency and product customisation requirements for various end-use segments were taken into account during customer-orientated development. Sustainable alternatives and product safety increased their role alongside these requirements. Continuous quality development still remains an essential part of product and process development.
UPM Specialty Papers	Research and development efforts focus on growing businesses, growth initiatives, responsibility and operational efficiency. R&D centres in Lappeenranta, Finland, and Changshu, China, work in close co-operation with local production, customer service and global business operations. The More with Biofore in China research programme — one of the key initiatives — progressed well and new approaches were devised to further improve the environmental performance of the UPM Changshu mill.
UPM Communication Papers	Targeted innovations allowed the portfolio to be extended to address new and profitable end uses. UPM Communication Papers launched UPM Digi Star and UPM Digi Sol for book publishing. Another example of the targeted product development work is UPM Impresse plus C, a CSWO paper grade that adds economic benefits for newspaper printers. New fibre concepts for various paper grades were also investigated at the R&D centres in Lappeenranta, Finland, and in Augsburg, Germany. In the energy sector, the focus was on technological innovations that help minimise resource input at the production sites. Efficiency was increased through own-process development, asset optimisation and digitalised maintenance concepts.
UPM Plywood	The key focus areas for research and development include providing superior technical expertise and support for customers, creating competitive products within selected end-use areas, developing processes within their own production environment and supporting the commercialisation of newly developed products and applications. One example of products launched in 2018 is WISA®-TopGrip evo2 friction floor solution for trucks and trailers. The solution was developed to speed up loading time by eliminating the need for separate, manually placed friction mats underneath cargo. This improves work safety during loading as workers do not need to operate in the same space with forklifts. The friction floor also improves cargo securing, which means increased road safety.

Information on shares

Shares

UPM has one class of shares. Each share entitles the holder to one vote at the Annual General Meeting of UPM.

On 31 December 2018, the total number of UPM shares was 533,735,699. Through the issuance authorisation described below, the number of shares may increase to a maximum of 558,735,699. On 31 December 2018, UPM held 411,653 treasury shares, representing approximately 0.08% of the total number of UPM shares and voting rights. There are no specific terms related to the shares.

In 2018, UPM shares worth a total of EUR 9,980 million (8,460 million) were traded on the NASDAQ Helsinki stock exchange. This is estimated to represent approximately two thirds of all trading volumes in UPM shares. The highest listing was EUR 34.70 in September and the lowest was EUR 21.69 in December.

The company's ADSs are traded on the US over-the-counter (OTC) market under a Level 1-sponsored American Depositary Receipt programme.

Authorisations held by the Board of Directors

The Annual General Meeting authorised the Board of Directors to decide on the repurchase of a maximum of 50,000,000 of the Company's own shares. The authorisation will be valid for 18 months from the date of the AGM resolution.

The Annual General Meeting approved amendments to articles 2, 8 and 10 of the Articles of Association and resolved to remove the article 12 (Obligation to redeem shares in different voting right situations) from the Articles of Association. Article 2 was amended to reflect the Company's businesses more closely, Article 8 to correspond to the statutory responsibility for the auditor oversight and Article 10 to the effect that the entire notice of the Annual General Meeting will be published only on the corporate website. Article 12 was removed from the Articles of Association as obsolete and difficult to apply in practice.

The Annual General Meeting held on 7 April 2016 authorised the Board of Directors to decide on the issuance of new shares, transfer of treasury shares and issuance of special rights entitling to shares in proportion to the shareholders' existing holdings in the company, or in a directed share issue, deviating from the shareholders' pre-emptive subscription rights. The Board of Directors may also decide on a share issue without payment to the company itself. The aggregate maximum number of new shares that may be issued and treasury shares that may be transferred is 25,000,000, including also the number of shares that can be received on the basis of the special rights. The authorisation will be valid for three years from the date of the AGM resolution.

Aside from the above, the Board of Directors has no current authorisation to issue shares, convertible bonds or share options.

Changes in number of shares

	2018	2017	2016	2015	2014
Number of shares 1 January	533,735,699	533,735,699	533,735,699	533,735,699	529,301,897
Options exercised	–	–	–	–	4,433,802
Number of shares at 31 December	533,735,699	533,735,699	533,735,699	533,735,699	533,735,699

Major shareholders at 31 December 2018

	NUMBER OF SHARES	HOLDING %
Varma Mutual Pension Insurance Company	13,242,374	2.48
Ilmarinen Mutual Pension Insurance Company	9,043,000	1.69
The State Pension Fund	3,800,000	0.71
ELO Mutual Pension Insurance Company	3,766,000	0.71
Keva	3,429,278	0.64
Skagen Global Verdipapirfond	3,369,331	0.63
The Society of Swedish Literature in Finland	2,703,224	0.51
Swiss National Bank	2,415,522	0.45
Nordea Bank ABP	1,957,261	0.37
OP-Suomi Investment fund	1,923,797	0.36
Nominees & registered foreign owners	366,767,836	68.72
Others	121,318,076	22.73
Total	533,735,699	100.00

Shareholders by category at 31 December, %

	2018	2017	2016	2015	2014
Companies	2.1	2.1	2.2	2.3	2.8
Financial institutions and insurance companies	2.9	2.4	3.1	3.4	4.3
Public bodies	6.8	5.1	5.8	6.0	8.0
Non-profit organisations	4.4	4.8	4.8	5.0	5.3
Households	15.0	15.1	15.3	15.8	17.2
Non-Finnish nationals	68.7	70.5	68.8	67.5	62.4
Total	100.0	100.0	100.0	100.0	100.0

Share distribution at 31 December 2018

SIZE OF SHAREHOLDINGS	NUMBER OF SHAREHOLDERS	% OF SHAREHOLDERS	NUMBER OF SHARES, MILLION	% OF SHARES
1 – 100	28,576	30.53	1.5	0.3
101 – 1,000	48,370	51.68	19.5	3.7
1,001 – 10,000	15,315	16.36	41.4	7.8
10,001 – 100,000	1,205	1.29	29.8	5.6
100,001 –	121	0.13	85.0	15.9
Total	93,587	100.00	177.2	33.2
Nominee-registered			356.6	66.8
Not registered as book entry units			–	0.0
Total			533.7	100.0

Under the provisions of the Securities Markets Act, changes in holdings must be disclosed when the holding reaches, exceeds or falls below 5, 10, 15, 20, 25, 30, 50 or 66.7 (2/3) per cent of the voting rights or the number of shares of the company. The stock exchange releases on notifications of changes in holdings pursuant to Chapter 9, Section 5 of the Securities Market Act are available in UPM website ***upm.com/investors.***

Adjusted share related indicators

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Earnings per share (EPS), EUR	2.80	1.82	1.65	1.72	0.96	0.63	–2.14	0.88	1.08	0.33
Comparable EPS, EUR	2.24	1.88	1.65	1.38	1.20	0.91	0.74	0.93	0.99	0.11
Equity per share, EUR	18.36	16.24	15.43	14.89	14.02	14.08	14.18	14.22	13.64	12.67
Dividend per share, EUR	1) 1.30	1.15	0.95	0.75	0.70	0.60	0.60	0.60	0.55	0.45
Dividend to earnings ratio, %	46.4	63.2	57.6	43.6	72.9	95.2	neg.	68.2	50.9	136.4
Dividend to operating cash flow, %	50	39	30	34	30	43	30	30	29	19
Effective dividend yield, %	5.9	4.4	4.1	4.4	5.1	4.9	6.8	7.1	4.2	5.4
P/E ratio	7.9	14.2	14.1	10.0	14.2	19.5	neg.	9.7	12.2	25.2
Operating cash flow per share, EUR	2.61	2.92	3.16	2.22	2.33	1.39	1.98	1.99	1.89	2.42
Dividend distribution, EURm	1) 693	613	507	400	373	317	317	315	286	234
Share price at 31 Dec., EUR	22.15	25.91	23.34	17.23	13.62	12.28	8.81	8.51	13.22	8.32
Lowest quotation, EUR	21.69	20.82	13.71	13.19	10.07	7.30	7.82	7.34	7.37	4.33
Highest quotation, EUR	34.70	26.69	23.41	19.26	13.99	13.02	10.98	15.73	13.57	9.78
Average quotation for the period, EUR	28.86	23.89	17.51	16.37	12.26	9.42	9.21	11.17	10.43	7.06
Market capitalisation, EURm	11,813	13,818	12,452	9,192	7,266	6,497	4,633	4,466	6,874	4,326
Shares traded, EURm 2)	9,980	8,460	6,749	7,469	6,233	5,308	5,534	8,835	8,243	5,691
Shares traded (1,000)	345,822	354,053	385,355	456,168	508,318	563,382	600,968	790,967	790,490	805,904
Shares traded, % of all shares	64.8	66.4	72.2	85.5	95.6	106.7	114.4	151.5	152.0	155.0
Number of shares, average (1,000)	533,324	533,415	533,505	533,505	531,574	527,818	525,434	521,965	519,970	519,955
Number of shares at the end of period (1,000)	533,736	533,736	533,736	533,736	533,736	529,302	526,124	524,973	519,970	519,970
of which treasury shares (1,000)	412	412	231	231	231	231	231	211	–	–

1) Proposal

2) Trading on the Nasdaq Helsinki Main Market. Treasury shares bought by the company are included in shares traded.

The definitions of share related indicators are described below

SHARE RELATED INDICATORS	DEFINITION
Earnings per share (EPS), EUR	Profit for the period attributable to owners of the parent company divided by adjusted average number of shares during the period excluding treasury shares.
Comparable EPS, EUR	Earnings per share calculated in accordance with IFRS excluding items affecting comparability and their tax impact.
Equity per share, EUR	Equity attributable to the owners of the parent company in relation to the adjusted number of shares at the end of period.
Dividend per share, EUR	Dividend distribution divided by adjusted number of shares at the end of period.
Dividend to earnings ratio, %	Dividend per share as a percentage of earnings per share.
Dividend to operating cash flow, %	Dividend per share as a percentage of operating cash flow per share.
Effective dividend yield, %	Adjusted dividend per share as a percentage of adjusted share price at 31.12.
P/E ratio	Adjusted share price in relation to the earnings per share.
Operating cash flow per share, EUR	Operating cash flow divided by adjusted average number of shares during the period excluding treasury shares.
Market capitalisation, EURm	Total number of shares (excluding those held as treasury shares) multiplied by the share price at the end of period.
Adjusted share price at the end of period	Share price at the end of period in relation to share issue coefficient.
Adjusted average share price	Total value of shares traded in relation to adjusted number of shares traded during the period.

Board of Directors' proposal for the distribution of profits

The Board of Directors proposes to the Annual General Meeting of UPM-Kymmene Corporation to be held on 4 April 2019 that a dividend of EUR 1.30 per share be paid based on the balance sheet to be adopted for the financial year ending 31 December 2018 and that the remaining portion of the distributable funds be retained in the Company's unrestricted shareholders' equity.

The dividend will be paid to a shareholder who is registered in the Company's shareholders' register held by Euroclear Finland Ltd on the dividend record date of 8 April 2019. The Board of Directors proposes that the dividend be paid on 17 April 2019.

On the date of the dividend proposal, 31 January 2019, the Company's registered number of shares is 533,735,699. The aforementioned number of shares includes 411,653 treasury shares which are not entitled to dividend. As a result, the proposed dividend would total EUR 693.3 million.

On 31 December 2018, the distributable funds of the parent company were EUR 3,906,282,951.06 including EUR 780,361,424.68 profit for the period. No material changes have taken place in respect of the Company's financial position after the balance sheet date. In the opinion of the Board of Directors, the proposed distribution of profits does not risk the solvency of the Company.

Signatures of the annual accounts and the report of the Board of Directors for the year 2018

Helsinki, 31 January 2019

Björn Wahlroos
Chairman

Berndt Brunow

Henrik Ehrnrooth

Piia-Noora Kauppi

Marjan Oudeman

Jussi Pesonen
President and CEO

Ari Puheloinen

Veli-Matti Reinikkala

Suzanne Thoma

Kim Wahl

Financial Statements 2018

Consolidated income statement and statement of comprehensive income 121
Consolidated balance sheet 122
Consolidated statement of changes in equity 123
Consolidated cash flow statement 124
Notes to the consolidated financial statements 125

1. Basis for reporting
1.1 Corporate information 125
1.2 Basis of preparation 125
1.3 Consolidation principles 126
1.4 Foreign currency translation 126
1.5 New standards and amendments adopted 127

2. Business performance
2.1 Business areas 129
2.2 Sales 134
2.3 Operating expenses and other operating income 136
2.4 Earnings per share and dividend 137

3. Employee rewards
3.1 Employee costs 138
3.2 Key management personnel 138
3.3 Share-based payments 139
3.4 Retirement benefit obligations 140

4. Capital employed
4.1 Property, plant and equipment 144
4.2 Forest assets 146
4.3 Energy shareholdings 146
4.4 Goodwill and other intangible assets 147
4.5 Provisions 150
4.6 Working capital 151

5. Capital structure
5.1 Capital management 153
5.2 Net debt 155
5.3 Financial assets and liabilities by category 157
5.4 Financial income and expenses 160
5.5 Share capital and reserves 161

6. Risk management
6.1 Financial risk management 162
6.2 Derivatives and hedge accounting 164

7. Income tax
7.1 Tax on profit for the year 167
7.2 Deferred tax 167

8. Group structure
8.1 Business acquisitions and disposals 168
8.2 Principal subsidiaries and joint operations 169
8.3 Related party transactions 170
8.4 Assets held for sale 170

9. Unrecognised items
9.1 Commitments and contingencies 171
9.2 Litigation 171
9.3 Events after balance sheet date 172

10. Other notes
10.1 Forthcoming new standards, amendments and accounting policy changes 172

Parent company accounts 174

Consolidated financial statements, IFRS

Consolidated income statement

EURm	NOTE	2018	2017
Sales	2.1, 2.2	10,483	10,010
Other operating income	2.3	87	83
Costs and expenses	2.3	−8,710	−8,492
Change in fair value of forest assets and wood harvested	4.2	452	103
Share of results of associates and joint ventures		6	5
Depreciation, amortisation and impairment charges	2.3, 4.1, 4.4	−422	−450
Operating profit		1,895	1,259
Gains on sale of energy shareholdings, net	4.3	–	−3
Exchange rate and fair value gains and losses	5.4	3	−12
Interest and other finance costs	5.4	−60	−57
Profit before tax		1,839	1,186
Income taxes	7.1	−342	−212
Profit for the period		1,496	974
Attributable to:			
Owners of the parent company		1,495	973
Non-controlling interests		1	1
		1,496	974
Earnings per share for profit attributable to owners of the parent company			
Basic earnings per share, EUR	2.4	2.80	1.82
Diluted earnings per share, EUR	2.4	2.80	1.82

Consolidated statement of comprehensive income

EURm	NOTE	2018	2017
Profit for the period		1,496	974
Other comprehensive income for the period, net of tax			
Items that will not be reclassified to the income statement:			
Actuarial gains and losses on defined benefit plans		–	66
Changes in fair value of energy shareholdings (IFRS 9)		183	–
Items that may be reclassified to the income statement:			
Translation differences		62	−270
Net investment hedge		−14	20
Cash flow hedges		13	122
Changes in fair value of energy shareholdings (IAS 39)		–	24
Other comprehensive income for the period, net of tax	7.2	243	−37
Total comprehensive income for the period		1,739	937
Attributable to:			
Owners of the parent company		1,738	937
Non-controlling interests		1	1
		1,739	937

The notes are integral part of these consolidated financial statements.

Consolidated balance sheet

EURm	NOTE	2018	2017
ASSETS			
Goodwill	4.4	236	231
Other intangible assets	4.4	295	294
Property, plant and equipment	4.1	4,186	4,281
Forest assets	4.2	1,945	1,600
Energy shareholdings	4.3	2,159	1,974
Other non-current financial assets	5.3	178	192
Deferred tax assets	7.2	397	423
Net retirement benefit assets	3.4	38	84
Investments in associates and joint ventures		32	29
Other non-current assets		34	37
Non-current assets		9,501	9,144
Inventories	4.6	1,642	1,311
Trade and other receivables	4.6, 5.3	1,833	1,783
Other current financial assets	5.3	107	92
Income tax receivables		24	20
Cash and cash equivalents	5.1, 5.3	888	716
Current assets		4,496	3,922
Assets classified as held for sale		–	1
Assets		13,996	13,067

EURm	NOTE	2018	2017
EQUITY AND LIABILITIES			
Share capital	5.5	890	890
Treasury shares		−2	−2
Translation reserve		232	184
Other reserves	5.5	1,778	1,564
Reserve for invested non-restricted equity	5.5	1,273	1,273
Retained earnings		5,623	4,752
Equity attributable to owners of the parent company		9,792	8,660
Non-controlling interests		5	4
Equity		9,797	8,663
Deferred tax liabilities	7.2	535	458
Net retirement benefit liabilities	3.4	679	736
Provisions	4.5	126	177
Non-current debt	5.2, 5.3	753	789
Other non-current financial liabilities	5.3	101	94
Non-current liabilities		2,194	2,254
Current debt	5.2, 5.3	25	324
Trade and other payables	4.6, 5.3	1,881	1,765
Other current financial liabilities	5.3	78	34
Income tax payables		22	26
Current liabilities		2,005	2,150
Liabilities		4,199	4,404
Equity and liabilities		13,996	13,067

The notes are integral part of these consolidated financial statements.

Consolidated statement of changes in equity

EURm	SHARE CAPITAL	TREASURY SHARES	TRANSLATION RESERVE	OTHER RESERVES	RESERVE FOR INVESTED NON-RESTRICTED EQUITY	RETAINED EARNINGS	EQUITY ATTRIBUTABLE TO OWNERS OF THE PARENT COMPANY	NON-CONTROLLING INTERESTS	TOTAL EQUITY
Value, at 31 December 2017	890	−2	184	1,564	1,273	4,752	8,660	4	8,663
Impact of adoption of IFRS 15 [1]	–	–	–	–	–	−3	−3	–	−3
Impact of adoption of IFRS 2 amendment [1]	–	–	–	26	–	–	26	–	26
Value, at 1 January 2018	890	−2	184	1,590	1,273	4,750	8,684	4	8,687
Profit for the period	–	–	–	–	–	1,495	1,495	1	1,496
Translation differences	–	–	61	–	–	–	61	–	62
Cash flow hedges – reclassified to income statement, net of tax	–	–	–	−13	–	–	−13	–	−13
Cash flow hedges – changes in fair value, net of tax	–	–	–	26	–	–	26	–	26
Net investment hedge, net of tax	–	–	−14	–	–	–	−14	–	−14
Energy shareholdings – changes in fair value, net of tax	–	–	–	183	–	–	183	–	183
Actuarial gains and losses on defined benefit plans, net of tax	–	–	–	–	–	–	–	–	–
Total comprehensive income for the period	–	–	48	196	–	1,494	1,738	1	1,739
Share-based payments, net of tax	–	–	–	−8	–	−7	−16	–	−16
Dividend distribution	–	–	–	–	–	−613	−613	–	−613
Total transactions with owners for the period	–	–	–	−8	–	−621	−629	–	−629
Total equity at 31 December 2018	890	−2	232	1,778	1,273	5,623	9,792	5	9,797
Value, at 1 January 2017	890	−2	433	1,416	1,273	4,225	8,234	3	8,237
Profit for the period	–	–	–		–	973	973	1	974
Translation differences	–	–	−269	–	–	–	−269	–	−270
Cash flow hedges – reclassified to income statement, net of tax	–	–	–	28	–	–	28	–	28
Cash flow hedges – changes in fair value, net of tax	–	–	–	95	–	–	95	–	95
Net investment hedge, net of tax	–	–	20	–	–	–	20	–	20
Energy shareholdings – changes in fair value, net of tax	–	–	–	24	–	–	24	–	24
Actuarial gains and losses on defined benefit plans, net of tax	–	–	–	–	–	66	66	–	66
Total comprehensive income for the period	–	–	−249	147	–	1,039	937	–	937
Share-based payments, net of tax	–	–	–	1	–	−5	−4	–	−4
Dividend distribution	–	–	–	–	–	−507	−507	–	−507
Total transactions with owners for the period	–	–	–	1	–	−512	−511	–	−511
Total equity at 31 December 2017	890	−2	184	1,564	1,273	4,752	8,660	4	8,663

[1] More information on changes in group's accounting policies is presented in » Note 1.5 *New Standards and amendments adopted.*

» Refer Note 5.5 *Share capital and reserves, for further information.*

Consolidated cash flow statement

EURm	2018	2017
Cash flows from operating activities		
Profit for the period	1,496	974
Adjustments [1]	386	779
Interest received	2	2
Interest paid	–15	–32
Dividends received	2	10
Other financial items, net	–20	–51
Income taxes paid	–252	–216
Change in working capital [2]	–209	91
Operating cash flow	1,391	1,558
Cash flows from investing activities		
Capital expenditure	–303	–305
Acquisition of businesses and subsidiaries, net of cash acquired	–	–1
Acquisition of energy shareholdings	–	–25
Proceeds from sale of property, plant and equipment and intangible assets	32	106
Proceeds from disposal of shares in associates and joint ventures	–	3
Proceeds from disposal of energy shareholdings	1	1
Net cash flows from net investment hedges	16	–3
Change in other non-current assets	–4	3
Investing cash flow	–260	–222
Cash flows from financing activities		
Proceeds from non-current debt	–	1
Payments of non-current debt	–331	–964
Change in current liabilities	4	–21
Net cash flows from derivatives	–	–97
Dividends paid	–613	–507
Other financing cash flow	–19	–17
Financing cash flow	–959	–1,604
Change in cash and cash equivalents	172	–268
Cash and cash equivalents at beginning of period	716	992
Exchange rate effect on cash and cash equivalents	–	–7
Change in cash and cash equivalents	172	–268
Cash and cash equivalents at end of period	888	716

[1] **Adjustments**

EURm	2018	2017
Change in fair value of forest assets and wood harvested	–452	–103
Share of results of associates and joint ventures	–6	–5
Depreciation, amortisation and impairment charges	422	450
Capital gains and losses on sale of non-current assets	–47	–53
Financial income and expenses	56	70
Income taxes	342	212
Utilised provisions	–35	–45
Non-cash changes in provisions	–21	37
Other adjustments	125	216
Total	386	779

[2] **Change in working capital**

EURm	2018	2017
Inventories	–317	–26
Receivables included in working capital	–50	–68
Liabilities included in working capital	158	184
Total	–209	91

Notes to the consolidated financial statements

The notes to the consolidated financial statements are grouped into sections based on their nature. The notes contain the relevant financial information as well as a description of accounting policy and key estimates and judgements applied for the topics of the individual notes. All amounts are shown in millions of euros unless otherwise stated.

§ Items marked with this symbol describe the accounting principle applied by UPM to the specific financial statement area.

Items marked with this symbol indicate that the accounting area involves estimates and judgement which are described separately.

! Risks related disclosures, whether they are financial, actuarial, credit or counterparty in nature, can be found in sections marked with this symbol.

1. Basis for reporting

1.1 Corporate information

UPM-Kymmene Corporation ("the parent company" or "the company") together with its consolidated subsidiaries ("UPM" or "the group") is a global forest-based bioindustry group. UPM large product range covers pulp, graphic and specialty papers, self-adhesive labels, wood-based renewable diesel, electricity as well as plywood and timber products.

UPM-Kymmene Corporation is a Finnish limited liability company, domiciled in Helsinki in the Republic of Finland. The address of the company's registered office is Alvar Aallon katu 1, 00100 Helsinki, where a copy of the consolidated financial statements can be obtained.

The parent company's shares are publicly traded on the Nasdaq Helsinki Main Market.

These group consolidated financial statements were authorised for issue by the Board of Directors on 31 January 2019. According to the Finnish Companies Act, the General Meeting of Shareholders is entitled to decide on the adoption of the company's financial statements.

1.2 Basis of preparation

UPM's consolidated financial statements are prepared in accordance with International Financial Reporting Standards as adopted by the European Union (IFRS as adopted by the EU) and IFRIC Interpretations.

The consolidated financial statements have been prepared under the historical cost convention, except for forest assets, energy shareholdings and certain other financial assets and financial liabilities, defined benefit plan assets and obligations and share-based payment arrangements which are measured at fair value.

The consolidated financial statements are presented in millions of euros, which is the functional and presentation currency of the parent company. Items included in the financial statements of each group subsidiary are measured using the currency of the primary economic environment in which the subsidiary operates ("the functional currency").

The amounts within parentheses refer to the preceding year, 2017.

Figures presented in these financial statements are rounded and therefore the sum of individual figures might deviate from the presented total figure.

§ *Accounting policies*

The accounting policies applied to the consolidated financial statements as a whole are described in this section, while the remaining accounting policies are described in the notes to which they relate as UPM aims to provide enhanced understanding of each financial statement area. Further, to provide a better understanding, the accounting choices made within the framework of the prevailing IFRS are described together with the policy.

Key estimates and judgements

In the process of applying the group's accounting policies, management has made a number of judgements and applied estimates of future events that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting periods. Although these estimates are based on management's best knowledge, actual results and timing may ultimately differ from previously made estimates.

Key estimates and judgement which are material to the reported results and financial position are presented in the following notes.

KEY ESTIMATES AND JUDGEMENTS	NOTE
Valuation of forest assets	4.2 Forest assets
Fair value determination of energy shareholdings	4.3 Energy shareholdings
Impairment of property, plant and equipment	4.1 Property, plant and equipment
Impairment of goodwill and other intangible assets	4.4 Goodwill and other intangible assets
Pension and other post-employment benefits	3.4 Retirement benefit obligations
Income taxes	7. Income tax
Environmental provisions	4.5 Provisions
Legal contingencies	9.2 Litigation

Financial risks

UPM is exposed to a variety of financial risks as a result of its business activities including currency risk, interest rate risk, commodity price risk, credit risk, capital risk and liquidity risk. Risk management related to financial activities is carried out by UPM's central treasury department, Treasury and Risk Management, under policies approved by the Board of Directors. Financial risks are described in the relevant notes as described below.

FINANCIAL RISK	NOTE
Credit risk	4.6 Working capital
Liquidity and refinancing risk	5.1 Capital management
Interest rate risk	6.1 Financial risk management
Foreign exchange risk	6.1 Financial risk management
Electricity price risk	6.1 Financial risk management
Financial counterparty risk	6.2 Derivatives and hedge accounting

1.3 Consolidation principles

Subsidiaries
UPM's consolidated financial statements include the financial statements of the parent company, UPM-Kymmene Corporation, and subsidiaries controlled by UPM. All group entities apply consistently UPM's accounting policies. All intercompany transactions, receivables, liabilities and unrealised profits, as well as intragroup profit distributions, are eliminated. Unrealised losses are also eliminated unless the transaction provides evidence of an impairment of the transferred asset.

Joint operations
UPM's share in joint operations is recognised in the consolidated balance sheet through recognition of the group's own assets and liabilities and revenues and expenses in the arrangement together with UPM's proportionate share in the joint assets, liabilities and joint income and expenses. The proportionate share of realised and unrealised gains and losses arising from intragroup transactions between UPM and its joint operations is eliminated.

Associates and joint ventures
Associates are entities over which the group has significant influence. Joint ventures are joint arrangements where the group has joint control with other parties and the parties have rights to the arrangement's net assets.

Interests in associates and joint ventures are accounted for using the equity method of accounting and are initially recognised at cost.

Associates and joint ventures follow the group accounting policies for consolidation purpose.

Non-controlling interests
The profit or loss attributable to owners of the parent company and non-controlling interests is presented on the face of the income statement. Non-controlling interests are presented in the consolidated balance sheet within equity, separately from equity attributable to owners of the parent company.

Transactions with non-controlling interests are treated as transactions with equity owners of the group. For purchases from non-controlling interests, the difference between consideration paid and the acquired share of the carrying value of the subsidiary's net assets is recorded in equity. Gains or losses of disposals to non-controlling interests are also recorded in equity, net of transaction costs.

1.4 Foreign currency translation

Foreign currency transactions are translated into the functional currency using the exchange rate prevailing at the date of transaction. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the income statement, except when recognised in other comprehensive income as qualifying cash flow hedges and qualifying net investment hedges.

UPM records foreign exchange differences relating to ordinary business operations within the appropriate line items above operating profit and those relating to financial items are presented separately as a net amount in finance costs.

Income and expenses of subsidiaries that have a functional currency different from euro are translated into euros at quarterly average exchange rates. Assets and liabilities of subsidiaries are translated at the closing rate at the balance sheet date. All resulting translation differences are recognised as a separate component in other comprehensive income. On consolidation, exchange differences arising from the translation of net investment in foreign operations and other currency instruments designated as hedges of such investments, are recognised in other comprehensive income. When a foreign entity is partially disposed of, sold or liquidated, translation differences accrued in equity are recognised in the income statement as part of the gain or loss on sale/liquidation.

1.5 New standards and amendments adopted

IFRS 15 Revenue from contracts with Customers

The group has adopted IFRS 15 on 1 January 2018 using modified retrospective transition approach upon initial application, applying the standard only to contracts that are not completed as of 1 January 2018. The cumulative effect of the adoption amounting to EUR 3 million net of tax is shown as a decrease of retained earnings on 1 January 2018. Comparative information is not restated. The impact of the initial application of IFRS 15 by each line item and the changes that have been made to the group's accounting policies are described below.

EURm	VALUE, AT 31 DEC 2017	IMPACT OF ADOPTION OF IFRS 15	VALUE, AT 1 JAN 2018
Balance sheet			
Assets			
Inventories	1,311	–9	1,302
Trade and other receivables	1,783	0	1,782
Deferred tax assets	423	1	423
Liabilities			
Trade and other payables	1,765	–6	1,760
Equity			
Retained earnings	4,752	–3	4,750

In accordance with the new IFRS 15 requirements, the amount by which each financial statement line item is affected in 2018 as a result of applying IFRS 15 is presented in below table.

EURm	AS REPORTED 2018	WITHOUT ADOPTION OF IFRS 15	IMPACT OF ADOPTION OF IFRS 15
Consolidated income statement			
Sales	10,483	10,483	0
Costs and expenses	–8,710	–8,709	–1
Assets			
Inventories	1,642	1,650	–8
Trade and other receivables	1,833	1,833	0
Deferred tax assets	397	396	1
Liabilities			
Trade and other payables	1,881	1,884	–4

Variable consideration
The group gives the customers the right for purchase price refund in case the products do not meet the quality as specified in the agreement. The group has not previously made an estimate of expected claims relating to sales of paper products. Instead, the revenue has been adjusted when the group has processed and accepted the claims. Under changed accounting policy, the group estimates and updates the amount of expected claims at each reporting date, and adjusts the sales revenue accordingly.

Consignment stock agreements
According to new requirements, revenue is recognised when the customer obtains control of the good or service. The group has some sales agreements labelled as consignment stock agreements, that under new more specific requirements do not qualify as consignment stock agreements. Consequently, the revenue is recognised in these cases earlier than under old accounting policy.

Delivery terms
The group has some sales over long distances using CIP and CPT delivery terms whereby UPM is responsible for organising the delivery. In these cases, there are separate performance obligations for goods and delivery services. Consequently, the portion of revenue relating to goods has to be recognised when the goods pass the ship's rail and the part of delivery services over time when the service has been performed. Under old accounting policy, full revenue was recognised when the goods passed the ship's rail. The accounting policy change did not have any effect of UPM retained earnings at the transition because the group recognises delivery costs at the same time with revenue.

Presentation and disclosure
IFRS 15 requires disaggregation of revenue by categories that depict how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors.

The group disaggregates its external sales by business areas, because UPM business areas are reported consistently with the internal reporting provided to UPM's President and CEO who is responsible for allocating resources and assessing performance of the business areas.

» Refer Note 2.2 Sales, for further information.

Amendment to IFRS 2 Share-based Payments

Amendment to IFRS 2 clarifies the accounting for equity-settled share-based payments with net settlement features for withholding tax obligations. UPM has share-based arrangements with net settlement features in several countries. Tax laws and regulations oblige UPM to withhold an amount for an employee's obligation in respect of taxes associated with share-based payments and to pay this amount to tax authorities in cash on behalf of employee. The obligation to settle in cash has resulted in such transactions being classified previously as cash-settled. According to new requirements, the group classifies the transactions with net settlement features as equity-settled in its entirety.

The change will reduce profit and loss volatility and was implemented prospectively without restatement of comparatives. At the transition date 1 January 2018, the group has transferred the liability amounting to EUR 26 million relating to unvested plans to share-based payments reserve in equity.

UPM BIOFORE – BEYOND FOSSILS

IFRS 9 Financial instruments

The group has adopted on 1 January 2018 IFRS 9, which has replaced IAS 39 and addresses the classification, measurement and recognition of financial assets and financial liabilities, introduces new rules for hedge accounting and a new impairment model for financial assets. The adoption of IFRS 9 had less than EUR 1 million impact on UPM retained earnings at the transition date. The changes that have been made to group's accounting policies are described below.

Classification of financial assets and liabilities
UPM has classified its financial assets and liabilities based on group's business model using categories stated in IFRS 9.

On the date of initial application, 1 January 2018, UPM financial instruments were as follows, with any reclassifications noted:

EURm	ORIGINAL CLASSIFICATION IAS 39	NEW CLASSIFICATION IFRS 9	ORIGINAL CARRYING AMOUNT IAS 39	NEW CARRYING AMOUNT IFRS 9
Financial assets				
Energy shareholdings	Available-for-sale	Equity investments at FVOCI	1,974	1,974
Loans and receivables	Loans and receivables	Financial assets at amortised costs	21	21
Trade and other receivables	Loans and receivables	Financial assets at amortised costs	1,783	1,783
Derivatives, qualifying hedges	Derivatives used for hedging	Derivatives under hedge accounting	240	240
Derivatives, non-qualifying hedges	Fair value through profit and loss	Fair value through profit and loss	23	23
Financial liabilities				
Loans	Financial liabilities at amortised costs	Financial liabilities at amortised costs	1,185	1,185
Trade and other payables	Financial liabilities at amortised costs	Financial liabilities at amortised costs	1,765	1,765
Derivatives, qualifying hedges	Derivatives used for hedging	Derivatives under hedge accounting	20	20
Derivatives, non-qualifying hedges	Fair value through profit and loss	Fair value through profit and loss	36	36

The group has classified its energy shareholdings categorised as available-for-sale under IAS 39 at the date of initial application 1 January 2018 as measured at fair value through other comprehensive income (FVOCI). Energy shareholdings are unlisted equity investments that group intends to hold for the long term. Under this new FVOCI category, fair value changes are recognised in fair value reserve in OCI while dividends are recognised in profit or loss. Gains or losses, including any gains or losses on sale, are never reclassified from equity to the income statement. Despite the fact that the election had to be adopted retrospectively, comparatives were not restated on initial application. These changes did not have any impact on UPM's financial statements in the period of the initial application, 1 January 2018.

Loans and receivables including trade receivables continue to be measured in the balance sheet at amortised costs as the purpose of holding these financial assets is to obtain contractual cash flows.

IFRS 9 did not bring any changes to group's previous classification and measurement of financial liabilities.

Impairment of trade receivables
Under IAS 39, impairment was recognised when there was objective evidence that the group is not able to collect the amounts due. Under IFRS 9, the group has developed a simplified expected credit loss model for trade receivables, whereby expected credit losses that are expected to occur during the full lifetime of the assets are recognised as provisions. New impairment model is based on forward-looking information as well as past experience and current expectations. UPM has historically low levels of realised bad debts in trade receivables due to strict policies and use of trade credit insurance. The new expected loss model did not materially change the amount of credit loss provision at the transition date.

Cost of hedging
In cash flow hedge accounting, the group designates only the spot element in the foreign exchange forward contract to offset the changes in the spot foreign exchange prices. Under IAS 39, the changes in the fair value of the forward points were recognised directly in profit or loss. Under IFRS 9, when only designating the spot element in a cash flow hedge, the change in the fair value of the forward element may be recognised in OCI and accumulated in a separate component of equity. Group applies this in transaction related cash flow hedges. Forward element that is accumulated in OCI is recognised in profit or loss when the hedged transaction affects profit or loss. This change in accounting policy will reduce the group's profit and loss volatility, but the anticipated effect is relatively small. The change has been implemented prospectively without restatement of comparatives.

Commodity hedges
UPM is hedging both sales of power production and power purchases consumed at daily business. The group's sensitivity to electricity market price is dependent on the electricity production and consumption levels and the hedging levels. In the Nordic and Central European market areas the operative risk management is done by entering into electricity derivatives contracts.

Under IFRS 9, more group's risk management strategies qualify for hedge accounting. UPM's electricity price hedging benefits from the possibility to apply hedge accounting for one or several risk components separately or in aggregation. UPM considers system (SYS) and electricity price area differential (EPAD) products perfect hedges for corresponding electricity price risk components in Finland. Thus, a vast majority of the previously non-hedge accounted electricity derivatives qualify for hedge accounting under IFRS 9 as of 1 January 2018. This change will reduce the UPM's profit and loss volatility as the fair value changes of unrealised derivatives are recognised in OCI hedging reserve instead of income statement. The effective portion of designated risk component is recognised in OCI. Ineffectiveness is recognised in income statement. However, it may arise in rare cases only.

UPM has updated its risk management strategies, hedging documentation and hedge effectiveness testing principles.

UPM applies the hedge accounting of IFRS 9 on a prospective basis for all hedging relationships without restating comparative information. Comparative information has therefore been prepared in accordance with IAS 39. Thus, these changes in accounting principles did not have any impact on the figures of UPM's financial statements in the date of the initial application, 1 January 2018. However, the amendments made to IFRS 7 upon application of IFRS 9 have had an impact on the disclosure requirements that apply to UPM financial statements for the financial year ending 31 December 2018.

2. Business performance

Sales	Comparable EBIT	Comparable ROE
EUR 10,483m	EUR 1,513m	12.9%
(EUR 10,010m)	(EUR 1,292m)	(11.9%)

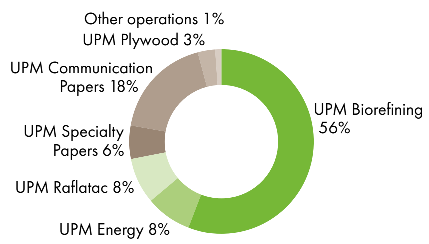
2.1 Business areas

UPM business portfolio consist of six competitive businesses with strong market positions. UPM reports financial information for the following business areas (segments): UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers, UPM Plywood and Other operations. UPM has production plants in 12 countries. The group's most important markets are Europe, North America and Asia.

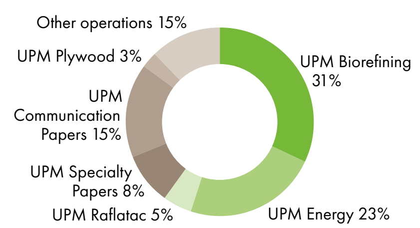
Accounting policies

UPM business areas are reported consistently with the internal reporting provided to UPM's President and CEO who is responsible for allocating resources and assessing performance of the business areas. Internal reporting is prepared under the same basis as the consolidated accounts, except for a joint operation, Madison Paper Industries (MPI) which is consolidated as a subsidiary in the UPM Communication Papers reporting. Costs, revenues, assets and liabilities are allocated to business areas on a consistent basis. The sales transactions between business areas are based on market prices, and they are eliminated on consolidation.

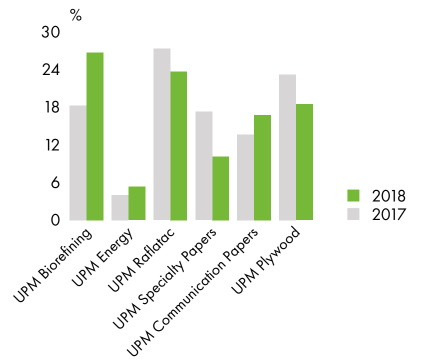
Comparable EBIT 2018
EUR 1,513 million



Capital employed 31 Dec 2018
EUR 10,575 million



Comparable ROCE



UPMBIOFORE–BEYOND FOSSILS

The group disaggregates its external sales by business areas, because UPM business areas are reported consistently with the internal reporting provided to UPM's President and CEO who is responsible for allocating resources and assessing performance of the business areas. The goods and services included in sales revenue of each business area are presented in below table:

BUSINESS AREA	DESCRIPTION AND PRODUCTS
UPM Biorefining	UPM Biorefining consists of UPM Pulp, UPM Biofuels and UPM Timber business units. UPM Pulp has three pulp mills in Finland, one pulp mill and plantation operations in Uruguay. UPM Pulp serves the global market with a comprehensive assortment of sustainably produced eucalyptus, birch and softwood pulp grades for a variety of tissue, specialty paper, board, printing and writing paper and other applications. UPM Biofuels has one biorefinery in Finland. UPM Biofuels products include wood-based renewable diesel for transport and renewable naphtha for transport and for bioplastics. UPM Timber has four saw mills in Finland. UPM Timber products include certified sawn timber from Nordic pine and spruce to joinery, packaging, distribution and construction industries.
UPM Energy	UPM Energy assets consists of hydro power assets in Finland and shareholdings in energy companies. UPM Energy is the second largest electricity producer in Finland. UPM Energy operations include electricity generation, and operations in both physical electricity and financial portfolio management. UPM Energy sells low emission electricity to NordPool electricity market.
UPM Raflatac	UPM Raflatac is one of the world's leading producers of self-adhesive label materials. UPM Raflatac supplies high-quality film and paper label stock for consumer product and industrial labelling. Customers include label printers and brand owners.
UPM Communication Papers	UPM Communication Papers is the world's leading producer of graphic papers. UPM Communication Papers customers include newspaper publishers, telephone directory publishers, cataloguers, retailers, magazine publishers, printers, merchants, office supply distributors, office equipment manufacturers and envelope manufacturers.
UPM Plywood	UPM Plywood manufactures high-quality plywood and veneer products mainly for construction and transport industries and thermo-formable wood material for the form pressing industry. Production facilities are located in Finland, Estonia and Russia.
UPM Specialty Papers	UPM Specialty Papers produces office papers to Asian markets and labelling and packaging materials to global markets. High performance papers are manufactured in China and Finland.
Other operations	Other operations include wood sourcing and forestry, UPM Biocomposites, UPM Biochemicals business units and group services. Wood sourcing operations sells wood and wood-based biomass (logs, pulpwood, chips, forest residues) to other UPM Business Areas as well as third party customers. Forestry operations provides forest expertise and contracting services to woodland and forestry owners. UPM Biocomposites combines cellulose fibres and polymers into UPM ProFi decking products and UPM Formi granules. UPM Biochemicals produces wood-based lignin products for industrial use and cell culture hydrogel products for biomedical applications.

Key performance indicators and financial targets

UPM aims to grow its comparable EBIT over the long term. The group has a portfolio of five businesses that operate on growing markets and one business that faces declining demand. All of UPM businesses are competitive and have strong market positions. Financial target setting, follow up and allocation of resources in the group's performance management process is mainly based on the business area comparable EBIT and comparable ROCE.

UPM presents comparable performance measures to reflect the underlying business performance and to enhance comparability from period to period. However the comparable performance measures used by management should not be considered in isolation as a substitute for measures of performance in accordance with IFRS. Business area information including description of items affecting comparability is presented below.

Business area information for the year ended 31 December 2018

EURm, OR AS INDICATED	UPM BIOREFINING	UPM ENERGY	UPM RAFLATAC	UPM SPECIALTY PAPERS	UPM COM PAPERS	UPM PLYWOOD	OTHER OPERATIONS	ELIMINATIONS AND RECONCI-LIATIONS [2]	GROUP
External sales	2,223	109	1,488	1,213	4,664	458	321	7	10,483
Internal sales	669	282	–	216	26	22	6	–1,220	–
Total sales	2,892	391	1,488	1,429	4,690	480	326	–1,214	10,483
Comparable EBIT	847	123	126	90	267	52	35	–26	1,513
Items affecting comparability in operating profit	–	–9	–	–	46	–	345	1	382
Operating profit	847	114	126	90	312	52	380	–25	1,895
Finance costs, net									–56
Income taxes									–342
Profit for the period									1,496
Operating assets [1]	3,540	2,506	701	1,158	2,228	353	1,847	–362	11,970
Deferred tax assets									397
Other non-operating assets									97
Other financial assets									1,532
Total assets									13,996
Operating liabilities [1]	288	45	172	265	624	51	183	–310	1,318
Deferred tax liabilities									535
Other liabilities									826
Other financial liabilities									1,520
Total liabilities									4,199
Other items									
Change in fair value of forest assets and wood harvested	30	–	–	–	–	–	422	–	452
Share of results of associates and joint ventures	2	–	–	–	2	–	2	–	6
Depreciation and amortisation	–155	–9	–30	–77	–116	–23	–13	–	–423
Impairment charges	–	–	–	–	–	–	–	–	–
Capital employed, 31 December	3,252	2,460	529	892	1,604	302	1,665	–130	10,575
Average capital employed	3,180	2,346	535	889	1,602	283	1,392	–51	10,176
Capital expenditure	77	1	24	85	46	52	18	–	303
Capital expenditure, excluding acquisitions and shares	77	1	24	85	46	52	18	–	303
Comparable ROCE, %	26.6	5.3	23.6	10.1	16.7	18.4	2.5	–	14.6
Personnel, 31 December	2,636	63	3,244	2,000	7,929	2,502	604	–	18,978

[1] Business area's operating assets include goodwill, other intangible assets, property, plant and equipment, forest assets, energy shareholdings, investments in associates and joint-ventures, inventories and trade receivables. Operating liabilities include trade payables and advances received.

[2] Eliminations and reconciliations include the elimination of internal sales and internal inventory margin and the consolidation of MPI as a joint operation. In addition the changes in fair value of unrealised cash flow and commodity hedges that are not allocated to segments are included in reconciliations.

» Refer Other financial information on Alternative performance measures, for definitions of key figures and reconciliation to measures presented in the consolidated income statement and balance sheet prepared in accordance with IFRS.

Business area information for the year ended 31 December 2017

EURm, OR AS INDICATED	UPM BIOREFINING	UPM ENERGY	UPM RAFLATAC	UPM SPECIALTY PAPERS	UPM COMMUNICATION PAPERS	UPM PLYWOOD	OTHER OPERATIONS	ELIMINATIONS AND RECONCILIATIONS [2]	GROUP
External sales	1,958	120	1,495	1,111	4,592	463	274	–2	10,010
Internal sales	573	197	–	225	23	21	8	–1,046	–
Total sales	2,531	317	1,495	1,336	4,615	484	281	–1,048	10,010
Comparable EBIT	587	91	136	152	231	62	51	–18	1,292
Items affecting comparability in operating profit	–30	–	–	–	16	–	–	–19	–33
Operating profit	557	91	136	152	247	62	51	–38	1,259
Finance costs, net									–73
Income taxes									–212
Profit for the period									974
Operating assets [1]	3,358	2,316	686	1,104	2,149	301	1,544	–291	11,167
Deferred tax assets									423
Other non-operating assets									141
Other financial assets									1,337
Total assets									13,067
Operating liabilities [1]	247	22	177	241	577	39	163	–260	1,206
Deferred tax liabilities									458
Other liabilities									939
Other financial liabilities									1,800
Total liabilities									4,404
Other items									
Change in fair value of forest assets and wood harvested	33	–	–	–	–	–	69	–	103
Share of results of associates and joint ventures	2	–	–	–	1	–	2	–	5
Depreciation and amortisation	–163	–9	–32	–80	–133	–23	–14	–	–453
Impairment charges	1	–	–	–	3	–	–1	–	3
Capital employed, 31 December	3,111	2,293	509	863	1,572	262	1,381	–214	9,777
Average capital employed	3,225	2,267	502	885	1,702	267	1,465	–95	10,217
Capital expenditure	135	27	47	28	51	29	11	–	329
Capital expenditure, excluding acquisitions and shares	135	2	46	28	51	29	11	–	303
Comparable ROCE, %	18.2	4.0	27.2	17.2	13.6	23.1	3.5	–	12.8
Personnel, 31 December	2,628	60	3,186	1,949	8,252	2,454	581	–	19,111

[1] Business area's operating assets include goodwill, other intangible assets, property, plant and equipment, forest assets, energy shareholdings, investments in associates and joint-ventures, inventories and trade receivables. Operating liabilities include trade payables and advances received.

[2] Eliminations and reconciliations include the elimination of internal sales and internal inventory margin and the consolidation of MPI as a joint operation. In addition the changes in fair value of unrealised cash flow and commodity hedges that are not allocated to segments are included in reconciliations.

» Refer Other financial information on Alternative performance measures, for definitions of key figures and reconciliation to measures presented in the consolidated income statement and balance sheet prepared in accordance with IFRS.

Items affecting comparability

EURm	2018	2017
In operating profit		
Impairment charges	–	–3
Restructuring charges	9	–67
Change in fair value of unrealised cash flow and commodity hedges	–	2
Capital gains and losses on sale of non-current assets	29	35
Fair value changes of forest assets resulting from changes in estimates	345	–
Total	382	–33
In finance costs		
Gains and losses on sale of associates and joint ventures	–	1
Total	–	1
Total in profit before tax	382	–31
In income taxes		
Taxes related to items affecting comparability	–80	7
Changes in tax rates	–	–5
Total	–80	2
Total in profit for the period	302	–30

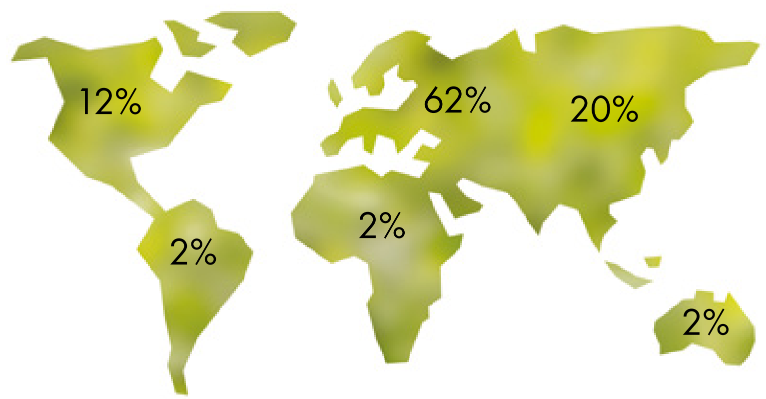
Certain non-operational or non-cash valuation transactions with significant income statement impact are considered as items affecting comparability and reported separately to reflect the underlying business performance and to enhance comparability from period to period.

In 2018, items affecting comparability in operating profit include fair value change of forest assets in Finland amounting to EUR 345 million, resulting mainly from higher forest growth estimates. In addition, the group has adjusted its long-term wood price estimates slightly.

Capital gains affecting the comparability comprise of a gain of EUR 30 million relating to sale of UPM Communication Papers' hydropower facilities in Schongau and Ettringen, Germany. Restructuring charges reported as items affecting comparability include reversals of previous years' restructuring provisions, amounting to EUR 18 million for UPM Communication Papers and EUR 9 million charges in UPM Energy regarding restructuring of ownership in Meri-Pori power plant.

In 2017, items affecting comparability in operating profit include impairment charges of EUR 4 million relating to closure of Blandin paper machine 5 and reversal of impairment of EUR 1 million relating to prior paper machine closures. Restructuring charges reported as items affecting comparability include EUR 30 million related to the reorganisation of pension schemes in UPM Biorefining, EUR 13 million relating to closure of Blandin paper machine 5, EUR 24 million relating to restructuring charges of optimisation of operations in UPM Communication Papers. Capital gains affecting the comparability comprise of a gain of EUR 33 million relating to sale of hydropower facilities in Austria and the United States and EUR 2 million relating to sale of other assets.

Sales by destination



Total assets and capital expenditure by country

EURm	Assets 2018	Assets 2017	Capital expenditure 2018	Capital expenditure 2017
Finland	8,900	8,108	131	183
Germany	987	946	59	25
United States	406	361	3	1
United Kingdom	152	161	5	4
China	784	799	34	16
France	59	68	1	1
Uruguay	1,820	1,766	17	19
Other EU countries	333	338	9	42
Other European countries	150	116	40	9
Rest of world	406	404	5	2
Total	13,996	13,067	303	303

Sales by country

EURm	2018	2017
Finland	916	825
Germany	1,688	1,650
United States	1,158	1,160
United Kingdom	664	645
China	1,186	1,079
France	395	411
Uruguay	57	55
Other EU countries	2,380	2,235
Other European countries	461	434
Rest of world	1,577	1,516
Total	10,483	10,010

2.2 Sales

UPM generates revenue mainly from the sale of goods, i.e. several types of products.

The majority of UPM's revenue comes from sales of graphic and specialty papers to publishers, retailers, printing houses, merchants and distributors, converters and label stock manufacturers; sales of self-adhesive label materials to label printers and brand owners and sales of pulp products to tissue, board, specialty and graphic paper producers. The revenue comprises also sales of energy, biofuels, sawn timber and plywood products and a very limited amount of services not related to sale of goods.

UPM sells a proportion of its products to several major customers. The largest customer in terms of sales represented approximately 3% of UPM's sales in 2018 and 2017, and the ten largest customers represented approximately 15% of such sales.

The group disaggregates its external sales by business area, because this depicts how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors. Sales by UPM business areas are reported consistently with the internal reporting provided to UPM's President and CEO who is responsible for allocating resources and assessing performance of the business areas. The goods and services included in sales revenue of each business area are presented in below tables.

» **Refer Note 2.1** *Business areas for information on UPM products.*

Sales by business area

EURm	2018	2017	CHANGE
UPM Biorefining	2,892	2,531	14%
UPM Energy	391	317	23%
UPM Raflatac	1,488	1,495	0%
UPM Specialty Papers	1,429	1,336	7%
UPM Communication Papers	4,690	4,615	2%
UPM Plywood	480	484	–1%
Other operations	326	281	16%
Eliminations	–1,214	–1,048	–
Total	10,483	10,010	5%

External sales by major products

BUSINESS AREA	BUSINESS	2018	2017
EUR million			
UPM Biorefining	UPM Pulp, UPM Biofuels, UPM Timber	2,223	1,958
UPM Energy	UPM Energy	109	120
UPM Raflatac	UPM Raflatac	1,488	1,495
UPM Specialty Papers	UPM Specialty Papers	1,213	1,111
UPM Communication Papers	UPM Communication Papers	4,664	4,592
UPM Plywood	UPM Plywood	458	463
Other operations	Wood Sourcing and Forestry, UPM Biochemicals, UPM Biocomposites	321	274
Eliminations and reconciliations		7	–2
Total		10,483	10,010

BUSINESS	PRODUCT RANGE
UPM Pulp	Softwood, birch and eucalyptus pulp
UPM Biofuels	Wood-based renewable diesel for transport and renewable naphtha for transport and for bioplastics
UPM Timber	Standard and special sawn timber
UPM Energy	Electricity and related services
UPM Raflatac	Self-adhesive paper and film label stock
UPM Specialty Papers	Labelling materials, release base papers, flexible packaging materials, office papers, graphic papers
UPM Communication Papers	Graphic papers for various end uses
UPM Plywood	Plywood and veneer products, thermoformable wood material
Wood Sourcing and Forestry	Wood and wood-based biomass (logs, pulpwood, chips, forest residues etc.), full forestry service offering
UPM Biochemicals	Lignin products for industrial use, nanocellulos-based products for biomedical applications
UPM Biocomposites	UPM ProFi decking products and UPM Formi granules

Effect of a 10% change in prices on operating profit for the year

EURm	2018	2017
Papers in UPM Communication Papers	458	452
Fine and specialty papers in UPM Specialty Papers	120	110
Label materials in UPM Raflatac	149	149
Plywood	45	44
Sawn timber	33	31
Chemical pulp (net effect)	57	52

The biggest factor affecting UPM's financial results is the sales price of paper. A change in the volume delivered has less than half of the effect of the same percentage change in sale prices.

§ *Accounting policies*

Sales of goods

UPM's performance obligation in the contracts with customers consists of providing the goods specified in the contracts. Revenue from UPM's product sales is recognised when performance obligation is satisfied, which takes place at point in time when control of the good has been transferred to the customer. In UPM's customer contracts the transfer of control and thus timing of revenue recognition is largely dependent on delivery terms. Group terms of delivery are based on Incoterms 2010, the official rules for interpretation of trade terms issued by the International Chamber of Commerce. Major part of the sales contracts is on delivery terms basis, whereby delivery is not a promised service to the customer, as the control of a good does not transfer to the customer before shipment. Revenue and the corresponding receivable are recorded at the point in time when the product is delivered to the destination point for terms designated Delivered Duty Paid ("DDP") or Delivered at Place ("DAP"). For sales transactions designated free of carriage (FCA), revenue is recorded at the time of shipment. For sales transactions designated as Carriage paid to (CPT) or Carriage and Insurance Paid to (CIP), the portion of revenue relating to goods is recorded at the time of loading and the portion of revenue relating to delivery services over time when the service has been performed.

UPM sells energy to NordPool electricity market. Revenue is recognised when electricity is transmissed over time.

Sales of services

UPM provides forest expertise and contracting services to woodland and forestry owners and freight services (free space on group's vessels sold as freight services). Revenues from services are recorded over time when the service has been performed. Sales of services is very limited and thus the group does not report it separately.

Revenue recognition

The group recognises revenue as an amount equal to the price specified in the customer contract net of any sales taxes, cash flow hedging results of sales in foreign currency, hedges of energy sales and variable consideration, when applicable. Variable consideration is defined as any variability that may occur between the sales price and the amount UPM expects to receive. The variable consideration includes mainly volume rebates that encourage the customer to take specific volumes in a given timescale. In addition, the group gives the customers the right for purchase price refund in case the products do not meet the quality as specified in the agreement. The amount of variable consideration is recognised as a refund liability when some of the amount received is expected to be refunded to the customer. Customer rebates payable to customers in relation to sales made until the end of the reporting period and expected quality claims are estimated using the expected value method, and revenue is only recognised to the extent that it is highly probable that a significant reversal will not occur. A refund liability is included in trade and other payables.

Receivables are recognised when the goods are delivered, and the consideration is unconditional except for the passage of time. For most of UPM's customer contracts the period between the transfer of goods or services to customers and the receipt of payment is less than 12 months. For these contracts the group has elected to use the practical expedient not to adjust revenue for the effect of financing components.

Advance payments received from customers are recognised as contract liability. UPM does not have any contract assets arising from contracts with customers.

» **Refer Note 4.6** *Working capital for information on contract liabilities and refund liabilities.*

2.3 Operating expenses and other operating income

Operating expenses

Operating expenses excluding forest assets fair value change, wood harvested and share of results of associates and joint ventures are presented below.

EURm	2018	2017
Costs and expenses		
Raw materials, consumables and goods	5,723	5,471
Employee costs [1]	1,194	1,265
Other operating costs and expenses [2]	902	869
Delivery costs and other external charges	891	888
Total	8,710	8,492

[1] *» Refer Note 3. Employee rewards, for further information.*

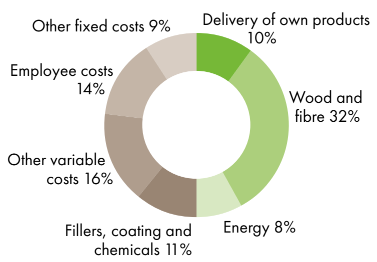
[2] Distribution of other operating costs and expenses

EURm	2018	2017
Rents and lease expenses	37	42
Emission expenses [1]	–7	4
Losses on sale of non-current assets	2	2
Credit losses	9	–
Maintenance and other operating expenses [2]	861	820
Total	902	869

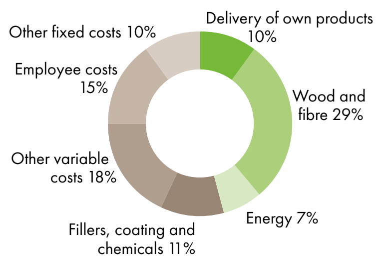
[1] Emission expenses include gains on sales of emission rights EUR 22 (4) million.

[2] Other operating expenses include, among others, energy as well as expenses related to services and group's administration.

Cost structure 2018



Cost structure 2017



Auditor's fees

EURm	2018	2017
Audit fee	2.4	2.3
Audit related services	0.0	0.1
Tax services	0.3	0.3
Other services	0.5	0.5
Total	3.2	3.2

In 2018, auditor's fees include EUR 0.0 (0.0) million related to tax services and EUR 0.5 (0.3) million related to other services paid to PwC Oy.

Research and development costs

The research and development costs included in operating expenses were EUR 52 million (51 million) in 2018. The focus was on new technologies and developing businesses.

Government grants

In 2018, government grants recognised as deduction of operating expenses totalled to EUR 5 million (6 million) of which EUR 4 million (5 million) relates to Finland. In addition, the group received emission rights from governments amounting to EUR 34 million (14 million) of which EUR 20 million (7 million) relates to Finland, EUR 10 million (5 million) to Germany, EUR 1 million (1 million) to Austria and EUR 1 million (1 million) to UK.

Other operating income

EURm	2018	2017
Gains on sale of non-current assets	49	55
Rental income	14	14
Emission rights received	34	14
Derivatives, non-qualifying hedges	–11	14
Exchange rate gains and losses	–10	–30
Other	12	16
Total	87	83

In 2018, gains on sale relating to sale of non-current assets includes EUR 30 million income relating to sale of hydropower facilities in Germany and EUR 17 million income relating to sale of land areas in Finland. In 2017, gains on sale of non-current assets includes EUR 33 million income relating to sale of hydropower assets in Austria and the United States and EUR 16 million income relating to sale of land areas in Finland.

Emission rights

The group has recognised EUR 34 million (14 million) of income in Other operating income and EUR 7 million of income (4 million expense) under Other operating costs and expenses relating to CO_2 emissions. The liability to cover the obligation to return emission rights amounted to EUR 14 million (9 million) and is recognised in provisions. The emission rights recognised in intangible assets are specified below:

EURm	2018	2017
Carrying value, at 1 January	44	45
Emission rights received and purchased	33	14
Deliveries and disposals	–31	–22
Impairment	–	6
Carrying value, at 31 December	45	44
Accumulated costs	47	45
Accumulated impairments	–1	–1
Carrying value, at 31 December	45	44

Accounting policies

Research and development costs

Research and development costs are expensed as incurred, except for certain development costs, which are capitalised as they generate future economic benefits, and UPM can the measure the cost reliably. Capitalised development costs are amortised on a systematic basis over their expected useful lives, usually not exceeding five years.

Government grants

Government grants are recognised at fair value where there is a reasonable assurance that the grant will be received and the group will comply with the attached conditions. Government grants relating to the purchase of property, plant and equipment are deducted from the acquisition cost of the asset and accordingly directly reduce the annual depreciation of the underlying asset. Other government grants are recognised in the income statement in the period necessary to match them with the costs they are intended to compensate.

Other operating income

Other operating income mainly includes gains on the disposal of non-current assets and rental income. Further, other operating income includes foreign exchange gains and losses in respect of UPM's normal business activities. Gains and losses on derivatives not qualifying hedge accounting are also recognised in other operating income.

Emission rights

The group participates in the European Emissions Trading Scheme aimed at reducing greenhouse gas emissions. Emission rights received from governments free of charge to emit a fixed tonnage of carbon dioxide in a fixed period of time give rise to an intangible asset for the emission rights, a government grant and a liability for the obligation to deliver emission rights equal to the emissions that have been made during the compliance period. Emission rights are initially recognised as intangible assets based on market value at the date of initial recognition. Emission rights are not amortised. If the market price of emissions rights at the balance sheet date is less than the recognised costs, any surplus emission rights that are not required to cover actual and estimated emissions during the financial year, are impaired to the market price.

Government grants are recognised as deferred income in the balance sheet at the same time as emission rights and are recognised in other operating income in the income statement, systematically, over the compliance period to which the corresponding emission rights relate.

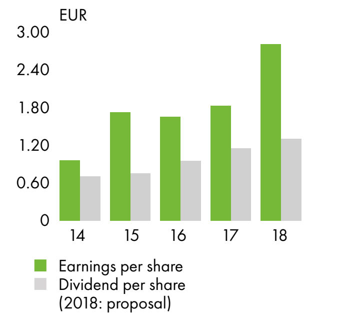
The liability to deliver emission rights is recognised based on actual emissions. The emissions realised are expensed under other operating costs and expenses in the income statement and presented as a provision in the balance sheet. The liability is settled using emission rights on hand, measured at the carrying amount of those emission rights. Emission rights and associated provisions are derecognised when disposed. Any profit or loss represents the costs of purchasing additional rights to cover excess emissions, the sale of unused rights in the case realised emission are under emission rights received free of charge or the impairment of unused emission rights.

2.4 Earnings per share and dividend

According to UPM dividend policy, the company aims to pay an attractive dividend amounting to 30-40% of the group annual operating cash flow per share.

The dividend paid in 2018 were EUR 613 million (EUR 1.15 per share) which is 39% of the operating cash flow per share and in 2017 EUR 507 million (EUR 0.95 per share). The Board of Directors proposes to the Annual General Meeting that a dividend of EUR 693,3 million, EUR 1.30 per share, will be paid in respect of 2018. The proposed dividend represents 50% of UPM's operating cash flow per share for the year 2018.

Earnings and dividend per share



Earnings per share

	2018	2017
Profit attributable to owners of the parent company, EURm	1,495	973
Weighted average no. of shares (1,000)	533,324	533,415
Basic earnings per share, EUR	2.80	1.82
Diluted earnings per share, EUR	2.80	1.82

Accounting policies

Earnings per share

Earnings per share (EPS) is the amount of profit for the period attributable to each ordinary share. The basic earnings per share are computed using the weighted average number of shares outstanding during the period. Diluted earnings per share are computed using the weighted average number of shares outstanding during the period plus the dilutive effect of share options. The group did not have share-option schemes at the end of 2018 and 2017.

Dividend

Dividend distribution to the owners of the parent company is recognised as a liability in the group's consolidated financial statements in the period in which the dividends are approved by the parent company's shareholders.

3. Employee rewards

3.1 Employee costs

EURm	2018	2017
Salaries and fees	936	965
Share-based payments	13	23
Pension and other post-employment benefits, defined benefit plans	29	57
Pension costs, defined contribution plans	105	107
Other indirect employee costs [1]	110	113
Total	1,194	1,265

[1] Other indirect employee expenses primarily include other statutory social expenses, excluding pension expenses.

3.2 Key management personnel

The Annual General Meeting 2018 resolved that the remuneration of the Board of Directors remain unchanged.

The Annual General Meeting 2017 decided to raise the annual Board fees, which had remained the same since 2007, and also adopted annual committee fees, which had not been paid earlier. The Chairman of the Board of Directors receives an annual base fee of EUR 190,000, the Deputy Chairman of the Board EUR 135,000 and other members of the Board EUR 110,000. The annual base fee is paid in company shares and cash so that approximately 40% of the fee is paid in the company shares to be purchased on the Board members' behalf, and the rest in cash. The company pays any costs and transfer tax related to the purchase of the company shares. The annual committee fees are paid in cash. No annual fees are paid to the President and CEO for his role as a member of the Board.

In 2018, 2,539 (3,067) company shares were paid to the Chairman, 1,804 (2,179) to the Deputy Chairman and 1,470 (1,776) to other members of the Board.

Shareholdings (no. of shares) and fees of the Board of Directors

	Shareholdings 31 December		Annual base fee (EUR 1,000)		Annual committee fee (EUR 1,000)	
	2018	2017	2018	2017	2018	2017
Board members						
Björn Wahlroos, Chairman	262,283	259,744	190	190	20	20
Berndt Brunow, Deputy Chairman	310,465	308,661	135	135	10	10
Henrik Ehrnrooth	7,821	6,351	110	110	10	10
Piia-Noora Kauppi	17,706	16,236	110	110	35	35
Marjan Oudeman [1]	1,470	–	110	–	15	–
Jussi Pesonen, President and CEO	418,859	353,491	–	–	–	–
Ari Puheloinen	9,846	8,376	110	110	10	10
Veli-Matti Reinikkala	42,642	41,172	110	110	20	20
Suzanne Thoma	7,821	6,351	110	110	10	10
Kim Wahl	19,620	18,150	110	110	15	15
Wendy E. Lane	–	37,000	–	110	–	15
Total	1,098,533	1,055,532	1,095	1,095	145	145

[1] Succeeding Wendy E. Lane, who stepped down from the Board on 5 April 2018.

Salaries and benefits of the President and CEO and the Group Executive Team

	President and CEO Jussi Pesonen		Other members of Group Executive Team [1]	
EUR 1,000	2018	2017	2018	2017
Salaries	1,094	1,049	3,971	3,934
Short-term incentives	1,416	1,119	2,387	2,088
Share rewards	2,966	2,656	9,014	8,174
Benefits	31	31	131	251
Total	5,507	4,854	15,502	14,446

[1] 11 members in 2018 and 2017.

In 2018, costs under the Finnish statutory pension scheme for the President and CEO amounted to EUR 471,000 (413,000) and payments under the voluntary pension plan were EUR 923,000 (1,170,000).

In 2018, costs under the Finnish and German statutory pension schemes for Group Executive Team (GET) members (excluding the President and CEO) amounted to EUR 988,000 (899,000) and payments under the voluntary pension plan were EUR 880,000 (850,000).

The remuneration of the President and CEO and other members of the Group Executive Team consists of the base salary and benefits, short-term incentives and long-term share-based incentives.

The short-term incentive plan for the President and CEO and other members of the Group Executive Team is linked to the achievement of the predetermined financial targets of the group or business area as well as individual targets. The incentives amount to a total maximum of 100% of annual base salary to the Business Area Executives and to a total maximum of 70% of annual base salary to the other members of the Group Executive Team. For the President and CEO the maximum annual incentive amounts to 150% of the annual base salary.

The expenses recognised in income statement in respect of share-based payments for the Group Executive Team were EUR 3.0 million (7.8 million).

In accordance with the executive contract, the retirement age of the President and CEO Jussi Pesonen is 60. For the President and CEO, the target pension is 60% of the average indexed earnings from the last ten full calendar years of employment calculated according to the Finnish statutory pension scheme. The cost of lowering the retirement age to 60 is covered by supplementing the statutory pension with a voluntary defined benefit pension plan. Should the President and CEO leave the company before reaching the age of 60, an immediate vesting right corresponding to 100% of the earned pension (pro rata) will be applied. The expenses of the President and CEO's defined benefit pension plan in 2018 were EUR 0.9 million (0.6 million). The plan assets amounted to EUR 11.5 million (10.9 million) and the obligation amounted to EUR 11.7 million (10.4 million).

The retirement age of other members of the Group Executive Team is 63. Other Group Executive Team members are under defined contribution plans.

If notice of termination is given to the President and CEO, severance pay of 24 months' base salary will be paid in addition to the salary for the six-month notice period. Should the President and CEO give notice of termination to the company, no severance pay will be paid in addition to the salary for the notice period. For other members of the Group Executive Team, the period for severance pay is 12 months in addition to the six months' salary for the notice period, unless notice is given for reasons that are solely attributable to the executive. Should other member of the Group Executive Team give notice of termination to the company, no severance pay will be paid in addition to the salary for the notice period.

If there is a change of control in the company, the President and CEO may terminate his executive contract within three months and other members of the Group Executive Team within one month from the date of the event that triggered the change of control and shall receive compensation equivalent to 24 months' base salary.

3.3 Share-based payments

UPM offers rewards and recognition with an emphasis on high performance. All UPM's employees belong to a unified annual Short Term Incentive (STI) scheme. In addition, UPM has two long-term incentive plans: the Performance Share Plan (PSP) for senior executives and the Deferred Bonus Plan (DBP) for other key employees.

Performance Share Plan

The Performance Share Plan (PSP) is targeted at Group Executive Team (GET) members and other selected members of the management. Under the ongoing plans the UPM shares are awarded based on the total shareholder return during a three-year earning period. The earned shares are delivered after the earning period has ended. Total shareholder return takes into account share price appreciation and paid dividends.

PERFORMANCE SHARE PLANS	PSP 2015–2017	PSP 2016–2018	PSP 2017–2019	PSP 2018–2020
No. of participants at 31 December 2018	24	22	24	30
Actual achievement	100%	100%	–	–
Max no. of shares to be delivered [1]				
to the President and CEO	107,196	112,500	92,500	84,100
to other members of GET	325,876	319,500	275,500	250,400
to other key individuals	252,980	240,500	222,000	227,000
Total max no. of shares to be delivered	686,052	672,500	590,000	561,500
Share delivery (year)	2018	2019	2020	2021
Earning criteria (weighting)	Total shareholder return (100%)	Total shareholder return (100%)	Total shareholder return (100%)	Total shareholder return (100%)

[1] For PSP 2015–2017 and PSP 2016–2018, the gross number of shares actually earned.

Deferred Bonus Plan

The Deferred Bonus Plan (DBP) is targeted at other selected key employees of the group and it consists of annually commencing plans. Each plan consists of a one-year earning period and a two-year restriction period. UPM shares are awarded based on achievement of group or group and business area EBITDA targets. Prior to share delivery, the share rewards earned are adjusted with dividends and other capital distributions, if any, paid to all shareholders during the restriction period.

DEFERRED BONUS PLANS	DBP 2015	DBP 2016	DBP 2017	DBP 2018
No. of participants (at grant)	350	340	360	370
No. of participants (at 31 December 2018)	321	303	333	357
Max no. of shares to be delivered (at grant)	800,000	770,000	525,000	450,000
Estimated no. of shares to be delivered at 31 December 2018 [1]	382,497	350,261	311,627	415,602
Share delivery (year)	2018	2019	2020	2021
Earning criteria	Group/Business area EBITDA	Group/Business area EBITDA	Group/Business area EBITDA	Group/Business area EBITDA

[1] For DBP 2015 and DBP 2016, the gross number of shares actually earned.

UPMBIOFORE–BEYOND FOSSILS

The indicated actuals and estimates of the share rewards under the Performance Share Plan and the Deferred Bonus Plan represent the gross amount of the rewards of which the applicable taxes will be deducted before the shares are delivered to the participants.

Accounting policies

The group's long-term share incentive plans are recognised as equity-settled or cash-settled share-based payment transactions depending on the settlement. The group classifies the transactions with net settlement features for tax obligations as equity-settled in its entirety. Shares are valued using the market rate on the grant date. The settlement is a combination of shares and cash. The group may obtain the necessary shares by using its treasury shares or may purchase shares from the market. PSP and DBP share deliveries are executed by using already existing shares and the plans, therefore, have no dilutive effect.

3.4 Retirement benefit obligations

The group operates various pension schemes in accordance with local conditions and practices in the countries of operations. Retirement benefits are employee benefits that are payable usually after the termination of employment, such as pensions and post-employment medical care. The pension plans are generally funded through payments to insurance companies or to trustee-administered funds or foundations and classified as defined contribution plans or defined benefit plans.

Defined benefit assets and liabilities recognised in the balance sheet are presented below:

	2018					2017				
EURm	FINLAND	UK	GERMANY	OTHER COUNTRIES	TOTAL	FINLAND	UK	GERMANY	OTHER COUNTRIES	TOTAL
Present value of funded obligations	481	451	33	17	982	474	522	34	18	1,047
Fair value of plan assets	–518	–417	–3	–18	–956	–557	–450	–3	–19	–1,028
Deficit (+)/surplus (-)	–38	34	31	–1	26	–83	73	31	–1	19
Present value of unfunded obligations	–	–	512	75	587	–	–	526	79	604
Net defined benefit liability (+)/asset (-)	–38	34	542	74	612	–83	73	557	77	623
Net retirement benefit asset in the balance sheet	–38	–	–	–	–38	–83	–	–	–1	–84
Net retirement benefit liability in the balance sheet [1]	–	34	542	74	650	–	73	557	78	707

[1] Net retirement benefit liability in the balance sheet includes other long-term employee benefits of EUR 29 million (29 million) in 2018.

About 95% of the group's defined benefit arrangements exist in Finland, in the UK and in Germany. The group has defined benefit obligations also in Austria, Holland, France, Canada and in the US. Approximately a quarter of UPM's employees are active members of defined benefit arrangement plans.

Finland

In Finland employers are obliged to insure their employees for statutory benefits, as determined in Employee's Pension Act (TyEL). TyEL provides the employee with insurance protection for old age, disability and death. The benefits can be insured with an insurance company or the employer can establish a fund or a foundation to manage the statutory benefits.

Approximately 82% (82%) of group´s Finnish employees are insured with an insurance company and these arrangements qualify as defined contribution plans. Approximately 18% (18%) of employees are insured with TyEL foundation (UPM Sellutehtaiden eläkesäätiö, former Kymin Eläkesäätiö). The TyEL foundation is administered by the representatives of both the employer and the employees. The foundation has named an authorised representative to take care of its regular operations. The plan is supervised by Financial Supervisory Authority. The foundation is classified as a defined benefit plan for the benefits that must be funded nationally and is the most significant defined benefit pension plan in Finland for UPM.

In 2017, past service costs include EUR 30 million relating to the reorganisation of pension schemes in Finland.

UK

In the UK, the group operates a legacy defined benefit scheme providing benefits that are linked to the salary level near retirement age or an earlier date of leaving service. The scheme is closed both for new members and future accrual for old members. Part of the scheme is a defined contribution plan and is open to all current employees. The UK pension scheme operates under a single trust which is independent from the group.

Germany

In Germany employees within defined benefit arrangements are entitled to annual pensions on retirement based on their service and final salary. All significant defined benefit plans are closed for new employees.

Present value of obligation and fair value of plan assets

	Pension and other post-employment benefits 2018			Pension and other post-employment benefits 2017		
EURm	PRESENT VALUE OF OBLIGATION	FAIR VALUE OF PLAN ASSETS	NET DEFINED BENEFIT LIABILITY/ (ASSET)	PRESENT VALUE OF OBLIGATION	FAIR VALUE OF PLAN ASSETS	NET DEFINED BENEFIT LIABILITY/ (ASSET)
Carrying value, at 1 January	1,651	–1,028	623	1,573	–858	714
Current service cost	14	–	14	13	–	13
Past service cost	4	–	4	151	–121	30
Interest expense (+) income (–)	31	–20	11	32	–18	14
Total included in employee costs (Note 3.1)	49	–20	29	195	–138	57
Actuarial gains and losses arising from changes in demographic assumptions	–5	–	–5	–14	–	–14
Actuarial gains and losses arising from changes in financial assumptions	–90	–	–90	26	–	26
Actuarial gains and losses arising from experience adjustments	35	–	35	–8	–	–8
Return on plan assets, excluding amounts included in interest expense (+) income (–)	–	60	60	–	–83	–83
Total remeasurement gains (–) and losses (+) included in other comprehensive income	–59	60	1	4	–83	–78
Benefits paid	–68	68	–	–75	75	–
Settlements paid	–	–	–	–21	21	–
Contributions by the employer	–	–40	–40	–	–61	–61
Translation differences	–4	4	–1	–25	17	–8
Carrying value, at 31 December	1,569	–956	612	1,651	–1,028	623

Actuarial risks

Defined benefit plans typically expose the group to the following actuarial risks:

Investment risk (asset volatility)
The group is exposed to changes of assets' values especially in the investments of the foundations and schemes in Finland and in the UK. The asset values of these arrangements constitute 98% of total asset values in defined benefit plans within group.

Interest risk
Discount rates used in calculations are based on high-quality corporate bond yield curves in currency in which the benefits are paid. A decrease in the discount rate would increase the plan liabilities. The maturities of yields are reflecting the durations of the underlying obligations. The weighted average duration of group's defined benefit obligation is 16 years (16 years) at the end of 2018.

Inflation risk
In the Finnish plan, the inflation risk is not significant as changes in the inflation assumption are mainly covered by the TyEL pooling system. In the UK, the pensions in payment are tied to Retail Price Index whilst being tied to Consumer Price Index during deferment. An increase of 0.5% in indexes will increase the liabilities by some EUR 29 million. In Germany the pensions have to be adjusted in accordance with the Consumer Price Index.

Salary risk
The present value of the net retirement benefit assets and liabilities is calculated by reference to the expected future salaries of plan participants. An increase in the salary of the plan participants would increase the plan liabilities. In Finland, the salary risk is minor as well as in the UK, where the changes in salary levels have no impact on the funding position as all defined benefit arrangements in the UK are closed to future accrual. In Germany, an increase of 0.5% in expected future salaries would increase the obligation by EUR 18 million.

Life expectancy
Adjustments in mortality assumption have an impact on group's defined benefit obligation. An increase in life expectancy by one year will increase the obligation in Finland by EUR 18 million, in the UK by EUR 14 million and in Germany by EUR 24 million.

Key estimates and judgements

Several actuarial assumptions are used in calculating the expense and liability related to the defined benefit plans. Statistical information used may differ materially from actual results due to, among others, changing market and economic conditions, or changes in service period of plan participants. Significant differences in actual experience or significant changes in assumptions may affect the future amounts of the defined benefit obligation and future expense.

Actuarial assumptions

The weighted average principal assumptions used in the valuations of the defined benefit obligations are detailed below:

	FINLAND		UK		GERMANY		OTHER COUNTRIES	
	2018	2017	2018	2017	2018	2017	2018	2017
Discount rate %	1.79	1.55	3.00	2.50	1.88	1.65	2.07	1.83
Inflation rate %	1.69	1.80	3.40	3.40	1.70	1.70	1.86	1.91
Rate of salary increase %	1.69	1.80	n/a	n/a	2.50	2.50	2.53	2.55
Rate of pension increase %	0.65	0.67	3.25	3.25	1.70	1.70	0.95	0.95
Expected average remaining working years of participants	13.9	13.1	16.5	16.3	9.3	9.8	9.4	9.0

EURm	0.5% INCREASE		0.5% DECREASE	
	2018	2017	2018	2017
Discount rate %	–121	–131	137	150
Rate of salary increase %	20	21	–16	–19
Rate of pension increase %	67	74	–64	–71
Life expectancy +1 year	57	60	n/a	n/a

A negative change indicates a decrease in the defined benefit obligation.
A positive change indicates an increase in the defined benefit obligation.

Sensitivity analysis of defined benefit obligations

The sensitivity analysis shows the effect of the change in assumption. The analysis assume that all other assumptions remain unchanged. The projected unit credit method has been applied when calculating the obligation as well as these sensitivities.

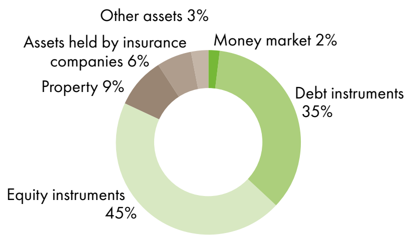
Plan assets by categories at 31 December

EURm	2018		2017	
	Quoted	Unquoted	Quoted	Unquoted
Money market	18	–	67	–
Debt instruments	307	27	338	7
Equity instruments	439	–	439	–
Property	39	46	48	41
Assets held by insurance companies	–	54	–	57
Other assets	–	26	–	30
Total	802	154	892	136

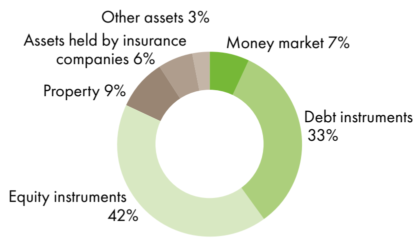
Plan assets include the company's ordinary shares with a fair value of EUR 1 million (1 million).

In 2019 contributions of EUR 40 million are expected to be paid to group's defined benefit plans. In 2018 contributions of EUR 40 million were paid to group's defined benefit plans.

Plan assets by categories 2018



Plan assets by categories 2017



Accounting policies

Defined benefit pension plans

Plan benefits depend on salary and length of service. The defined benefit obligations are calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds that are denominated in the currency in which the benefits will be paid and that have terms to maturity approximating the term of the related pension liability. The liability recognised in the balance sheet in respect of defined benefit pension plans is the present value of the defined benefit obligation at the balance sheet date less the fair value of plan assets. The cost of providing pensions is charged to the income statement as employee costs so as to spread the cost over the service lives of employees. Changes in actuarial assumptions and actuarial gains and losses arising from experience adjustments are charged or credited in other comprehensive income in the period in which they arise. Past service costs and gains or losses on settlement are recognised immediately in income when they occur.

Defined contribution plans

For defined contribution plans, contributions are paid to pension insurance companies. Once the contributions have been paid, there are no further payment obligations. Contributions to defined contribution plans are charged to the income statement in the period to which the contributions relate.

Other post-employment obligations

Some group companies provide post-employment medical and other benefits to their retirees. The entitlement to healthcare benefits is usually conditional on the employee remaining in service up to retirement age and the completion of a minimum service period. The expected costs of these benefits are accrued over the period of employment, using an accounting methodology similar to that for defined benefit pension plans. Valuations of these obligations are carried out by independent qualified actuaries.

4. Capital employed

UPM's capital employed primarily relates to its production facilities and both forest and energy assets. UPM aims to capture growth opportunities in its existing business portfolio and invest in projects with attractive and sustainable returns.

Capital employed

EURm	2018	2017
Property, plant and equipment	4,186	4,281
Forest assets	1,945	1,600
Energy shareholdings	2,159	1,974
Goodwill and other intangible assets	531	525
Operating working capital	1,800	1,552
Provisions	–126	–177
Net retirement benefit assets and liabilities	–640	–652
Cash and cash equivalents	888	716
Other assets and liabilities	–29	–7
Net deferred tax assets and liabilities	–138	–36
Assets classified as held for sale	–	1
Total	10,575	9,777

4.1 Property, plant and equipment

EURm	LAND AND WATER AREAS	BUILDINGS	MACHINERY AND EQUIPMENT	OTHER TANGIBLE ASSETS	CONSTRUCTION IN PROGRESS	TOTAL
2018						
Accumulated costs	775	3,599	14,227	878	159	19,638
Accumulated depreciation and impairments	–35	–2,606	–12,060	–751	–	–15,452
Carrying value, at 31 December	740	992	2,167	127	159	4,186
Carrying value, at 1 January	724	1,044	2,295	130	88	4,281
Additions	7	–	10	–1	270	286
Disposals	–13	–	–1	–	–	–15
Depreciation	–	–74	–317	–17	–	–408
Reclassifications	1	15	168	14	–198	–
Translation differences	22	7	12	1	–1	41
Carrying value, at 31 December	740	992	2,167	127	159	4,186
2017						
Accumulated costs	759	3,577	14,150	883	88	19,456
Accumulated depreciation and impairments	–35	–2,532	–11,855	–753	–	–15,176
Carrying value, at 31 December	724	1,044	2,295	130	88	4,281
Carrying value, at 1 January	801	1,131	2,502	133	89	4,657
Additions	4	8	13	3	261	289
Disposals	–16	–2	–5	–	–	–24
Depreciation	–	–80	–337	–18	–	–434
Impairment	–1	2	–4	–1	–	–3
Reclassifications	1	26	214	19	–261	–2
Translation differences	–65	–41	–88	–6	–2	–202
Carrying value, at 31 December	724	1,044	2,295	130	88	4,281

Capital expenditure

Capital expenditure, excluding acquisitions and shares, amounted to EUR 303 million (303 million) in 2018.

In January 2018, UPM announced that it intends to expand its glassine and supercalendered kraft (SCK) paper manufacturing capacity by rebuilding a calender at the UPM Jämsänkoski mill in Finland. The project increased annual capacity by approximately 40,000 tonnes and was completed during Q4 2018.

In April 2018, UPM announced that it would rebuild paper machine 2 at its Nordland mill in Dörpen, Germany and convert it from fine paper to glassine paper production. The machine will be equipped with new finishing equipment and will start producing glassine paper as of Q4 2019. The planned capacity after the rebuild will be 110,000 tonnes per year. The total investment in Nordland is EUR 116 million.

In April 2018, UPM announced plans to increase the release liner base paper capacity at the UPM Changshu mill in China. Installing a second supercalender on paper machine 3 will create an additional capacity of more than 40,000 tonnes of glassine paper a year, as of Q1 2020. The total investment in Changshu is EUR 34 million.

In October 2017, UPM announced plans to expand its Chudovo plywood mill in Russia. The project will raise the mill's production capacity by 45,000 cubic metres to 155,000 cubic metres, while also broadening the mill's product portfolio. In addition to the production capacity growth, a new bio-heat boiler will be built at the mill site. The total investment will be approximately EUR 50 million and will be completed by the end of Q3 2019.

In June 2017, UPM announced it will further improve the efficiency and competiveness of the UPM Kaukas pulp mill, with EUR 30 million investment to upgrade the mill's fibre lines, recovery boiler, evaporation, bailing and wood handling. The project was completed in Q2 2018. The annual production capacity of the UPM Kaukas pulp mill increased by 30,000 tonnes to 770,000 tonnes of softwood and birch pulp.

Capitalised borrowing costs

In 2018, the borrowing costs capitalised as part of non-current assets amounted to EUR 2 million (1 million). Amortisation of capitalised borrowing costs was EUR 3 million (2 million) and the average interest rate used 7.92% (2.40%), which represents the average costs to finance the projects. In 2018, capitalised borrowing costs were mainly related to the expansion of Chudovo plywood mill.

Major capital commitments at 31 December

EURm	2018	2017
Paper machine conversion / Nordland paper mill	81	–
Capacity increase / Changshu paper mill	25	–
Capacity increase / Chudovo plywood mill	8	42
Debottlenecking / Kaukas pulp mill	6	21

Impairment losses

In 2018, no impairment charges were recognised.

In December 2017, UPM closed permanently paper machine 5 at UPM Blandin in Minnesota, USA, in response to overcapacities in the North American paper market. With the closure of the paper machine, UPM recognised impairment charges of EUR 4 million in UPM Communication Papers business area.

Accounting policies

Property, plant and equipment

Property, plant and equipment is stated at historical cost. Costs of assets of acquired in business combinations are determined at fair value at the acquisition date. Depreciation is calculated on a straight-line basis and the carrying value is adjusted for impairment charges, if any. The carrying value of property, plant and equipment on the balance sheet represents the cost less accumulated depreciation and any impairment charges.

Borrowing costs incurred for the construction of any qualifying assets are capitalised during the period of time required to complete and prepare the asset for its intended use. Other borrowing costs are expensed.

Major renovations are capitalised and depreciated over the useful lives of the related asset. Ordinary expenses for repairs and maintenance are expensed as incurred.

Gains and losses on disposals are determined by comparing the disposal proceeds with the carrying amount and are included in other operating income and other operating expenses, respectively.

Impairment testing

Carrying values of individual items included in property, plant and equipment are reviewed at each closing date to determine whether there is any indication of impairment. The carrying value is written down immediately to the asset's recoverable amount if the carrying value exceeds the estimated recoverable amount. Assets that have an indefinite useful life are not subject to amortisation and are tested annually for impairment. The recoverable amount is determined as the higher of an asset's fair value less costs to sell and its value in use. Value in use is determined by discounting future cash flows expected to be generated by the asset. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash-generating units).

Non-financial assets, other than goodwill, that have suffered impairment are reviewed for possible reversal of the impairment at each reporting date. Where an impairment loss is subsequently reversed, the carrying amount of the asset is increased to the revised estimate of its recoverable amount, but the increased carrying amount will not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset in prior years.

ASSESSED USEFUL LIVES	NUMBER OF YEARS
Land, not subject to depreciation	–
Buildings	20–50
Power plants	20–30
Heavy machinery	15–20
Light machinery	10–15
Equipment	5

Key estimates and judgements

The estimations of useful lives, residual value as well as depreciation and amortisation methods require significant management judgement and are reviewed annually. Management makes estimates on the future cash flows expected to result from the use of the asset and its eventual disposal. While management believes that estimates of future cash flows are reasonable, different assumptions regarding such cash flows could materially affect valuations.

The long useful lives of assets, changes in estimated future sales prices of products, changes in product costs and changes in the discount rates used could lead to significant impairment charges.

Estimates are also made in an acquisition when determining the fair values and remaining useful lives of acquired intangible and tangible assets.

4.2 Forest assets

UPM is both a major forest owner and a purchaser of wood. The value of forest assets, i.e. standing trees, amounted to EUR 1,945 million (1,600 million) at the end of 2018. UPM's own and leased forest land areas are summarised in below table.

1,000 ha	FOREST LAND	PRODUCTIVE FOREST LAND	FORESTED LAND
Finland	512	433	428
Uruguay	258	157	148
Uruguay, leased land	124	102	91
United States	76	56	56
Total	971	748	723

Forest assets

EURm	2018	2017
Carrying value, at 1 January	1,600	1,734
Additions	5	3
Disposals	–32	–97
Wood harvested	–101	–117
Net change in fair value	451	137
Translation differences	22	–59
Carrying value, at 31 December	1,945	1,600

Change in fair value, change due to harvesting and gains or losses on sale of forest assets are recognised in the income statement as a net amount amounting to EUR 452 million (103 million) in 2018. The fair value of forest assets in Finland was increased by EUR 345 million mainly due to higher forest growth estimates. In addition, the company adjusted its long-term wood price estimates slightly.

Accounting policies

The group divides all its forest assets for accounting purposes into growing forests, which are recognised as forest assets at fair value less costs to sell, and land, which is stated at cost. Any changes in the fair value of the growing forests are recognised in the operating profit in the income statement. The fair value is calculated on the basis of discounted future expected cash flows as there is a lack of a liquid market. The fair value of forest assets is a level 3 measure in terms of the fair value measurement hierarchy.

Key estimates and judgements

Fair valuation

The valuation process of forest assets is complex and requires management estimates and judgment on assumptions that have a significant impact on the valuation of the group's forest assets.

Main factors used in the fair valuation of forest assets are estimates for growth and wood harvested, stumpage prices and discount rates. Stumpage price forecasts are based on the current prices adjusted by the management's estimates for the full remaining productive lives of the trees, up to 100 years for forests in Finland and in the US and up to 10 years for plantations in Uruguay. The cash flows are adjusted by selling costs and risks related to the future growth. Felling revenues and maintenance costs are estimated on the basis of actual costs and prices, taking into account the group's projection of future price and costs development. In addition, calculations take into account environmental restrictions.

The pre-tax discount rate used to determine the fair value of the Finnish forests in 2018 was 7.0% (7.0%) and for Uruguayan plantations 9.9% (9.5%). A decrease (increase) of one percentage point in discount rate would increase (decrease) the fair value of forest assets by approximately EUR 260 million (220 million).

4.3 Energy shareholdings

UPM is both a significant purchaser and producer of energy. The majority of electrical and thermal energy is consumed at the group's pulp and paper production. The production is mainly carried out by energy companies in which UPM has energy shareholdings. Energy shareholdings are unlisted equity investments. UPM does not have control or joint control of or significant influence in the said energy companies.

The value of energy shareholdings amounted to EUR 2,159 million (1,974 million) at the end of 2018. These energy companies supply energy or both energy and heat to their shareholders on a cost-price principle (Mankala-principle) which is widely applied in the Finnish energy industry. Under the Mankala-principle energy and/or heat is supplied to the shareholders in proportion to their ownership and each shareholder is, pursuant to the specific stipulations of the respective articles of association, severally responsible for its respective share of the production costs of the energy company concerned.

	Number of shares	Group holding %	Carrying value, EURm	
			2018	2017
Pohjolan Voima Oyj, A series	8,176,191	61.24	340	343
Pohjolan Voima Oyj, B series	4,140,132	58.11	1,185	1,063
Pohjolan Voima Oyj, B2 series	2,869,819	51.22	226	181
Kemijoki Oy	179,189	7.33	290	276
Länsi-Suomen Voima Oy	10,220	51.10	110	102
Other	–	–	7	9
Carrying value, at 31 December			2,159	1,974

PVO's share capital is divided into different series of shares. The B and B2 series relate to PVO's shareholdings in Teollisuuden Voima Oyj (TVO). UPM has no direct shareholdings in TVO. TVO operates two nuclear power plants (Olkiluoto 1 and Olkiluoto 2) and is constructing one new nuclear power plant in Olkiluoto (Olkiluoto 3), Finland. The operation of a nuclear power plant is governed by international, European Union and local nuclear regulatory regimes. Pursuant to the Finnish Nuclear Liability Act, the operator of a nuclear facility has a strict third-party liability in relation to nuclear accidents. Shareholders of power companies that own and operate nuclear power plants are not subject to the liability under the Nuclear Liability Act. In Finland, the future costs of conditioning, storage and final disposal of spent fuel, management of low and intermediate level radioactive waste as well as nuclear power plant decommissioning are provided for by a state established fund (the Finnish State Nuclear Waste Management Fund). The contributions to the Fund are intended to be sufficient to cover estimated future costs. These contributions have been taken into consideration in the fair value of the related energy shareholdings.

Energy shareholdings

EURm	2018	2017
Carrying value, at 1 January	1,974	1,932
Additions	–	25
Impairment charges	–	–3
Disposals	–1	–
Changes in fair value recognised in other comprehensive income	185	20
Carrying value, at 31 December	2,159	1,974

Accounting policies

Following the adoption of IFRS 9 in January 2018, the group has made an irrevocable election to designate its energy shareholdings as equity instruments where changes in fair value are recognised through OCI. The shareholdings are not held for trading as the group has an intention to hold the investments for the long term. Purchases of energy shareholdings are initially and subsequently measured at fair value through other comprehensive income, net of tax if applicable, with only dividend income recognised through profit and loss. Initial fair value is acquisition cost including transaction costs. Upon disposal of the investment, the accumulated fair value changes in equity are not recycled to the income statement but instead, are reclassified from the fair value reserve to retained earnings.

In the prior financial year, energy shareholdings were designated as available-for-sale equity investments, for which accumulated fair value adjustments in equity were recognised through the income statement when the investments were sold or impaired.

The fair value of energy shareholdings is a level 3 measure in the fair value measurement hierarchy.

Key estimates and judgements

Fair valuation and sensitivity

Valuation of energy shareholdings requires management's assumptions and estimates of a number of factors that may differ from the actual outcome which could lead to significant adjustment to the carrying amount of the asset. Fair value is determined on a discounted cash flow basis and the main factors impacting the future cash flows include future electricity prices, price trends and discount rates.

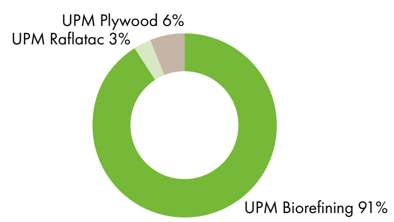
The electricity price estimate is based on a simulation of the Finnish area electricity price. A change of 5% in the electricity price used in the model would change the total value of the assets by EUR 350 million. The discount rate of 5.49% used in the valuation model is determined using the weighted average cost of capital method. A change of 0.5% in the discount rate would change the estimated fair value of the assets by approximately EUR 300 million.

Other uncertainties and risk factors in the value of the assets relate to start-up schedule of the fixed price turn-key Olkiluoto 3 EPR nuclear power plant project. UPM's indirect share of the capacity of Olkiluoto 3 EPR is approximately 31%, through its PVO B2 shares. Changes in regulatory environment or taxation could also have an impact on the value of the energy generating assets.

4.4 Goodwill and other intangible assets

The group's goodwill mainly relates to pulp operations in Finland and Uruguay belonging to UPM Biorefining business area.

Goodwill by business area 2018



Goodwill by business area

EURm	2018	2017
UPM Biorefining	214	210
UPM Raflatac	7	7
UPM Plywood	13	13
Other operations	1	1
Total	236	231

Goodwill

EURm	2018	2017
Carrying value, at 1 January	231	245
Translation differences	5	–13
Carrying value, at 31 December	236	231

Other intangible assets

EURm	INTANGIBLE RIGHTS	SOFTWARE AND OTHER INTANGIBLE ASSETS	TOTAL
2018			
Accumulated costs	518	634	1,152
Accumulated amortisation and impairments	−301	−601	−902
Carrying value, at 31 December	217	33	250
Carrying value, at 1 January	217	33	250
Additions	4	10	15
Amortisation	−4	−11	−15
Carrying value, at 31 December	217	33	250
Emission rights, carrying value [1]			45
Carrying value including emission rights, at 31 December			295
2017			
Accumulated costs	516	622	1,137
Accumulated amortisation and impairments	−299	−588	−887
Carrying value, at 31 December	217	33	250
Carrying value, at 1 January	218	38	256
Additions	4	9	13
Amortisation	−4	−14	−18
Reclassifications	1	–	1
Translation differences	−1	–	−1
Carrying value, at 31 December	217	33	250
Emission rights, carrying value [1]			44
Carrying value including emission rights, at 31 December			294

[1] » Refer Note 2.3 *Operating expenses and other operating income, for further information on emission rights.*

Impairment testing

Impairment tests for goodwill and water rights with indefinite life were carried out in the fourth quarter 2018. The values of water rights were tested based on expected future cash flows of each separate hydropower plant. Water rights of hydropower plants belonging to UPM Energy and reported in intangible rights amounted EUR 189 million at the end of 2018 and 2017.

Goodwill impairment tests were carried out for pulp operations in Finland and Uruguay, belonging to UPM Biorefining business area, UPM Raflatac business area and UPM Plywood business area.

The 2018 impairment tests did not result in a recognition of any impairment.

The basis for valuation and key assumptions used in goodwill impairment testing are summarised in below table:

CASH GENERATING UNIT	BASIS OF VALUATION	PERIOD OF FORECAST	PRE-TAX DISCOUNT RATE	KEY ASSUMPTIONS
Pulp operations Finland	Value in use	10 years + terminal value	9.25% (2017: 8.57%)	Pulp price, wood costs
Pulp operations Uruguay	Value in use	10 years + terminal value	9.87% (2017: 9.36%)	Pulp price, wood costs
UPM Raflatac	Value in use	10 years + terminal value	7.83% (2017: 8.19%)	Product prices, cost development
UPM Plywood	Value in use	10 years + terminal value	10.93% (2017: 10.85%)	Product prices, cost development

Sensitivity analyses

The sensitivity analyses of goodwill impairment tests indicate that no reasonable change in key assumptions would result in recognition of impairment loss against goodwill. In pulp operations the recoverable amount is most sensitive to pulp sales prices and the cost of wood raw material.

As at 31 December 2018, for pulp operations Finland, a decrease of more than 28% in pulp prices would result in recognition of impairment loss against goodwill. For pulp operations Uruguay, a decrease of more than 13% in pulp prices would result in recognition of impairment loss against goodwill and a decrease of more than 15% in pulp prices would result in a write-down of the entire goodwill. The group believes that no reasonable change in wood cost would cause the aggregate carrying amount to exceed the recoverable amount.

Key estimates and judgements

The group's assessment of the carrying value of goodwill and indefinite life assets requires significant judgement.

While management believes that estimates of future cash flows are reasonable, different assumptions are subject to change as a result of changing economic and operational conditions. Actual cash flows could therefore vary from estimated discounted future cash flows and could result in changes in the recognition of impairment charges in future periods.

Future cash flows

The review of recoverable amount for goodwill and indefinite life assets is based on a calculation of value in use, using management projections of future cash flows. The most important assessments and assumptions needed in calculations are forecasts for future growth rates for the business in question, product prices, cost development and the discount rates applied. The group is using ten-year forecasts in calculations as the nature of the group's business is long-term, due to its capital intensity, and is exposed to cyclical changes. In estimates of product prices and cost development, forecasts prepared by management for the next three years and estimates made for the following seven years are taken into consideration. In addition, consideration is given to the investment decisions made by the group as well as the profitability programmes that the group has implemented and the views of knowledgeable industry experts on the long-term development of demand and prices. In the projection of cash flows UPM uses EBITDA adjusted with cash flows not captured within EBITDA, including working capital movements and capital expenditures.

Discount rate

The discount rate is estimated using the weighted average cost of capital (WACC) on the calculation date adjusted for risks specific to the business in question. The adjusted after-tax discount rate is translated to a pre-tax rate for each cash generating unit (CGU) based on the specific tax rate applicable to where the CGU operates.

Accounting policies

Goodwill

Goodwill arises in connection with business combinations where the consideration transferred exceeds the fair value of the acquired net assets. Goodwill is recognised at cost less accumulated impairment and is an intangible asset with an indefinite useful life. Goodwill is allocated to the cash generating units that are expected to benefit from the synergies from the business combination.

Intangible rights

Intangible rights include water rights of hydropower plants, patents, licences, intellectual property and similar rights. Water rights are deemed to have an indefinite useful life as the company has a contractual right to exploit water resources in the energy production of power plants.

The values of water rights are tested annually for impairment based on expected future cash flows of each separate hydropower plant. Other intangible rights are recognised at cost less accumulated amortisation and impairment. Amortisation is calculated using the straight-line method over their estimated useful lives ranging from 5 to 10 years.

Software and other intangible assets

Research expenditure is recognised as an expense as incurred. Costs incurred in acquiring software that will contribute to future period financial benefit are capitalised to software and systems. Other intangible assets are recognised at cost less accumulated amortisation and impairment. Amortisation is calculated using the straight-line method over their estimated useful lives ranging from 3 to 5 years.

Impairment testing

Goodwill and other intangible assets that are deemed to have an indefinite life are tested at least annually for impairment. For goodwill impairment testing purposes the group identifies its cash-generating units (CGUs), which is the smallest identifiable group of assets that generate cash inflows largely independent of the cash inflows of other assets or other groups of assets. Each CGU is no larger than a business area. The carrying amount for the CGU includes goodwill, non-current assets and working capital. If the balance sheet carrying amount of the CGU unit exceeds its recoverable amount, an impairment loss is recognised. Impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to other assets of the unit. An impairment loss recognised for goodwill is not reversed in a subsequent period.

Other intangible assets with indefinite useful lives are impaired if the recoverable amount of the asset is less than the carrying amount. The carrying amount of the asset is then reduced to the recoverable amount which is the higher of the asset's net selling price and its value in use.

4.5 Provisions

EURm	RESTRUCTURING	TERMINATION	ENVIRONMENTAL	EMISSIONS	OTHER	TOTAL
2018						
Provisions at 1 January	42	52	20	9	53	177
Provisions made during the year	1	5	1	16	1	22
Provisions utilised during the year	−8	−20	−1	−10	−7	−46
Unused provisions reversed	−13	−10	–	–	−2	−25
Reclassifications	−1	−3	–	–	–	−3
Translation differences	–	–	–	–	–	1
Provisions at 31 December	22	24	20	14	46	126
Non-current						95
Current						31
Total						126
2017						
Provisions at 1 January	45	54	21	9	16	145
Provisions made during the year	5	42	2	8	42	99
Provisions utilised during the year	−7	−35	−1	−8	−1	−53
Unused provisions reversed	−1	−8	−1	−1	−3	−14
Reclassifications	1	−1	–	–	–	–
Translation differences	–	–	–	–	–	−1
Provisions at 31 December	42	52	20	9	53	177
Non-current						117
Current						60
Total						177

UPM has undergone several restructurings in recent years including mill closures and profit improvement programs. Restructuring provisions recognised include various restructuring activities including dismantling costs. Termination provisions include severance payments, unemployment compensations or other arrangements for employees leaving the company. In Finland termination provisions include also unemployment arrangements and disability pensions. Unemployment provisions in Finland are recognised 2–3 years before the granting and settlement of the compensation.

At 31 December 2018 and 2017, restructuring and termination provisions relate mainly to capacity closures and optimisation of operations in UPM Communication Papers business area. In 2018, EUR 18 million prior years' restructuring and termination provisions were reversed as unused. In 2017, UPM has closed paper machine 5 at UPM Blandin mill in the United States, optimised operations at UPM Nordland Papier and UPM NorService units in Germany and in other European countries. The total termination and restructuring provisions made related to these capacity closures and optimisations amounted to EUR 40 million in 2017.

The group recognises provisions for normal environmental remediation costs expected to be incurred in a future period upon a removal of non-current assets and restoring industrial landfills where a legal or constructive obligation exists.

Other provisions are mainly attributable to onerous contracts and will be incurred over a period longer than one year.

Provisions for emissions include liability to cover the obligation to return emission rights. The group possesses emission rights amounting to EUR 45 million (44 million) as intangible assets.

» **Refer Note 2.3** *Operating expenses and other operating income, for further information on emission rights.*

Accounting policies

A provision is recognised when a present legal or constructive obligation exists as a result of a past event and it is probable that an outflow of resources will be required to settle the obligation and the amount can be reliably estimated. Provisions are split between amounts expected to be settled within 12 months of the balance sheet date (current) and amounts expected to be settled later (non-current).

Restructuring and termination provisions
A restructuring provisions is recognised when a detailed plan for the implementation of the measures is complete and when the plan has been communicated to those who are affected. Employee termination provisions are recognised when the group has communicated the plan to the employees.

Environmental provisions
Environmental expenditures that relate to an existing condition caused by past operations that do not contribute to future earnings are expensed. The recognition of environmental provisions is based on current interpretations of environmental laws and regulations. Such provisions are recognised when the group has an obligation to dismantle and remove a facility or an item of plant and to restore the site on which it is located. The amount recognised is the present value of the estimated future expenditure determined in accordance with local conditions and requirements. A corresponding item of property, plant and equipment of an amount equivalent to the provision is also recognised and subsequently depreciated as part of the asset. Provisions do not include any third-party recoveries.

Emission provisions
Emission obligations are recognised in provisions based on realised emissions. The provision is measured at the carrying amounts of the corresponding emission rights held, which are recognised as intangible assets. In case of deficit in emission rights, the shortage is valued at the market value at the balance sheet date.

Key estimates and judgements

Environmental provisions
The estimates used in determining the provisions are based on the expenses incurred for similar activities in the current reporting period taking into account the effect of inflation, cost-base development and discounting. Because actual outflows can differ from estimates due to changes in laws, regulations, public expectations, technology, prices and conditions, and can take place many years in the future, the carrying amounts of provisions are regularly reviewed and adjusted to take into account of any such changes. The discount rate applied is reviewed annually.

The group aims to operate in compliance with regulations related to the treatment of waste water, air emissions and landfill sites. However, expected events during production processes and waste treatment could cause material losses and additional costs in the group's operations.

Legal contingencies
Management judgement is required in measurement and recognition of provisions related to pending litigation. Provisions are recorded when the group has a present legal or constructive obligation as a result of past event, an unfavourable outcome is probable and the amount of loss can be reasonably estimated. Due to inherent uncertain nature of litigation, the actual losses may differ significantly from the originally estimated provision.

» **Refer Note 9.2** *Litigation for details of legal contingencies.*

4.6 Working capital

The group defines operating working capital as inventories, trade receivables, trade payables and advances received which are presented separately below. The performance obligations related to advances received are typically fulfilled within 12 months of receipt of the advance.

UPM is focusing on working capital efficiency and targeting a sustainable and permanent reduction in operating working capital.

Operating working capital

EURm	2018	2017
Inventories	1,642	1,311
Trade receivables	1,476	1,447
Trade payables	−1,310	−1,167
Advances received	−7	−39
Total	1,800	1,552

Inventories

EURm	2018	2017
Raw materials and consumables	822	617
Work in progress	10	58
Finished products and goods	777	617
Advance payments	33	19
Total	1,642	1,311

Trade and other receivables

EURm	2018	2017
Trade receivables		
Trade receivables	1,502	1,470
Loss allowance provision	−26	−23
Total trade receivables	1,476	1,447
Prepayments and accrued income		
Personnel expenses	4	5
Interest income	1	1
Energy and other excise taxes	54	53
Other items	77	64
Total prepayments and accrued income	135	123
Other receivables		
VAT and other indirect taxes receivable	181	166
Other receivables	41	47
Total other receivables	222	213
Total	1,833	1,783

EURm	TRADE RECEIVABLES	LOSS ALLOWANCE PROVISION	2018 TRADE RECEIVABLES, NET OF PROVISION	2017 TRADE RECEIVABLES, NET OF PROVISION
Undue	1,325	−5	1,320	1,254
Past due up to 30 days	116	−1	115	147
Past due 31–90 days	32	−1	30	32
Past due over 90 days	30	−20	10	13
Total	1,502	−26	1,476	1,447

Trade and other payables

EURm	2018	2017
Accrued expenses and deferred income		
Personnel expenses	196	209
Interest expenses	6	9
Indirect taxes	4	4
Customer rebates	129	129
Customer claims	7	4
Other items	82	63
Total accrued expenses and deferred income	425	419
Advances received	7	39
Trade payables	1,310	1,167
Other current liabilities	139	141
Total	1,881	1,765

Operational credit risk

Operational credit risk is defined as the risk where UPM is not able to collect the payments for its receivables. The group has a credit policy in place and the exposure to credit risk is monitored on an ongoing basis. Outstanding trade receivables, days of sales outstanding (DSO) and overdue trade receivables are followed on monthly basis. Potential concentrations of credit risk with respect to trade and other receivables are limited due to the large number and the geographic dispersion of customers. Customer credit limits are established and monitored, and ongoing evaluations of their financial condition is performed. The group has trade credit insurances to protect accounts receivables from significant credit losses. In certain market areas, including Asia and Northern Africa, measures to reduce credit risks include letters of credit, prepayments and bank guarantees. Maximum exposure to credit risk, without taking into account any credit enhancements, is the carrying amount of trade and other receivables.

UPM does not have significant concentration of customer credit risk. The ten largest customers accounted for approximately 18% (19%) of the trade receivables as at 31 December 2018 – i.e., approximately EUR 269 million (274 million).

In 2018, trade receivables amounting to EUR 7 million were subject to permanent write-off and the loss was recognised under other costs and expenses. In accordance with the group's accounting policy, trade receivables are permanently written off when there is no reasonable expectation of recovery.

§ *Accounting policies*

Inventories

Inventories are stated at the lower of cost and net realisable value. Cost is determined by the method most appropriate to the particular nature of inventory, the first-in, first-out (FIFO) or weighted average cost. The cost of finished goods and work in progress comprises raw materials, direct labour, other direct costs and related production overheads (based on normal operating capacity) but excludes borrowing costs. Net realisable value is the estimated selling price in the ordinary course of business, less the costs of completion and selling expenses. If the net realisable value is lower than cost, a valuation allowance is established for inventory obsolescence.

Trade receivables

Trade receivables arising from selling goods and services in the normal course of business are recognised initially at transaction price and subsequently at amortised cost less loss allowance provision. No element of financing is deemed present as the sales are made with a credit term of 14-60 days, which is consistent with market practice.

From 1 January, 2018 onwards the group applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables. The group has recognised two types of provisions for trade receivables – a general provision for lifetime expected credit losses and a provision for specified individual trade receivables, both of which are charged to the income statement. The group uses a provision matrix for estimating lifetime expected credit losses where trade receivables are segregated by businesses. The provision matrix is based on historical observed default rates, adjusted by forward looking information. It takes into account trade credit insurances, payment profile of customers and the factor that as debts get older they are more likely not to be paid. Additionally, the group recognises a provision individually for outstanding trade receivables where specific debtor information is available. In these cases there must be objective evidence that the group will not be able to collect all amounts due according to the original terms of the receivables.

Trade receivables are permanently written off when there is no reasonable expectation of recovery. The customer entering into bankruptcy or liquidation proceedings or finalising such proceedings, or entering into debt-restructuring are considered indicators that the trade receivables are no longer expected to be recovered. Subsequent recoveries of amounts previously written off are credited to the income statement. The carrying amount of trade receivables approximates to their fair value due to the short-term nature of the receivables.

In the comparison period, a provision for impairment was charged to the income statement only when there was objective evidence that the group will not be able to collect all amounts due.

Trade and other payables

Trade payables arise from purchase of inventories, fixed assets and goods and services in the ordinary course of business from UPM's suppliers. Trade and other payables are classified as current liabilities if they are due to be settled within the normal operating cycle of the business or within 12 months from the balance sheet date. Trade payables are recognised initially at fair value and subsequently at amortised cost using the effective interest method. The carrying amount of trade payables approximates to their fair value due to the short-term nature of the payables.

The group is recognising refund liability for expected volume and other discounts arising from contracts with customers. Customer rebates include mainly volume discounts and are recognised as equal to an amount which is most likely to be paid to the customer. The carrying amount of expected customer rebates is updated at each reporting date, using the latest forecast data available.

Customer claims relating to quality complaints are accounted for as revenue related refund liability. Expected customer claims are estimated based on historical data and the amount of refund liability is updated at each reporting date.

Advances received are recognised as contract liability until the performance obligation is fulfilled.

5. Capital structure

UPM has a strong cash flow and industry-leading balance sheet that mitigates risks and enables value-enhancing strategic actions.

Net debt
EUR **−311m**
(EUR 174m)

Free cash flow
EUR **1,131m**
(EUR 1,336m)

5.1 Capital management

UPM's objective for managing capital comprising of net debt and total equity is to ensure maintenance of flexible capital structure to enable the ability to operate in capital markets and maintain optimal returns to shareholders. The group manages its financing activities, debt portfolio and financial resources via various policies that are designed to ensure optimum financing arrangements minimising simultaneously financial expenses and refinancing risk and optimising liquidity. Borrowing activities are centralised to the parent to the extent possible and cash resources are distributed within the group by the central treasury department.

UPM targets a net debt to EBITDA ratio of approximately 2 times or less.

UPM's capital

EURm	2018	2017
Equity attributable to owners of the parent company	9,792	8,660
Non-controlling interest	5	4
Total equity	9,797	8,663
Non-current debt	753	789
Current debt	25	324
Total debt	778	1,114
Total capitalisation	10,575	9,777
Total debt	778	1,114
Less: Interest-bearing financial assets	−1,089	−940
Net debt	−311	174
Gearing ratio, % [1]	−3	2
Net debt to EBITDA [1]	−0.17	0.11

[1] » Refer Other financial information *on Alternative performance measures.*

Liquidity and refinancing risk

UPM seeks to maintain adequate liquidity under all circumstances by means of efficient cash management and restricting financial investments to investment types that can readily be converted into cash. Adequate liquidity is maintained by keeping sufficient amount of unused committed credit lines or cash as a reserve.

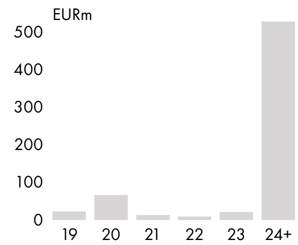
Refinancing risks are minimised by ensuring a balanced loan portfolio maturing schedule and sufficiently long maturities. The average loan maturity at 31 December 2018 was 8.0 years (6.9 years).

Liquidity and refinancing

EURm	2018	2017
Cash at bank	784	666
Cash equivalents	104	50
Committed credit lines	7	657
of which used	−5	−6
Loan commitments	−47	−46
Used uncommitted credit lines	−9	−5
Long-term loan repayment cash flow	−13	−306
Liquidity	821	1,010

Cash and cash equivalents comprise cash in hand, deposits held at banks and with original maturities of three months or less. Bank overdrafts are included in used uncommitted credit lines and presented within current debt in the balance sheet. In 2018, no impairment and no expected credit losses were recognised in profit or loss for loan receivables or cash and cash equivalents.

Repayments of debt at the end of 2018



Maturity table of debt at the end of 2018

EURm	2019	2020	2021	2022	2023	2024+	TOTAL
Bonds	–	–	–	–	–	328	328
Loans from financial institutions	4	13	8	3	15	2	44
Finance leases	7	49	5	5	4	27	98
Other loans	1	4	1	1	1	169	176
Current loans	9	–	–	–	–	–	9
Principal payments	22	66	13	9	20	525	654
Interest payments	36	32	32	32	32	137	302

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 133 million and other non-cash adjustments decreasing carrying value by EUR 10 million.

Maturity table of debt at the end of 2017

EURm	2018	2019	2020	2021	2022	2023+	TOTAL
Bonds	208	–	–	–	–	313	521
Loans from financial institutions	14	18	26	10	8	13	91
Pension loans	74	–	–	–	–	–	74
Finance leases	7	7	49	5	5	31	105
Other loans	2	4	1	1	1	158	165
Current loans	5	–	–	–	–	–	5
Principal payments	310	29	76	17	15	515	961
Interest payments	39	35	31	31	31	162	329

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 151 million and other non-cash adjustments decreasing carrying value by EUR 11 million.

Maturity table of derivatives included in net debt and guarantees at the end of 2018

EURm	2019	2020	2021	2022	2023	2024+	TOTAL
Net settled interest rate swaps							
Net inflow	11	11	11	11	11	40	95
Net outflow	–2	–	–	–	–	–	–2
Gross settled derivatives							
Gross currency swaps							
Total inflow	10	7	7	7	7	205	242
Total outflow	–1	–1	–2	–2	–3	–187	–195
Forward foreign exchange contracts							
Total inflow	409	–	–	–	–	–	409
Total outflow	–410	–	–	–	–	–	–410
Guarantees	2	–	–	–	–	–	2

Maturity table of derivatives included in net debt and guarantees at the end of 2017

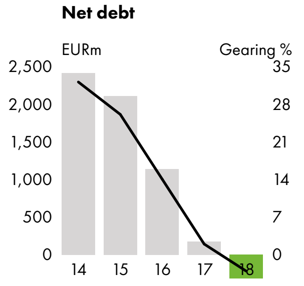
EURm	2018	2019	2020	2021	2022	2023+	TOTAL
Net settled interest rate swaps							
Net inflow	21	12	11	11	11	53	119
Net outflow	–	–2	–	–	–	–	–2
Gross settled derivatives							
Gross currency swaps							
Total inflow	89	8	7	7	7	198	315
Total outflow	–78	–1	–2	–2	–3	–192	–278
Forward foreign exchange contracts							
Total inflow	356	–	–	–	–	–	356
Total outflow	–356	–	–	–	–	–	–356
Guarantees	2	–	–	–	–	–	2

5.2 Net debt

Net debt is defined as the total of current and non-current debt less cash and cash equivalents and interest-bearing current and non-current financial assets. In 2018, the group reduced net debt by EUR 485 million. Net debt totalled EUR –311 million at the end of 2018 (174 million).

Net debt

EURm	2018	2017
Bonds	405	405
Loans from financial institutions	39	78
Finance leases	90	97
Other loans	219	209
Non-current debt	753	789
Repayments of non-current debt	13	306
Derivatives	3	13
Other liabilities	9	5
Current debt	25	324
Total debt	778	1,114
Loan receivables	7	7
Derivatives	134	148
Other receivables	31	34
Non-current interest-bearing assets	171	189
Loan receivables	8	5
Derivatives	4	8
Other receivables	18	21
Cash and cash equivalents	888	716
Current interest-bearing assets	918	751
Total interest-bearing assets	1,089	940
Net debt	–311	174



Accounting policies

Debt
Debt comprising of bonds, bank and pension loans and other loans is recognised initially at fair value, net of transaction costs and subsequently measured at amortised cost using the effective interest method. Any difference between proceeds (net of transaction costs) and the redemption value is recognised in the income statement over the estimated life of the borrowing. UPM classifies debt as non-current unless due for settlement within a year. Most of the debt is hedged in a fair value hedge relationship as described in » *Note 6.1 Financial risk management.*

Change in net debt 2018

EURm	Reported in financing activities in cash flow statement						
	NON-CURRENT LOANS INCL. REPAYMENTS	FINANCE LEASES	CURRENT LOANS	NET DERIVATIVES	OTHER FINANCIAL ASSETS	CASH AND CASH EQUIVALENTS	NET DEBT
Carrying value, at 1 January	–991	–105	–5	143	68	716	–174
Change in net debt, cash							
Proceeds from non-current debt	–	–	–	–	–	–	–
Payments of non-current debt	324	7	–	–	–	–	331
Change in current liabilities	–	–	–4	–	–	–	–4
Change in other financial assets in operating cash flow	–	–	–	–	–7	–	–7
Change in other financial assets in investing cash flow	–	–	–	–	3	–	3
Change in cash and cash equivalents	–	–	–	–	–	172	172
	324	7	–4	–	–4	172	495
Change in net debt, non-cash							
Fair value gains and losses	19	–	–	–8	–	–	10
Exchange gains and losses	–19	–1	–	–	–	–	–20
Effective interest rate adjustment	–1	–	–	–	–	–	–1
	–1	–1	–	–8	–	–	–10
Carrying value, at 31 December	–669	–98	–9	135	64	888	311

UPM BIOFORE–BEYOND FOSSILS

Change in net debt 2017

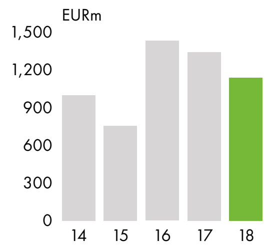
	Reported in financing activities in cash flow statement						
EURm	NON-CURRENT LOANS INCL. REPAYMENTS	FINANCE LEASES	CURRENT LOANS	NET DERIVATIVES	OTHER FINANCIAL ASSETS	CASH AND CASH EQUIVALENTS	NET DEBT
Carrying value, at 1 January	–2,082	–195	–26	112	68	992	–1,131
Change in net debt, cash							
Proceeds from non-current debt	–1	–	–	–	–	–	–1
Payments of non-current debt	957	7	–	–	–	–	964
Change in current liabilities	–	–	21	–	–	–	21
Net cash flows from derivatives	–	–	–	97	–	–	97
Change in other financial assets in operating cash flow	–	–	–	–	2	–	2
Change in other financial assets in investing cash flow	–	–	–	–	–5	–	–5
Change in cash and cash equivalents	–	–	–	–	–	–268	–268
	956	7	21	97	–3	–268	810
Change in net debt, non-cash							
Fair value gains and losses	50	–	–	–66	–	–	–16
Exchange gains and losses	90	2	–	–	–1	–7	84
Effective interest rate adjustment	–5	–	–	–	–	–	–5
Other non-cash changes	–	81	–	–	3	–	84
	135	83	–	–66	2	–7	148
Carrying value, at 31 December	–991	–105	–5	143	68	716	–174

Free cash flow

Free cash flow is primarily a liquidity measure. It is an important indicator of UPM's overall operational performance as it reflects the cash generated from operations after investing activities. UPM's free cash flow has enabled payment of dividends as well as repayments of debt reducing net debt significantly.

EURm	2018	2017
Operating cash flow	1,391	1,558
Investing cash flow	–260	–222
Free cash flow	1,131	1,336
Dividends paid	–613	–507
Other financing cash flow	–19	–17
Change in other financial assets in operating cash flow	–7	2
Change in other financial assets in investing cash flow	3	–5
Change in net debt, cash	495	810
Change in net debt, non-cash	–10	148
Decrease in net debt	485	957
Opening net debt	174	1,131
Closing net debt	–311	174

Free cash flow



Bonds

FIXED RATE PERIOD	INTEREST RATE, %	CURRENCY	NOMINAL VALUE ISSUED, MILLION	CARRYING VALUE 2018 EURm	CARRYING VALUE 2017 EURm
1997–2027	7.450	USD	375	405	405
2003–2018	5.500	USD	250	–	208
Value, at 31 December				405	613
Current portion				–	208
Non-current portion				405	405

Leases

UPM has three finance lease agreements regarding power plant machinery outstanding at the end of 2018. The group uses the energy generated by these plants for its own production. The group also has a finance lease arrangement over the usage of a waste water treatment plant. In addition, the group leases certain production assets and buildings under long term finance lease arrangements.

Leased assets included in property, plant and equipment

EURm	2018	2017
Accumulated costs	153	152
Accumulated depreciation	–66	–58
Carrying value, at 31 December	88	94

The group also leases office, manufacturing and warehouse space through various non-cancellable operating leases. Certain contracts contain renewal options for various periods of time.

Future minimum lease payments

	Finance leases		Operating leases	
EURm	2018	2017	2018	2017
Within 1 year	8	8	90	77
Between 1 and 5 years	66	69	226	203
Later than 5 years	28	32	238	183
Total	102	110	554	463
Of which interest	–5	–6	–	–
Present value of future minimum lease payments	98	105	–	–

§ *Accounting policies*

Leases

Leases of property, plant and equipment where the group, as a lessee, has substantially all the risks and rewards of ownership are classified as finance leases. Finance leases are recognised as assets and liabilities in the balance sheet at the commencement of lease term at the lower of the fair value of the leased property and the present value of the minimum lease payments.

Each finance lease payment is allocated between the liability and finance charges. The corresponding rental obligations, net of finance charges, are included in other non-current debt. The interest element of the finance cost is charged to the income statement over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. Property, plant and equipment acquired under finance leases are depreciated over the shorter of the asset's useful life and the lease term.

Leases where the lessor retains substantially all the risks and rewards of ownership are classified as operating leases. Payments made as a lessee under operating leases are charged to the income statement on a straight-line basis over the period of the lease.

UPM will apply IFRS 16 Leases from 1 January, 2019.
» Refer Note 10.1 Forthcoming new standards, amendments and accounting policy changes for more information.

5.3 Financial assets and liabilities by category

Financial assets and liabilities recognised in the balance sheet include cash and cash equivalents, loans and other financial receivables, investments in securities, trade receivables, trade payables, loans, bank overdrafts and derivatives.

Classification of financial assets into different measurement categories depends on the contractual cash flow characteristics and the business model for managing the financial asset. The measurement category of each financial asset is determined at inception. In the comparison period, classification was dependent on the purpose for which the financial assets were acquired. Financial assets and liabilities are offset and the net amount reported in the balance sheet when there is a legally enforceable right in all circumstances to offset the recognised amounts and there is an intention to settle on a net basis or realise the asset and settle the liability simultaneously.

Financial assets and liabilities by category at the end of 2018

EURm	FAIR VALUE THROUGH PROFIT AND LOSS	EQUITY INSTRUMENTS AT FAIR VALUE THROUGH OCI	DERIVATIVES UNDER HEDGE ACCOUNTING	FINANCIAL ASSETS AND LIABILITIES AT AMORTISED COST	TOTAL
Energy shareholdings	–	2,159	–	–	2,159
Other non-current financial assets					
Loans and receivables	–	–	–	15	15
Derivatives	–	–	163	–	163
	–	–	163	15	178
Trade and other receivables	–	–	–	1,833	1,833
Other current financial assets					
Loans and receivables	–	–	–	8	8
Derivatives	16	–	83	–	99
	16	–	83	8	107
Cash and cash equivalents				888	888
Total financial assets	16	2,159	246	2,745	5,166
Non-current debt					
Loans	–	–	–	753	753
	–	–	–	753	753
Other non-current financial liabilities					
Other liabilities [1]	–	–	–	100	100
Derivatives	–	–	1	–	1
	–	–	1	100	101
Current debt					
Loans	–	–	–	22	22
Derivatives	3	–	–	–	3
	3	–	–	22	25
Trade and other payables	–	–	–	1,881	1,881
Other current financial liabilities					
Derivatives	8	–	70	–	78
	8	–	70	–	78
Total financial liabilities	10	–	71	2,756	2,838

Financial assets and liabilities by category at the end of 2017

EURm	FAIR VALUE THROUGH PROFIT AND LOSS	AVAILABLE-FOR-SALE FINANCIAL ASSETS	DERIVATIVES UNDER HEDGE ACCOUNTING	FINANCIAL ASSETS AND LIABILITIES AT AMORTISED COST	TOTAL
Energy shareholdings	–	1,974	–	–	1,974
Other non-current financial assets					
Loans and receivables	–	–	–	16	16
Derivatives	2	–	175	–	176
	2	–	175	16	192
Trade and other receivables	–	–	–	1,783	1,783
Other current financial assets					
Loans and receivables	–	–	–	5	5
Derivatives	21	–	66	–	87
	21	–	66	5	92
Cash and cash equivalents				716	716
Total financial assets	23	1,974	240	2,520	4,757
Non-current debt					
Loans	–	–	–	789	789
	–	–	–	789	789
Other non-current financial liabilities					
Other liabilities [1]	–	–	–	85	85
Derivatives	8	–	1	–	9
	8	–	1	85	94
Current debt					
Loans	–	–	–	311	311
Derivatives	13	–	–	–	13
	13	–	–	311	324
Trade and other payables	–	–	–	1,765	1,765
Other current financial liabilities					
Derivatives	15	–	19	–	34
	15	–	19	–	34
Total financial liabilities	36	–	20	2,951	3,006

[1] Consists mainly of non-current advances received and a put liability that is not estimated to mature within 12 months.

The carrying amounts of financial assets and financial liabilities except for non-current loans approximate their fair value. The fair value of non-current loans amounted to EUR 750 million (801 million) at the end of 2018. For quoted bonds, the fair values are based on the quoted market value as of 31 December. At the end of 2018, all bonds were quoted. For other non-current borrowings fair values are estimated using the expected contractual future payments discounted at market interest rates and are categorised within level 2 of the fair value hierarchy.

» Refer Note 5.2 Net debt, for further information on net debt and bonds.

Fair value measurement hierarchy for financial assets and liabilities

EURm	2018				2017			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Financial assets								
Derivatives, non-qualifying hedges	–	16	–	16	4	19	–	23
Derivatives under hedge accounting	106	140	–	246	42	198	–	240
Energy shareholdings	–	–	2,159	2,159	–	–	1,974	1,974
Total	106	156	2,159	2,421	46	217	1,974	2,237
Financial liabilities								
Derivatives, non-qualifying hedges	–	10	–	10	17	19	–	36
Derivatives under hedge accounting	15	56	–	71	12	8	–	20
Total	15	66	–	81	29	27	–	56

There have been no transfers between levels in 2018 and 2017.

§ *Accounting policies*

Fair value through profit or loss
This category includes derivatives that don't qualify hedge accounting. They are measured at fair value and any gains or losses from subsequent measurement are recognised in the income statement.

Equity instruments at fair value through other comprehensive income
This category includes mainly UPM's energy shareholdings. These assets are measured at fair value through other comprehensive income.

Financial assets at amortised cost
This category comprises loan receivables with fixed or determinable payments that are not quoted in an active market, as well as trade and other receivables, and cash and cash equivalents. They are included in non-current assets unless they mature within 12 months of the balance sheet date. Cash and cash equivalents are always classified as current assets. Loan receivables that have a fixed maturity are measured at amortised cost using the effective interest method. Loan receivables without fixed maturity date are measured at amortised cost. As soon as a loan receivables or cash and cash equivalents are originated or purchased, a loss allowance for 12-month expected credit losses are recognised in profit or loss. If credit risk increases significantly, full lifetime expected credit losses are recognised in profit or loss. In the comparison period, loan receivables were impaired if the carrying amount exceeded the estimated recoverable amount. The credit loss model applied to trade receivables is described in *» Note 4.6 Working capital.*

Derivatives under hedge accounting
All derivatives are initially and continuously recognised at fair value in the balance sheet. Gains and losses on remeasurement of derivatives used for hedging purposes are recognised in accordance with the accounting principles described in *» Note 6.2 Derivatives and hedge accounting.*

Financial liabilities measured at amortised cost
This category includes debt, trade payables and other financial liabilities. *» Refer Note 5.2 Net debt, for further information.*

The different levels of fair value hierarchy used in fair value estimation are defined as follows:

Fair values under level 1
Quoted prices (unadjusted) traded in active markets for identical assets or liabilities. Derivatives include futures and commodity forwards traded in exchange.

Fair values under level 2
Observable inputs are used as basis for fair value calculations either directly (prices) or indirectly (derived from prices). If all significant inputs required to fair value an instrument are observable, the instrument is included in level 2. Derivatives, level 2 include OTC derivatives like forward foreign exchange contracts, foreign currency options, interest and currency swaps and commodity swaps.

Specific valuation techniques used to value financial instruments at level 2 include the following methods:

Interest forward rate agreements (FRA) are fair valued based on quoted market rates on the balance sheet date. Forward foreign exchange contracts are fair valued based on the contract forward rates at the balance sheet date. Foreign currency options are fair valued based on quoted market rates and market volatility rates on the balance sheet date by using the Black&Scholes option valuation model. Interest and currency swap instruments are fair valued as present value of the estimated future cash flows based on observable yield curves. Commodity swaps are fair valued based on forward curve quotations received from service providers.

An embedded derivative that is by nature a foreign currency forward contract is valuated at market forward exchange rates and is included in level 2. Embedded derivatives are monitored by the group and the fair value changes are reported in other operating income in the income statement.

Fair values under level 3
Financial assets or liabilities of which fair values are not based on observable market data (that is, unobservable inputs) are classified under level 3. This category include UPM's energy shareholdings and forest assets. Fair valuations are performed at least quarterly by respective business areas or functions. Fair valuations are reviewed by the group finance management and overseen by the Audit Committee. *» Refer Note 4.3 Energy shareholdings and » Note 4.2 Forest assets.*

UPMBIOFORE–BEYOND FOSSILS

5.4 Financial income and expenses

EURm	2018	2017
Exchange rate gains and losses		
Derivatives	7	−46
Exchange gains and losses on financial liabilities measured at amortised costs	−20	89
Exchange gains and losses on financial assets measured at amortised costs	14	−51
Other exchange rate gains and losses	1	–
	2	−8
Fair value changes		
Fair value gains and losses on derivatives designated as fair value hedges	−15	−54
Fair value adjustment of debt attributable to interest rate risk	19	50
Fair value adjustment of firm commitments attributable to foreign exchange risk	−2	–
	1	−4
Total	3	−12
Interest and other finance costs, net		
Interest expense on financial liabilities measured at amortised cost	−44	−76
Interest income on derivatives	22	35
Interest income on loans and receivables	2	2
Dividend income from energy shareholdings	–	8
Losses on sale of associates and joint ventures	–	−1
Other financial expenses, net	−40	−26
	−60	−57
Total	−56	−70

Net gains and losses on derivatives included in the operating profit

EURm	2018	2017
Cash flow hedges reclassified from hedging reserve	19	−1
Cash flow hedges recognised directly in operating profit	−4	6
Non-qualifying hedges	−11	14
Total	5	18

Foreign exchange gains and losses in the operating profit excluding non-qualifying hedges

EURm	2018	2017
Sales	19	26
Other operating income	−10	−30
Total	9	−4

5.5 Share capital and reserves

The company has one series of shares and each share carries one vote. There are no specific terms related to the shares. At 31 December 2018, the number of the company's shares was 533,735,699. The shares do not have any nominal counter value. The shares are included within the book entry system for securities.

Share capital

	2018	2017
Number of shares (1,000)	533,736	533,736
Share capital, EURm	890	890

Treasury shares

At 31 December 2018, the company held 411,653 (411,653) of its own shares, 0.08% (0.08%) of the total number of shares.

Reserves

EURm	2018	2017
Fair value reserve	1,646	1,462
Hedging reserve	104	91
Share-based payments reserve	28	10
Total other reserves	1,778	1,564
Reserve for invested non-restricted equity	1,273	1,273
Translation reserve	232	184
Total reserves	3,282	3,021

Accounting policies

Transaction costs directly relating to the issue of new shares or share options are recognised, net of tax, in equity as a reduction in the proceeds. Where any group company purchases the parent company's shares (treasury shares), the consideration paid, including any directly attributable incremental costs (net of tax), is deducted from equity attributable to the owners of the parent company until the shares are cancelled or reissued. Where such shares are subsequently reissued, any consideration received, net of any directly attributable incremental transaction costs and the related income tax effects, is included in equity attributable to the owners of the parent company.

Fair value reserve

This reserve represents the cumulative net change in the fair value of investments in equity securities comprising mainly of the fair value change of the energy shareholdings. Amounts are recycled only within equity upon the disposal of the asset.

Hedging reserve

This reserve comprises the cumulative net change in the fair value of the effective portion of cash flow hedging instruments related to hedged transactions that have not yet occurred and the cost of hedging when recognised in OCI. Amounts are recognised in profit or loss when the associated hedged transactions affect profit or loss or as part of the acquisition cost of property, plant and equipment. There were no reclassifications from the cash flow hedge reserve to profit or loss during the period resulting from inefficiency.

Share-based payments reserve

The share-based payments reserve is used to recognise the fair value of the share incentive plans, Performance Share Plan and Deferred Bonus Plan, over their vesting period.

Reserve for invested non-restricted equity

Reserve for invested non-restricted equity includes, under the Companies' Act, the exercise value of shareholders' investments in the company unless otherwise decided by the company.

Translation reserve

This reserve includes the foreign currency differences arising from the translation of foreign operations, and the effective result of transactions that hedge the group's net investments in foreign operations. There were no reclassifications from the translation reserve to profit or loss during the period resulting from inefficiency of net investment hedges.

Hedging reserve

EURm	CURRENCY CASH FLOW HEDGES	ELECTRICITY PURCHASE AND SALES HEDGES	COST OF HEDGING	TAX	TOTAL
2018					
Hedging reserve, at 1 January	38	76	–	−23	91
Amounts reclassified to profit and loss	−23	3	4	3	−13
Change in fair value of hedging instruments recognised in OCI	−34	75	−9	−6	25
Hedging reserve, at 31 December	−19	154	−5	−26	104

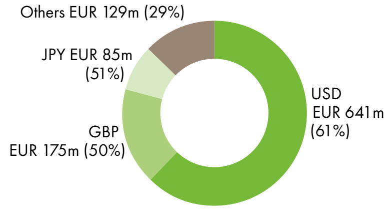
6. Risk management

6.1 Financial risk management

The objective of financial risk management is to protect the group from unfavourable changes in financial markets and thus help to secure profitability. The objectives and limits for financing activities are defined in the Group Treasury Policy approved by the Board of Directors. In financial risk management various financial instruments are used within the limits specified in the Group Treasury Policy. Only such instruments which market value and risk profile can be continuously and reliably monitored are used for this purpose.

Financing services are provided to the group entities and financial risk management carried out by the central treasury department, Treasury and Risk Management.

Nominal values of hedging instruments and corresponding hedging ratios, based on 12 months forecasts



The average weighted hedging rate by currency against EUR were USD 1.21, GBP 0.90 and JPY 130.5

Foreign exchange risk

The group is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to USD, GBP and JPY. Foreign exchange risk arises from contracted and expected commercial future payment flows (transaction exposure), from changes in value of recognised assets and liabilities denominated in foreign currency and from changes in the value of assets and liabilities in foreign subsidiaries (translation exposure). The objective of foreign exchange risk management is to limit the uncertainty created by changes in foreign exchange rates on the future value of cash flows earnings and in the group's balance sheet. Changing exchange rates can also have indirect effects, such as change in relative competitiveness between currency regions.

Transaction exposure

The group hedges transaction exposure related to highly probable future commercial foreign currency cash flows on a rolling basis over the next 12-month period based on forecasts by the respective business areas. Transaction risk arises from the changes in currency rates of highly probable transactions, which are expected to take place in currencies other than the functional currency of the entity. The group's policy is to hedge an average of 50% of its estimated net risk currency cash flow. Some highly probable cash flows have been hedged for longer than 12 months ahead while deviating from the risk neutral hedging level at the same time. At 31 December 2018, 52% (50%) of the forecast 12-month currency flow was hedged.

The group enters into external forward contracts, which are designated at group level as hedges of foreign exchange risk of specific future foreign currency flows. Cash flow hedge accounting is applied when possible. If hedge accounting is not possible, fair value changes of the hedging instrument are recognised through profit and loss immediately.

At the end of 2018, UPM's estimated net risk currency flow for the next 12 months was EUR 1,999 million (1,626 million).

12 months net risk currency flow

EURm	2018	2017
USD	1,045	808
GBP	342	369
JPY	170	196
Others	442	253
Total	1,999	1,626

Translation exposure

The group has several currency denominated assets and liabilities on its balance sheet such as foreign currency bonds, loans and deposits, group internal loans and cash in other currencies than functional currencies. The aim is to fully hedge this balance sheet exposure. The group might, however, within the limits set in the group Treasury Policy have unhedged balance sheet exposures.

At 31 December 2018 the unhedged balance sheet exposures in net of interest-bearing assets and liabilities amounted to EUR 21 million (10 million). Hedge accounting is not applied and all fair value changes of hedging instruments are recognised through profit and loss immediately.

The group has also accounts receivable and payable balances denominated in foreign currencies. The aim is to fully hedge the net exposure in main currencies. The nominal values of the hedging instruments in net of accounts payable and receivable hedging were EUR 530 million (426 million). Hedge accounting is not applied and all fair value changes of hedging instruments are recognised through profit and loss immediately.

The group has net investments in foreign subsidiaries that are subject to foreign currency translation differences. The exchange rate differences arising from translation of foreign subsidiaries are accumulated as a separate component of equity in the translation reserve relate mainly to USD, CNY and GBP. Currency exposure arising from the net investment in foreign subsidiaries is generally not hedged. However, at 31 December 2018, part of the foreign exchange risk associated with the net investments in Uruguay, China and Singapore were hedged and net investment hedge accounting has been applied. The average weighted hedging rate of these hedges against EUR were Uruguay USD 1.24, China CNY 8.37 and Singapore USD 1.15.

Derivatives used for hedging translation risks are external forward contracts, cross currency swaps and currency options.

Foreign exchange risk sensitivity

The following table illustrates the effect to profit before tax due to recognised balance sheet items in foreign currency and the effect to equity arising mainly from foreign currency forwards used to hedge foreign currency flows.

	Profit before tax		Equity	
EURm	2018	2017	2018	2017
EUR strengthens by 10%				
USD	1	–2	64	48
GBP	–	–	17	19
JPY	–1	1	9	10
EUR weakens by 10%				
USD	–1	2	–64	–48
GBP	–	–	–17	–19
JPY	1	–1	–9	–10

The following assumptions were made when calculating the sensitivity to changes in the foreign exchange risk:

- Major part of non-derivative financial instruments (such as cash and cash equivalents, trade receivables, debt and trade payables) are either directly denominated in the functional currency or are transferred to the functional currency through the use of derivatives i.e. the balance sheet position is close to zero. Exchange rate fluctuations have therefore minor or no effects on profit or loss.
- The position includes foreign currency forward contracts that are part of the effective cash flow hedge having an effect on equity.
- The position includes also foreign currency forward contracts that are not part of the effective cash flow hedge having an effect on profit.
- The position excludes foreign currency denominated future cash flows and effects of translation exposure and related hedges.

Interest rate risk

The interest-bearing liabilities and assets expose the group to interest rate risk, namely repricing and fair value interest rate risk caused by interest rate movements. According to the Group Treasury Policy the interest rate exposure is defined as the difference in interest rate sensitivity between assets and liabilities compared to a benchmark portfolio with a 6-month duration. The total interest rate exposure is a net debt portfolio which includes all interest bearing assets and liabilities and derivatives that are used to hedge the aforementioned balance sheet items. The policy sets risk limits and allowed deviation from target net debt duration level. The group uses interest rate derivatives, such as interest rate swaps, interest rate futures and cross-currency swaps, to change net debt duration.

The table below shows the nominal value of interest rate position exposed to interest rate risk in each significant currency. The position includes all cash balances, interest bearing assets and liabilities and currency derivatives used to hedge these items. The positive/negative position indicates a net liability/asset position by currency and that the group is exposed to repricing and/or fair value interest risk by interest rate movements in that currency.

Nominal values of the group's net debt by currency including derivatives

EURbn	2018	2017
EUR	–0.4	0.1
USD	0.2	0.2
GBP	–0.1	–0.1
Total	–0.3	0.2

Most of the interest rate derivatives hedging interest on long-term debt meet the requirement of fair value hedge accounting.

Interest rate risk sensitivity

The following table illustrates the effect to profit before tax mainly as a result of higher/lower interest expense on floating rate debt and the effect to equity as a result of a decrease/increase in the fair value of derivatives designated as cash flow hedges of floating rate debt.

	Profit before tax		Equity	
EURm	2018	2017	2018	2017
Interest rate of net debt 100 basis points higher	–5	–3	–	–
Interest rate of net debt 100 basis points lower	5	3	–	–

The following assumptions were made when calculating the sensitivity to changes in interest rates:

- The variation of interest rate is assumed to be 100 basis points parallel shift in applicable interest rate curves.
- In the case of fair value hedges designated for hedging interest rate risk, the changes in the fair values of the hedged items and the hedging instruments attributable to the interest rate movements balance out almost completely in the income statement in the same period. However, the possible ineffectiveness has an effect on the profit of the year.
- Cash balances are excluded.
- Fixed rate debt that is measured at amortised cost and is not designated to fair value hedge relationship is not subject to interest rate risk sensitivity.
- In case of variable to fixed interest rate swaps which are included in cash flow hedge accounting, fair value changes of hedging swaps are booked to equity.
- Floating rate debt that are measured at amortised cost and not designated as hedged items are included in interest rate sensitivity analysis.
- Changes in the market interest rate of interest rate derivatives (interest rate futures, swaps and cross currency swaps) that are not designated as hedging instruments in hedge accounting affect the financial income or expenses (net gains or losses from remeasurement of the financial assets and liabilities to fair value) and are therefore included in the income-related sensitivity analysis.

Electricity price risk

UPM is hedging both sales of power production and power purchases consumed at daily business. The group's sensitivity to electricity market price is dependent on the electricity production and consumption levels and the hedging levels. The inherent price risks arise from the daily sales and purchases of electricity from the power market with spot prices, and the hedging objective is to reduce the earnings volatility that arises from electricity prices.

UPM considers system (SYS) and electricity price area differential (EPAD) products perfect hedges for corresponding electricity price risk components in Finland. The components of electricity price risk in the Nordic power market are hedged by entering into System and EPAD electricity derivative contracts, mostly Nasdaq Commodities forwards, futures and options. System and EPAD prices are considered as separately identifiable and reliably measurable risk components in electricity sales and purchase contracts as well as in the hedging instruments, as a quoted price is available. Fair value changes of designated system and EPAD derivatives are offsetting electricity sales and purchase price changes. The share of SYS component covers approximately 80-90% and the share of EPAD component covers 10-20% of the changes in electricity sales and purchase prices.

The electricity price risk in the Central European power market is hedged by entering into European electricity exchange futures. Products used for hedging hedge the entire price risk for the underlying price area.

The time frame hedged has historically been approximately rolling 5 years. Hedging level has been typically higher for the nearest years and lower for the latter years. Hedging level for a certain year has historically varied between 0-80%. UPM constantly updates its electricity sales and consumption forecasts. The targeted hedging level is calculated based on the most recent available information about the sales and consumption of electricity.

The group applies cash flow hedge accounting for the hedging relationships when it hedges its electricity price risk. In addition to hedging, the group is also trading electricity forwards and futures. As well as hedging, proprietary trading risks are monitored on a daily basis. Value-At-Risk levels are set to limit the maximum risk at any given time. Cumulative maximum loss is limited by stop-loss limits.

Electricity derivatives price sensitivity

Sensitivity analysis for financial electricity derivatives is based on position at the end of financial year. Sensitivities change over time as the overall hedging and trading positions change. Underlying physical positions are not included in the sensitivity analysis. Sensitivity analysis is calculated separately for the hedge accounted and non-hedge accounted volumes. In the analysis it is assumed that forward quotation in Nasdaq Commodities and EEX would change EUR 5/ MWh throughout the period UPM has derivatives. EUR 5/ MWh price sensitivity is estimated from historical market price movements in Nasdaq and EEX markets.

EURm	EFFECT	2018	2017
+/– EUR 5/MWh in electricity forward quotations			
Effect on profit before tax	+/–	–	35.9
Effect on equity	+/–	27.2	49.6

The comparison period has been prepared in accordance with IAS 39. In accordance with IAS 39, the hedging of some electricity price risk components separately or in aggregate did not qualify for hedge accounting while considered economic hedges for UPM. Thus, under IFRS 9, more group's risk management strategies qualify for hedge accounting starting 1 January 2018.

6.2 Derivatives and hedge accounting

The group uses financial derivatives to manage currency, interest rate and commodity price risks.

» Refer Note 6.1 *Financial risk management.*

Accounting policies

All derivatives are initially and continuously recognised at fair value in the balance sheet. The fair value gain or loss is recognised through the income statement or other comprehensive income depending on whether the derivative is designated as a hedging instrument, and on the nature of the item being hedged. Certain derivatives are designated at inception either hedges of the fair value of recognised assets or liabilities or a firm commitment (fair value hedge), hedges of highly probable forecasted transactions (cash flow hedge), or hedges of net investments in foreign subsidiaries with other than the EUR as their functional currency (net investment hedge). Derivative fair values on the balance sheet are classified as non-current when the remaining maturity is more than 12 months and as current when the remaining maturity is less than 12 months.

For hedge accounting purposes, UPM documents the relationship between the hedging instruments and hedged items, as well as the risk management objective and strategy for undertaking various hedge transactions at the inception date. This process includes linking all derivatives designated as hedges to specific assets and liabilities or to specific firm commitments or forecast transactions. The group also documents its assessment, both at the hedge inception and on an on-going basis, as to whether the hedge is highly effective in offsetting changes in fair values or cash flows of the hedged items.

Certain derivatives, while considered to be economical hedges for UPM's financial risk management purposes, do not qualify for hedge accounting. Such derivatives are recognised at fair value through the income statement in other operating income or under financial items.

Cash flow hedges

The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognised in other comprehensive income. Cost of hedging, meaning forward points of derivative forward contracts accounted as cash flow hedges, is recognised as a part of the hedging reserve. Amounts deferred in equity are transferred to the income statement and classified as income or expense in the same period as that in which the hedged item affects the income statement (for example, when the forecast external sale to the group that is hedged takes place). When the forecasted transaction that is hedged results in the recognition of a fixed asset, gains and losses previously deferred in equity are transferred from equity and included in the initial measurement of the acquisition cost and depreciated over the useful lives of the assets.

When a hedging instrument expires or is sold, or when a hedge no longer meets hedge accounting criteria, any cumulative gain or loss existing in equity at that time remains in equity and is recognised when the committed or forecasted transaction is ultimately recognised in the income statement. However, if a forecasted transaction is no longer expected to occur, the cumulative gain or loss that was reported in equity is immediately recognised to the income statement.

In currency cash flow hedging, the hedging instrument is made in the same currency as the hedged item and hence the fair value change of the hedging instrument are expected to effectively offset the fair value changes generated by the hedged items. Thereby the hedge ratio between the instrument and the cash flow is 1:1. Ineffectiveness may arise in the highly unlikely case that the forecasted cash flows are no longer expected to occur. There are no other significant sources of ineffectiveness that can reasonably be expected to take place.

Ineffectiveness in electricity price hedges may arise in the highly unlikely case that the forecasted cash flows are no longer expected to occur. Ineffectiveness may also arise in case EPAD prices remained negative for a longer period of time, but considering historical price development UPM considers this scenario to be highly unlikely.

Hedges of net investments in foreign subsidiaries

The fair value changes of forward exchange contracts used in hedging net investments that reflect the change in spot exchange rates are recognised in other comprehensive income within translation reserve. Any gain or loss relating to the interest portion of forward exchange contracts is recognised immediately in the income statement under financial items. Gains and losses accumulated in equity are included in the income statement when the foreign operation is partially disposed of or sold.

The hedging instrument is always made in the same currency as the hedged investment, hence the hedge ratio in net investment hedging is 1:1. For hedging of net investments, ineffectiveness may only arise in the highly unlikely situation where the hedged item is disposed or sold during the duration of the hedging instrument.

Fair value hedges

The group applies fair value hedge accounting for hedging fixed interest risk on debt. Changes in the fair value of derivatives that are designated and qualify as fair value hedges and that are prospectively highly effective are recorded in the income statement under financial items, along with any changes in the fair value of the hedged asset or liabilities that are attributable to the hedged risk. The carrying amounts of hedged items and the fair values of hedging instruments are included in interest-bearing assets or liabilities.

Derivatives that are designated and qualify as fair value hedges mature at the same time as hedged items. If the hedge no longer meets the criteria for hedge accounting, the adjustment to the carrying amount of a hedged item for which the effective interest method is used is amortised to profit or loss over the expected period to maturity.

Ineffectiveness in fair value hedge of fixed interest risk may arise in case of early redemption of such debt, which is hedged under fair value hedge accounting. The group has not recognised other significant sources of ineffectiveness that can reasonably be expected to take place.

The group applies fair value hedge accounting also for hedging firm commitment of a purchase in foreign currency. The currency changes of the hedging instrument are recorded through profit and loss in financial items, until they are recognised as a part of the acquisition cost of a fixed asset.

Financial counterparty risk

The financial instruments the group has agreed with banks and financial institutions contain an element of risk of the counterparties being unable to meet their obligations. According to the Group Treasury Policy derivative instruments and investments of cash funds may be made only with counterparties meeting certain creditworthiness criteria. The group minimises counterparty risk also by using a number of major banks and financial institutions. Creditworthiness of counterparties is constantly monitored by Treasury and Risk Management.

Net fair values of derivatives

EURm	Positive fair values 2018	Negative fair values 2018	Net fair values 2018	Positive fair values 2017	Negative fair values 2017	Net fair values 2017
Foreign exchange risk						
Forward foreign exchange contracts						
Cash flow hedges	6	–30	–24	39	–6	33
Net investment hedge	–	–26	–26	11	–2	9
Non-qualifying hedges	9	–9	–	6	–7	–1
Cross currency swaps						
Non-qualifying hedges	2	–	2	6	–10	–4
Derivatives hedging foreign exchange risk	17	–65	–49	62	–24	37
Interest rate risk						
Interest rate swaps						
Fair value hedges	83	–	83	101	–	101
Non-qualifying hedges	1	–1	–	7	–1	5
Cross currency swaps						
Fair value hedges	50	–	50	47	–	47
Non-qualifying hedges	3	–	3	–	–	–
Derivatives hedging interest risk	138	–1	137	155	–1	154
Commodity risk						
Electricity sales						
Cash flow hedges	2	–12	–10	2	–8	–6
Non-qualifying hedges	–	–	–	2	–17	–15
Electricity purchase						
Cash flow hedges	104	–2	102	40	–4	36
Non-qualifying hedges	–	–	–	2	–	2
Other commodities						
Non-qualifying hedges	1	–	1	–	–1	–1
Derivatives hedging commodity risk	107	–14	93	46	–30	16
Total	262	–81	181	263	–56	207

No derivatives are subject to offsetting in the group's financial statements. All derivatives are under ISDA or similar master netting agreement.

Notional amounts of derivatives

EURm	2018	2017
Interest rate forward contracts	1,129	1,223
Interest rate swaps	753	1,056
Forward foreign exchange contracts	2,524	2,298
Currency options	52	48
Cross currency swaps	167	239
Commodity contracts	1,189	436

Net fair values of derivatives calculated by counterparty

EURm	POSITIVE FAIR VALUES	NEGATIVE FAIR VALUES	NET FAIR VALUES
2018	245	–64	181
2017	210	–3	207

Cash collaterals pledged for derivative contracts totalled EUR 18 million of which EUR 17 million relate to commodity contracts and EUR 1 million to interest rate forward contracts.

Timing of nominal amounts of derivatives 2018

EURm	Within 1 year	Between 1-5 years	Later than 5 years	Total
		2018		
Foreign exchange risk				
Forward foreign exchange contracts				
Cash flow hedges	1,249	–	–	1,249
Net investment hedge	443	–	–	443
Non-qualifying hedges	810	22	–	832
Currency options				
Non-qualifying hedges	52	–	–	52
Cross currency swaps				
Non-qualifying hedges	–	–	167	167
Interest rate risk				
Interest rate swaps				
Fair value hedges	–	–	328	328
Non-qualifying hedges	425	–	–	425
Cross currency swaps				
Fair value hedges	–	–	167	167
Interest rate futures				
Non-qualifying hedges	1,129	–	–	1,129
Commodity risk				
Electricity sales				
Cash flow hedges	286	157	–	443
Electricity purchase				
Cash flow hedges	294	368	–	662
Other commodities				
Non-qualifying hedges	84	–	–	84

The nominals of cross currency swaps are included in both foreign exchange risk and interest rate risk.

7. Income tax

7.1 Tax on profit for the year

Income tax

In 2018, tax on profit for the year amounted to EUR 342 million (212 million). The effective tax rate was 18.6% (17.9%). In 2018 and 2017, the effective tax rate was affected by the income not subject to tax from subsidiaries operating in tax free zone. In addition, effective tax rate was affected by German tax rate that is higher than in Finland.

In 2018, accrued and paid withholding taxes relating to dividend payments of subsidiaries amounted to EUR 1 million (EUR 19 million).

In 2017, changes in the United States tax legislation resulted in recognition of EUR 5 million tax expense relating to reassessment of deferred tax assets and liabilities. Change of recoverability of deferred tax assets includes EUR 8 million tax income related to reassessment of deferred tax assets on capital losses in the United States.

Income tax

EURm	2018	2017
Current tax expense	243	224
Change in deferred taxes	99	–11
Total	342	212

Tax rate reconciliation

EURm	2018	2017
Profit before tax	1,839	1,186
Computed tax at Finnish statutory rate 20%	368	237
Difference between Finnish and foreign rates	30	18
Tax-exempt income	–63	–56
Non-deductible expenses	8	6
Withholding taxes	1	19
Tax loss with no tax benefit	6	5
Results of associates	–1	–1
Change in tax legislation	4	5
Change in recoverability of deferred tax assets	–3	–15
Utilisation of previously unrecognised tax losses	–8	–7
Other items	–	1
Total income taxes	342	212
Effective tax rate, %	18.6%	17.9%

Accounting policies

The group's income tax expense comprises current tax and deferred tax. Current tax is calculated on the taxable result for the period based on the tax rules prevailing in the countries where the group operates and includes tax adjustments for previous periods and withholding taxes deducted at source on intra-group transactions. Tax expense is recognised in the income statement, unless it relates to items that have been recognised in equity or as part of other comprehensive income. In these instances, the related tax expense is also recognised in equity or other comprehensive income, respectively.

Key estimates and judgements

The group is subject to income taxes in numerous jurisdictions and the calculation of the group's tax expense and income tax liabilities involves a degree of estimation and judgement. Tax balances reflect a current understanding and interpretation of existing tax laws. Management periodically evaluates positions taken in tax returns with respect of situations in which applicable tax regulation is subject to interpretation and adjusts income tax liabilities where appropriate.

7.2 Deferred tax

EURm	2018	2017
Deferred tax assets		
Intangible assets and property, plant and equipment	76	90
Inventories	62	41
Retirement benefit liabilities and provisions	121	135
Other temporary differences	24	19
Tax losses and tax credits carried forward	198	222
Offset against liabilities	–83	–84
Total	397	423
Deferred tax liabilities		
Intangible assets and property, plant and equipment	–181	–186
Forest assets	–329	–244
Retirement benefit assets	–7	–16
Other temporary differences	–101	–95
Offset against assets	83	84
Total	–535	–458
Net deferred tax assets (liabilities)	–138	–36

Deferred income tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets against current tax liabilities and when the deferred income taxes relate to the same fiscal authority.

Movements in deferred tax assets and liabilities

EURm	2018	2017
Carrying value, at 1 January	–36	–11
Charged to income statement	–99	11
Charged to other comprehensive income	–2	–44
Exchange rate adjustments	–1	8
Net deferred tax assets (liabilities)	–138	–36

Tax charge to other comprehensive income

EURm	Before tax	Tax	After tax	Before tax	Tax	After tax
	2018			2017		
Actuarial gains and losses on defined benefit plans	−1	–	–	78	−13	66
Energy shareholdings	186	−3	183	20	4	24
Translation differences	62	–	62	−270	–	−270
Cash flow hedges	16	−3	13	153	−31	122
Net investment hedges	−17	3	−14	26	−5	20
Total	246	−2	243	7	−44	−37

Key estimates and judgements

Recognised deferred tax assets

The recognition of deferred tax assets requires management judgement as to whether it is probable that such balances will be utilised and/or reversed in the foreseeable future. At 31 December 2018, net operating loss carry-forwards for which the group has recognised a deferred tax asset amounted to EUR 672 million (758 million), of which EUR 567 million (632 million) was attributable to German subsidiaries. In Germany net operating loss carry-forwards do not expire. In other countries net operating loss carry-forwards expire at various dates and in varying amounts. Based on profit forecasts, it is probable that there will be sufficient future taxable profits available against which the tax losses can be utilised.

The assumptions regarding future realisation of tax benefits, and therefore the recognition of deferred tax assets, may change due to future operating performance of the group, as well as other factors, some of which are outside of the control of the group.

Unrecognised deferred tax assets and liabilities

The net operating loss carry-forwards for which no deferred tax is recognised due to uncertainty of their utilisation amounted to EUR 804 million (821 million) in 2018. These net operating loss carry-forwards are mainly attributable to certain German and French subsidiaries and do not expire. In addition, the group has not recognised deferred tax assets on loss carry-forwards amounting to EUR 410 (426 million) which relate to closed Miramichi paper mill in Canada. Most of these loss carry-forwards expire by end of 2029.

The group has not recognised deferred tax liability in respect of undistributed earnings of non-Finnish subsidiaries to the extent that it is probable that the temporary differences will not reverse in the foreseeable future. In addition, the group has not recognised deferred tax liability for the undistributed earnings of Finnish subsidiaries and associates as such earnings can be distributed without any tax consequences.

Accounting policies

Deferred tax is calculated based on temporary differences between the carrying amounts and the taxable values of assets and liabilities and for tax loss carry-forwards to the extent that it is probable that these can be utilised against future taxable profits.

Deferred income tax is determined using tax rates (and laws) that have been enacted or substantially enacted by the balance sheet date and are expected to apply when the related deferred income tax asset is realised or the deferred income tax liability is settled.

Deferred income tax is provided on temporary differences arising on investments in subsidiaries, associates and joint ventures, except where the timing of the reversal of the temporary difference is controlled by the group and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets and liabilities are recognised net where there is a legal right to set-off and an intention to settle on a net basis.

8. Group structure

8.1 Business acquisitions and disposals

In 2018, UPM made a minor business acquisition by acquiring the assets of Converters Express in the United States. In 2017, UPM made a minor business acquisition by acquiring the assets of Southwest Label Stock in the United States.

In 2018 and 2017 no business disposals were made.

Accounting policies

UPM consolidates acquired entities at the acquisition date which is when it gains control using the acquisition method. Consideration transferred is determined as the fair value of the assets transferred, the liabilities incurred and equity instruments issued including the fair value of a contingent consideration. Acquisition related transaction costs are expensed as incurred. Identifiable assets acquired and liabilities and contingent liabilities assumed are measured initially at their fair values at the acquisition date. The group measures any non-controlling interest in the acquiree either at fair value or at the non-controlling interest's proportionate share of the acquiree's net assets.

The excess of the consideration transferred, the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of any previous equity interest in the acquiree over the fair value of the identifiable net assets of the subsidiary acquired is recorded as goodwill.

8.2 Principal subsidiaries and joint operations

SUBSIDIARIES	COUNTRY OF INCORPORATION	HOLDING % 2018	HOLDING % 2017
Blandin Paper Company	US	100.00	100.00
Forestal Oriental S.A.	UY	100.00	100.00
Gebr. Lang GmbH Papierfabrik	DE	100.00	100.00
LLC UPM Ukraine	UA	100.00	100.00
MD Papier GmbH	DE	100.00	100.00
Nordland Papier GmbH	DE	100.00	100.00
NorService GmbH	DE	100.00	100.00
nortrans Speditionsgesellschaft mbH	DE	100.00	100.00
OOO UPM-Kymmene	RU	100.00	100.00
OOO UPM-Kymmene Chudovo	RU	100.00	100.00
PT UPM Raflatac Indonesia	ID	100.00	100.00
Rhein Papier GmbH	DE	100.00	100.00
Steyrermühl Sägewerksgesellschaft m.b.H. Nfg KG	AT	100.00	100.00
UPM (China) Co., Ltd	CN	100.00	100.00
UPM (Vietnam) Ltd	VN	100.00	100.00
UPM AG	CH	100.00	100.00
UPM AS	EE	100.00	100.00
UPM Asia Pacific Pte. Ltd	SG	100.00	100.00
UPM Communication Papers Oy [1]	FI	100.00	100.00
UPM Energy Oy	FI	100.00	100.00
UPM France S.A.S.	FR	100.00	100.00
UPM GmbH	DE	100.00	100.00
UPM Manufatura e Comércio de Produtos Florestais Ltda	BR	100.00	100.00
UPM Plywood Oy	FI	100.00	100.00
UPM Pulp Sales Oy	FI	100.00	100.00
UPM Raflatac (China) Co., Ltd	CN	100.00	100.00
UPM Raflatac (S) Pte Ltd	SG	100.00	100.00
UPM Raflatac (UK) Limited	GB	100.00	100.00
UPM Raflatac Chile SpA	CL	100.00	100.00
UPM Raflatac Co., Ltd	TH	100.00	100.00
UPM Raflatac Iberica S.A.	ES	100.00	100.00
UPM Raflatac Inc.	US	100.00	100.00
UPM Raflatac Mexico S.A. de C.V.	MX	100.00	100.00
UPM Raflatac NZ Limited	NZ	100.00	100.00
UPM Raflatac Oy	FI	100.00	100.00
UPM Raflatac Pty Ltd	AU	100.00	100.00
UPM Raflatac s.r.l.	AR	100.00	100.00
UPM Raflatac SAS	FR	100.00	100.00
UPM Raflatac Sdn. Bhd.	MY	100.00	100.00
UPM Raflatac South Africa (Pty) Ltd	ZA	100.00	100.00
UPM Raflatac Sp.z.o.o.	PL	100.00	100.00
UPM S.A.	UY	91.00	91.00
UPM Sales GmbH	DE	100.00	100.00
UPM Sales Oy	FI	100.00	100.00
UPM Silvesta Oy	FI	100.00	100.00
UPM Specialty Papers Oy	FI	100.00	100.00
UPM Sähkönsiirto Oy	FI	100.00	100.00
UPM Kymmene (Korea) Ltd	KR	100.00	100.00
UPM-Kymmene (UK) Ltd	GB	100.00	100.00
UPM-Kymmene Austria GmbH	AT	100.00	100.00
UPM-Kymmene B.V.	NL	100.00	100.00
UPM-Kymmene Beteiligungs GmbH	DE	100.00	100.00
UPM-Kymmene Inc.	US	100.00	100.00
UPM-Kymmene India Private Limited	IN	100.00	100.00
UPM-Kymmene Japan K.K.	JP	100.00	100.00
UPM-Kymmene Kagit Urunleri Sanayi ve Ticaret Ltd. Sti.	TR	100.00	99.99
UPM-Kymmene Otepää AS	EE	100.00	100.00
UPM-Kymmene S.A.	ES	100.00	100.00
UPM-Kymmene Seven Seas Oy	FI	100.00	100.00
UPM-Kymmene S.r.l.	IT	100.00	100.00
Werla Insurance Company Ltd	MT	100.00	100.00

[1] UPM Paper ENA Oy's legal company name has changed to UPM Communication Papers Oy as of 1 September 2018.

The table includes subsidiaries with sales exceeding EUR 2 million in 2018.

JOINT OPERATIONS	COUNTRY OF INCORPORATION	HOLDING % 2018	HOLDING % 2017
Oy Alholmens Kraft Ab (Pohjolan Voima Oyj, G series)	FI	27.88	27.88
EEVG Entsorgungs- und Energieverwertungsgesellschaft m.b.H.	AT	50.00	50.00
Järvi-Suomen Voima Oy	FI	50.00	50.00
Kainuun Voima Oy	FI	50.00	50.00
Kaukaan Voima Oy (Pohjolan Voima Oyj, G9 series)	FI	54.00	54.00
Kymin Voima Oy (Pohjolan Voima Oyj, G2 series)	FI	76.00	76.00
Madison Paper Industries	US	50.00	50.00
Rauman Biovoima Oy (Pohjolan Voima Oyj, G4 series)	FI	71.95	71.95

8.3 Related party transactions

The Board of Directors and the Group Executive Team

There have not been any material transactions between UPM and its members of the Board of Directors or the Group Executive Team (key management personnel) or persons closely associated with these members or organisations in which these individuals have control or significant influence. There are no loans granted to any members of the Board of Directors or the Group Executive Team at 31 December 2018 and 2017.

For information concerning shares held by members of the Board of Directors as well as remuneration to members of the Board of Directors and the Group Executive Team are disclosed in ***» Note 3.2.*** *Key management personnel.*

Associates and joint ventures

In Finland, the group organises its producer's responsibility of recovered paper collection through Encore Ympäristöpalvelu Oy (until 1.1.2019 by name Paperinkeräys Oy). Austria Papier Recycling GmbH purchases recovered paper in Austria and L.C.I s.r.l. in Italy. ASD Altpapier Sortierung Dachau GmbH is a German recovered paper sorting company. The purchases from those four companies represented approximately 89% (81%) of total recovered paper purchase amount from associates and joint ventures.

Transactions with associates and joint ventures are presented in the table below. The group has no individually material associates or joint ventures.

EURm	2018	2017
Dividends received	2	2
Purchases of raw materials and services	87	94
Loan receivables	6	6
Trade and other receivables	1	1
Trade and other payables	9	8

Subsidiaries and joint operations

» Refer Note 8.2 *Principal subsidiaries and joint operations.*

Pension Funds

In Finland, the group has the pension foundation, UPM Sellutehtaiden eläkesäätiö (former Kymin Eläkesäätiö), which is a separate legal entity. Pensions for about 18% (18%) of the group's Finnish employees are arranged through the foundation.

In 2018, the contributions paid by UPM to the Foundation amounted to EUR 23 million (14 million). The Foundation manages and invests the contributions paid to the plan. The fair value of the Foundation's assets at 31 December 2018 was EUR 470 million (504 million), of which 50% was in the form of equity instruments, 42% in the form of debt instruments and 8% was invested in property and money market.

In the UK, the single UPM Pension Scheme operates under a Trust which is independent from the group. The Trust consists of various defined benefit sections, all of which are closed to future accrual and one common defined contribution section which is open to all UPM employees in the UK. The group made contributions of EUR 8 million (25 million) to the defined benefit sections of the Scheme in 2018. The fair value of the UK defined benefit fund assets at 31 December 2018 was EUR 417 million (450 million), of which 47% was invested in equity instruments, 32% in debt instruments, 15% in property and money market and 6% in other investments.

8.4 Assets held for sale

No assets were classified as held for sale at the end of 2018. Assets classified as held for sale at the end of 2017 amounting to EUR 1 million include hydro power assets located in Schongau and Ettringen mill sites in Germany.

Accounting policies

Non-current assets (or disposal groups) are classified as assets held for sale and stated at the lower of carrying amount and fair value less costs to sell, if UPM will recover their carrying amount through a sale transaction which is considered highly probable. Non-current assets classified as held for sale, or included within a disposal group that is classified as held for sale, are not depreciated after the classification.

9. Unrecognised items

9.1 Commitments and contingencies

In the normal course of business, UPM enters into various agreements providing financial or performance assurance to third parties. The maximum amounts of future payments for which UPM is liable is disclosed in the table below under "Other commitments". Property under mortgages given as collateral for own commitments include property, plant and equipment, industrial estates and forest land.

EURm	2018	2017
On own behalf		
Mortgages	1	76
On behalf of others		
Guarantees	2	2
Other own commitments		
Operating leases, due within 12 months	90	77
Operating leases, due after 12 months	464	386
Other commitments	92	95
Total	649	636

9.2 Litigation

Group companies

In 2011, Metsähallitus (a Finnish state enterprise, which administers state-owned land) filed a claim for damages against UPM and two other Finnish forest companies. The claim relates to the decision of December 2009 in which the Finnish Market Court held that the defendants had breached competition rules in the Finnish roundwood market. In addition to Metsähallitus, private forest owners, and companies, as well as municipalities and parishes, filed claims relating to the Market Court decision. In addition to the claims on capital amounts, the claimants are also requesting compensation relating to value added tax and interests. Private forest owners, companies, municipalities and parishes have waived their claims against UPM. Metsähallitus has requested for leave of appeal with the Supreme Court in relation to judgement passed by the Court of Appeal of Helsinki in May 2018. Court of Appeal had rejected the damages claim of Metsähallitus and ordered Metsähallitus to pay compensation for legal expenses. The principal amount of Metsähallitus claim is currently in total EUR 61.8 million, of which EUR 3 million is based on agreements between UPM and Metsähallitus. No provision has been made in UPM's accounts for the claim. In January 2019 the Supreme Court rendered its decision denying Metsähallitus leave to appeal as a result of which the judgement of the Court of Appeal remains final.

In 2012, UPM commenced arbitration proceedings against Metsäliitto Cooperative and Metsä Board Corporation due to their breaches of UPM's tag-along right under the shareholders' agreement concerning Metsä Fibre Oy in connection with the sale of shares in Metsä Fibre to Itochu Corporation. UPM claimed jointly from Metsäliitto and Metsä Board a capital amount of EUR 58.5 million. Metsäliitto and Metsä Board had sold a 24.9% holding in Metsä Fibre to Itochu Corporation for EUR 472 million. In connection with the transaction with Itochu, Metsäliitto had exercised a call option to purchase UPM's remaining 11% shareholding in Metsä Fibre for EUR 150 million. The arbitral tribunal rendered its final decision (arbitral award) in February 2014 and ordered Metsäliitto and Metsä Board to pay UPM the capital amount of EUR 58.5 million and penalty interest and compensate UPM for its legal fees. As a result, UPM recorded an income of EUR 67 million as item affecting comparability in Q1 2014. In May 2014 Metsäliitto and Metsä Board commenced litigation proceedings in the Helsinki District Court challenging the arbitral award and requesting the District Court to set aside the arbitral award or to declare it null and void. In June 2015 the District Court rejected the actions by Metsäliitto and Metsä Board and following an appeal the Helsinki Court of Appeal rejected the actions by Metsäliitto and Metsä Board in October 2016. Metsäliitto and Metsä Board have filed a request for leave of appeal with the Supreme Court.

Other shareholdings

In Finland, UPM is participating in a project to construct a new nuclear power plant unit Olkiluoto 3 EPR (OL3) through its shareholdings in Pohjolan Voima Oyj. Pohjolan Voima Oyj is a majority shareholder of Teollisuuden Voima Oyj (TVO), holding 58.5% of its shares. UPM's indirect share of OL3 is approximately 31%.

According to TVO OL3 was procured as a fixed price turnkey project from a consortium formed by Areva GmbH, Areva NP SAS and Siemens AG (the Supplier). The consortium companies have under the plant contract joint and several liability for the contractual obligations.

Originally the commercial electricity production of the OL3 was scheduled to start in April 2009. The completion of the project, however, has been delayed. As announced by TVO, in accordance with the schedule updated by the Supplier in November 2018, the regular electricity generation at the plant unit will commence in January 2020.

According to TVO, the business restructuring plan announced by Areva Group in 2016 was implemented at the beginning of 2018. The restructuring involved a transfer of the majority of business of Areva NP to a company named Framatome of which 75.5% is owned by Electricité de France (EDF). According to TVO, the OL3 project and the means required to complete it, as well as certain other liabilities remained within Areva NP SAS and Areva GmbH, within the scope of Areva SA.

In March 2018 TVO announced it had signed a comprehensive settlement agreement with the Supplier and Areva Group parent company, Areva SA, a company wholly owned by the French State. The settlement agreement concerns the completion of the OL3 project and related disputes and entered into force in late March. According to TVO, pursuant to the settlement agreement TVO and the Supplier jointly withdrew the pending arbitration proceedings under the International Chamber of Commerce (ICC) rules with respect to costs and losses incurred in relation to delays in the construction of the OL3 project.

In July 2018 TVO announced that in June 2018 the ICC tribunal had confirmed the arbitration settlement by a consent award, and the arbitration proceedings had been terminated. The parties also withdrew the pending appeals in the General Court of the European Union.

According to TVO the settlement agreement stipulates as follows: To provide and maintain adequate and competent technical and human resources for the completion of the OL3 project, Areva will source the necessary additional resources from Framatome S.A.S., whose majority owner is EDF.

The supplier consortium companies undertake that the funds dedicated to the completion of the OL3 project will be adequate and will cover all applicable guarantee periods, including setting up a trust mechanism funded by Areva companies to secure the financing of the costs of completion of the OL3 project.

The turnkey principle of the OL3 plant contract and the joint and several liability of the supplier consortium companies remain in full force.

The agreement also noted the plant Supplier's schedule at the time the agreement was signed, according to which regular electricity production in the unit would have commenced in May 2019.

The ICC arbitration concerning the costs and losses caused by the delay of the OL3 project is settled by financial compensation of EUR 450 million to be paid to TVO in two installments by the Supplier.

The parties withdraw all on-going legal actions related to OL3, including the ICC Arbitration and appeals in the General Court of the European Union.

The supplier consortium companies are entitled to receive an incentive payment, in a maximum amount of EUR 150 million, upon timely completion of the OL3 project. In the event that the supplier consortium companies fail to complete the OL3 project by the end of 2019, the supplier consortium companies will pay a penalty to TVO for such delay in an amount which will depend on the actual time of completion of the OL3 project and may not exceed EUR 400 million.

According to TVO, TVO received the first payment of EUR 328 million of the settlement amount in March at the entry into force of the settlement agreement. The second payment of EUR 122 million is payable upon completion of the OL3 project or, in any event, on 31 December 2019 at the latest. TVO had made in the first quarter of 2018, a provision of EUR 150 million reflecting the maximum amount of the incentive payment payable to the Supplier for timely completion of the OL3 project. According to the updated schedule for the commissioning of OL3 received by TVO from the Supplier in June 2018, the regular electricity generation at OL3 will start in September 2019, so in the second quarter of 2018, the provision was withdrawn by EUR 50 million. According to the announcement by TVO in accordance with the updated schedule for the commissioning of OL3 received in November 2018 the regular electricity generation at OL3 will start in January 2020. These settlement payments to TVO, any incentive payment by TVO and any penalty payable to TVO due to any additional project delay have all been taken into account by TVO in calculating the final cost of the OL3 project.

TVO announced that based on the current OL3 project schedule provided by the Supplier, TVO's current capital expenditure assumptions and the effect of the settlement agreement, TVO estimates its total investment in OL3 EPR to be approximately EUR 5.5 billion.

9.3 Events after the balance sheet date

On 9 January, UPM announced it is taking part in the international public tendering process in the port of Montevideo organised by the National Ports Administration (ANP) of Uruguay. The scope of the concession tender is the building and operation of a port terminal specialising in the storage and shipping of pulp, chemicals and other inputs related to pulp production, with the capacity to handle approximately 2 million tonnes of pulp annually. The tender includes the design, financing, engineering, construction, operation and maintenance of the pulp terminal. The tenure of the concession would be for 50 years.

If awarded a concession in the Montevideo port, UPM's financial commitment in the form of a performance bond would be USD 20 million at this stage. At the time of the potential investment decision on the pulp mill project described in the report of Board of Directors, UPM would proceed with the port investment decision and start of the construction of the port facilities. The preliminary UPM investment estimate for the port facilities would be approximately USD 260 million.

On 31 January, UPM announced it will invest in the refurbishment of Kuusankoski hydropower plant in Finland. The average annual production of the Kuusankoski plant is expected to increase from the current 180 GWh to 195 GWh. The investment will be completed by the end of 2022.

10. Other notes

10.1 Forthcoming new standards, amendments and accounting policy changes

UPM will adopt in 2019 IFRS 16 Leases standard and IFRIC 23 Uncertainty over income tax treatments interpretation. In addition, the group will change accounting policy of forest renewal costs on 1 January 2019. Description of effects of implementation is presented below.

IFRS 16 Leases

The new leasing standard IFRS 16 Leases is effective for annual reporting periods beginning on or after 1 January 2019 and it replaces the current IAS 17 standard. IFRS 16 sets out the principles for the recognition, measurement, presentation and disclosure of leases. As a result, lessees will recognise most of leases on the balance sheet and there will be no distinction between operating and finance leases anymore. Under IFRS 16, a lease asset (i.e. right-of-use asset), representing right to use the underlying item, and a lease liability, representing obligation to make lease payments, will be recognised. The new standard introduces certain exemptions what comes to the short-term leases and leases of low-value items. Lessor accounting remains similar compared to the current IAS 17 standard.

IFRS 16 implementation project

The group is about to finalise the IFRS 16 implementation project and related documentation. The project was carried out in several streams including determination of accounting policies, collecting and assessing lease contract data, selecting and implementing of lease software, determining lease process related workflows and controls, and calculating quantitative impact analyses. Representatives from several departments have been involved in the project including Finance, Sourcing, Real Estate, production units, Treasury, Tax, IT, Investment Management and Investor Relations. Several trainings and communication sessions were arranged for end-users and stakeholders.

Impact analysis

As described above, the adoption of the new standard will have an impact on the group's financial statements as most of the future operating lease payments will be recognised as right-of-use assets and interest-bearing liabilities in the balance sheet.

On adoption of IFRS 16 as of 1 January 2019, UPM expects to recognise right-of-use assets of approximately EUR 490 million and lease liabilities approximately EUR 490 million from current operating leases.

The most significant lease agreements that will be capitalised consist of the following leased assets

- Land areas (~32%)
- Power plants (~30%)
- Real estate (~27%)

Real estate contracts include offices, factories, terminals and warehouses. In addition, the group has a significant number of company cars.

The disclosed non-cancellable operating lease commitments under IAS 17 cover the major part of the lease agreements that will be recognised as right-of-use asset and lease liabilities. The reported undiscounted lease commitments amounted to EUR 554 million as of 31 December 2018. » **Refer Note 5.2** *Net debt.*

The new standard will also influence the group's income statement as operating lease expense will be replaced by anticipated similar levels of depreciation and interest expense. For lease contracts that will be recognised on the balance sheet as of 1 January 2019, the annual operating lease expense, which would have been recognised under IAS 17, approximates to EUR 80 million.

Additionally, IFRS 16 will influence cash flow statement. The principal payment will be recognised under financing activities and interest portion of lease payments will be recognised under operating activities. As a result, the operating cash flow will increase, and financing cash flow will correspondingly decrease by approximately EUR 70 million.

Transition policy

UPM will apply IFRS 16 using modified retrospective application method without restatement of comparatives. Under modified retrospective approach, UPM measures right-of-use assets and lease liabilities at the application date as of 1 January 2019 and respectively recognises an adjustment to the opening balance of retained earnings. UPM estimates the remaining lease term as of 1 January 2019 and measures the remaining lease payments accordingly. The group measures its lease liability at the present value of the remaining lease payments discounted using incremental borrowing rate at the date of application 1 January 2019. Lease payments relating to an optional renewal period in the lease liability are included only if it is reasonably certain that the group will exercise that option.

UPM applies short-term leases exemption consistently on transition and subsequently for all asset classes. The lease contracts with a duration of less than 12 months are considered short-term and will not be capitalised. As a practical expedient UPM will not reassess previous decisions about existing contracts whether they are or contain a lease. Additionally, the group will not identify initial direct costs of leases previously classified as operating leases.

What comes to the leases previously classified as finance leases, UPM is not making any adjustments to its IAS 17 balances on transition. Subsequently, the group accounts for the right-of-use asset and lease liability in accordance with the general requirements of IFRS 16.

UPM has not identified any significant lease agreement where it is a lessor.

IFRIC 23 Uncertainty over income tax treatments

IFRIC 23 explains how to recognise and measure deferred and current income tax assets and liabilities where there is uncertainty over a tax treatment. The interpretation is effective for annual reporting periods beginning on or after 1 January 2019. The group is subject to income taxes in numerous jurisdictions and the calculation of the group's tax expense and income tax liabilities involves a degree of estimation and judgement. Tax balances reflect the current understanding and interpretation of existing tax laws and the latest information available about the positions expected to be taken by tax authorities. Tax matters at UPM are managed by UPM's own tax function, which is complemented by third-party tax services in order to comply with local tax reporting, filings and other duties. Management periodically evaluates positions taken in tax returns with respect of situations in which applicable tax regulation is subject to interpretation and adjusts income tax liabilities where appropriate using the most likely amount expected to be paid. The group will apply IFRIC 23 retrospectively with the cumulative effect recognised to retained earnings and without adjusting comparative information. At the end of 2018, the group has reviewed its uncertain tax positions and concluded that there are appropriate tax liabilities recognised for periods which are open for reviews and audits by tax authorities. Thus, the adoption of IFRIC 23 on 1 January 2019 will not have any impact on the group's financial statement on transition.

Accounting policy change of forest renewal costs

From 1 January 2019, UPM will change its accounting policy relating to forest assets by capitalising forestry renewal costs on the balance sheet during the growth cycle and reclassifying forest assets-related cash flows from operating cash flow to investing cash flow.

Currently UPM recognises forestry renewal costs in income statement and reports forest assets-related cash flows, including forest renewal costs, forest asset purchases and sales, in operating cash flow. UPM has consistently increased the weight of the Southern hemisphere plantations in its forest asset portfolio, where the growth cycle is significantly shorter and significance of forestry renewal cost substantially higher compared to the Northern hemisphere. Majority of UPM's forest renewal costs are related to Southern hemisphere plantations. Thus, the change of accounting policy results in more relevant information on group's financial performance and cash flows.

The change will impact the following key figures in UPM group, UPM Biorefining Business Area and Other operations: EBITDA, EBITDA margin, operating and investing cash flows, operating cash flow per share and net debt to EBITDA ratio. There will be no impact on operating profit, comparable EBIT and balance sheet. The comparative years will be restated according to the new reporting principles.

As published

	2018	2017
EBITDA, EURm	1,823	1,631
% of sales	17.4	16.3
Operating cash flow, EURm	1,391	1,558
Operating cash flow per share, EUR	2.61	2.92
Investing cash flow, EURm	−260	−222
Net debt to EBITDA (last 12 m.)	−0.17	0.11

Restated

	2018	2017
EBITDA, EURm	1,868	1,677
% of sales	17.8	16.8
Operating cash flow, EURm	1,330	1,460
Operating cash flow per share, EUR	2.49	2.74
Investing cash flow, EURm	−199	−124
Net debt to EBITDA (last 12 m.)	−0.17	0.10

Parent company accounts

(Finnish Accounting Standards, FAS)

Income statement

EURm	NOTE	2018	2017
Sales	1	2,484	2,217
Change in inventories of finished goods and work in progress		–	5
Production for own use		4	4
Other operating income	2	154	208
Materials and services	3	−1,494	−1,301
Personnel expenses	4	−242	−237
Depreciation, amortisation and impairment charges	5	−117	−118
Other operating expenses	6	−200	−164
Operating profit		588	614
Financial income and expenses	7	312	354
Profit before closing entries and tax		900	968
Closing entries	8	3	−1
Income taxes	9	−122	−108
Profit for the period		780	859

Balance sheet

EURm	NOTE	2018	2017
ASSETS			
Intangible assets	10	36	35
Tangible assets	11	1,646	1,726
Holdings in group companies	12	4,136	4,363
Holdings in participating interest companies	12	5	5
Other shares and holdings	12	3	4
Receivables from group companies	12	646	699
Receivables from participating interest companies	12	4	4
Other non-current receivables	12	7	7
Non-current assets		6,482	6,842
Inventories	13	267	143
Trade receivables	14	30	27
Receivables from group companies	14	1,180	1,016
Receivables from participating interest companies	14	5	8
Other current receivables	14	75	69
Cash and cash equivalents		770	589
Current assets		2,327	1,852
Assets		8,809	8,694

EURm	NOTE	2018	2017
EQUITY AND LIABILITIES			
Share capital	15	890	890
Revaluation reserve	15	142	165
Reserve for invested non-restricted equity	15	1,273	1,273
Retained earnings	15	1,853	1,608
Profit for the period		780	859
Equity		4,938	4,794
Accumulated depreciation difference		446	454
Provisions	16	101	65
Bonds	17	328	313
Payables to group companies	17	385	385
Other non-current liabilities	17	167	156
Non-current liabilities		879	853
Bonds	18	–	208
Pension loans	18	–	68
Trade payables	18	267	225
Payables to group companies	18	1,919	1,832
Payables to participating interest companies	18	1	–
Other current liabilities	18	258	193
Current liabilities		2,444	2,527
Liabilities		3,324	3,380
Equity and liabilities		8,809	8,694

Cash flow statement

EURm	2018	2017
Cash flow from operating activities		
Profit before closing entries and tax	900	968
Financial income and expenses	–312	–354
Adjustments to operating profit [1]	13	–137
Change in working capital [2]	–238	455
Interest received	39	33
Interest paid	–25	–35
Dividends received	328	328
Other financial items	17	–193
Income taxes paid	–103	–67
Operating cash flow	618	998
Cash flow from investing activities		
Investments in tangible and intangible assets	–79	–141
Investments in shares and holdings	–14	–
Proceeds from sale of intangible and tangible assets	131	172
Proceeds from disposal of shares and holdings	243	1
Change in other non-current receivables	49	58
Investing cash flow	329	89
Cash flow from financing activities		
Proceeds from non-current liabilities	–	71
Payments of non-current liabilities	–269	–926
Change in current liabilities	118	–14
Dividends paid	–613	–507
Group contributions, net	–2	–32
Financing cash flow	–765	–1,406
Change in cash and cash equivalents	182	–320
Cash and cash equivalents at beginning of period	589	908
Change in cash and cash equivalents	182	–320
Cash and cash equivalents at end of period	770	589

[1] Adjustments to operating profit

EURm	2018	2017
Depreciation, amortisation and impairment charges	117	118
Capital gains and losses on sale of non-current assets	–141	–186
Change in provisions	37	–70
Total	13	–137

[2] Change in working capital

EURm	2018	2017
Inventories	–124	31
Current receivables	–184	413
Current non-interest-bearing liabilities	69	11
Total	–238	455

Notes to the parent company financial statements

Accounting policies

The financial statements of the parent company are prepared in accordance with Finnish Accounting Standards, FAS. The main differences in accounting policies of the group and the parent company relate to the measurement of forest assets and financial derivatives and recognition of defined benefit obligations and deferred income taxes. The financial statements are presented in millions of euros and rounded and therefore the sum of individual figures might deviate from the presented total figure.

1. Sales

Sales by business area

EURm	2018	2017
UPM Biorefining	2,005	1,725
Other operations and eliminations	479	492
Total	2,484	2,217

Sales by destination

EURm	2018	2017
Finland	2,432	2,158
Other EU countries	27	30
Other countries	25	29
Total	2,484	2,217

2. Other operating income

EURm	2018	2017
Gains on sale of non-current assets	140	189
Rental income	12	12
Other	2	6
Total	154	208

3. Materials and services

EURm	2018	2017
Raw materials and consumables	1,599	1,263
Change in inventories	–109	32
Delivery costs and other external charges	5	6
Total	1,494	1,301

4. Personnel expenses

Salaries, fees and other personnel expenses

EURm	2018	2017
Salaries and fees of the President and CEO, and members of the Board of Directors [1]	7	6
Other salaries and fees	194	190
Pension costs	35	32
Other indirect employee costs	7	8
Total	242	237

[1] » Refer Note 3.2 *Key management personnel.*

Personnel

	2018	2017
Total on average	2,990	2 944

5. Depreciation, amortisation and impairment charges

EURm	2018	2017
Intangible rights	2	2
Other intangible assets	8	12
Land areas	–	1
Buildings	20	20
Machinery and equipment	83	79
Other tangible assets	4	5
Total	117	118

6. Other operating expenses

EURm	2018	2017
Rents and lease expenses	7	11
Losses on sale of non-current assets	1	–
Maintenance expenses	95	75
Other operating expenses [1]	97	77
Total	200	164

[1] The research and development costs in operating expenses were EUR 21 million (10 million) and auditor's fee EUR 0.7 million (0.8 million). In personnel expenses the research and development costs were EUR 16 million (20 million).

7. Financial income and expenses

EURm	2018	2017
Income on non-current assets		
Dividend income from group companies	328	328
Interest income from group companies	6	3
	334	331
Other interest and financial income		
Other interest income from group companies	32	30
Other financial income from group companies	13	1
Other financial income from other companies	2	85
	47	116
Value adjustments	2	–3
Interest and other financial expenses		
Interest expenses to group companies	–12	–12
Interest expenses to other companies	–13	–22
Other financial expenses to group companies	–	–50
Other financial expenses to other companies	–46	–7
	–71	–90
Total	312	354

8. Closing entries

EURm	2018	2017
Change in accumulated depreciation difference	–9	–1
Group contributions granted	6	1
Total	–3	1

9. Income taxes

EURm	2018	2017
Tax expense for the period	122	108
Total	122	108

Deferred tax assets and liabilities [1]

EURm	2018	2017
Deferred tax assets		
Provisions	20	13
Share-based payments	2	3
Total	23	16
Deferred tax liabilities		
Accumulated depreciation difference	89	91
Revaluations of land areas	60	65
Total	149	155

[1] The parent company has not recognised deferred tax assets and liabilities in the balance sheet. Deferred tax assets and liabilities were calculated based on temporary differences between the carrying and taxable values of assets and liabilities.

10. Intangible assets

EURm	INTANGIBLE RIGHTS	OTHER INTANGIBLE ASSETS	ADVANCE PAYMENTS	TOTAL
2018				
Accumulated costs	16	249	14	279
Accumulated amortisation and impairments	–11	–232	–	–243
Carrying value, at 31 December	5	17	14	36
Carrying value, at 1 January	5	23	8	35
Additions	2	1	12	15
Disposals	–	–	–5	–5
Amortisation	–2	–8	–	–10
Reclassifications	–	1	–1	–
Carrying value, at 31 December	5	17	14	36
2017				
Accumulated costs	14	247	8	269
Accumulated amortisation and impairments	–10	–225	–	–234
Carrying value, at 31 December	5	23	8	35
Carrying value, at 1 January	5	25	5	35
Additions	2	6	7	15
Disposals	–	–	–2	–2
Amortisation	–2	–12	–	–14
Reclassifications	–	3	–3	–
Carrying value, at 31 December	5	23	8	35

11. Tangible assets

EURm	LAND AND WATER AREAS	BUILDINGS	MACHINERY AND EQUIPMENT	OTHER TANGIBLE ASSETS	ADVANCE PAYMENTS AND CONSTRUCTION IN PROGRESS	TOTAL
2018						
Accumulated costs	420	623	2,166	142	11	3,363
Accumulated depreciation and impairments	–	–379	–1,520	–117	–	–2,017
Revaluations	300	–	–	–	–	300
Carrying value, at 31 December	720	244	645	25	11	1,646
Carrying value, at 1 January	757	256	668	26	19	1,726
Additions	1	6	45	2	10	64
Disposals	–14	–	–	–	–	–14
Depreciations	–	–20	–83	–4	–	–107
Reclassifications	–	2	16	1	–18	–
Changes in revaluations	–23	–	–	–	–	–23
Carrying value, at 31 December	720	244	645	25	11	1,646
2017						
Accumulated costs	434	620	2,115	141	19	3,329
Accumulated depreciation and impairments	–	–364	–1,447	–115	–	–1,925
Revaluations	323	–	–	–	–	323
Carrying value, at 31 December	757	256	668	26	19	1,726
Carrying value, at 1 January	813	259	630	27	36	1,766
Additions	3	12	91	2	18	125
Disposals	–18	–	–	–	–	–18
Depreciations	–	–20	–79	–5	–	–104
Impairment	–1	–	–	–	–	–1
Reclassifications	–	6	26	3	–35	–
Changes in revaluations	–41	–	–	–	–	–41
Carrying value, at 31 December	757	256	668	26	19	1,726

12. Other non-current assets

EURm	HOLDINGS IN GROUP COMPANIES	HOLDINGS IN PARTICIPATING INTEREST COMPANIES	OTHER SHARES AND HOLDINGS	RECEIVABLES FROM GROUP COMPANIES	RECEIVABLES FROM PARTICIPATING INTEREST COMPANIES	OTHER NON-CURRENT RECEIVABLES	TOTAL
2018							
Accumulated costs	5,551	5	3	646	4	7	6,216
Accumulated value adjustments	–1,415	–	–	–	–	–	–1,415
Carrying value, at 31 December	4,136	5	3	646	4	7	4,801
Carrying value, at 1 January	4,363	5	4	699	4	7	5,080
Additions	14	–	–	8	–	–	22
Disposals	–243	–	–	–61	–	–	–304
Value adjustments [1]	2	–	–	–	–	–	2
Carrying value, at 31 December	4,136	5	3	646	4	7	4,801
2017							
Accumulated costs	5,780	5	4	699	4	7	6,498
Accumulated value adjustments	–1,417	–	–	–	–	–	–1,417
Carrying value, at 31 December	4,363	5	4	699	4	7	5,080
Carrying value, at 1 January	4,365	5	4	756	5	7	5,143
Additions	–	–	–	168	–	–	168
Disposals	–	–	–	–225	–2	–	–227
Value adjustments [1]	–3	–	–	–	–	–	–3
Carrying value, at 31 December	4,363	5	4	699	4	7	5,080

[1] Value adjustments are recognised under financial items.

13. Inventories

EURm	2018	2017
Raw materials and consumables	210	100
Finished products and goods	27	27
Advance payments	29	15
Carrying value, at 31 December	267	143

14. Current receivables

EURm	TOTAL	RECEIVABLES FROM GROUP COMPANIES	RECEIVABLES FROM PARTICIPATING INTEREST COMPANIES
2018			
Trade receivables	564	529	5
Loan receivables [1]	650	650	–
Prepayments and accrued income	30	1	–
Other current receivables	46	–	–
Carrying value, at 31 December	1,290	1,180	5
2017			
Trade receivables	479	444	8
Loan receivables [1]	571	571	–
Prepayments and accrued income	48	1	–
Other current receivables	23	–	–
Carrying value, at 31 December	1,120	1,016	8

1) There were no loans granted to the company's President and CEO and members of the Board of Directors at 31 December 2018 and 2017.

EURm	2018	2017
Prepayments and accrued income		
Energy taxes	6	6
Personnel expenses	1	2
Interest income	10	13
Exchange gains and losses	7	22
Income taxes	4	–
Other items	3	5
Carrying value, at 31 December	30	48

15. Equity

EURm	SHARE CAPITAL	REVALUATION RESERVE	RESERVE FOR INVESTED NON-RESTRICTED EQUITY	RETAINED EARNINGS	TOTAL SHAREHOLDER'S EQUITY
2018					
Carrying value, at 1 January	890	165	1,273	2,467	4,794
Profit for period	–	–	–	780	780
Dividend distribution	–	–	–	–613	–613
Changes in revaluations	–	–23	–	–	–23
Carrying value, at 31 December	890	142	1,273	2,634	4,938
2017					
Carrying value, at 1 January	890	206	1,273	2,115	4,483
Profit for period	–	–	–	859	859
Dividend distribution	–	–	–	–507	–507
Changes in revaluations	–	–41	–	–	–41
Carrying value, at 31 December	890	165	1,273	2,467	4,794

EURm	2018	2017
Distributable funds		
Reserve for invested non-restricted equity	1,273	1,273
Retained earnings from previous years	1,853	1,608
Profit for the period	780	859
Total distributable funds at 31 December	3,906	3,740

16. Provisions

EURm	RESTRUCTURING	TERMINATION	ENVIRONMENTAL	OTHER [1]	TOTAL
2018					
Provisions at 1 January	3	5	9	49	65
Provisions made during the year	–	–	–	37	37
Provisions utilised during the year	–	–1	–	–	–1
Carrying value, at 31 December	3	4	8	85	101
2017					
Provisions at 1 January	3	5	9	153	170
Provisions utilised during the year	–	–1	–1	–104	–105
Carrying value, at 31 December	3	5	9	49	65

1) Other provisions are attributable to onerous contracts and fair value losses of financial derivatives. At the end of 2018 the fair value loss in other provisions of EUR 11 million (12 million) was attributable to one group internal cross currency swap with nominal value of EUR 85 million (95 million) and maturity in 2027. Changes in provisions are recognised in sales, materials, personnel or other operating expenses or financial expenses.

17. Non-current liabilities

EURm	2018	2017
Bonds	328	313
Payables to group companies	385	385
Other non-current liabilities	167	156
Carrying value, at 31 December	879	853

Maturity in 2024 or later (in 2023 or later)

EURm	2018	2017
Bonds	328	313
Other non-current liabilities	167	156
Total	494	468

Bonds

FIXED RATE PERIOD	INTEREST RATE, %	CURRENCY	NOMINAL VALUE ISSUED, MILLION	CARRYING VALUE, 2018 EURm	CARRYING VALUE, 2017 EURm
1997–2027	7.450	USD	375	328	313
2003–2018	5.500	USD	250	–	208
Carrying value, at 31 December				328	521
Current portion				–	208
Non-current portion				328	313

18. Current liabilities

EURm	TOTAL	PAYABLES TO GROUP COMPANIES	PAYABLES TO PARTICIPATING INTEREST COMPANIES
2018			
Trade payables	324	56	1
Accrued expenses and deferred income	137	18	–
Other current liabilities	1,984	1,844	–
Carrying value, at 31 December	**2,444**	**1,919**	**1**
2017			
Bonds	208	–	–
Pension loans	68	–	–
Advances received	1	–	–
Trade payables	270	45	–
Accrued expenses and deferred income	140	24	–
Other current liabilities	1,839	1,763	–
Carrying value, at 31 December	**2,527**	**1,832**	**–**

EURm	2018	2017
Accrued expenses and deferred income		
Personnel expenses	77	81
Interest expenses	7	10
Exchange gains and losses	51	42
Income taxes	–	5
Other items	1	2
Carrying value, at 31 December	**137**	**140**

19. Commitments

EURm	2018	2017
Mortgages		
As security against own debt	1	69
As security against group companies' debt	–	7
Guarantees		
Guarantees for loans on behalf of Group companies	1	46
Other guarantees on behalf of Group companies	37	36
Other commitments		
Leasing commitments, due within 12 months	33	25
Leasing commitments, due after 12 months	81	67
Other commitments	77	89
Total	**229**	**339**

Pension commitments of the President and CEO and the members of the Group Executive Team
» Refer Note 3.2 Key management personnel.

Related party transactions
» Refer Note 8.3 Related party transactions.

Derivatives
All financial derivative contracts of the group were made by the parent company. All contracts were made with external counterparties except for one cross currency swap used in managing foreign currency risk of the group internal assets. Hedge accounting was not applied. Derivatives were initially recognised at cost in the balance sheet. The fair value losses of financial derivatives were recognised through the income statement and presented as a provision in the balance sheet.

Financial risks, fair values and maturities of the group external derivatives are disclosed in » Note 6.1 Financial risk management and » Note 6.2 Derivatives and hedge accounting and the group internal financial derivative in » Note 16. Provisions of the parent company.

Auditor's report

(Translation from the Finnish Original)

To the Annual General Meeting of UPM-Kymmene Corporation

Report on the Audit of the Financial Statements

Opinion

In our opinion,

- the consolidated financial statements give a true and fair view of the group's financial performance and financial position in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU
- the financial statements give a true and fair view of the parent company's financial performance and financial position in accordance with the laws and regulations governing the preparation of the financial statements in Finland and comply with statutory requirements.

Our opinion is consistent with the additional report to the Audit Committee.

What we have audited
We have audited the financial statements of UPM-Kymmene Corporation (business identity code: 1041090-0) for the year ended 31 December, 2018. The financial statements comprise:

- the consolidated balance sheet, income statement, statement of comprehensive income, statement of changes in equity, statement of cash flows and notes, including a summary of significant accounting policies
- the parent company's balance sheet, income statement, statement of cash flows and notes.

Basis for opinion

We conducted our audit in accordance with good auditing practice in Finland. Our responsibilities under good auditing practice are further described in the ***» Auditor's Responsibilities for the Audit of the Financial Statements*** section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence
We are independent of the parent company and of the group companies in accordance with the ethical requirements that are applicable in Finland and are relevant to our audit, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

To the best of our knowledge and belief, the non-audit services that we have provided to the parent company and to the group companies are in accordance with the applicable law and regulations in Finland and we have not provided non-audit services that are prohibited under Article 5(1) of Regulation (EU) No 537/2014. The non-audit services that we have provided are disclosed in *» Note 2.3 Operating expenses and other operating income* to the Financial Statements.

Our audit approach

OVERVIEW	
Materiality	• Overall group materiality: EUR 60 million, which represents 5% of profit before tax.
Group scoping	• The group audit scope encompassed all significant group companies, as well as a number of smaller group companies in Europe, Asia, North America and South America covering the vast majority of revenue, assets and liabilities.
Key audit matters	• Valuation of forest assets • Valuation of energy shareholdings • Recoverability of deferred tax assets

As part of designing our audit, we determined materiality and assessed the risks of material misstatement in the financial statements. In particular, we considered where management made subjective judgements; for example, in respect of significant accounting estimates that involved making assumptions and considering future events that are inherently uncertain.

Materiality
The scope of our audit was influenced by our application of materiality. An audit is designed to obtain reasonable assurance whether the financial statements are free from material misstatement. Misstatements may arise due to fraud or error. They are considered material if individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

Based on our professional judgement, we determined certain quantitative thresholds for materiality, including the overall group materiality for the consolidated financial statements as set out in the table below. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures and to evaluate the effect of misstatements on the financial statements as a whole.

MATERIALITY	
Overall group materiality	€ 60 million (previous year € 54 million)
How we determined it	Approximately 5% of the average of the profit before tax for the last three years.
Rationale for the materiality benchmark applied	We chose profit before taxes as the benchmark because, in our view, it is the benchmark against which the performance of the Group is commonly measured by users, and is a generally accepted benchmark. We chose approximately 5%, which is within the range of acceptable quantitative materiality thresholds in auditing standards.

How we tailored our group audit scope
We tailored the scope of our audit, taking into account the structure of the UPM-Kymmene Group, the accounting processes and controls, and the industry in which the group operates.

We determined the type of work that needed to be performed at group companies by us, as the group engagement team, or by auditors from other PwC network firms operating under our instruction. Audits were performed in group companies which were considered significant either because of their individual financial significance or due to their specific nature, covering the majority of revenue, assets and liabilities of the group. Selected specified procedures as well as analytical procedures were performed to cover the remaining group companies.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

As in all of our audits, we also addressed the risk of management override of internal controls, including among other matters consideration of whether there was evidence of bias that represented a risk of material misstatement due to fraud.

KEY AUDIT MATTER IN THE AUDIT OF THE GROUP	HOW OUR AUDIT ADDRESSED THE KEY AUDIT MATTER
Valuation of forest assets *» Refer Note 4.2 in the consolidated financial statements for the related disclosures.* The group owns about 847 thousand hectares of forests and plantations in Finland, the United States and Uruguay valued at EUR 1,945 million at 31 December 2018. Forest assets are measured at fair value less cost to sell. The fair value is calculated on the basis of discounted future expected cash flows as there is a lack of a liquid market and are valued at cost. Main factors used in the valuation are estimates for growth and wood harvested, stumpage prices and discount rates. We focused on this area as the amounts are material, the valuation process is complex and judgmental and is based on assumptions that are affected by expected future market or economic conditions.	In testing the valuation of forest assets, in conjunction with our valuation specialists we: • Assessed the methodologies adopted by management for the valuation; • Tested the mathematical accuracy of the model used for valuation; • Assessed the discount rates applied in the valuation; • Assessed the other key valuation assumptions; and, • Validated key inputs and data used in valuation model such as stumpage price, trend price forecast, tree growth assumptions, consumer price index and inflation.
Valuation of energy shareholdings *» Refer Note 4.3 in the consolidated financial statements for the related disclosures.* The energy shareholdings amounted to EUR 2,159 million at 31 December 2018. The energy shareholdings are unlisted equity investments in energy companies and are valued at fair value through other comprehensive income, net of tax if applicable. The fair value is determined on a discounted cash flow basis. The main factors impacting the future cash flows include future electricity prices, price trends, discount rates and the start-up schedule of the nuclear power plant unit Olkiluoto 3. We focused on this area as the amounts are material, the valuation process is complex and judgmental and is based on assumptions that are affected by expected future market or economic conditions.	In testing the valuation of the energy shareholdings, in conjunction with our valuation specialists we: • Assessed the methodology adopted by management for the valuation; • Tested the mathematical accuracy of the model used for valuation; • Assessed the future electricity prices and price trends; • Assessed the discount rate applied in the valuation; • Validated the Olkiluoto 3 nuclear power plant unit start-up schedule against the most recent available information; • Validated key inputs and data used in valuation model such as production costs and volumes, UPM's ownership percentages, inflation, tax rate and net debt.

KEY AUDIT MATTER IN THE AUDIT OF THE GROUP	HOW OUR AUDIT ADDRESSED THE KEY AUDIT MATTER
Recoverability of deferred tax assets *» Refer Note 7.2 in the consolidated financial statements for the related disclosures.* The Group has recognised deferred tax assets of € 198 million on net operating loss carry-forwards, of which most relates to German subsidiaries. In Germany the net operating loss carry-forwards do not expire. We focused on this area because the recognition of deferred tax assets relies on the significant application of judgement by the Management in respect of assessing the probability and sufficiency of future taxable profits.	We assessed whether historical profitability in German subsidiaries support the recognition of the deferred tax asset. Despite recent history of profits for the German tax group we also assessed whether the Management's forecasts of future profitability support the recoverability of deferred tax assets.

We have no key audit matters to report with respect to our audit of the parent company financial statements.

There are no significant risks of material misstatement referred to in Article 10(2c) of Regulation (EU) No 537/2014 with respect to the consolidated financial statements or the parent company financial statements.

Responsibilities of the Board of Directors and the Managing Director for the Financial Statements

The Board of Directors and the Managing Director are responsible for the preparation of consolidated financial statements that give a true and fair view in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU, and of financial statements that give a true and fair view in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements. The Board of Directors and the Managing Director are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors and the Managing Director are responsible for assessing the parent company's and the group's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting. The financial statements are prepared using the going concern basis of accounting unless there is an intention to liquidate the parent company or the group or to cease operations, or there is no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with good auditing practice will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with good auditing practice, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the parent company's or the group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the Board of Directors' and the Managing Director's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the parent company's or the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the parent company or the group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events so that the financial statements give a true and fair view.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Other reporting requirements

Appointment

We have been acting as auditors appointed by the annual general meeting since 30 April 1996. Our appointment represents a total period of uninterrupted engagement of 22 years. The Company arranged the latest audit tendering process in 2013. Authorised Public Accountant (KHT) Merja Lindh has acted as the responsible auditor since 8 April 2014, representing a total uninterrupted period of four years.

Other information

The Board of Directors and the Managing Director are responsible for the other information. The other information comprises the report of the Board of Directors and the information included in the Annual Report, but does not include the financial statements and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. With respect to the report of the Board of Directors, our responsibility also includes considering whether the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.

In our opinion
- the information in the report of the Board of Directors is consistent with the information in the financial statements
- the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.
- If, based on the work we have performed, we conclude that there is a material misstatement of the other information, we are required to report that fact. We have nothing to report in this regard

Other Statements

We support the proposal that the financial statements are adopted. The proposal by the Board of Directors regarding the distribution of profits is in compliance with the Limited Liability Companies Act. We support that the Members of the Board of Directors and the Managing Director of the parent company should be discharged from liability for the financial period audited by us.

Helsinki 15 February 2019

PricewaterhouseCoopers Oy
Authorised Public Accountants

Merja Lindh
Authorised Public Accountant (KHT)

Other financial information

Alternative performance measures

UPM presents certain performance measures of historical performance, financial position and cash flows, which in accordance with the "Alternative Performance Measures" guidance issued by the European Securities and Markets Authority (ESMA) are not accounting measures defined or specified in IFRS and are therefore considered as alternative performance measures. These alternative performance measures are described below:

ALTERNATIVE PERFORMANCE MEASURE	DEFINITION
Operating profit	Profit before income tax expense, finance expenses and finance income and net gains on sale of energy shareholdings as presented on the face of the IFRS income statement. Gains on sale of energy shareholdings are not recorded to the income statement from 2018 onwards.
Comparable EBIT	Operating profit adjusted for items affecting comparability.
Comparable EBITDA	Operating profit before depreciation, amortisation and impairments, change in fair value of forest assets and wood harvested, share of results of associates and joint ventures and items affecting comparability.
Comparable profit before tax	Profit before income tax expense excluding items affecting comparability.
Comparable profit for the period	Profit for the period excluding items affecting comparability and their tax impact.
Comparable EPS, EUR	Earnings per share calculated in accordance with IFRS excluding items affecting comparability and their tax impact.
Net debt	Total of current and non-current debt less cash and cash equivalents and interest-bearing current and non-current financial assets.
Items affecting comparability	Certain non-operational or non-cash valuation transactions with significant income statement impact are considered as items affecting comparability, if they arise from asset impairments, restructuring measures, asset sales, fair value changes of forest assets resulting from changes in valuation parameters or estimates or changes in legislation or legal proceedings. In addition, the changes in fair value of unrealised cash flow and commodity hedges are classified as items affecting comparability. Numerical threshold for items to be considered as significant in UPM's business areas UPM Biorefining, UPM Specialty Papers and UPM Communication Papers is determined as one cent (EUR 0.01) after tax per share or more. In other business areas, the impact is considered to be significant if the item exceeds EUR 1 million before tax.
Free cash flow	Cash generated from operations after cash used for investing activities.
Return on equity (ROE), %	Profit for the period as a percentage of average equity.
Comparable ROE, %	Return on equity (ROE) excluding items affecting comparability.
Return on capital employed (ROCE), %	Profit before taxes, interest expenses and other financial expenses as a percentage of average capital employed.
Comparable ROCE, %	Return on capital employed (ROCE) excluding items affecting comparability.
Capital employed	Group total equity and total debt.
Business area's comparable ROCE, %	Business area's operating profit adjusted for items affecting comparability as a percentage of business area's average capital employed.
Business area's capital employed	Business area's operating assets less its operating liabilities. Operating assets include goodwill, other intangible assets, property, plant and equipment, forest assets, energy shareholdings, investments in associates and joint-ventures, inventories and trade receivables. Operating liabilities include trade payables and advances received.
Capital expenditure	Capitalised investments in property, plant and equipment, intangible assets including goodwill arising from business combinations, energy shareholdings and other shares, associates and joint ventures.
Capital expenditure excluding acquisitions and shares	Capital expenditure excluding investments in shares and participations.
Operating cash flow per share, EUR	Operating cash flow divided by adjusted average number of shares during the period excluding treasury shares.
Gearing ratio, %	Net debt as a percentage of total equity
Net debt to EBITDA	Net debt divided by EBITDA
Equity to assets ratio, %	Equity expressed as a percentage of total assets less advances received.

Reconciliation of key figures to IFRS

EURm, OR AS INDICATED	Q4/18	Q3/18	Q2/18	Q1/18	Q4/17	Q3/17	Q2/17	Q1/17	Q1-Q4/18	Q1-Q4/17
Items affecting comparability										
Impairment charges	–	–	–	–	–4	–	–	1	–	–3
Restructuring charges	–10	–	18	–	–61	–2	–2	–3	9	–67
Change in fair value of unrealised cash flow and commodity hedges	6	–3	–2	–	–2	–6	1	9	–	2
Capital gains and losses on sale of non-current assets	–	–	–2	30	1	35	–	–	29	35
Fair value changes of forest assets resulting from changes in estimates	345	–	–	–	–	–	–	–	345	–
Total items affecting comparability in operating profit	340	–3	15	30	–67	28	–1	7	382	–33
Total items affecting comparability in financial items	–	–	–	–	–	1	–	–	–	1
Changes in tax rates	–	–	–	–	–5	–	–	–	–	–5
Taxes relating to items affecting comparability	–68	1	–3	–9	19	–10	–	–2	–80	7
Items affecting comparability in taxes	–68	1	–3	–9	14	–10	–	–2	–80	2
Items affecting comparability, total	272	–2	11	21	–53	19	–1	6	302	–30
Comparable EBITDA										
Operating profit	744	417	349	385	299	379	269	312	1,895	1,259
Depreciation, amortisation and impairment charges excluding items affecting comparability	105	105	106	106	112	104	112	119	422	447
Change in fair value of forest assets and wood harvested excluding items affecting comparability	–47	–37	–14	–10	–26	–29	–32	–16	–107	–103
Share of results of associates and joint ventures	–1	–2	–1	–2	–1	–1	–1	–2	–6	–5
Items affecting comparability in operating profit	–340	3	–15	–30	67	–28	1	–7	–382	33
Comparable EBITDA	461	487	425	449	451	425	349	405	1,823	1,631
% of sales	16.9	18.4	16.4	17.9	17.5	17.1	14.2	16.3	17.4	16.3
Comparable EBIT										
Operating profit	744	417	349	385	299	379	269	312	1,895	1,259
Items affecting comparability in operating profit	–340	3	–15	–30	67	–28	1	–7	–382	33
Comparable EBIT	404	420	334	355	366	351	270	305	1,513	1,292
% of sales	14.8	15.9	12.9	14.1	14.2	14.1	11.0	12.3	14.4	12.9
Comparable profit before tax										
Profit before tax	731	401	337	371	273	357	258	299	1,839	1,186
Items affecting comparability in operating profit	–340	3	–15	–30	67	–28	1	–7	–382	33
Items affecting comparability in financial items	–	–	–	–	–	–1	–	–	–	–1
Comparable profit before tax	390	404	322	341	340	328	258	291	1,457	1,218
Comparable ROCE, %										
Comparable profit before tax	390	404	322	341	340	328	258	291	1,457	1,218
Interest expenses and other financial expenses	7	9	8	9	55	13	10	10	33	89
	397	413	330	350	395	341	268	302	1,490	1,307
Capital employed, average	10,259	9,817	9,712	9,755	9,938	10,032	9,942	10,288	10,176	10,217
Comparable ROCE, %	15.5	16.8	13.6	14.3	15.9	13.6	10.8	11.7	14.6	12.8
Comparable profit for the period										
Profit for the period	591	328	269	309	244	286	205	240	1,496	974
Items affecting comparability, total	–272	2	–11	–21	53	–19	1	–6	–302	30
Comparable profit for the period	319	330	258	288	297	267	205	234	1,194	1,004
Comparable EPS, EUR										
Comparable profit for the period	319	330	258	288	297	267	205	234	1,194	1,004
Profit attributable to non-controlling interest	2	–2	–	–1	–1	–	–	–	–1	–1
	321	328	258	287	296	267	205	234	1,193	1,003
Average number of shares basic (1,000)	533,324	533,324	533,324	533,324	533,323	533,328	533,505	533,505	533,324	533,415
Comparable EPS, EUR	0.60	0.61	0.48	0.54	0.56	0.50	0.39	0.44	2.24	1.88
Comparable ROE, %										
Comparable profit for the period	319	330	258	288	297	267	205	234	1,194	1,004
Total equity, average	9,491	8,959	8,856	8,821	8,497	8,204	8,020	8,100	9,230	8,450
Comparable ROE, %	13.4	14.6	11.6	13.0	14.0	13.0	10.2	11.6	12.9	11.9

Quarterly key figures are unaudited.

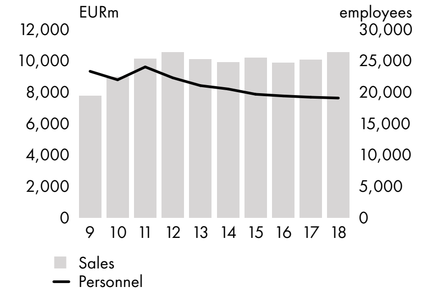
Financial information 2009–2018

EURm, OR AS INDICATED	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Income statement										
Sales	10,483	10,010	9,812	10,138	9,868	10,054	10,492	10,068	8,924	7,719
Comparable EBITDA [1]	1,823	1,631	1,560	1,350	1,306	1,161	1,325	1,383	1,343	1,062
% of sales	17.4	16.3	15.9	13.3	13.2	11.5	12.6	13.7	15.0	13.8
Operating profit	1,895	1,259	1,135	1,142	674	548	–1,318	459	755	135
% of sales	18.1	12.6	11.6	11.3	6.8	5.5	–12.6	4.6	8.5	1.7
Comparable EBIT	1,513	1,292	1,143	916	866	683	556	682	731	270
% of sales	14.4	12.9	11.6	9.0	8.8	6.8	5.3	6.8	8.2	3.5
Profit before tax	1,839	1,186	1,080	1,075	667	475	–1,271	417	635	187
% of sales	17.5	11.9	11.0	10.6	6.8	4.7	–12.1	4.1	7.1	2.4
Comparable profit before tax	1,457	1,218	1,089	849	793	610	471	573	611	107
% of sales	13.9	12.2	11.1	8.4	8.0	6.1	4.5	5.7	6.8	1.4
Profit for the period	1,496	974	880	916	512	335	–1,122	457	561	169
% of sales	14.3	9.7	9.0	9.0	5.2	3.3	–10.7	4.5	6.3	2.2
Comparable profit for the period	1,194	1,004	879	734	638	479	390	487	516	58
% of sales	11.4	10.0	9.0	7.2	6.5	4.8	3.7	4.8	5.8	0.8
Balance sheet										
Non-current assets	9,501	9,144	9,715	10,259	10,269	10,487	11,066	11,412	10,557	10,581
Inventories	1,642	1,311	1,346	1,376	1,356	1,327	1,388	1,429	1,299	1,112
Other current assets	2,853	2,612	2,850	2,558	2,570	2,785	2,489	2,548	1,956	1,912
Total assets	13,996	13,067	13,911	14,193	14,195	14,599	14,943	15,389	13,812	13,605
Total equity	9.797	8,663	8,237	7,944	7,480	7,455	7,461	7,477	7,109	6,602
Non-current liabilities	2,194	2,254	3,364	4,328	4,717	5,019	5,430	5,320	4,922	5,432
Current liabilities	2,005	2,150	2,309	1,921	1,998	2,125	2,052	2,588	1,781	1,571
Total equity and liabilities	13,996	13,067	13,911	14,193	14,195	14,599	14,943	15,389	13,812	13,605
Capital employed at year end	10,575	9,777	10,657	11,010	10,944	11,583	11,603	12,110	11,087	11,066
Capital expenditure	303	329	325	520	411	362	357	1,179	257	913
% of sales	2.9	3.3	3.3	5.1	4.2	3.6	3.4	11.7	2.9	11.8
Capital expenditure excluding acquisitions and shares	303	303	325	486	375	329	347	340	252	229
% of sales	2.9	3.0	3.3	4.8	3.8	3.3	3.3	3.4	2.8	3.0
Cash flow and net debt										
Operating cash flow	1,391	1,558	1,686	1,185	1,241	735	1,040	1,041	982	1,259
Free cash flow	1,131	1,336	1,424	750	994	438	968	910	787	1,045
Net debt	–311	174	1,131	2,100	2,401	3,040	3,210	3,592	3,286	3,730
Key figures										
Return on capital employed (ROCE), %	18.4	12.5	10.5	10.3	6.5	4.8	neg.	4.4	6.6	3.2
Comparable ROCE, %	14.6	12.8	10.6	8.3	7.6	6.0	4.2	5.2	6.4	2.5
Return on equity (ROE), %	16.2	11.5	10.9	11.9	6.9	4.5	neg.	6.3	8.2	2.8
Comparable ROE, %	12.9	11.9	10.9	9.5	8.5	6.4	4.2	6.7	7.5	1.0
Gearing ratio, %	–3	2	14	26	32	41	43	48	46	56
Net debt to EBITDA	–0.17	0.11	0.73	1.56	1.84	2.62	2.42	2.60	2.45	3.51
Equity to assets ratio, %	70.1	66.6	59.4	56.1	52.7	51.1	50.0	48.6	51.5	48.6
Personnel										
Personnel at year end	18,978	19,111	19,310	19,578	20,414	20,950	22,180	23,909	21,869	23,213
Deliveries										
Pulp (1,000 t)	3,468	3,595	3,419	3,224	3,287	3,163	3,128	2,992	2,919	1,759
Electricity (GWh)	8,608	8,127	8,782	8,966	8,721	8,925	9,486	8,911	9,426	8,865
Papers, total (1,000 t)	8,996	9,430	9,613	9,771	10,028	10,288	10,871	10,615	9,914	9,021
Plywood (1,000 m^3)	791	811	764	740	731	737	679	656	638	567
Sawn timber (1,000 m^3)	1,719	1,728	1,751	1,731	1,609	1,661	1,696	1,683	1,729	1,497

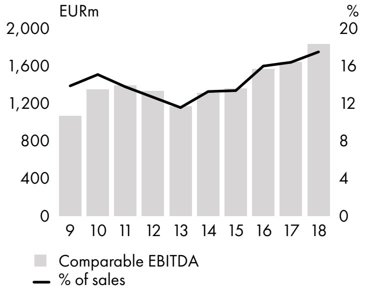
[1] EBITDA 2009–2011 includes change in fair value of unrealised cash flow and commodity hedges.

Financial information 2009–2018

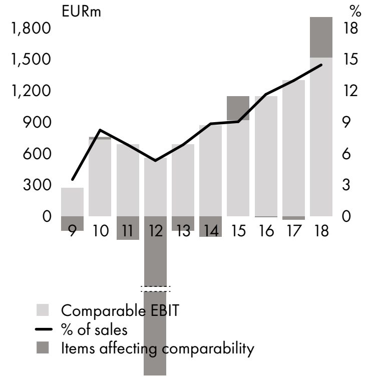
Sales and personnel



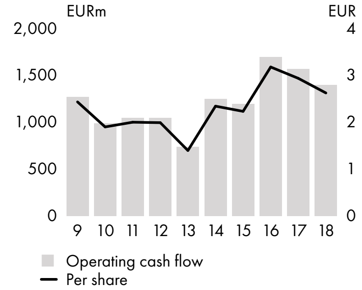
Comparable EBITDA



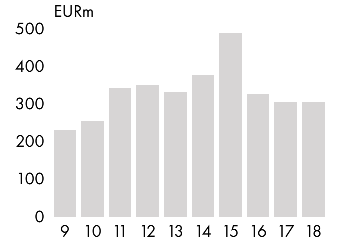
Operating profit



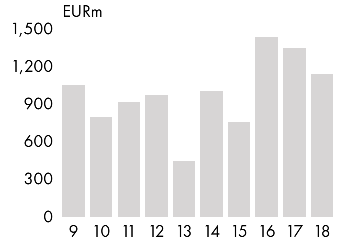
Operating cash flow



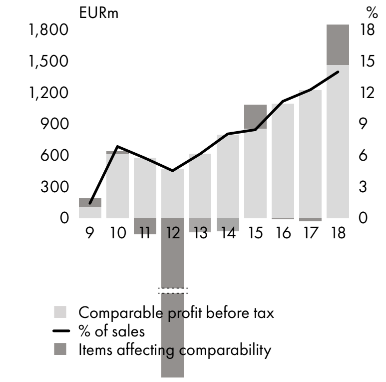
Capital expenditure excluding acquisitions and shares



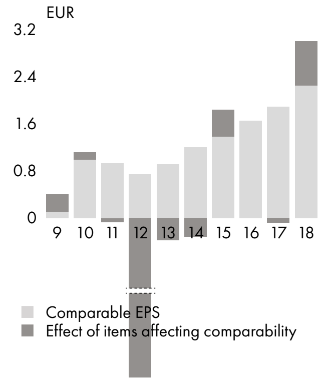
Free cash flow



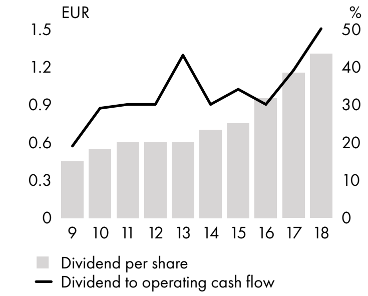
Profit before tax



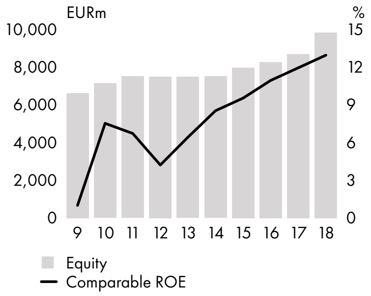
Earnings per share



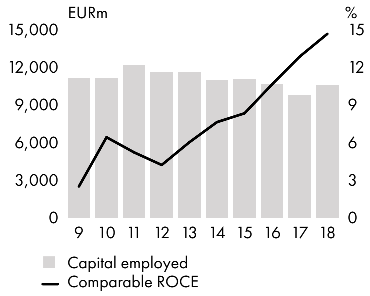
Dividend per share



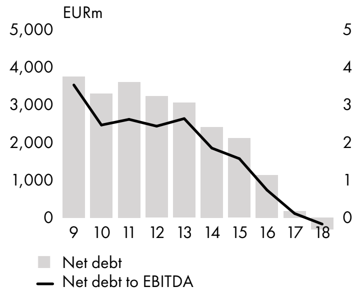
Equity and ROE



Capital employed and ROCE



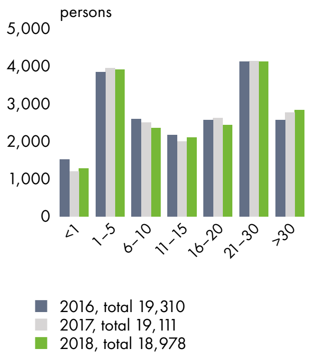
Net debt and net debt to EBITDA



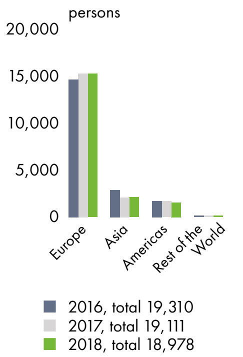
In 2016 UPM has relabeled the previously referenced "excluding special items" non-GAAP financial measures with "comparable" performance measures. Corresponding 2014 and 2015 group measures have been revised accordingly.

More on responsibility

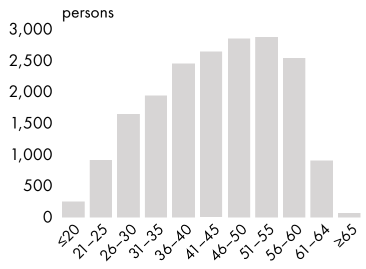
Employees' years of service with UPM



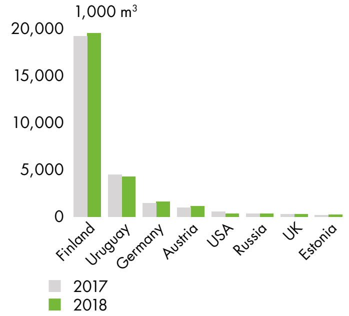
UPM employees by region



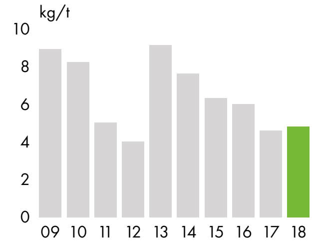
Age structure of UPM employees 2018



Wood deliveries to UPM mills

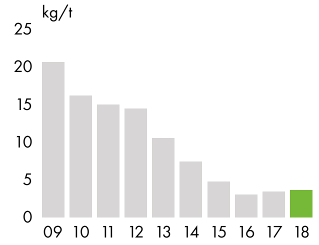


UPM's solid waste to landfills per tonne of paper



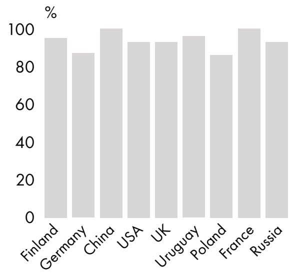
The amount of solid waste sent to landfills per paper tonne has decreased by 46% over the last ten years. However, in 2013 the amount increased significantly because former reuse possibilities for ash ceased at one of the paper mills. Starting from 2014, new methods of recycling were established.

UPM's solid waste to landfills per tonne of converted product



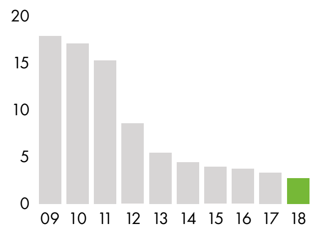
Solid waste to landfills per tonne of converted product decreased by 82% over the last ten years.

Ratio of female to male salaries weighted basic salary 2018



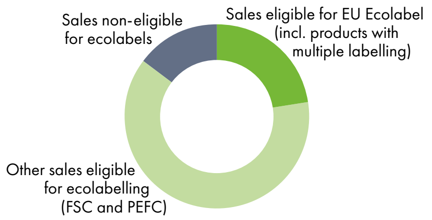
The ratio is calculated by comparing weighted average of basic salaries of women to men on the same job grades, for the nine biggest countries in terms of salaried employees. These countries cover 90% of UPM's total number of salaried employees.

Lost-time accident frequency, UPM workforce



Lost-time accident frequency (LTAF) is the number of lost-time accidents per one million hours of work. LTAF improved significantly over the last ten years.

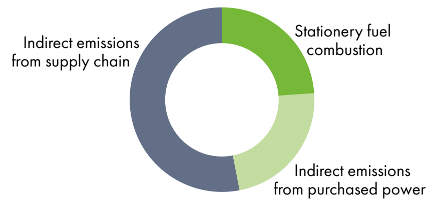
UPM's eligibled ecolabelled sales *⁾ 2018



*⁾ incl. Paper, Pulp, Plywood, Label material, Timber and Biocomposites

In 2018, 85% of UPM's overall eligible sales of paper, chemical pulp, plywood, label material, timber and biocomposite products was eligibel for ecolabelling. This figure includes FSC, PEFC, EU Ecolabels and national ecolabels.

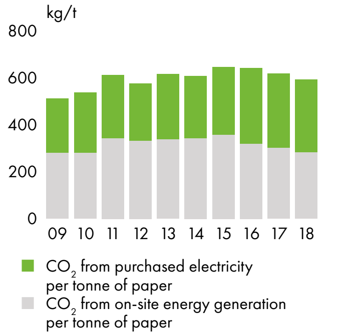
Sources of UPM's greenhouse gas emissions*⁾ 2018



*⁾ measured in CO_2-equivalents

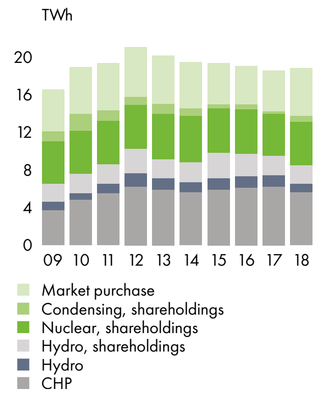
According to the calculation 47% of the direct and indirect greenhouse gas emissions are related to UPM's energy use, but raw materials, transportation and processing of sold products also have a significant impact. GHG emissions related to energy use reduced by 4% in 2018.

UPM's fossil carbon dioxide emissions per tonne of paper



In 2018 on-site CO_2 emissions (Scope 1) decreased due to declined on-site electricity generation at paper mills. CO_2 of purchased electricity (Scope 2) decreased due to purchases with lower CO_2 factors in Finland, Germany and the US.

Electricity sourcing



UPM BIOREFINING

- A versatile range of chemical pulp for many growing end uses with annual production capacity of 3.7 million tonnes produced in Finland and in Uruguay
- Annual capacities in tonnes by mills: UPM Fray Bentos 1.3 million; UPM Pietarsaari 800,000; UPM Kaukas 770,000 and UPM Kymi 870,000 tonnes
- 258,000 ha of plantation land in Uruguay
- Certified sawn timber with annual capacity of 1.5 million cubic metres, produced at four sawmills in Finland
- Wood-based renewable diesel and naphtha with the annual capacity of 120 million litres produced in Finland

Pulp mills

Finland: UPM Kaukas (Lappeenranta), UPM Kymi (Kouvola) and UPM Pietarsaari

Uruguay: UPM Fray Bentos and sustainable eucalyptus plantations

Sawmills

Finland: UPM Alholma (Pietarsaari), UPM Kaukas (Lappeenranta), UPM Korkeakoski (Juupajoki) and UPM Seikku (Pori)

Biorefinery

Finland: UPM Lappeenranta Biorefinery (Lappeenranta)

Market position

#8 Pulp globally

UPM ENERGY

- Cost competitive low-emission electricity generation in Finland consisting of hydro, nuclear and condensing power.
- The total electricity generation capacity is 1,541 MW, including UPM's own hydropower plants and shareholdings in other energy companies
- Market agility and optimisation services for industrial consumers
- Largest shareholdings:
  - 47.69% of Pohjolan Voima Oy (PVO), which is a majority shareholder (58.5%) in Teollisuuden Voima Oyj (TVO)
  - 19% of Kemijoki Oy's hydropower shares

Hydropower plants:

Finland: Harjavalta, Kallioinen (Sotkamo), Kaltimo (Joensuu), Katerma (Kuhmo), Keltti (Kouvola), Kuusankoski (Kouvola), Tyrvää (Sastamala), Voikkaa (Kouvola) and Äetsä

Market position

#2 in Finland

UPM RAFLATAC

- Self-adhesive label materials for product and information labelling
- 10 factories and 29 slitting and distribution terminals in all continents

Labelstock factories

China: Changshu
Finland: Tampere
France: Nancy
Malaysia: Johor
Poland: Kobierzyce (Wroclaw) and Nowa Wieś (Wroclaw)
United Kingdom: Scarborough
USA: Mills River, NC; Fletcher, NC and Dixon, IL

Slitting and distribution terminals

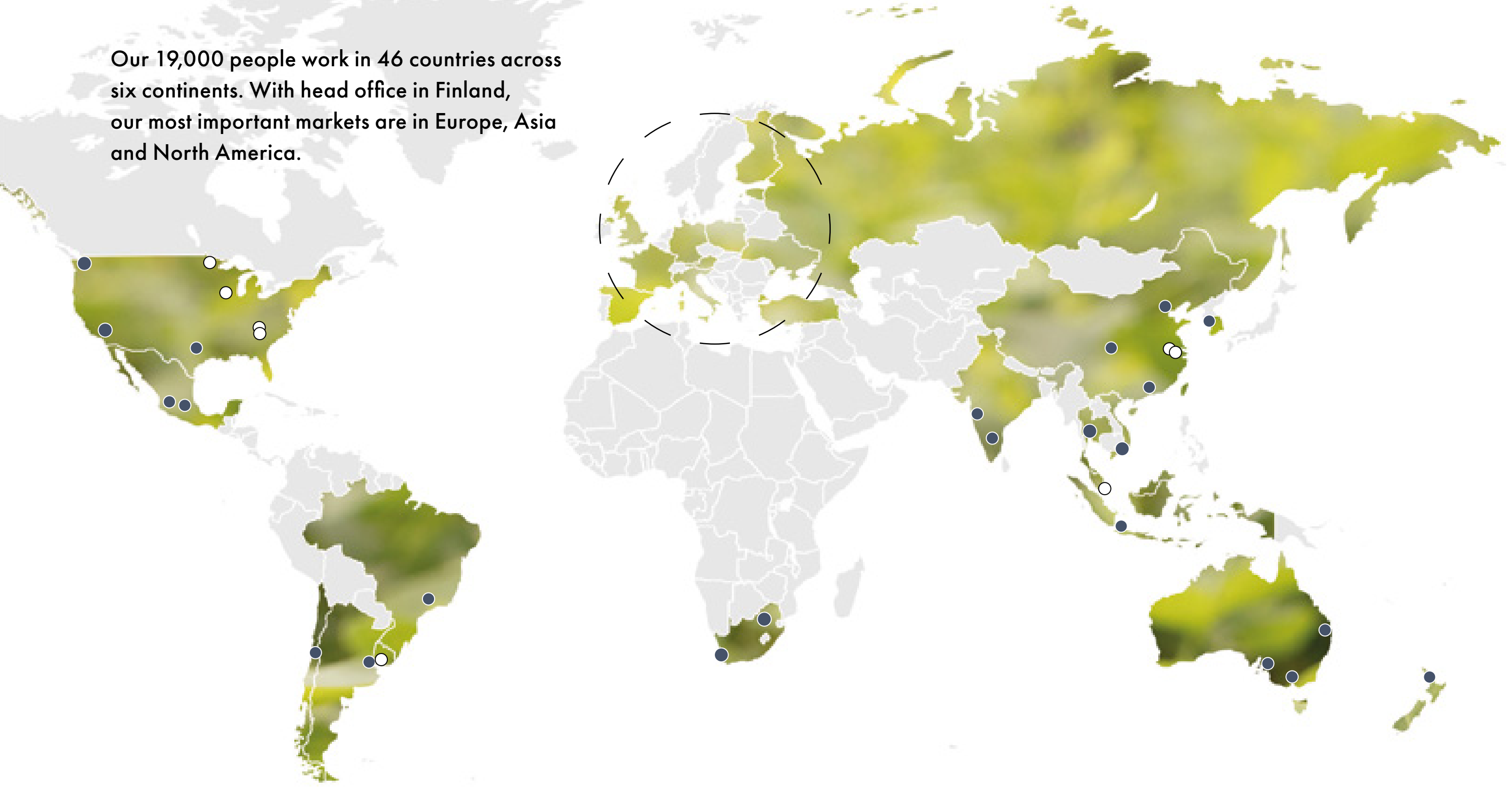
Argentina: Buenos Aires
Australia: Adelaide, Brisbane and Melbourne
Brazil: Jaguariúna
Chile: Santiago
China: Chengdu, Guangzhou and Tianjin
India: Bangalore and Navi Mumbai
Indonesia: Jakarta
Italy: Osnago
México: Ciudad de México and Guadalajara
New Zealand: Auckland
Russia: Moscow and St Petersburg
South Africa: Cape Town and Johannesburg
South Korea: Seoul
Spain: Barcelona
Thailand: Bangkok
Turkey: Istanbul
Ukraine: Kiev
USA: Dallas, TX, Ontario, CA and Seattle, WA
Vietnam: Binh Thang Ward Di An District

Market position

#2 globally

Competitive businesses, strong market positions

Our 19,000 people work in 46 countries across six continents. With head office in Finland, our most important markets are in Europe, Asia and North America.



UPM SPECIALTY PAPERS

- Labelling materials, release base papers, flexible packaging materials, office and graphic papers
- Total annual production capacity of 2.0 million tonnes

Paper mills

China: UPM Changshu
Germany: UPM Nordland Papier (Dörpen) (under construction)
Finland: UPM Jämsänkoski (Jämsä) and UPM Tervasaari (Valkeakoski)

Market position

#1 Labelling materials globally

#1 High-quality office paper segment in China

UPM COMMUNICATION PAPERS

- Magazine paper, newsprint and fine papers for a wide range of end uses
- Annual paper production capacity of 8.2 million tonnes, manufactured in 15 paper mills
- Capacities: Annual production capacity of 4.0 million tonnes of magazine papers, 2.1 million tonnes of newsprint and 2.1 million tonnes of fine papers
- The combined heat and power (CHP) plants operating on paper mill sites included in the business area

Paper mills

Austria: UPM Steyrermühl
Finland: UPM Jämsä River Mills (Jämsänkoski and Kaipola), UPM Kaukas (Lappeenranta), UPM Kymi (Kouvola) and UPM Rauma
France: UPM Chapelle Darblay (Grand-Couronne)
Germany: UPM Augsburg, UPM Ettringen, UPM Hürth, UPM Nordland Papier (Dörpen), UPM Plattling and UPM Schongau
United Kingdom: UPM Caledonian Paper (Irvine), UPM Shotton Paper
USA: UPM Blandin (Grand Rapids, MN)

Market position

#1 in Europe

UPM PLYWOOD

- Plywood and veneer products mainly for construction, vehicle flooring and LNG shipbuilding as well as other manufacturing industries
- Production capacity: approximately one million cubic metres
- Production in 9 mills in Finland, Estonia and Russia

Plywood mills

Estonia: UPM Otepää
Finland: UPM Joensuu, UPM Jyväskylä, UPM Pellos (3 mills, Ristiina, Mikkeli) and UPM Savonlinna
Russia: UPM Chudovo

Veneer mill

Finland: UPM Kalso (Vuohijärvi, Kouvola)

Market position

#1 High and mid segments in EMEA

#1 LNG plywood globally

○ Production plant
● Slitting and distribution terminal
● Group Head Office

OTHER OPERATIONS

- Wood Sourcing and Forestry: Purchasing wood and biomass in 15 countries, 512,000 ha of own forest land in Finland and 76,000 ha in the USA, offering forestry services to private forest owners in Finland
- UPM Biochemicals: Developing glycols, lignin products and biomedical products
- UPM Biocomposites producing UPM ProFi outdoor products and UPM Formi composite material for injection moulding and extrusion

Biochemicals innovation unit

Finland: Biomedicum research and educational centre, Helsinki

Biocomposites mills

Finland: UPM Lahti
Germany: UPM Bruchsal (Karlsruhe)

UPM BIOFORE – BEYOND FOSSILS

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Contents

UPM AT A GLANCE

4 UPM at a glance: UPM Biofore – Beyond Fossils
6 Year 2018 in brief
8 From the President and CEO

STRATEGY

10 From fossils to bioeconomy
14 UPM strategy – Aiming higher
16 Aiming higher in performance
17 UPM as an investment
18 Spearheads for growth
20 Innovations for growth and competitiveness
24 Value from responsibility
26 Guided by the Biofore strategy – 2030 responsibility targets
28 Megatrends drive demand for renewable and responsible solutions
30 Risks and opportunities

BUSINESSES

32 UPM Biorefining
36 UPM Energy
38 UPM Raflatac
40 UPM Specialty Papers
42 UPM Communication Papers
44 UPM Plywood
46 Strategic actions for future growth

SOCIETY AND ENVIRONMENT

48 Stability through stakeholder engagement
54 Our people
58 Continuous safety improvements
60 Responsible and efficient sourcing is based on good partnerships
62 Sustainable and safe products
64 Active customer collaboration
66 UPM's value creation also generates tax revenues
68 Committed to sustainable forestry
70 Continuous improvement of resource-efficiency in production
72 Responsible water use
74 Climate actions and energy efficiency
76 Circular economy at the core
78 Summary of our societal impacts

GOVERNANCE AND COMPLIANCE

80 Compliance
83 Governance principles
90 Remuneration
92 Board of Directors
94 Group Executive Team
96 GRI content index – short version
98 Independent Practitioner's Assurance Report

ACCOUNTS 2018

99 Report of the Board of Directors
120 Financial Statements 2018
183 Auditor's report
187 Other financial information
192 More on responsibility
194 UPM on a world map
197 Addresses
199 Annual General Meeting

UPM**BIOFORE**–**BEYOND** FOSSILS

Annual General Meeting

UPM-Kymmene Corporation will hold its Annual General Meeting on Thursday 4 April 2019 at 14:00 (EET), at Messukeskus, Messuaukio 1, 00520 Helsinki, Finland. Instructions for those wishing to attend are given in the notice to the meeting, which is available on the company's website at **www.upm.com/agm2019.**

Dividend

The Board of Directors proposes to the Annual General Meeting that a dividend of EUR 1.30 per share be paid for the 2018 financial year. The dividend will be paid to the shareholders who are registered in the company's shareholders' register held by Euroclear Finland Ltd on the dividend record date 8 April 2019. The Board of Directors proposes that the dividend be paid on 17 April 2019.

Financial reports in 2019

UPM will publish the financial reports in 2019 as follows:

UPM Interim Report for January–March (Q1) on 26 April 2019
UPM Half Year Financial Report for January–June (Q1–Q2) on 23 July 2019
UPM Interim Report for January–September (Q1–Q3) on 24 October 2019

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Accounts: UPM Fine, 90 g/m^2. Other pages: UPM Finesse silk, 135 g/m^2.
Printed on papers granted the EU Ecolabel FI/028/003. Printer: Erweko Oy 2019/2