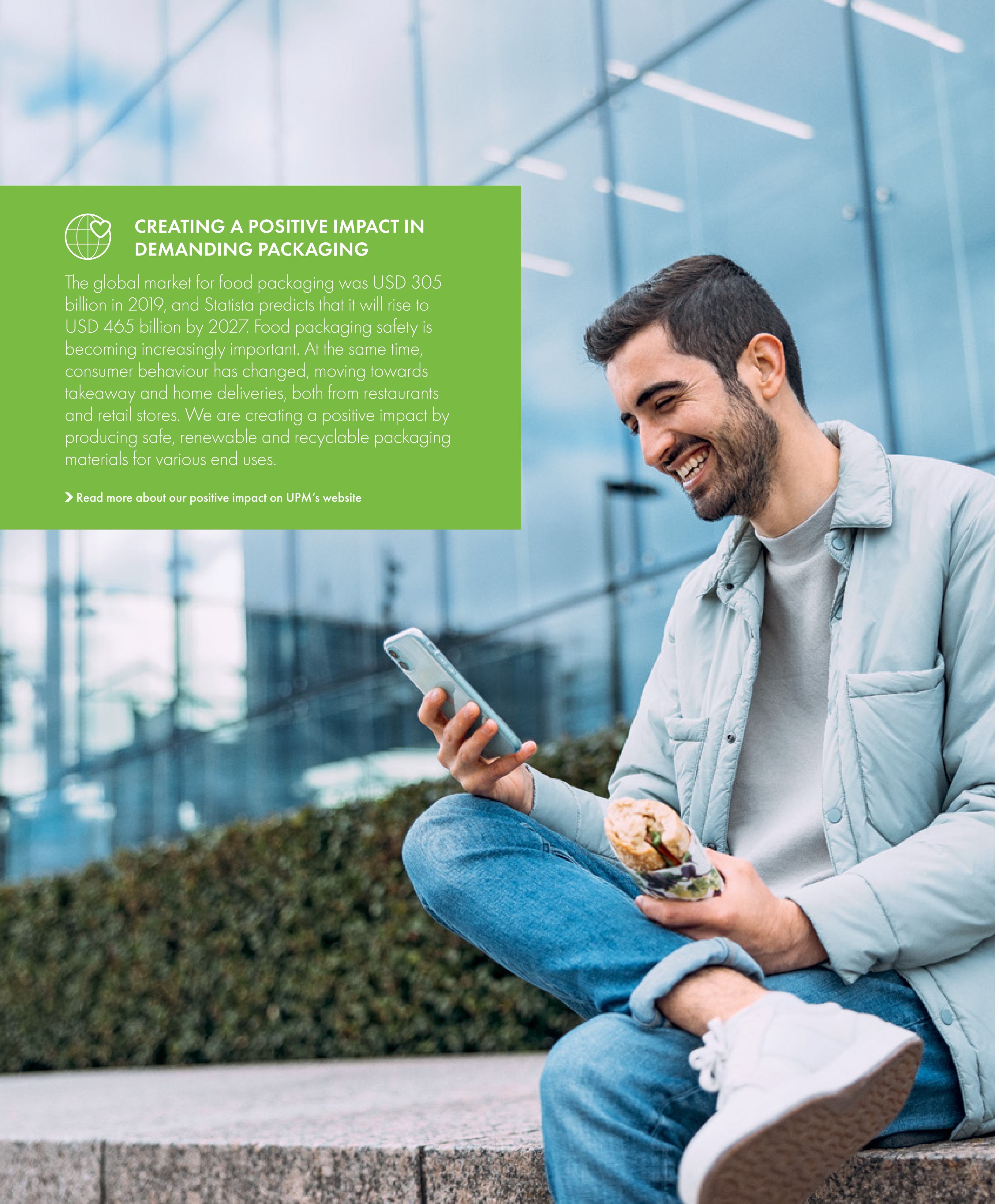
CREATING A POSITIVE IMPACT

ANNUAL REPORT 2021

UPM



CREATING A POSITIVE IMPACT IN DEMANDING PACKAGING

The global market for food packaging was USD 305 billion in 2019, and Statista predicts that it will rise to USD 465 billion by 2027. Food packaging safety is becoming increasingly important. At the same time, consumer behaviour has changed, moving towards takeaway and home deliveries, both from restaurants and retail stores. We are creating a positive impact by producing safe, renewable and recyclable packaging materials for various end uses.

› Read more about our positive impact on UPM's website

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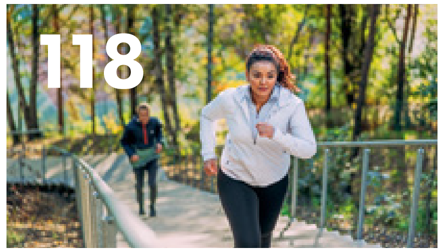


About this report

This annual report provides a comprehensive overview of our performance in 2021. All material information has been integrated into this one, third-party assured entirety.

The Reports online

PDF version for download www.upm.com, UPM Corporate Governance Statement 2021, UPM Remuneration Report 2021, Accounts for 2021 in XBRL format, UPM GRI Content Index 2021, SASB content index 2021, UPM material balance 2021, UPM carbon inventory 2021, Interactive Analyst tool for financial figures and responsibility data. More about our responsibility agenda on www.upm.com/responsibility

BEYOND FOSSILS

CREATING A POSITIVE IMPACT IN MORE SUSTAINABLE ACTIVEWEAR

The size of the global activewear market was about USD 354 billion in 2020 and it is expected to grow by 25% by 2026. From 2019 to 2020, sustainable activewear in the US and the UK grew by 45-65%, depending on the category. We innovate unique and responsible biochemicals from wood-based biomass that can be used in polyester textiles and training shoes, for example.

> Read more about our positive impact on UPM's website (Source: Statista)

CREATING A SUSTAINABLE FUTURE

2021 was a strong year for UPM. We successfully managed to navigate an exceptionally fast changing operating environment, delivering performance that exceeded UPM's financial targets.

The world economy recovered quickly from the previous year's deep slowdown. Demand for our products was strong in all business areas. Our earnings returned to strong pre-pandemic levels, and five out of our six business areas surpassed their long-term financial targets. We improved our margins, despite significant raw material and energy cost increases. The year ended with a solid Q4.

Overall, the year was excellent. Our sales increased by 14% and our comparable EBIT by 55% from the previous year. Delivery volumes increased in all business areas. Sales prices also increased in all of our business areas except for graphic papers. Operating cash flow strengthened further.

In February 2021, we joined the Climate Pledge, which aims for climate-neutrality by 2040 and to reach the targets of the Paris Agreement 10 years in advance. In 2021, our energy-related CO_2 emissions decreased by 8%. As part of our journey towards carbon neutrality, our goal is stop using coal energy by 2030.

In 2021, we again received several recognitions for our sustainability work. Our ambitious responsibility targets will continue to steer us in the right direction.

Progress in strategic growth projects

The year 2021 was significant in our strategic growth projects, which was reflected in investments of nearly EUR 1.5 billion. Our investment projects have taken place in an exceptional period when the pandemic and disturbances in the global supply chains have caused unpredictable challenges. Given the circumstances, the projects have progressed well.

The construction of the Paso de los Toros pulp mill is now at a point where the most material uncertainties have been resolved and we can fine-tune the project's completion plan. The mill will start production by the end of Q1 2023, with a 10% increase in the updated investment estimate. Most importantly, the investment case remains strong because of the cash cost level of approximately USD 280 per delivered tonne of pulp.

Business preparation at UPM Biochemicals is proceeding at good pace and the long-term business opportunities for the project are excellent. There is keen interest in wood-based biochemicals. However, the pandemic and disruptions to global supply chains have affected the progress of the project. We estimate that the start-up will take place by the end of 2023.

At the beginning of 2021, we started the basic engineering phase of a next generation biofuels biorefinery. The potential investment would take place in Rotterdam. The current investment environment is very challenging for new major projects so we are not planning to make further decisions before the end of 2022.

These strategic investments remain our focus area also this year. We will do our best to ensure that they proceed successfully and safely.

Biofore strategy unchanged

Global megatrends are increasing demand for many of our products. The drive for more sustainable consumption affects customer and consumer behaviour. More and more people want to make responsible purchasing decisions.

Our purpose is to create a future beyond fossils. We offer our customers and consumers sustainable choices: renewable and recyclable materials and low-emission energy.

Our strategy remains unchanged. We seek sustainable growth in businesses with strong long-term market fundamentals. We have defined our spearheads for growth loud and clear: fibre products, specialty packaging materials and biorefining. Performance, innovation and responsibility continue to be the cornerstones we build on.

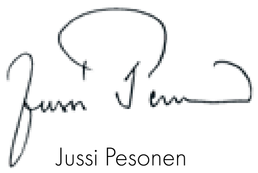
Responsibility is an integral part of our Biofore strategy. We source our raw materials from sustainably managed forests and we foster biodiversity. We develop climate-positive products that replace fossil-based products. We also have ambitious and science-based emission reduction targets.

Strong financial position

Increasing shareholder value continues to be our long-term goal. We believe that this also benefits other stakeholders and society in the long term. UPM's Board of Directors is proposing an unchanged dividend of EUR 1.30 per share for 2021. The proposal reflects UPM's strong financial position and confidence in UPM's future success.

I believe that 2022 will be another good year for UPM. Good demand is expected to continue for most products and sales prices for many products are expected to develop favourably. There are uncertainties in the operating environment also in 2022. However, we have demonstrated our ability to perform in a volatile environment and our long-term strategy is solid.

I warmly thank all UPM employees, stakeholders and shareholders for an excellent year 2021! I also look to the future with confidence. The world needs responsible solutions. Together, we will create a future beyond fossils.



Jussi Pesonen
President and CEO

THIS IS UPM

As a frontrunner in the forest industry, we provide renewable solutions for various end uses. We invest in sustainable growth and innovate for a future beyond fossils. Responsibility is at the core of everything we do.

OUR BUSINESSES

UPM FIBRES

UPM Fibres consists of pulp and timber businesses. UPM Pulp offers a versatile range of pulp grades suitable for various end uses such as tissue, specialty and packaging papers, graphic papers and board. UPM Timber offers certified sawn timber for joinery, packaging, furniture, planing and construction end-use segments.

UPM ENERGY

UPM Energy generates cost-competitive, zero-carbon electricity. Operations also include physical electricity and financial portfolio management as well as services to industrial electricity consumers and producers.

UPM RAFLATAC

UPM Raflatac offers self-adhesive label materials for branding and promotion, information and functional labelling in the food, beverage, personal care, pharmaceutical and logistics segments, for example.

UPM SPECIALTY PAPERS

UPM Specialty Papers offers labelling and packaging materials as well as office and graphic papers for labelling, commercial siliconising, packaging, office use 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 high quality WISA® plywood and veneer products for construction, vehicle flooring, LNG shipbuilding, parquet manufacturing and other industrial applications.

OTHER OPERATIONS

UPM FOREST

UPM Forest 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 BIOFUELS

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 the petrochemical industry.

UPM BIOCHEMICALS

UPM Biochemicals offers wood-based biochemicals for replacing fossil-based raw materials in various applications such as textiles, PET bottles, packaging, cosmetics, pharmaceuticals, detergents, rubbers and resins.

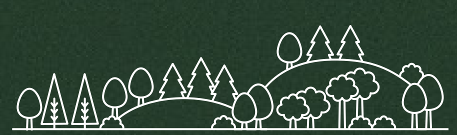
UPM BIOMEDICALS

UPM Biomedicals develops and supplies wood-based biomedical products for a variety of uses. The main ingredient of our high-quality products is nanocellulose, extracted from birch.

UPM BIOCOMPOSITES

UPM Biocomposites offers composite decking materials based on both recycled consumer and industrial waste. The product range also includes composite materials made from renewable fibres and polymers to replace fossil-based plastics.

Wood-based raw materials



Low-carbon energy

BUSINESS AREAS:

- UPM FIBRES
- UPM ENERGY
- UPM RAFLATAC
- UPM SPECIALTY PAPERS
- UPM COMMUNICATION PAPERS
- UPM PLYWOOD
- NEW BUSINESSES

54 production plants

17,000 employees in 46 countries

RENEWABLE AND RECYCLABLE PRODUCTS FOR:

- PACKAGING
- LABELLING
- TRANSPORTATION
- ELECTRIFICATION
- CONSTRUCTION
- COMMUNICATION
- TISSUE AND HYGIENE PRODUCTS
- MANUFACTURING
- BIOPLASTICS
- BIOMEDICALS

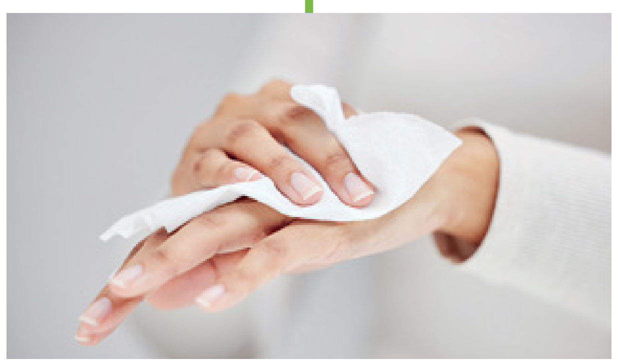
11,400 customers

200 million end-users globally

IT'S A MATERIAL WORLD

With higher living standards and an ageing population, a growing number of urban, middle-class people are consuming more and for longer. At the same time, the world is still highly dependent on fossil raw materials and energy sources that cause climate change. Consumers, businesses and regulators alike are seeking solutions that allow a more sustainable, modern way of life. Our solutions meet these challenges caused by the megatrends now and in the future.

WHAT WE OFFER



A SUSTAINABLE AND HEALTHY LIFESTYLE – MEETING DAILY CONSUMER NEEDS

Health and wellbeing depends, to a large extent, on safe hygiene products, both in personal care and medical use. Sustainable packaging and reliable information provide a foundation for everyday life.

- Fibres for hygiene and tissue products
- Safe food packaging
- Information labelling and sustainable packaging for e-commerce
- Papers for communication
- Personalised medicine

INNOVATION FOR A BETTER FUTURE – REPLACING FOSSIL FUELS AND MATERIALS

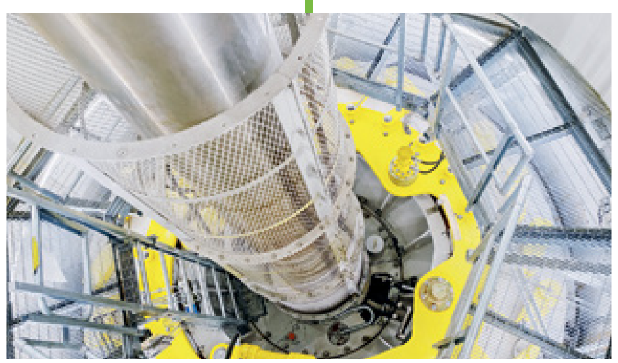
Customers and consumers need alternatives to fossil-based products to make sustainable choices. We provide a wide range of solutions so that consumers and businesses can switch to renewable raw materials and energy and reduce their carbon footprint.

- Materials for various consumer products like textiles, PET bottles, packaging, cosmetics and pharmaceuticals
- Replacing fossil-based plastics
- Decarbonising traffic

BUILDING BETTER – LOW-CARBON CONSTRUCTION

We make living spaces better by providing renewable, healthy and naturally beautiful construction materials. Carbon-neutral processes and renewable raw materials maximise sustainability.

- Renewable construction materials
- Carbon-storing buildings
- Lighter transportation equipment



DRIVING THE TRANSITION – LOW-EMISSION ENERGY

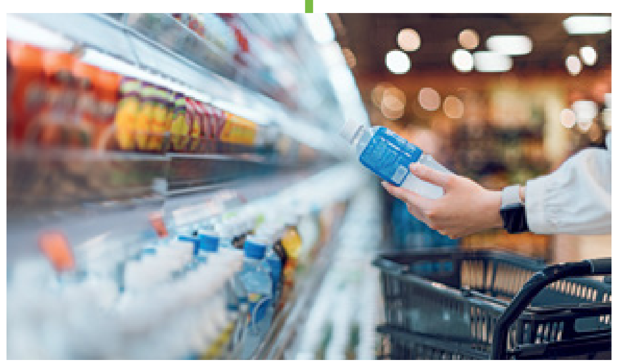
Fossil-based energy forms about 64% of the world's CO_2 emissions. The transition to a low-carbon economy requires our energy sources to be fossil-free as soon as possible.

- CO_2-free electricity
- Renewable energy
- Reliable and adjustable energy

SUSTAINABLE CHOICES

Forests provide a renewable source of raw materials for a broad range of products, from everyday necessities to ground-breaking innovations and alternatives to fossil-based materials. Growing forests are also one of the biggest absorbers of carbon on the planet, second only to oceans. They are critical to biodiversity and they protect water systems. For many, they provide a livelihood and are a source of wellbeing and recreation. Today, they're more important than ever.

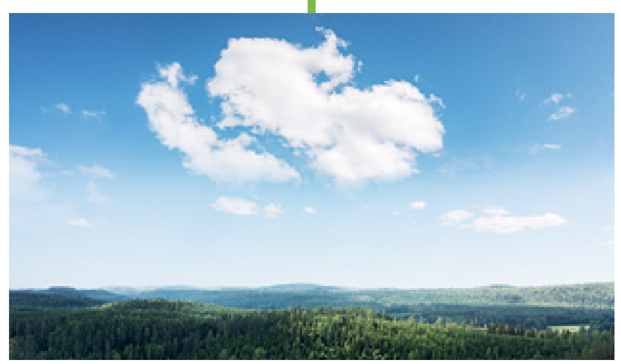
HOW WE MAKE A POSITIVE IMPACT



ENABLING SUSTAINABLE CONSUMER CHOICES

Consumers make important purchasing decisions, and we play a role in enabling sustainable choices. Responsible alternatives with credible information assist better choices. We provide sustainable solutions and create a future beyond fossils.

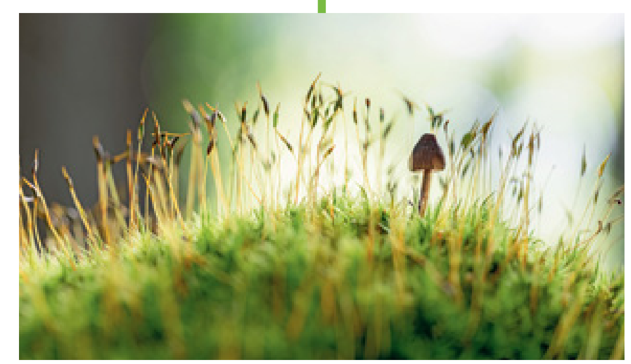
- Renewable and recyclable materials
- Sustainable product design
- Responsibility across product lifecycle
- Eco-labelled products



MITIGATING CLIMATE CHANGE

We're committed to the UN's 1.5 °C climate target and to science-based measures to mitigate climate change. We're also committed to being net-zero by 2040, ten years ahead of the Paris Agreement. We practise climate-positive forestry wherever we operate.

- Our forests absorb CO_2 from the air as they grow
- We aim to reduce our own emissions by 65% and supply chain emissions by 30% by 2030
- Our products replace fossils in various end-uses
- We innovate climate-positive products



IMPROVING BIODIVERSITY

Forests are critical to biodiversity. We want to ensure forests are full of life and continue to grow for generations to come. Safeguarding biodiversity makes forests more resilient to climate change, thereby also benefitting our business.

- Global biodiversity programme, established in 1998
- Science-based biodiversity indicators
- Stringent sustainability criteria for our own work and for our supply chain
- Sustainable forestry provides prosperity for local communities

ADVANCING A CIRCULAR BIOECONOMY

We promote the efficient use of all raw material streams and reduce, reuse and recycle whenever possible. Cross-industry collaboration provides a greater impact.

- Products made from side streams, residues and recovered materials
- Recyclability as an integral element of sustainable product design
- Efficient use of different resources
- Leading recycler in paper manufacturing

KEY FIGURES 2021

SALES 2021
EUR
9.8bn
+14%

ATTRACTIVE DIVIDEND
Dividend (proposal), EUR
693m
+0%

INDUSTRY-LEADING BALANCE SHEET
Net debt, EUR
647m
Net debt/EBITDA ratio 0.35

PERFORMANCE
Comparable EBIT, EUR
1,471m
+55%

FOCUSED INVESTMENTS
Capital expenditure, EUR
1,483m
+64%
attractive returns with disciplined and effective investments

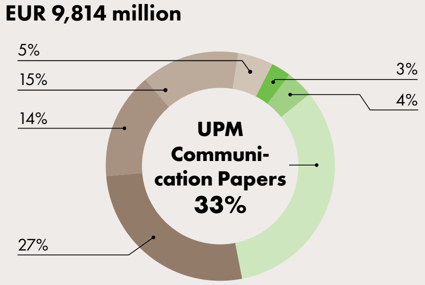
CASH FLOW
Operating cash flow, EUR
1,250m
+24%

PERFORMANCE
Comparable ROE
11.7%
+4.2pp

CASH FUNDS
and unused credit facilities, EUR
2.5bn

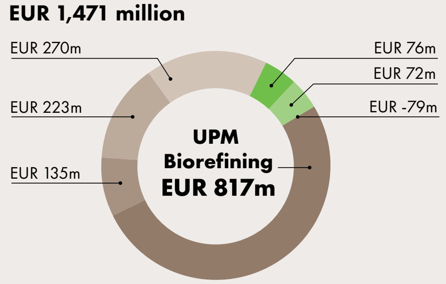
BUSINESS AREAS
Business areas achieved their financial targets
5/6

Sales 2021
EUR 9,814 million

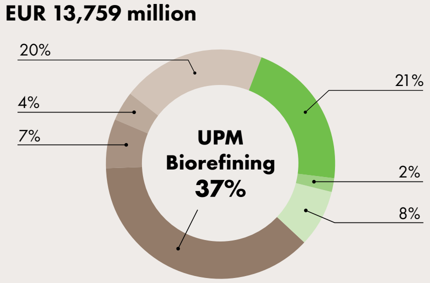


Unconsolidated

Comparable EBIT 2021
EUR 1,471 million

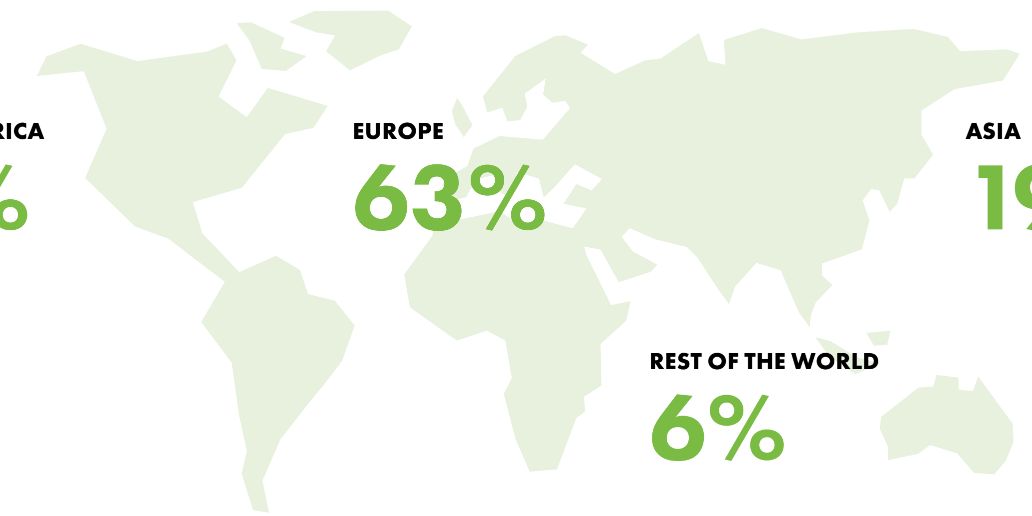


Capital employed 31 Dec 2021
EUR 13,759 million



Other operations | UPM Plywood | UPM Communication Papers | UPM Biorefining | UPM Specialty Papers | UPM Raflatac | UPM Energy

SALES BY MARKET



NORTH AMERICA
12%

EUROPE
63%

ASIA
19%

REST OF THE WORLD
6%

AIMING FOR CONTINUOUS IMPROVEMENT

ACTIVE EMPLOYEES COMPLETED CODE OF CONDUCT TRAINING
98%
-1pp
The UPM Code of Conduct lays the foundation for responsible business operations and continuous improvement.

EMPLOYEE ENGAGEMENT SCORE
68*
9 points below global benchmark
Engaged, high-performing people drive short- and long-term success.

FOSSIL CO_2 EMISSIONS (SCOPE 1 AND 2)
5.0m t
-8%
Creating climate solutions and working towards carbon neutrality.

SHARE OF SPEND COVERED BY OUR SUPPLIER CODE
86%
+2pp
Transparent supplier requirements form the basis of responsible sourcing throughout the entire supply chain.

SHARE OF CERTIFIED WOOD
84%
+1pp
Forest certification is an excellent tool for ensuring sustainable forestry. Chain-of-Custody requirements ensure 100% supply from controlled sources.

TOTAL RECORDABLE INJURY FREQUENCY
7.2
+16%
Ensuring a safe working environment for employees and everyone working for UPM.

* Results not comparable to previous year due to change in method

EVENTS 2021

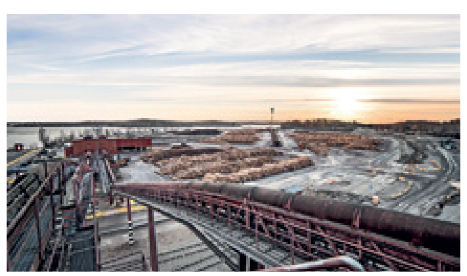
JANUARY

19 UPM Raflatac scales up its linerless business and builds a new production line in Nowa Wieś, Poland

28 UPM starts the basic engineering phase of a next-generation biofuels biorefinery

FEBRUARY

17 UPM joins The Climate Pledge



22 UPM announces its sawmills are powered entirely by renewable energy

MARCH

15 UPM issues a green bond of EUR 500 million

MAY

7 UPM announces it will close unexplained gaps in pay

14 UPM announces the sale of Shotton paper mill in the UK to Eren Paper Ltd. and newsprint production ends in September

20 Winfried Schaur is appointed Executive Vice President, Technology, and Mika Kekki is appointed Executive Vice President, UPM Plywood

JUNE

23 German Federal President Frank-Walter Steinmeier visits the UPM Biochemicals project site in Leuna

SEPTEMBER

20 The UN recognises UPM as the only forest industry representative and the only Finnish company in the Global Compact LEAD network

23 Massimo Reynaudo is appointed Executive Vice President, UPM Communication Papers

28 UPM Raflatac introduces RAFNXT+ as the world's first label material to be certified as a CarbonNeutral® product

OCTOBER

12 European Commission's competition authorities conduct an unannounced inspection at UPM's premises concerning companies in the wood pulp sector

14 UPM launches UPM BioMotion™ renewable functional fillers to significantly reduce CO_2 footprint and weight of rubber and plastics applications

NOVEMBER

15 UPM is listed in the Dow Jones European and World Sustainability Indices (DJSI) for 2021–2022 as the only company in its industry

DECEMBER

10 UPM Plywood and UPM Timber sign collective labour agreement with the Industrial Union

13 UPM Plywood announces a EUR 10 million investment in the Joensuu plywood mill

14 The Paperworkers' Union issues a strike announcement for several UPM businesses in Finland, the strike starts at the mills on 1 January 2022

LEADER IN RESPONSIBILITY

Our consistent responsibility efforts have received recognition from several third parties.

UN Global Compact LEAD: A Global Compact LEAD company for demonstrating world-class commitment to corporate responsibility. We are one of 37 companies globally—the only forest-industry company and Finnish company participating.

Dow Jones Sustainability Index: The only company in the forest and paper industry in the Dow Jones European and World Sustainability Indices (DJSI) for 2021–2022.

MSCI ESG ratings: An AAA rating in the assessment. MSCI ESG Research provides MSCI ESG ratings on global public companies, according to each company's exposure to industry-specific ESG risks and its ability to manage those risks relative to its peers.

CDP Programme: Leadership position in CDP Forests for preventing deforestation and CDP Water for water security. A good score in climate change category.

S&P Global's Sustainability Yearbook: Gold Class distiction in The Sustainability Yearbook 2022 by S&P Global as one of the top-scoring companies in our industry.

EcoVadis: The highest possible Platinum level for our responsible performance for which only 1% of over 75,000 companies assessed globally attain.

Bloomberg Gender-Equality Index (GEI): UPM is among the 418 public companies globally and one of the two Finnish companies in this index. The GEI lists the companies most committed to transparency in gender reporting and advancing women's equality.

MSCI ESG RATINGS AAA

Global Compact LEAD 2021 PARTICIPANT

Member of Dow Jones Sustainability Indices

Sustainability Award Gold Class 2022 S&P Global

CREATING SHAREHOLDER VALUE

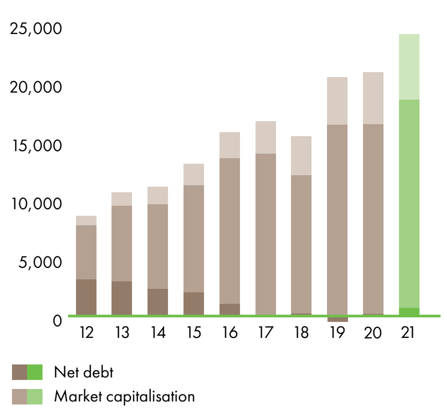
Making more sustainable choices increases demand for our products and attracts interest from investors. Our goal is to significantly increase our earnings and valuation in the coming years, while offering an attractive dividend to our shareholders.

+9.8%
Share price 2021

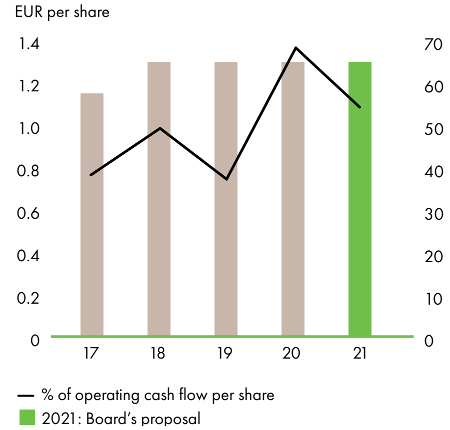
Dividend proposal EUR
1.30
per share

47%
Share of ESG-focused investors of all institutional shareholders

Enterprise value and cumulative dividends
EURm



Cash flow-based dividend
EUR per share



DRIVING LONG-TERM VALUE CREATION

Top performance enables investments in growth, innovation and responsibility
We aim for continuous improvement in our financial performance. We make good use of commercial strategies, tight cost control, materials and energy efficiency, effective capital allocation and efficient use of assets. We capture opportunities provided by our agile operating model, while capitalising on corporate synergies.

Value-enhancing growth
Consumer megatrends drive the demand growth for most of our products. This is further supported by the rapidly increasing need for sustainable alternatives to fossil-based materials and energy. We grow businesses with strong long-term demand fundamentals, where we have a clear competitive advantage. This underpins attractive returns on invested capital.

Responsibility is good business
Sustainability is an important driver for growth and competitiveness for us. We capture the opportunities presented by increasingly responsible consumer choices and tightening regulations for mitigating climate change and answering the plastics challenge, for example. Responsible operations and value chains help to mitigate risks.

Innovating for a future beyond fossils
We innovate new growth businesses with a unique competitive position in biochemicals, biofuels, biomedicals and speciality packaging materials, for example. The successful commercialisation and scale-up of the businesses to a significant size are important. We protect our intellectual property.

An improving business portfolio drives profitability and valuation
Increasing our share of sustainability-driven higher-margin growth businesses improves our long-term profitability and boosts the value of our shares. On average, UPM's growth businesses have more than three times higher EBIT margins than the mature graphic paper business.

Industry-leading balance sheet
Our industry-leading balance sheet mitigates risks and enables us to implement our growth projects even during uncertain times, such as during the pandemic in 2020–2022.

Attractive dividends
We aim to pay attractive dividends. A growth in earnings enables us to pay increasing dividends in the long term. Our dividend policy is based on cash flow, targeting a dividend of 30–40% of the company's annual operating cash flow per share.

5-YEAR SHARE PERFORMANCE AND VALUATION MULTIPLES

	2021	2020	2019	2018	2017
Share price at 31 Dec, EUR	33.46	30.47	30.91	22.15	25.91
Comparable EPS, EUR	2.22	1.37	2.07	2.24	1.88
Dividend per share, EUR	1.30*)	1.30	1.30	1.30	1.15
Operating cash flow per share, EUR	2.34	1.89	3.46	2.49	2.74
Effective dividend yield, %	3.9	4.3	4.2	5.9	4.4
P/E ratio	13.9	29.0	15.5	7.9	14.2
P/BV ratio 1)	1.65	1.74	1.64	1.21	1.60
EV/EBITDA ratio 2)	10.2	11.3	8.7	6.3	8.6
Market capitalisation, EUR million	17,845	16,250	16,485	11,813	13,818

*) 2021: Board's proposal
1) P/BV ratio = Share price at 31 Dec./Equity per share
2) EV/EBITDA ratio = (Market capitalisation + Net debt)/EBITDA

STRATEGY

CREATING A POSITIVE IMPACT IN URUGUAY

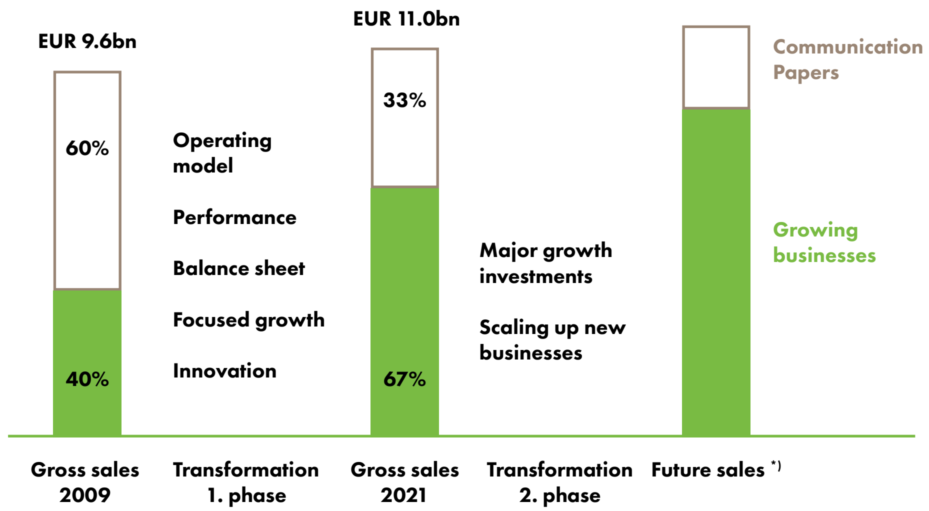
Our investments in 2021 amounted to nearly EUR 1.5bn or 15% of sales. Customers, investors and an increased network of suppliers benefit from our strategic growth project in Uruguay. The pulp mill also creates significant opportunities for the residents of the surrounding areas and for regional development. Permanent jobs increase wages, tax revenues and benefit the vitality of local communities.

> Read more about our positive impact on UPM's website

BIOFORE STRATEGY

Biofore strategy drives our transformation as a bioeconomy frontrunner. We seek sustainable growth by enabling our customers and consumers to make more sustainable choices. High performance, innovations and world-leading responsibility are the cornerstones of our strategy. We create a future beyond fossils.

TRANSFORMATION STRENGTHENS PERFORMANCE AND BUSINESS MIX



This is an illustration, not a forecast

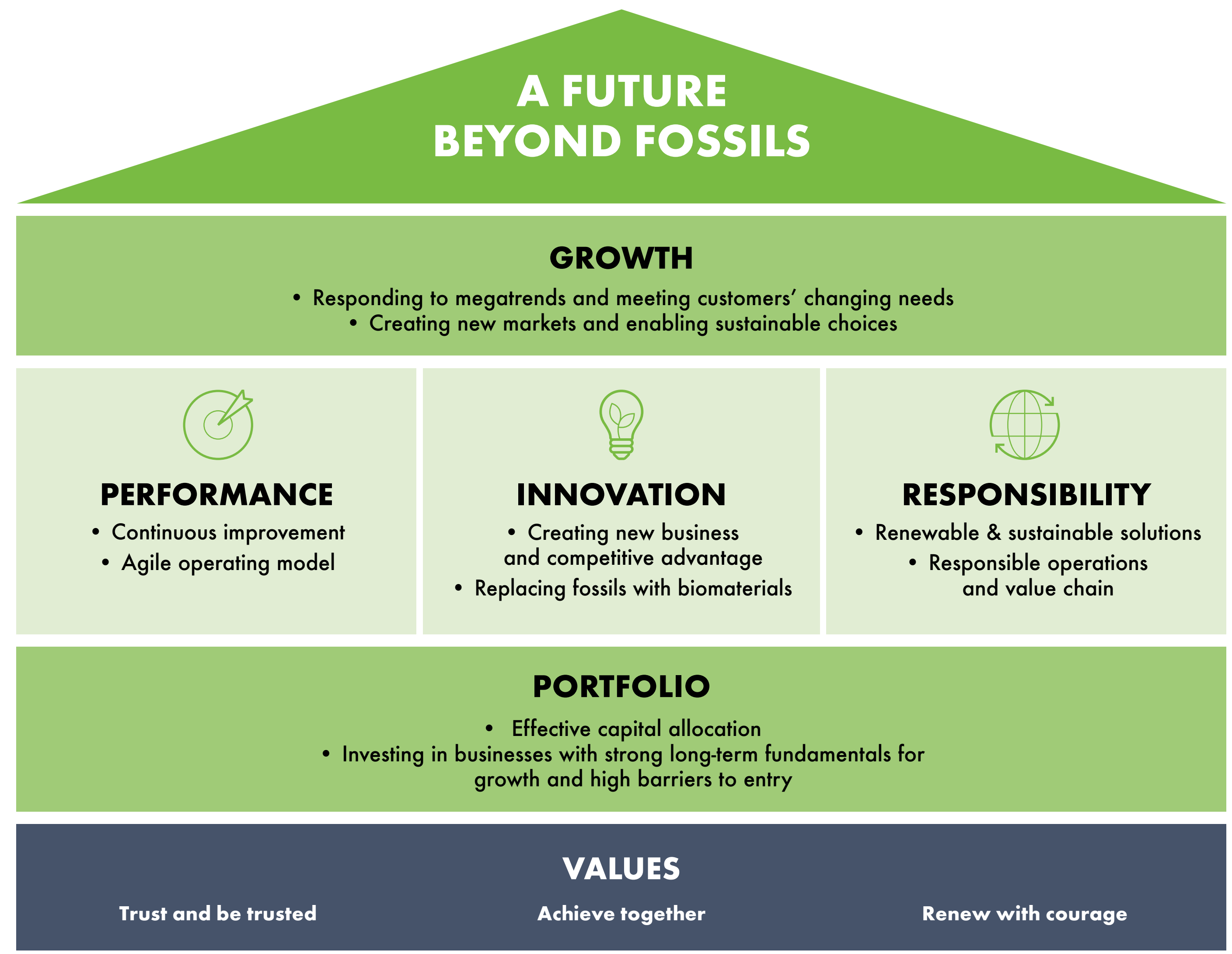
Our transformation has been ongoing for more than 10 years, at an increasingly fast pace. We have an agile operating model and nurture a culture of high performance and integrity. Through effective capital allocation we have achieved a nearly debt-free balance sheet and improved our business portfolio.

We are a world-leading company in responsibility. Our visionary purpose and values guide and inspire us in creating a positive impact for society and value for our shareholders.

Our renewable and recyclable products meet the everyday needs of consumers at the same time as addressing many global challenges such as climate change and resource scarcity.

Many of our products offer sustainable alternatives for fossil raw materials and energy, for example replacing fossil plastics in consumer products, steel and cement in construction or fossil fuels in traffic, aviation and electricity markets. Furthermore, we provide our customers completely new solutions, creating new innovative growth businesses.

We are currently in an intensive growth phase building a world-class pulp mill in Uruguay and a next generation biochemicals refinery in Germany. We are also conducting the basic engineering of a potential new biofuels refinery that would scale up our successful biofuels business. These transformative growth projects represent significant future earnings growth for us. They are set to further improve our business mix with higher-margin, higher-value businesses.



SPEARHEADS FOR GROWTH

Our transformation is in an intensive phase, with growth investments totalling EUR 3.6 billion scheduled to be completed by the end of 2023.

We have a well-balanced business portfolio, with most of the businesses in the growth phase of their lifecycle, generating attractive returns. We have also created a number of innovative new businesses, with large growth and value creation potential. Our graphic paper business is operating in a declining market and is managed to generate consistent free cash flow.

We have selected three spearheads for significant growth in the coming years. They are based on our long-term R&D work, deep know-how and high barriers to entry.

IMPACT

- We create a future beyond fossils
- We enable our customers and consumers to make more sustainable choices

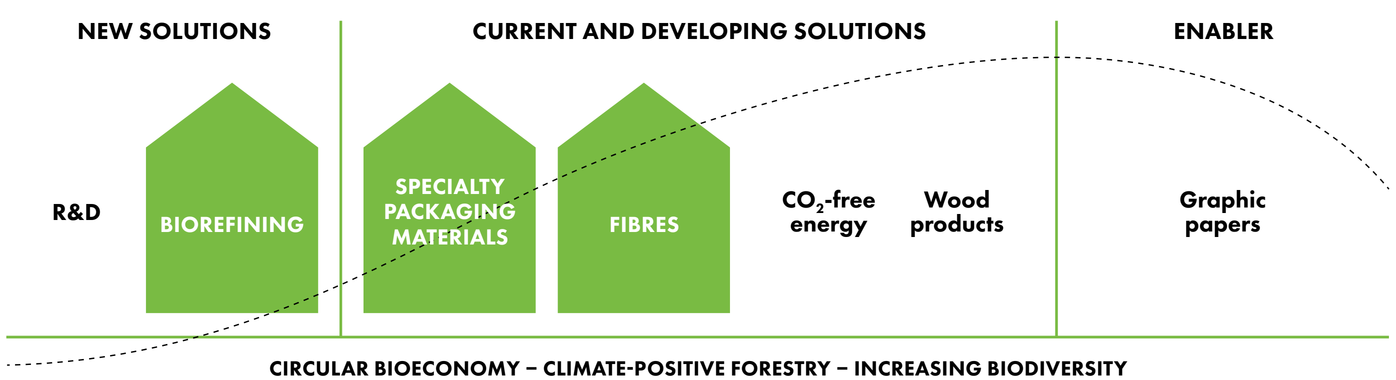
TARGETS

- Earnings growth
- Attractive returns
- Successful commercialisation

OUR WAY

- Sustainable and safe solutions
- Strong long-term fundamentals for demand growth
- High barriers to entry and a UPM competitive advantage
- Strict return requirements
- Talent attraction

TOWARDS A FUTURE BEYOND FOSSILS



FIBRES: A STRATEGIC GROWTH PROJECT IN URUGUAY

Global consumer megatrends and the need to find more sustainable alternatives for fossil-based materials support the demand growth for market pulp. The requirements for competitive greenfield pulp operations are difficult to meet and provide a lasting competitive advantage.

The production in our world-class pulp mill in Paso de los Toros in Uruguay and deliveries from a highly efficient pulp terminal at the port of Montevideo are scheduled to start up by the end of Q1 in 2023. The project and related plantation operations and logistics solutions have been carefully designed and prepared over the past decade to ensure that the pulp operation is competitive and sustainable, as well as in order to mitigate risks.

The construction of the mill was in its most intensive phase throughout 2021 and into early 2022. The mill will have an annual capacity of 2.1 million tonnes of eucalyptus market pulp. The USD 3.47 billion investment will raise our pulp production capacity by more than 50%. Given the expected highly competitive cash costs and the large scale of the mill, the investment is expected to significantly contribute to our future earnings.

› UPM Pulp on page 38
› UPM Paso de los Toros on page 42

BIOREFINING: TRANSFORMATIVE NEW BUSINESSES BEYOND FOSSILS

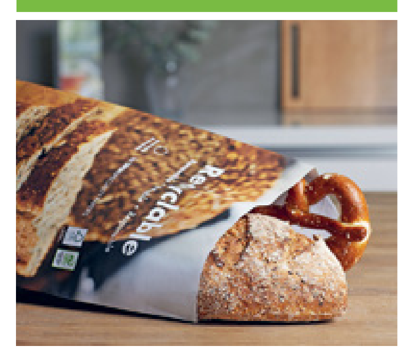
Sustainable alternatives for fossil-based chemicals in consumer products and decarbonising traffic and aviation with renewable fuels create significant new business opportunities. Access to sustainable feedstocks, proprietary technology concepts and high-quality products are expected to provide a lasting competitive advantage.

UPM Biochemicals is preparing for a commercial-scale market entry. Our next generation biochemicals refinery in Leuna, Germany is scheduled to start production by the end of 2023. The biorefinery will have an annual capacity of 220,000 tonnes of wood-based biochemicals. The EUR 550 million investment is expected to meet our ROCE target of 14% once fully ramped up. UPM Biochemicals is also proceeding in commercialising its products. As an example, we develop wood-based recyclable PET bottles in co-operation with the Coca-Cola Company. We also launched UPM BioMotion™, the renewable functional fillers to significantly reduce the CO_2 footprint and weight of rubber and plastic applications.

Currently, UPM Biofuels already supplies the markets with UPM BioVerno advanced renewable diesel and naphtha. The Lappeenranta Biorefinery has proven its proprietary technology, product quality and sustainability, and has achieved commercial success. In January 2021, we proceeded into the basic engineering phase of a potential larger next generation biorefinery to scale up the business.

› UPM Biochemicals on page 56
› UPM Biofuels on page 54

SPECIALITY PACKAGING MATERIALS: GROWTH AND PRODUCT INNOVATION



Global consumer megatrends are driving demand for appealing but sustainable and safe labelling and packaging solutions.

We continue to expand in the specialty paper and self-adhesive label materials segments. Our focus is on expanding customer reach, and on continuously developing their product portfolio. Our strong position and innovations in these technically demanding and fast-growing niche segments of the packaging value chain provide attractive growth opportunities.

In 2021, demand for our speciality papers and self-adhesive label materials continued to grow rapidly, supported by e-commerce and changes in consumer behaviour during the pandemic. UPM Raflatac's investment in a new innovative linerless label production line was completed at the end of year. UPM Specialty Papers' converted paper machine 2 at UPM Nordland, Germany reached good production during 2021.

› UPM Raflatac on page 46
› UPM Specialty Papers on page 48

ENSURING PERFORMANCE

We aim for continuous improvement in financial performance through the agile operating model, performance culture, continuous improvement programmes and effective capital allocation. In 2021, our comparable EBIT grew by 55%.

With regards to the global economy, there was a clear recovery in 2021 from the deep downturn caused by the COVID-19 pandemic in 2020. Demand for most of UPM's products was strong and sales prices of our products increased across the board. Variable costs increased rapidly as well, and global logistics and supply chains experienced bottlenecks.

We continued to implement measures to ensure performance during such an uncertain business environment. We achieved an annualised fixed cost savings impact of EUR 160 million by the end of 2021.

In 2021, our comparable EBIT grew by 55% to EUR 1,471 million (948 million). We also succeeded in maintaining progress in the transformative growth projects in Uruguay and Germany.

The agile operating model

Our businesses in various parts of the bio and forest industry value chain operate as separate market-facing businesses, both in terms of customers and suppliers. Our model offers several benefits:

- Transparency and accountability: target setting, incentives, commercial strategies and benchmarking
- Cost-competitiveness: agility, efficiency and optimal sourcing
- Growth and mix: wider business opportunities

Comparable ROE

11.7%

Comparable EBIT of sales

15.0%

At the business area level, we are targeting top performance in the respective markets. We have also set long-term return targets (ROCE %, on the left) for the six business areas. The return targets apply over business and investment cycles. In 2021, five out of six business areas exceeded the targeted returns.

Capturing corporate synergies

We build on corporate synergies, adding value to our businesses and stakeholders with:

- Competitive and sustainable wood sourcing, forestry and plantation operations
- Value-adding, efficient and responsible global functions
- Group-wide continuous improvement programmes in commercial strategies, variable costs, working capital, site and maintenance costs, safety and environmental performance
- Technology development and intellectual property rights
- Global business platform
- Disciplined and effective capital allocation
- Compliance, UPM Code of Conduct and strong UPM brand

Effective capital allocation

Capital allocation is key to attractive long-term returns, as well as developing the business portfolio in areas with the best long-term value creation potential. At UPM, capital allocation decisions take place at the corporate level.

We invest in sustainable businesses with strong long-term fundamentals for demand growth and a clear competitive advantage or high barriers to entry. With careful preparation, we aim to secure attractive returns that meet our targets both in the short and long term.

Over the past five years, our investments have offered attractive returns. In addition, our growing businesses have on average offered more than three times higher comparable EBIT margins than the mature communication paper business over the same period.

Currently, our transformation is in an intensive phase, with growth investments totalling EUR 3.6 billion scheduled to be completed by the end of 2023. For these investments, our ROCE target is 14% and we aim to achieve higher profitability than in the growing businesses on average.

Strong balance sheet and ROE

An Investment Grade rating is an important element in our financing strategy. Our financial policy on leverage is to maintain a net debt/EBITDA ratio of 2 or less. At the end of 2021, the net debt/EBITDA ratio was 0.35.

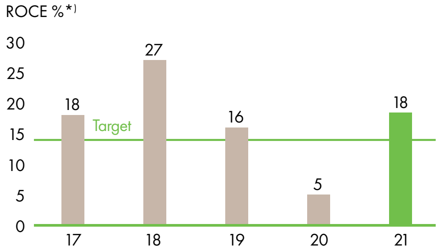
UPM aims for a 10% return on equity. ROE also takes into account the financing, taxation and capital structure of the group. In 2021, the comparable ROE was 11.7%.

› Creating shareholder value on page 18
› 2030 responsibility targets on page 32
› Spearheads for growth on page 24
› Financial Statements on page 151

BUSINESS AREA RETURNS AND LONG-TERM TARGETS

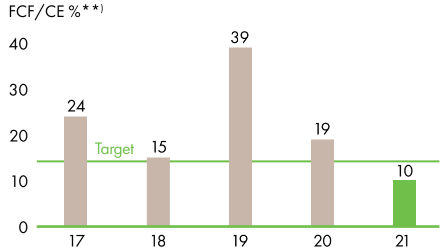
UPM Biorefining

ROCE %*)



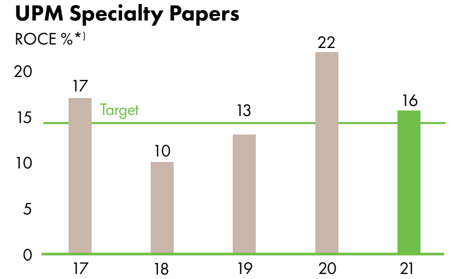
UPM Communication Papers

FCF/CE %**)



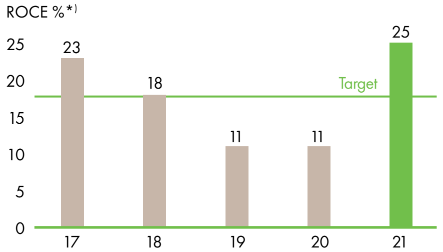
UPM Specialty Papers

ROCE %*)



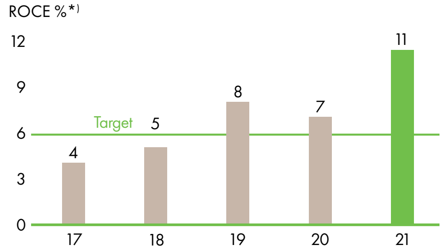
UPM Plywood

ROCE %*)



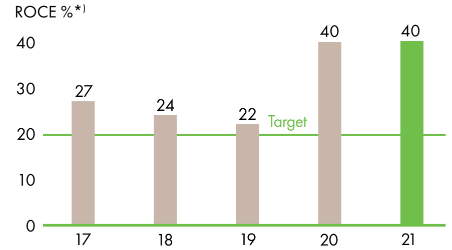
UPM Energy *)**

ROCE %*)



UPM Raflatac

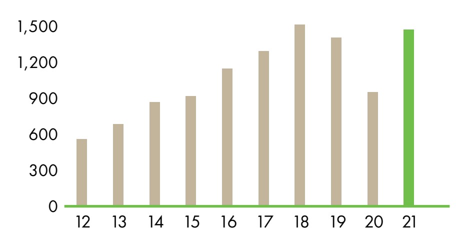
ROCE %*)



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

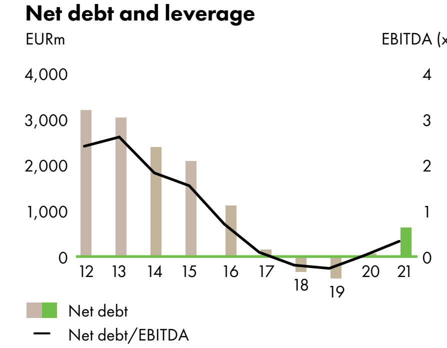
Comparable EBIT

EURm



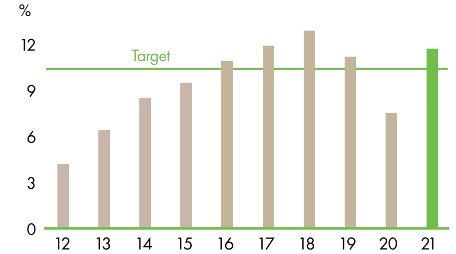
Net debt and leverage

EURm



Comparable ROE

%



IMPACT

- Top performance enables investments in growth, innovation and responsibility
- Effective capital allocation drives the company transformation and enhances long-term value creation

TARGETS

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

OUR WAY

- Agile operating model
- High-performing people
- Commercial excellence
- Cost efficiency
- Efficient use of assets and capital
- Capitalise on corporate benefits and synergies

INNOVATING FOR THE FUTURE

We innovate climate-positive products and turn them into growing businesses.

IMPACT

- Respond to global megatrends and growing demand for renewable products
- Replace fossil raw materials with bio-based materials
- Provide more sustainable choices for customers and consumers

TARGETS

- Developing products that replace fossil-based solutions and create added value and growth
- Accelerating the commercialisation of bio-based solutions into viable industrial processes
- Creating new business and a competitive advantage

OUR WAY

- In-depth expertise in forest biomass processing
- Responsibility and circular bioeconomy
- Sustainable product design
- Technological development and intellectual property rights
- Innovation culture, current and future competences
- Extensive partner network

Our products offer solutions to mitigating climate change as they replace fossil raw materials with bio-based renewable alternatives. The products store carbon for the entire duration of their lifecycle, especially when recycled multiple times. New solutions are developed in collaboration with our businesses, technology partners and customers.

Innovation and R&D programmes are essential in the development of new products and technologies. Research and development expenses cover the development of new technologies, businesses and processes. In 2021, UPM spent EUR 266 million (EUR 189) million) on research and development, making up 21.3% (18.8%) of UPM's operating cash flow.

The patents, trademarks and intellectual property rights protecting our innovations supports the journey from innovation to business. We have nearly 3,000 patents and patent applications, and nearly 1,400 trademarks globally.

Licensing innovations and technologies provides an excellent basis for value creation with customers and technology partners. As an example, at the end of 2021, UPM Biochemicals owned 160 patents and patent applications and another 353 patents and patent applications were held by partners, covering technology and products throughout the value chain.

Extensive partner network

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

Our network include the European Joint Undertaking on Bio-Based Industries (BBI) and the European Chemical Industry Council (CEFIC). We participated in the Renewable Carbon Initiative (RCI) as well as 4evergreen Alliance, an initiative by CEPI to raise the overall recycling rate of fibre-based packaging to 90% by 2030 (page 88).

We want to be proactive in the developments that reduce greenhouse gas emissions. In 2021, we joined the EU's Clean Hydrogen Alliance and became a member of the Roundtable on Clean Hydrogen for industrial users. We also joined the newly established Finnish Hydrogen Cluster to accelerate investments in the hydrogen economy.

OUR FOCUS IN 2021

EXPANDING THE INFRASTRUCTURE

UPM's Biofore Base research centres in Lappeenranta, Finland and Changshu, China are accelerating the development of new bio-based products and their launch to the markets. The Leuna Biofore Base in Germany was established at the end of the year. It works in connection with the upcoming biochemicals refinery and specialises in developing new biomolecular products.

The Biofore Base research centres unite our various technologies with globally accumulated experience and expertise in the new and existing businesses. The centres also focus on piloting and analytics enabling seamless collaboration with customers, value chain partners and research organisations such as universities. The research centres work closely with mills, UPM businesses and their research centres in various countries.

VALUE FROM DATA AND DIGITAL SOLUTIONS

We aim to significantly accelerate and improve data-based decision-making. Our development work in data utilisation focuses on high-quality, compliant, secure and modern common data platforms and services. We use agile methods in defining and implementing new business-driven data and digital solutions together with our partners. As a result, we aim for data products and digital services that have identified business value.

We finalised our Digi and Data strategy in 2021 based on a solid operating model created in co-operation with businesses. Our target is to achieve greater impact from the digital and data-driven solutions both on a corporate and a business level. The development projects common to several businesses include digital customer experience and pricing, digital supply chain and intelligent operations. The implementation of the strategy and development projects will start in 2022.

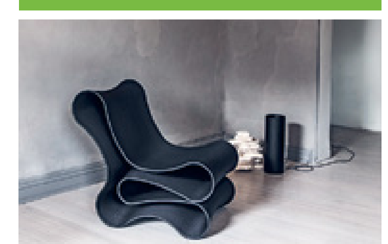
INNOVATING CLIMATE-POSITIVE PRODUCTS

Our biochemicals biorefinery under construction in Leuna, Germany, will enable a switch from fossil raw materials to wood-based sustainable alternatives in textiles, plastics, PET bottles, packaging and pharma or cosmetics products.

The basic engineering phase of a next-generation biofuels biorefinery is proceeding. The potential biorefinery would produce high-quality renewable fuels, including sustainable jet fuel. The products would significantly reduce the carbon footprint of road transport and aviation, as well as replace fossil raw materials with chemical and plastic alternatives from renewable sources.

We are also examining new ways to utilise renewable fibre-based materials that are being developed for textiles, nonwovens, hygiene products, labels and flexible packaging, amongst other applications.

DEVELOPING SUSTAINABLE PRODUCT DESIGN CONCEPT



Our 2030 responsibility targets and our contribution to the UN SDGs are integrated into our R&D activities and product development. We want our products to create value for our stakeholders during the whole product lifecycle.

In 2021, we further developed our Sustainable Product Design concept, the methodology that is based on design thinking. Our approach applies lifecycle thinking and lifecycle assessment data, both incorporated in sustainable product design practices. We piloted the new concept with packaging and biocomposites. Testing will continue in 2022 and the new concept will be gradually adopted in all businesses.

Our product development concept consists of six lifecycle steps. The process starts with a holistic overview of the design, like the purpose and use the product is developed for. During the process, the whole raw material chain, production and distribution efficiency and sustainable use including all circularity and technology aspects are considered. Lifecycle assessments (LCAs) are an important part of the sustainable product design toolbox.

> It's a material world on page 10
> Sustainable product lifecycle on page 86
> Report of the Board of Directors on page 120
> www.upm.com/innovation

VALUE FROM RESPONSIBILITY

Creating value for society—both as a responsible company and through our renewable and sustainable solutions—is an integral part of our strategy.

Our Biofore strategy guides us in achieving our responsibility targets for 2030 and in contributing to the UN Sustainable Development Goals (SDG).

We have connected our sustainability performance also to our financing. Our revolving credit facility is tied to our long-term biodiversity and climate targets, and we have also issued two green bonds in 2020 and in 2021 respectively.

As of January 2022, responsibility-related measures are included in UPM's long-term incentive plan. The distinct performance measures are based on the company's targets for fossil CO_2 emission reduction, positive impact on biodiversity and ensuring gender pay equity.

Our 2030 social responsibility targets renewed

We have strengthened our commitments to ensure fair, equitable and competitive rewarding for employees and introduced new targets for living wage and gender pay equity. Our new target on diversity further demonstrates our drive in building diversity and inclusion into the workplace.

Empowering our people with continuous professional development and ensuring future employability remains one of our priorities. Consequently, our work continues towards having development plans in place for all our employees by 2030 and reaching a perception of good opportunities to learn and grow at UPM. We continue to focus on achieving a level of employee engagement that is clearly above the benchmark by 2030 and driving responsible leadership that is value-based and inspiring.

All our targets for social responsibility are founded on the principle of respect for human rights. We constantly strive for better understanding of our impacts across our operations and business relationships and we prioritise our efforts accordingly. We monitor and work to remediate adverse impacts on human rights that we are aware of and that our activities have caused or contributed to. Remediation is specified case-by-case based on verified impacts.

A global forest responsibility programme will be launched

We continuously develop our industry leading practices in sustainable forestry. In 2021, we raised the bar with a new global forest responsibility programme that will be launched in 2022 and reaches until 2030. The new programme covers not only climate and biodiversity targets but also sustainability criteria related to water, soil and economical and social contribution.

All these areas will be developed in our own forests and plantations, but also promoted throughout our wood supply chain. Local characteristics will be taken into account to maximise the positive impact.

IMPACT

- Renewable raw materials and recyclable products advance transforming to a circular bioeconomy
- Our solutions respond to global challenges such as climate change and resource scarcity

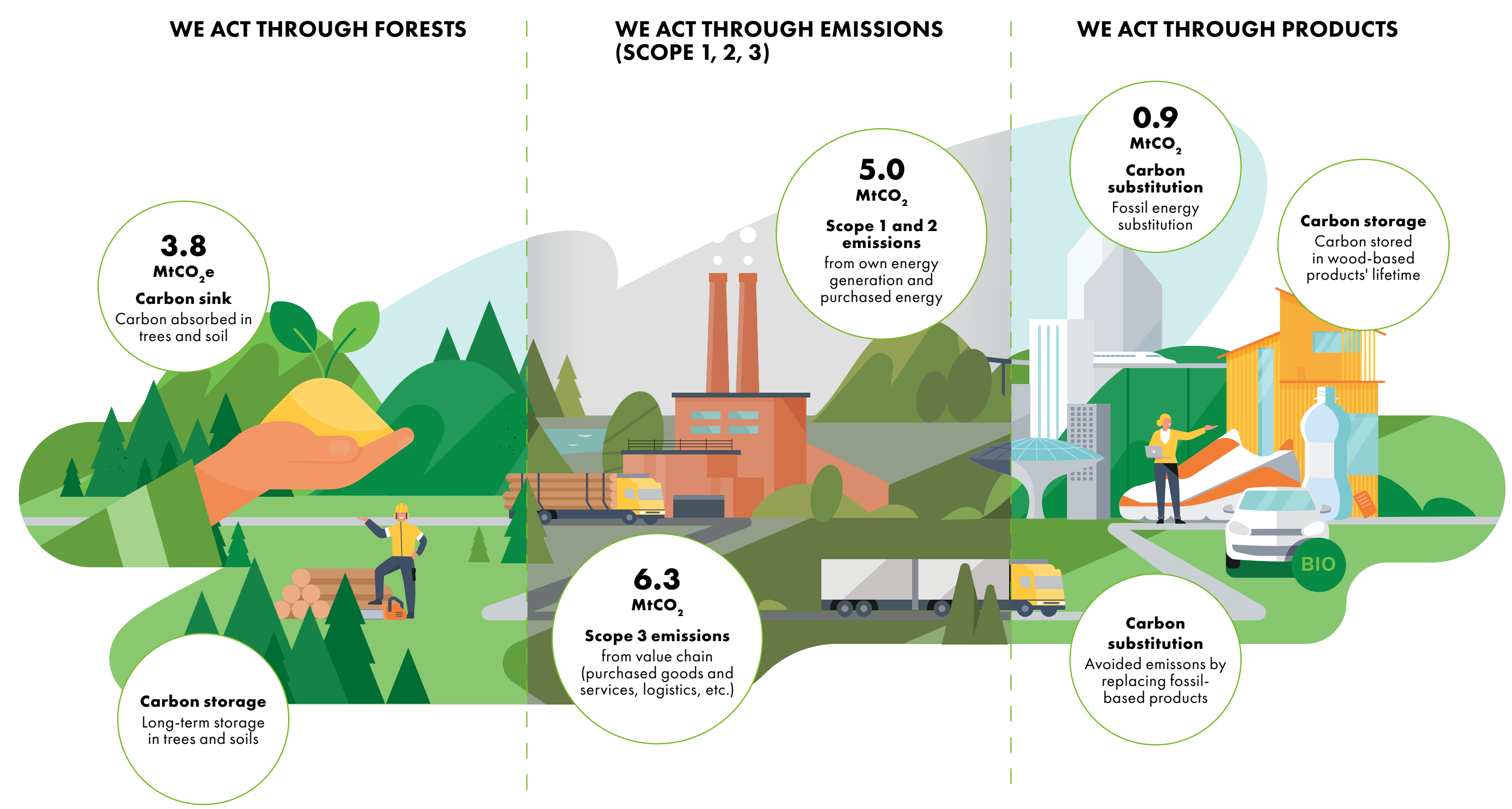
TARGETS

- We create value for our stakeholders
- We mitigate climate change through innovating novel products, committing to a 65% CO_2 emission reduction and by practising sustainable forestry

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 2030 responsibility targets and in contributing to the UN SDGs and the UN Business Ambition for 1.5° C
- Our purpose, values, UPM Code of Conduct as well as the UPM Supplier and Third-Party Code provide a solid foundation for decision-making, management and operations
- Responsibility is managed by the Board of Directors and the Group Executive Team, as well as by businesses and functions
- Responsible business conduct in all our operations
- Focus on 2030 responsibility targets

TOWARDS NET-ZERO EMISSIONS



We are committed to the UN's Business Ambition for 1.5° C in a promise to pursue science-based measures to limit global temperature rise. We act through climate-positive forestry, reducing emissions and innovating products. In 2021, we developed a method to measure soil carbon in Uruguay and a tool that enables us to steer CO_2 emissions on a monthly basis. A study on climate-related substitution and the carbon storage effects of our products continued with two research institutes, the German IFEU and the Finnish SYKE. In 2021, we also set a new target to stop using coal and peat in our on-site energy generation by 2030. There's currently no science-based calculation system to combine all climate related impacts of UPM, but we are contributing to the method development and working towards net-zero emissions.

› Our 2030 responsibility targets and how we did in 2021 on pages 32-33
› Our responsible way of operating on pages 62-99
› Sustainable forestry on page 84
› Development of Scope 1-3 emissions on page 92
› Examples of responsibility in different sections of the report
› Our Green Bond Report 2021 is available on www.upm.com/investors/upm-as-an-investment/debt/
› www.upm.com/responsibility

OUR RESPONSIBILITY TARGETS FOR 2030

FOCUS AREA	2030 TARGETS	2030 FOLLOW-UP / 2021 RESULTS
ECONOMIC		
Profit Creating value to shareholders	• Comparable EBIT growth through focused top-line growth and margin expansion • Comparable ROE 10% • Net debt/EBITDA 2 times or less	• Comparable EBIT increased by 55% to EUR 1,471 million (948 million) • Comparable ROE was 11.7% (7.5%) • Net debt/EBITDA was 0.35 times (0.04)
Governance Ensuring accountability and compliance	• 100% participation to UPM Code of Conduct training (continuous)	• 98% (99%) of active employees completed the UPM Code of Conduct training
Responsible sourcing Adding value through responsible business practices	• 80% of UPM spend covered by UPM Supplier and Third-Party Code (continuous) • 100% of UPM raw material spend covered by UPM Supplier and Third-Party Code by 2030 [1] • Supplier auditing based on systematic risk assessment practices (continuous) • 30% reduction of CO_2 emissions from materials and logistics (Scope 3) [2]	• 86% (84%) of supplier spend covered by the UPM Supplier and Third Party Code • 96% (96%) of raw material spend covered by the UPM Supplier and Third Party Code • 124 supplier audits based on identified risks. 300 contractor reviews with focus on working conditions. • Close co-operation with suppliers to develop CO_2 emission reporting
SOCIAL		
Continuous learning and development Enabling continuous professional development for high performance, growth and future employability	• Goal setting discussions are held, and development plans are created for employees: completion rate 100% by 2030 • Employees perceive good opportunities to learn and grow clearly above benchmark by 2030	• 88% (82%) of employees had completed individual goal setting or annual discussion. 70% (63%) of employees had a development plan documented. • Average score of 62 on Employee Engagement Survey question about learning and growth at UPM. This is 9 points below the global average benchmark.
Responsible leadership Emphasis on value-based and inspiring leadership and integrity	• Employee engagement is clearly above benchmark by 2030	• Employee engagement average score 68. This is 9 points below the global average benchmark.
Diversity and inclusion Developing an organisational culture and workplace to ensure a diverse and inclusive working environment for business success.	• UPM is among the top 10% of companies on employees' sense of belonging by 2030 • Continuous improvement in the female representation in professional and managerial roles, 40% by 2030. Developing leadership and decision-making capabilities with increased diversity • Diversity and inclusion initiative (continuous)	• Average score of 67 on Employee Engagement Survey question about belonging. This is 13 points below the benchmark of top 10% companies. • New target • UPM continued a dialogue on developing inclusive behaviours. Implemented a gender pay equity review process.
Fair rewarding Ensuring fair, equitable and competitive rewarding for all employees	• Ensure that employees' pay meets at least local living wage by implementing a yearly review • Ensure gender pay equity for all employees by implementing a yearly review process to identify and close unexplained pay gaps	• New target • Company-wide review done and pay adjustments implemented to close identified, statistically significant and unexplained gaps related to gender.
Safe and healthy working environment Ensuring the safety and health of our employees, contractors and the local communities close to our operations	• No fatalities or serious accidents • Total recordable injury frequency (TRIF) <2 by 2030, including contractors • Process safety development programme implemented at all UPM sites and businesses by 2030 • UPM is among top 10% companies on employees' sense of worklife balance by 2030 • Absenteeism rate <2% by 2030	• No (no) fatal accidents, 3(2) serious accidents • TRIF 6.3 (5.3) for UPM workforce and 7.2 (6.2) including contractors • New target • New target • The absenteeism rate was 4.1% (3.9%)
Community involvement Ensuring local commitment and positive impact on communities	• Assess quality of community relationships and define measures at relevant sites (continuous) • All businesses define long-term initiative(s) that impact their mill communities in line with the Biofore Share and Care programme (continuous)	• New target • New target
ENVIRONMENTAL		
Forests and biodiversity Ensuring sustainable land use and keeping forests full of life	• Climate-positive land use (continuous) • 100% of fibre certified by 2030 [3] • Positive impact on biodiversity: implementing biodiversity programme and developing monitoring system (continuous) [4]	• Five-year annual average carbon sink of UPM's own amd leased forests was approx. 3.8 m tonnes of CO_2 equivalents • 84% (83%) of all wood used by UPM is sourced from certified forests. • Overall positive development measured, 6 positive and 2 negative subindicators
Climate Creating climate solutions and working towards carbon neutrality	• 65% reduction of fossil CO_2 emissions from our own combustion and purchased electricity by 2030 (Scope 1 and 2) [5] • No coal and peat usage in on-site energy generation by 2030 • 1% annual energy efficiency improvement (continuous) • 70% share of renewable fuels (continuous) • 20% reduction of acidifying flue gases by 2030 (NO_x /SO_2) [5]	• Fossil CO_2 emissions reduced by 27% compared to 2015 and by 8% compared to 2020 • New target • Achieved • 70% (72%) share reached in the use of renewable fuels • 27% reduction of acidifying flue gases since 2015 for the UPM average product
Water Using water responsibly	• 40% reduction of effluent load (COD) by 2030 [6] • 30% reduction of wastewater volume by 2030 [6] • 100% of nutrients used at effluent treatment from recycled sources by 2030 [6]	• 38% reduction in effluent load since 2008 for the UPM average product • 18% reduction in wastewater volume since 2008 for the UPM average product • 35% (28%) of nutrients from recycled resources
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	• 89% (89%) of all UPM's process waste was recovered and recycled. The total amount of process waste to landfills decreased by 3% compared to 2020.
Product stewardship Taking care of the entire lifecycle	• Climate-positive product portfolio (continuous) • Development of new products and services with contribution to the UN SDGs (continuous) • 100% of applicable products eligible for ecolabelling	• Scientific study on substitution and storage effect continued • Piloting of the Sustainable Product Design concept continued • 84% (82%) of UPM sales were eligible for ecolabelling

UPM's Biofore strategy guides us in achieving our responsibility targets for 2030 and contributes positively to achieving the UN Sustainable Development Goals (SDGs).

We have selected six goals and, thereunder, 12 targets that are the most relevant for us based on where we can have the greatest effect, either by minimising our negative impacts or by increasing our positive impacts on people, societies and the environment. There are others that are also relevant to us, but to a lesser extent.

In 2021, we reviewed and renewed our social responsibility targets (see pages 30, 74, 77). We also replaced the earlier target on business benefits from GHG claims with a new target on ending the use of coal and peat.

Goal 6:
Clean water and sanitation
(Target: 6.3)

Goal 7:
Affordable and clean energy
(Targets: 7.2 and 7.3)

Goal 8:
Decent work and economic growth
(Targets: 8.2, 8.5 and 8.8)

Goal 12:
Responsible consumption and production
(Targets: 12.2, 12.4 and 12.5)

Goal 13:
Climate action
(Target: 13.1)

Goal 15:
Life on land
(Targets: 15.2 and 15.5)

[1] Covers all raw material spend including wood and wood-based biomass sourcing and excluding energy
[2] From 2018 level
[3] Forest management certification
[4] Covers UPM own forests in Finland
[5] From 2015 level
[6] From 2008 level, relevant for pulp and paper production

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.

- Risks in the report of Board of Directors on page 131
- Sensitivity to carbon pricing is presented on page 138
- Main earnings sensitivities are presented on page 165
- UPM's cost structure is presented on page 166
- Main currency exposures are presented on page 196

CYCLICAL AND COMPETITIVE BUSINESS ENVIRONMENT

UPM's current product offering competes in markets where there are competing alternatives for customers and where the shifts in supply and demand continuously influence prices. Changes in production capacity, new product development and competitor and consumer behaviour may impact the price levels for our products and cause demand fluctuations. Rapid acceleration in digitalisation and e-commerce may expedite the decline in demand for graphic papers and simultaneously increase demand for sustainable packaging products.

Management: Industry-leading balance sheet. Continuous improvement in competitiveness, resource efficiency and customer offering. Responsible operations. Business portfolio development.

Opportunity: Growing need and consumer preference for renewable and recyclable solutions create business opportunities and drive demand growth.

CLIMATE CHANGE

The transition to a low-carbon economy can cause policy changes and shifts in market preferences, standards, and technologies, which in turn may result in changes to cost structures or the commercial opportunities of biomass and change the competitiveness of products, raw materials, industries, and countries. The physical impacts of climate change include more frequent and severe extreme weather conditions, which can increase droughts and forest fires and cause uncertainties in business operations. Damage caused by insects and tree diseases can become increasingly common.

Management: Long-term targets and science-based measures to mitigate global warming through sustainable forestry, emissions reductions and innovating novel products. Enhancing biodiversity.

Opportunity: Transition opportunities include those driven by resource efficiency and the development of new technologies, products and services that could bring new markets, customers, sources of funding and competitive advantage for us. Longer forest growing season in northern hemisphere.

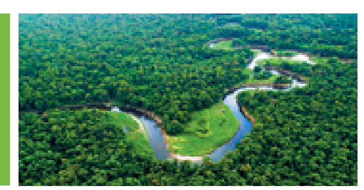
GEOPOLITICAL AND ECONOMIC UNCERTAINTY

The rising protectionism in Europe, global trade tensions between major economies, e.g. the US and China, as well as political uncertainties in several countries continue to cause uncertainty in trade policies, economic growth, rule of law and challenge competitiveness and predictability for companies with international value chains and operations in several countries. The testing relationships between businesses, governments and society, and the changing pandemic containment measures may continue to stress the economic and political environment and cause local challenges to our operations or influence demand for our products.

Management: Monitoring through international trade associations. Compliance. Continuous improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.

Opportunity: Diverse business portfolio, geographical presence and responsible business practices may present opportunities for supply chain optimisation or strategic opportunities (incl. M&A) in an economic downturn.

CHANGES IN POLICIES, LEGISLATION AND STAKEHOLDER EXPECTATIONS



The rising social inequality and strain on our natural ecosystem have intensified the expectations for companies to deliver economic, social and environmental benefits and complement the actions being taken by governments. Changes in regulation, taxation or subsidies could have an effect on our performance, competitiveness and the costs and availability of raw materials. Environmental regulations may continue to become more stringent. As policies, legislation or stakeholder expectations, or the application of them, change, additional costs in complying with more stringent requirements may be imposed on us.

Management: Responsible operations in the value chain enhance the ability to operate and influence long-term business success, including environmental management systems, sustainable forestry and compliance.

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

EXECUTION OF STRATEGIC INVESTMENT PROJECTS

We invest in selective strategic projects to enable profitable growth. Investment projects are often large and may take several years to complete. They may also involve strategic, technical and operational risks. Our large pulp mill project in Uruguay consists of several subprojects. The biochemical refinery project in Germany involves new technology and opens new markets for us. The OL3 power plant project may impact energy costs or the fair value of our energy shareholdings. The COVID-19 pandemic and the required additional health and safety measures as well as bottlenecks in the global logistics and supply chains have added new challenges to large investment projects.

Management: Stringent and continuous operational planning, steering and supervision, quality control, input procurement, scheduling as well as resource and cost monitoring. Environmental, health, safety and social impact assessments and protocols. Stakeholder engagement.

Opportunity: Carefully selected and implemented growth projects improve our earnings and returns, and change the positioning of the company.

INPUT PRICE FLUCTUATIONS ON THE MAIN RAW MATERIALS AND SERVICES

The main production inputs required in the manufacturing of our products are wood, fibre, chemicals, energy and water. The prices for many of these inputs have been volatile in recent years and are expected to remain volatile for the foreseeable future. Governmental protection, trade protection measures, climate change, local and global environmental policies, possibly impacted by COVID-19 related governmental actions or restrictions, could continue to cause further uncertainty around the prices and availability of these inputs as well as logistics services.

Management: Continuously improving resource efficiency and supply chain optimisation. New technologies. Long-term supply contracts and relying on alternative suppliers. Selected ownership of forest land and long-term forest management contracts.

Opportunity: Circular economy and continuous improvement in resource efficiency and resilience to withstand price fluctuations offer competitive advantage.

INFORMATION TECHNOLOGY AVAILABILITY AND INCREASING CYBERCRIME ACTIVITY

Our business operations depend on the availability of supporting information systems and network services. Unplanned interruptions in critical information system services can cause disruptions to the continuity of operations. The information systems may be exposed to a cyber-intrusion that could cause leakage of sensitive information, violation of data privacy regulations, theft of intellectual property, production outages or damage to reputation.

Management: We systematically maintain and further develop our measures for cybersecurity protection.

Opportunity: Sophisticated IT systems enable efficient operations and optimised performance, as well as new customer services and data security.

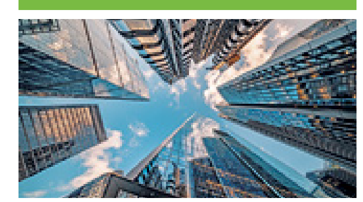
OPERATIONAL HAZARDS, HEALTH AND SAFETY ISSUES AND BUSINESS INTERRUPTION

Our operations are exposed to risks arising from the environment, fires, natural events, site security and occupational health and safety. A major incident at a UPM site or at a critical part of the supply chain could cause a shutdown or curtail production. Any failure to maintain high levels of safety management could also result in physical injury, sickness or liability to employees, contractors or third parties.

Management: We systematically maintain and further develop our management, safety, security and loss prevention programmes as well as insurance protection and business continuity.

Opportunity: Industry-leading environmental performance provides competitive advantage. Health and safety performance strengthens engagement, efficiency and productivity.

FINANCIAL RISKS



Financial risks include foreign exchange and interest rate fluctuations, challenges in refinancing, counterparty or credit risks or changes in taxes. Changes to the monetary policies of major central banks may significantly impact interest rates and consequently various currencies that directly or indirectly affect UPM. Our foreign exchange rate risk primarily relates to the US dollar, British pound sterling and Japanese yen.

Management: Continuous hedging of net currency exposure. Hedging the balance sheet. Continuous improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.

Opportunity: Diverse business portfolio and geographical presence, focus on competitiveness and strong balance sheet may present strategic opportunities in a changing currency environment.

EMERGING RISKS

Decisive carbon removal policies may require a rapid growth in carbon removal technology solutions, but could accelerate the tendency to optimise short-term actions and lead to restrictions on wood-use.

Management and opportunity: Sustainable forest management and expansion of forested areas.

A widening digital gap and unbalanced economic development can worsen societal fractures and recovery from the pandemic.

Management and opportunity: Economic activities and creating incremental value in remote areas especially related to forests.

OUR BUSINESSES

CREATING A POSITIVE IMPACT IN E-COMMERCE

About 900 million kilograms of plastic packaging waste is produced globally in the e-commerce industry each year. Four in ten e-commerce decision-makers plan to make plastic-free packaging available to their consumers. Over 40% of online shoppers would choose brands based on sustainable packaging according to a US survey. We create a positive impact by offering a wide range of sustainable packaging and label materials.

› Read more about our positive impact on UPM's website (Source: Statista)

UPM FIBRES - PULP & TIMBER

FIBRES FOR THE FUTURE

Versatile, renewable and recyclable — pulp and timber are the fuel of the modern bioeconomy.

OUR DIRECTION

- For pulp: to grow with our customers. To provide the most versatile pulp range, advanced technical service and a reliable long-term supply with undisputed commitment to sustainability. To maintain cost-competitiveness through continuous operational improvement.
- For timber: to enhance profitability through efficient wood supply, integrated full-production and focused commercial strategy. To have a streamlined business model that secures our position in chosen key markets and end-use segments.

OUR STRENGTHS

- Broad selection of sustainably produced pulp grades for a wide range of end uses
- Modern, efficient pulp mills and expert teams committed to grow with customers
- Industry-leading forest management and sustainable eucalyptus plantations
- Fossil-free timber production with a dedicated global sales and logistics network

KEY FIGURES	2021	2020
Sales, EURm	2,945	2,183
Comparable EBIT, EURm	817	166
Capital employed (average), EURm	4,437	3,620
Comparable ROCE, %	18.4	4.6
Personnel on 31 Dec.	2,692	2,695

Comparable EBIT increased due to significantly higher pulp and timber sales prices. In China, chemical pulp demand growth was slowing down in 2021 though showing some improvement at the end of the year. In Europe, demand was good. Demand for advanced renewable diesel and naphtha was strong. Also, demand for sawn timber was strong. The figures include UPM Biofuels business until the end of 2021.

Pulp is a material that perfectly matches the growing global demand for responsible and renewable products. We serve our customers with sustainably produced eucalyptus, birch and softwood pulp grades for a wide range of end uses such as tissue, specialty papers, graphic papers, board and packaging. In addition to high-quality pulp, our modern pulp mills produce renewable energy, and by-products and residues, which are used for innovative bioproducts.

In our timber business, we serve our industrial customers in the furniture, joinery, planing, construction and packaging sectors.

Capturing benefits from efficient operations

In 2021, the strong demand for tissue and hygiene products as well as for packaging and specialty paper products supported the global pulp demand. Pulp consumption in graphic paper end-use segment recovered from 2020. In China, pulp demand growth slowed down due to lower economic activity, customers' temporary capacity curtailments and inventory reduction in the customer value chain. In Europe, the overall markets remained strong with high demand and a tight demand and supply balance. Pulp sales prices increased to record levels in the first half of the year until the summer in both main markets, after which sales prices decreased in China while remaining at high level in Europe.

UPM Timber benefitted from improved economic activity and a high demand of wood-based construction materials. Strong demand of sawn timber raised the market prices to a high level. Our committed and experienced team successfully managed to secure our customer deliveries in the thriving markets.

Thanks to the strong markets and excellent operational efficiency, UPM Fibres had a strong financial performance in 2021. The scheduled maintenance shutdowns at the pulp mills in Uruguay and Finland were successfully carried out with strict COVID-19 protocols. In addition to the preventive COVID-19 measures, continuous improvement of safety measures continued in all operations.

Strong fundamentals for growth

Long-term demand for pulp remains strong, driven by global megatrends. Growth in demand is strongest in China and the rest of the Asia-Pacific region. The increasing Asian middle-class and rise

CASE

CHINA DRIVES GROWTH

China is the strongest growing market for pulp and one of UPM Pulp's main markets. The growing Chinese middle-class and the increasing use of paper packaging materials, tissue paper and specialty paper push the demand for pulp.

We have gained a strong foothold in the Chinese and European pulp markets and have a good reputation, especially in sustainability. The importance of the Chinese market will continue to grow for years to come as the new pulp mill in Paso de los Toros will be completed by the end of Q1 2023.

UPM Pulp's Asia-Pacific (APAC) sales team has been operating in China for 10 years and has broken many sales volume records. Currently the team employs 15 professionals. Our pulp production capacity will grow by more than 50%, which means a significant increase in delivery volumes and the strengthening of the Asian sales team.

Along with the growth we will take a more leading role as a pulp supplier in the market. The prerequisites for success include the right sales strategy and solid customer relationships. This means trust in the products, delivery reliability, sustainability promises and trust in the organisation and the people in it.

Co-operation with customers especially in technical and sustainability projects has also contributed to the sustainable development of the paper industry in China.

› www.upmpulp.com

CASE

RIGOROUS COVID HEALTH MEASURES AT CONSTRUCTION SITES IN URUGUAY

The sites have been kept running normally in accordance with hygiene rules in all areas. The traffic has been distributed and differentiated taking into account bus capacity, air conditioning and seating arrangements. Cleaning of accommodation has been intensified and accommodation capacity has been limited. Those who test positive have been accommodated in separate buildings.

Contractors have assigned separate COVID coordinators to facilitate communication. External experts assess the functionality and timeliness of the measures. Close co-operation, testing and timely communication have reduced the number of infections.

The screening capacity has been developed so that initially all employees were provided with external testing services. Soon after we received our own testing equipment and rapid test kits and most recently our own PCR laboratory.

The testing strategy covers all workers, suppliers, drivers and others who move around the sites. There are clear criteria for access. During the peak of the pandemic, the entire site was tested every two weeks and a 24-hour health service was set up. Returning from holiday requires sampling before starting work. During 2021, around 40,000 coronavirus tests were carried out in Paso de los Toros.

We have also participated in a vaccination campaign with the national health authorities to increase the number of vaccinated workers.

› www.upmpasodelostoros.com

in the use of paper packaging materials, tissue and hygiene papers, and specialty papers is pushing the demand for pulp.

In 2021, we continued to implement our growth strategy for pulp. Construction of our new pulp mill in Uruguay proceeded intensively in all main areas (page 42). Our commercial strategy focused on further strengthening our commercial capability and scaling our business processes to profitably serve the current and future markets with six million tonnes of pulp in 2023. At the same time, continuous improvement and the efficiency measures implemented in Finnish operations yielded results in productivity.

In terms of timber, the demand for responsible construction material is driving future growth. We are continuously seeking to improve our customer value creation. We are also working to develop our customers' businesses within our long-term co-operations and to improve our environmental footprint throughout the value chain. Our operating model has been revamped since 2020 to improve our internal operations so that they are even more effective.

The growth and competitiveness of our business is enabled by the strong forestry operations in Finland and Uruguay (page 84). Efforts in operational excellence and productivity continued in 2021, with a specific focus on the plantation expansion in Uruguay and cost efficiency and sustainability in Finland.

Replacing fossil-based products

As a sustainable, renewable, recyclable, and biodegradable raw material, pulp responds to the growing need for responsible alternatives to replace fossil-based materials. Pulp is already being used as an alternative to plastic packaging and its uses as a textile fibre, composite material and material for the chemical industry is currently being researched.

Pulp is produced in energy-efficient mills. Sustainability and circular economy are integrated in all our operations from the sustainably managed commercial forests and eucalyptus plantations to the use of residues and side streams as well as the recyclability of most end products in the paper and board segments.

The global construction industry is estimated to account for nearly 40% of energy-related CO_2 emissions. Replacing non-renewable raw materials in construction with responsibly produced timber is an effective solution for emission reduction. All of our sawmills run with 100% renewable energy and our timber products sequester carbon throughout their lifespan. We can offer wood products with the lowest possible carbon footprint to our customers. We also have a long track record on responsible business practices.

CASE

COLLECTIVE AGREEMENT RENEWED IN COLLABORATION WITH ALL PARTIES

UPM Timber and the Finnish Industrial Union signed a business-specific three-year collective agreement in December 2021. The new agreement enables increased flexibility to meet the needs of both employees and production. It also creates better conditions for sawmills to increase production and hire new labour on more flexible terms.

The agreement also allows a faster, cost-effective response to market fluctuations with a working time range instead of a fixed number of hours, which was the case previously. UPM Timber's payroll structures were also renewed, creating more incentives for individuals and teams.

UPM Timber's business management, sawmill directors, employee representatives from each sawmill and representatives of the Industrial Union were involved in the negotiations. This allowed diverse points of view to be expressed during the discussions and made it possible to take into account the wishes of the personnel as well as the specific needs of the sawmill business.

All parties will see benefits from the new agreement. The solution will ensure that employees' purchasing power is strengthened and the collective agreement will continue to determine the minimum working conditions for employees. In turn, UPM Timber can develop its business well into the future.

› www.upmtimber.com

UPM PASO DE LOS TOROS – WORLD-CLASS PULP MILL

In Uruguay, the UPM Paso de los Toros pulp mill project was progressing intensively in all main areas.

We are currently constructing a new world-class pulp mill near Paso de los Toros in Uruguay and an efficient pulp terminal in the port of Montevideo. The new pulp mill will be a significant step for UPM's future earnings and shareholder value. When operational, the UPM Paso de los Toros pulp mill, together with forestry, wood and pulp logistics and other related activities, will create around 10,000 new permanent jobs, of which 4,000 will be directly employed by UPM and its subcontractors.

Project highlights in 2021

- More than 6,000 people have been working on the most intensive phase at the various construction sites under strict COVID-19 protocols.
- The assembly phase, with mechanical erection, continued to progress in all main process areas at the pulp mill site in Paso de los Toros. Majority of large civil work was completed. Commissioning works have started.
- Temporary and permanent housing for the mill construction workers in the nearby communities are in use.
- The structure and roofing of the pulp warehouse were completed. The unloading line for the railway was also completed at the pulp terminal in the port of Montevideo. Piping, pipe bridge, auxiliary machinery and tank insulation work continues on the port basin.
- Works on the Central Railway by Uruguayan government proceeded, but the overall rail project is delayed.
- Works related to road infrastructure improvement in central and west Uruguay continued.
- Construction of a state-of-the-art eucalyptus tree nursery, scheduled to begin operations in March 2022, progressed in Sarandí del Yí.
- Preparing commercial readiness continued to proceed.
- Ramping up all operations related to wood supply, contracting required services for forestry and mill operations, and recruiting and training new resources advanced.
- Mitigating actions to ensure the progress of the project were implemented due to the pandemic and tight global supply chains.
- The project's completion plan was fine-tuned in January 2022.

- Annual production capacity of 2.1 million tonnes of eucalyptus pulp
- The total investment estimate is USD 3.47 billion
- Investments in port operations in Montevideo and local facilities in Paso de los Toros
- Expected cash cost level of USD 280 per delivered tonne of pulp
- Competitive wood supply, best available techniques and efficient logistics
- Highest safety and sustainability standards
- Scheduled start-up by the end of Q1 2023

Role of plantations

Eucalyptus availability for the mill is secured through our own and leased plantations, as well as through wood sourcing agreements with private partners. Our plantation areas in Uruguay cover 466,000 hectares of UPM's own and leased land.

Sustainably managed plantations are highly productive, acting as a carbon sink while taking care of biodiversity. Eucalyptus' fast growth rate and rotation time of 10 years make it the preferred plantation tree. We have created a permanent carbon storage of 55 million tonnes of CO_2-equivalent in 30 years. Our biodiversity programme has been implemented in plantations since the early 1990s.

In 2020, we defined the biodiversity indicators for the company-owned land as part of our global biodiversity programme. During 2021, we implemented an upgraded biodiversity strategy for biodiversity conservation management. At present, the network of formal conservation areas covers nearly 16,000 hectares. The aim is to increase these protected areas under UPM's clearly defined conservation categories and to continue with the long term biodiversity programme (right).

Our plantation operations are also strengthening rural regions and communities through increased opportunities for education and employment, as well as through developing services and infrastructure.

Uruguay's native forests are all protected. The country is located within a temperate climate zone so there are no rain forests. Plantations are established on former grazing lands classified for commercial forests. The Forestry Act sets strict rules for plantation design and structure. This includes location, tree types and identifying suitable forestry soils for plantation development, as well as safe zones around roads, native forests and waterways.

› www.upmpasodelostoros.com
› www.upmpulp.com

CASE

RAISING LOCAL COMPETENCE

The pulp mill project brings new opportunities for residents of Paso de los Toros and the surrounding area. We want to improve access to education and strengthen the entrepreneurial spirit in young people and women and local business networks.

In 2021, we organised various training courses with expert organisations to help the locals to benefit from the economic growth boosted by the project. People in the commercial sector are one key target group as the demand for services will increase.

English language courses are popular because language skills give locals an edge on the job market. Of the nearly 100 people who have received English training, the majority have also received customer services training at other educational institutes. The training included studies on sales and customer service - for example, what to say in everyday situations in a grocery store or restaurant.

We have also provided training in IT services and entrepreneurship and distributed 20 scholarships for students to carry out tertiary studies in mechanics, electrical, chemistry and mechatronics. Road safety training with the Automovil Club de Uruguay has also been organised in the community and at schools, with special attention on young motorists.

We also want to detect concerns, needs and opportunities that arise from the local community and address these by launching projects in cooperation with partners.

Fabián Muñoz

CASE

PROTECTING BIODIVERSITY IN URUGUAY

In Uruguay, biological surveys have been carried out in areas owned by UPM since the early 1990s to help identify, classify, and protect species and native ecosystems.

In 2020, we defined three biodiversity indicators for our land as part of the global biodiversity programme. In 2021, we implemented an upgraded biodiversity strategy to increase biodiversity in the long term. The strategy has four key elements: diverse landscape management, value ecosystems conservation, endangered species conservation, and alien species management.

We aim to increase the protected areas, and to continue with the long-term monitoring programmes. Our plan is to have 20% or more of our own land holding designated as under conservation management. We continually work with external experts to have an up-to-date list of total species, flora and fauna, and endangered species. Of the native flora species in Uruguay recorded by the end of 2021, 70% of those species were also present on land owned by UPM, for example.

A new native flower species was also discovered on our conservation land for the first time in Uruguay. The white flower, Antiphytum charruasorum, shows how important it is to have conservation areas growing around the eucalyptus plantations.

› www.upm.com/biodiversity

UPM ENERGY

PIONEER IN ENERGY

The availability of carbon-free electricity is central in mitigating climate change.

OUR DIRECTION
- Profitable growth in zero-carbon electricity generation
- Embracing the decarbonisation of society
- Solutions for industrial energy excellence

OUR STRENGTHS
- Competitive, zero-carbon electricity generation asset portfolio
- Strong track record in physical and financial electricity markets
- World-class expertise in the optimisation of industrial energy

KEY FIGURES	2021	2020
Sales, EURm	526	379
Comparable EBIT, EURm	270	171
Capital employed (average), EURm	2,375	2,313
Comparable ROCE, %	11.4	7.4
Personnel on 31 Dec.	72	70

Comparable EBIT increased due to higher electricity sales prices. The Nordic hydrological balance was below normal at the end of December. In Finland, the hydrological situation was close to normal.

97% of our electricity generation is from CO_2-free hydro and nuclear power. The CO_2-free electricity we produce contributes to achieving the 1.5° C climate commitment signed by UPM.

UPM Energy's hydropower plants meet the growing demand for renewable energy. Hydropower offers rapid adjustment to an electricity system in which weather dependent solar and wind power are becoming increasingly important. Flexible hydropower balances the system in an increasingly volatile market, while nuclear power ensures reliable baseload capacity for the system.

The electricity generated is sold to the Nordic Nord Pool power exchange. We trade directly in physical electricity and electricity derivatives. We also provide optimisation and consumption flexibility services to industrial electricity users and other energy companies.

Creating value in a volatile market

The price of electricity rose to a record level in Finland and in Europe in 2021. Prices of natural gas and emission allowances and the droughts in Sweden and Norway pushed up electricity prices in the Nordic countries. UPM Energy benefitted significantly from higher electricity sales prices and succeeded in optimising production and creating value in a volatile market. Hydropower production volumes reached a good level.

Annual nuclear production was slightly lower than in the previous year due to longer maintenance outages at nuclear power plants.

We continued to take COVID-19-related preventive measures to ensure business continuity, especially in 24-hour monitoring and control of hydropower plants.

Fossil-free electricity plays a key role in the electrification of society

We are responding to the growing need for carbon-dioxide free electricity as society electrifies and moves away from fossil fuels. The largest ongoing investment project is the construction of the Olkiluoto nuclear power plant unit 3 by Teollisuuden Voima (TVO). The Olkiluoto 3 project is in the final stretch and is scheduled to start regular electricity production in July 2022. UPM's share of the new unit's production will be approximately 500 MW generated through Pohjolan Voima's ownership. The Olkiluoto 3 will significantly increase the supply of CO_2-free electricity in Finland.

In August, we announced an investment in an ultracapacitor for hydropower plants in Kuhmo's Ontojoki River. This investment will increase our ability to produce more and faster reserve power from hydropower plants. The industrial-scale project will pilot innovative technology to meet the changing needs of the electricity market and enable more renewable energy in the grid. (right)

We continued the extensive renovation and modernisation of the Kuusankoski hydropower plant. The phased project will be fully completed during the first quarter of 2023. The plant's average annual energy production is expected to increase from the current 180 GWh to 195 GWh. Modern hydropower technologies are not only more efficient but also better for the environment.

Market-oriented solutions are contributing to the transformation of the energy market, and new transmission connections will increasingly link the Nordic electricity market to the continental European market. Electrification will play an important role in moving society away from fossil-based energy sources. UPM Energy is in an excellent position in a changing energy market with its CO_2-free electricity production.

Measures for the recovery of migratory fish stocks

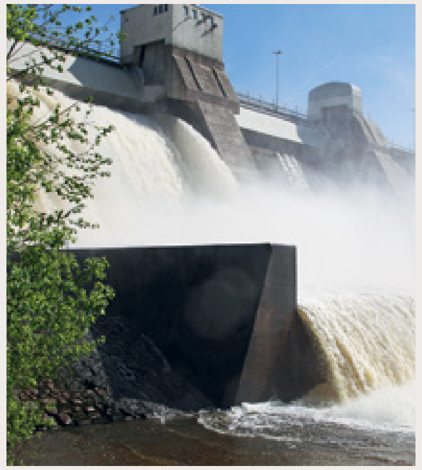
While hydropower is a cost-effective, renewable and emission-free way to generate electricity, it can also have adverse impacts on water bodies and their ecosystems. We are working closely with authorities and other stakeholders to minimise these impacts. In addition to the regulatory fishery fees required by the permit conditions, we protect and restore migratory fish stocks through our own migratory fish programme. The programme involves dismantling migratory barriers and testing new ways to rebuild fish stocks in different parts of Finland.

The migratory fish programme was also promoted in 2021. UPM submitted an application for a permit to dismantle the dam structures of a disused water intake in Arvajankoski, Jämsä, and to carry out a fisheries rehabilitation in Arvajankoski. We are actively looking for new potential sites for the removal of migration barriers and new innovative ways to promote fish migration in co-operation with stakeholders.

› www.upmenergy.com

CASE

MORE BALANCING POWER FROM AN ULTRACAPACITOR



UPM is now the first energy company to pilot energy storage with an ultracapacitor in a system comprising two hydropower plants. The power plants are Katerma in Kuhmo and Kallioinen in Sotkamo, both located along the Ontojoki River in Finland.

Ultracapacitors are electrostatic devices that can quickly discharge or charge large amounts of electrical power. Combined with a hydropower plant, an ultracapacitor can react in milliseconds to meet the rapid demand for power. It acts as the fast-responding part of the system, responding to the power demand first minutes, after which hydropower takes the lead and continues to balance the electricity system.

As the amount of renewable energy is predicted to grow in the future, more balancing power capability will be needed to quickly rebalance the grid when needed. Innovations like this are a prerequisite for adding renewable energy to the system. We are using it as a system to bring new reserves to the market and to enable more renewable energy in the grid.

The addition of an ultracapacitor to a hydropower plant will reduce the need for rapid response control of the plant and allows smooth power generation control. It will have no impact on dam safety, water use or the aquatic environment.

Construction started in autumn 2021, and the ultracapacitor is expected to be connected to the power plants in the second quarter of 2022.

UPM RAFLATAC

LABELLING A SMART FUTURE

We respond to the accelerating need for sustainable labelling solutions and aim to be the first label materials company beyond fossils.

OUR DIRECTION

- Profitable organic growth, potentially complemented by acquisitions
- Expanding customer reach through commercial excellence
- Widening product portfolio, especially through innovation of high-value-added and sustainable products
- Productivity improvement in everything we do

OUR STRENGTHS

- End-use-focused product offering
- Sustainability and product safety leadership
- Global customer reach, delivery network and efficient supply chain
- Global-scale R&D and technical expertise
- Modern, strategically located production assets

KEY FIGURES	2021	2020
Sales, EURm	1,671	1,560
Comparable EBIT, EURm	223	214
Capital employed (average), EURm	553	542
Comparable ROCE, %	40.2	39.5
Personnel on 31 Dec.	3,016	3,087

Comparable EBIT increased due to improved mix and margin management. Variable costs were higher. Global demand for self-adhesive label materials continued healthy in 2021.

We create unique value to customers and brand owners with innovative and sustainable label materials. Our products respond to consumer trends such as packaging unit growth and e-commerce whilst meeting the needs of various industries in our value chain. Our product and service offering enables printers and converters to serve their customers effectively. Together with our partners we are labelling a smarter future beyond fossils.

Significant progress in our core strategy

We made significant progress in our strategy with a clear focus on growth and customers. We scaled up our linerless production capacity and invested in a new production line in Nowa Wies, Poland. The new production line started-up at the end of 2021. The investment strengthens our position in the fast-growing linerless labelstock market driven by sustainability and the need for increased efficiency.

We continued developing our digital customer experience through MyRAFLATAC. This portal provides customers an unparalleled order-to-delivery experience 24/7. The tool's geographical roll-out will continue covering all regions and customer take-up is accelerating. Our RafCycle™ recycling service was further expanded to over 250 partners globally.

We achieved strong financial result amidst the challenging conditions. Thanks to the capability and grit of our employees we have ensured business continuity by sustaining our operations and excellent customer service. We took firm actions to mitigate increasing input costs and raw material shortages.

Solid long-term growth

The long-term outlook for pressure-sensitive label materials remains solid. UPM Raflatac is in a good position to grasp the growth opportunities as the leading supplier with solutions covering most industries and label applications. Our global supply chain and customer reach provides our customers with an unparalleled service level in all markets.

New growth segments such as linerless and print on demand are creating new business opportunities for us. We are also proactively following changes in the packaging industry to adjust our product portfolio accordingly.

Our drive to improve efficiency and productivity supports our growth. Our three-year programme Step Change in Productivity, launched in 2019, drives significant productivity growth across our production sites.

The first label materials company beyond fossils

UPM Raflatac's aim is to be the world's first label materials company to move beyond fossils, designing more sustainable solutions for the packaging industry. To reach this target, we launched several label solutions supporting brand owners' goals to reduce, recycle, renew and reuse packaging materials. We also received several recognitions for our products' enabling of recyclability.

Packaging recyclability and climate continued to be the main trends in sustainability. We are committed to positive climate actions in line with UPM's commitment to pursue science-based measures limiting the global temperature rise to 1.5 °C and to uphold the Climate Pledge. For example, we introduced RAFNXT+ as the world's first CarbonNeutral®-certified label material (right).

The demand for sustainable label solutions continues on a high level. During the year, we further developed our product portfolio and service offering like RafCycle and Label Life lifecycle assessment to meet these needs. Currently, six of our ten production sites use 100% renewable electricity.

CASE

WORLD FIRST CARBON NEUTRAL LABEL MATERIAL

Global consumer brands are facing increasing pressure to reduce the footprint of packaging. It can mean using less raw materials, increasing the use of renewable and recycled materials, as well as making it easier to recycle products.

Alongside the label material verified by the Carbon Trust in 2019, we have now introduced thinner and lighter RAFNXT+, the world's first CarbonNeutral® certified label material issued by Natural Capital Partners. It allows companies to compensate their unavoidable emissions by supporting certified emission compensation projects, which helps them reduce their climate impact in a way that can be taken into account when calculating their carbon footprint.

We currently operate four carbon offsetting compensation projects that fight the causes of climate change, bring additional benefits including the supporting of local communities, for example, and are linked to UN SDGs. Collaboration with Natural Capital Partners helps ensure that the investments are going to the right place and that the reduction in carbon emissions is both quantifiable and verifiable.

The current projects are grassland conservation in the US, improved water construction in Africa and cleaner cooking solutions in Bangladesh and China. Additional compensation projects will also be initiated to meet demand.

> www.upmraflatac.com

UPM SPECIALTY PAPERS

SPECIAL BY NATURE

We are co-creating a future beyond fossils with renewable and recyclable fibre-based label, packaging and fine papers.

OUR DIRECTION

- A global leader in labelling materials
- The preferred partner for fine paper in the Asia-Pacific region
- Growth in selected flexible packaging applications

OUR STRENGTHS

- Sustainable alternatives to fossil-based materials
- Extensive expertise in technically demanding papers
- Recognised by customers as a reliable partner
- The ability to serve customers on a global scale

KEY FIGURES	2021	2020
Sales, EURm	1,482	1,324
Comparable EBIT, EURm	135	199
Capital employed (average), EURm	864	897
Comparable ROCE, %	15.6	22.2
Personnel on 31 Dec.	1,918	1,932

Comparable EBIT decreased due to higher input costs. Sales prices increased and delivery volumes were higher. Global demand for label, release and packaging paper was good in 2021. Demand was driven by fast moving consumer goods and e-commerce.

UPM Specialty Papers responds to the world's need for sustainable products with high-performing, fibre-based materials for labelling and packaging. It also produces sustainable office and graphic papers available in the Asia-Pacific region. We help customers co-create solutions to their business challenges. UPM Specialty Papers' global team and mills across China, Finland and Germany serve customers consistently and reliably.

Delivering profitable growth

Our performance continued at the good level in 2021. The market situation, however, was twofold. On the one hand, demand for label papers, release base papers and packaging papers remained strong across all markets, and sales prices increased significantly compared to the previous year. On the other hand, in the second half of the year, the APAC fine paper supply-demand balance proved challenging, and sales prices decreased.

Higher input costs and the exceptional circumstances surrounding the energy market also impacted our performance. However, in China for example, we managed the challenging situation very well, with the help of our own on-site power plant. The availability of raw materials was secured successfully, and we were able to run our operations without interruption, despite global logistical challenges.

Our focused growth investments over the past five years have strengthened our operational excellence and flexible operating platform. In 2021, our ROCE was 15.6%, which was above our long-term return target.

Sales continued to grow in line with our strategy. Over the past few years, commercialisation of our specialty grades has been a success and in 2021, we launched a new, enhanced barrier paper that offers a fibre-based alternative for dry, greasy and frozen foods. We also launched new packaging grades for the Asian market. Our packaging grades are certified as fit for food contact. The new barrier paper and our kraft paper for packaging received an award in China for being an innovative and sustainable solution for reducing fossil-based packaging.

Megatrends drive demand

Megatrends support our business and healthy market demand is expected to continue. Certain trends driven by consumer behaviour have even grown during the COVID-19 pandemic, but volatility and unpredictability have also increased (right).

As the global market leader in release base papers and label papers, and as a well-positioned player in the growing packaging and Asian fine paper markets, we are well prepared for growth.

The co-creation of our packaging papers and services continues to be one of the cornerstones of our strategy. We aim to strengthen value chain synergy through co-operation and innovation. We offer recyclable fibre-based alternatives to non-renewable materials. We have several new product development projects ongoing with our customers and we are also continuously developing our understanding of end uses with growth potential.

Customer value from sustainability

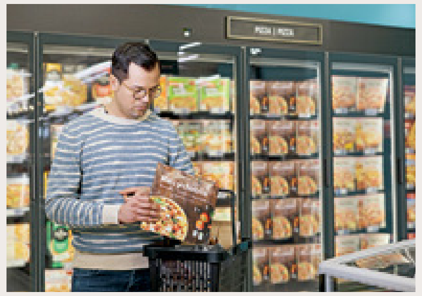
Many megatrends that are driving the market demand for our products are strongly linked to sustainability. Global brand owners have set ambitious targets to increase the share of packaging that is both recyclable and made using renewable raw materials. Our flexible packaging papers can help meet these targets, providing us with co-creation opportunities to develop new solutions for fibre-based packaging.

In China, we have a proven track record for being leaders in sustainable operations. In 2021, the UPM Changshu paper mill was recognised as a frontrunner in sustainable development within the Jiangsu province. The mill's water management and pollution control were the particular processes for which this recognition was received.

› www.upmspecialtypapers.com

CASE

CONSUMER CHOICES HAVE A BIG IMPACT



Changes in consumer behaviour, such as the growth of e-commerce and growing awareness of sustainability, have a positive impact on the demand for specialty papers, also after the pandemic.

In 2020, 1.3 billion e-commerce parcels shipped worldwide but forecasts estimate that this number will exceed 2.7 billion by 2026. E-commerce was a popular way to shop in China even before the pandemic, but COVID-19 has boosted e-commerce growth even more, especially in Europe and in the USA. E-commerce accounted for 18% of global retail sales in 2020, really outlining the growth potential. The growth of e-commerce has an impact on the need for both packaging material and logistics labels.

The packaging business is mainly driven by the growth of the middle class, and urbanisation resulting in smaller households and growing consumer spending power. It is particularly a trend in strong developing markets, such as many Asian countries. The Chinese consumer market alone is expected to double by 2030.

When people move to cities, their consumption habits also change. In China, for example, it is estimated that more than 60% of food is sold at markets, mostly without packaging. This is rapidly changing. Packaged food increases the need for packaging material and labels. As the demand for packaging grows, fibre-based materials offer easy-to-recycle packaging based on renewable raw materials.

UPM COMMUNICATION PAPERS

CAPTURING READERS

Our strategic focus is on safeguarding long-term competitiveness through targeted product development, uncompromising performance and a strong commitment to reliability, quality and sustainability.

OUR DIRECTION

- Maintain a profitable leading market position while managing capacity
- Increase operational efficiency and ensure the quality of our products
- Focus on operational and supply chain optimisation and enhancing digital solutions at the customer interface
- Secure the future relevance of the paper business, focusing on sustainability

OUR STRENGTHS

- Long-term commitment to paper and the reliability of our supply
- The high quality of our products and services
- Extensive, thoroughly optimised production
- Responsible operations, strong ethical values and traceable supply chain

KEY FIGURES	2021	2020
Sales, EURm	3,577	3,333
Comparable EBIT, EURm	-79	180
Capital employed (average), EURm	1,275	1,446
Comparable ROCE, %	-6.2	12.4
FCF/CE, %	10.1	19.1
Personnel on 31 Dec.	6,422	7 281

Comparable EBIT decreased due to higher variable costs, especially for fibre and energy, and lower sales prices. Delivery volumes were higher. Fixed costs decreased. In 2021, demand for graphic papers in Europe was 4% higher than in 2020.

As the world's leading producer of graphic papers, we are committed to the paper business and serving our customers. We offer an extensive product range of graphic papers for advertising and publishing, as well as for home and office use.

Good market demand and significant cost increases

In 2021, consumers spent more time with magazines, books and newspapers, and subscribed to a higher number of printed publications. Consequently, paper demand recovered well from the previous year when the COVID-19 pandemic and its associated lockdown measures caused, although temporary, an unexpected and severe disruption to demand.

Despite good demand and successful price increases, our profitability was weak due to significant cost increases in pulp, recycled fibre and logistics. Furthermore, despite hedging, the energy crisis in Europe resulted in unforeseen cost increases.

The demand and supply balance in Europe was tight and our ability to serve our customers reliably was highly prioritised. Our operating rates were good. However, global bottlenecks in the supply chain and challenges in raw material availability somewhat impacted our operations and supply security.

Our focus on active capacity management and cost competitiveness continued. The UPM Kaipola paper mill was permanently closed in January and the UPM Shotton newsprint mill was sold in September. We also took further action to streamline our organisation.

Ensuring performance

Today, the global market for graphic papers exceeds 70 million tonnes, with approximately 19 million tonnes in Europe alone. Even when in decline, these markets continue to offer profitable business and good cash flow for mills with a competitive cost position and high efficiency. Our strategic focus is on safeguarding long-term competitiveness.

Another key area is that of strengthening our customer focus. We're constantly aiming to renew our product offering, as well as increase the effectiveness of our planning, supply and delivery processes (right).

Reducing our carbon footprint

We have set high sustainability standards for our products, safety and environmental performance. Paper is a renewable material and can be recycled efficiently.

We are committed to reducing our CO_2 emissions by 65% by 2030 and aim to lower the carbon footprint of our products and supply chain activities. In 2021, we added carbon-neutral paper to our portfolio so that our customers can reduce carbon emissions in their supply chains. We also established a carbon offset service, certified by Gold Standard, to compensate for the remaining carbon footprint generated by our paper products.

UPM's new tool for reporting our energy consumption and CO_2 emissions provides a consistent, more transparent, and simple-to-use reporting system for us. The data is of added value to our customers due to the customer-specific carbon footprint reporting (page 95).

Production-related CO_2 emissions are our chief means of reducing our overall carbon footprint. Our emissions reduction plan includes modern power generation, environmentally sound power purchasing and innovative energy management solutions.

Based on our long-term wind power purchase agreement, the UPM Nordland mill, we are currently power will reduce UPM's total annual CO_2 emissions (Scope 1 and 2) by 5% as of 2022. We are also evaluating further sustainable power purchase agreements in Europe. At the UPM Nordland mill, we are currently constructing a natural gas-fired combined heat and power (CHP) plant, and at the UPM Hürth mill we are building a new biomass-fired plant.

CASE

THE NEW PAPER PORTFOLIO IS A WIN-WIN FOR EVERYONE

UPM is committed to maintaining competitive operations. Long-term success in graphic paper production is much more than merely adapting capacity to customer demand. Even if declining in the long term, the markets offer profitable business for products with a competitive cost structure.

We offer an extensive product range for all major printing methods. In 2021, we renewed our offering of coated mechanical papers with a non-glossy finish and reduced the number of paper grades to five. This way, we can meet our customers' needs and ensure a high level of service capability and supply chain security. These coated mechanical papers are mostly used in magazines, catalogues and advertisements.

The main advantage for our customers is that we can supply our paper grades from multiple mills. All of these papers are also large volume products, which presents a cost benefit to customers. For UPM, this improved offering aligns with our asset capabilities, which results in increased operational efficiency.

The renewal project was carried out in close collaboration with customers. The feedback has been so positive that the same assessment will also be carried out on improved newsprint and SC papers in 2022. Our target is also to secure the cost competitive graphic paper offering in the future.

› www.upmpaper.com

UPM PLYWOOD

OFFERING RENEWAL

We offer high-quality WISA® plywood and veneer products and solutions, mainly for the construction and transport industries.

OUR DIRECTION

- Profitable growth through superior customer experience and operational excellence
- A strengthened market position by increasing value and service packages
- Delivering implemented bolt-on expansions and evaluating future growth opportunities

OUR STRENGTHS

- End use, market and customer insight
- Leader in supply reliability with consistent high quality
- Leading supplier in demanding end-use segments
- Strongest brand on the market: WISA®

KEY FIGURES	2021	2020
Sales, EURm	492	405
Comparable EBIT, EURm	72	33
Capital employed (average), EURm	286	292
Comparable ROCE, %	25.1	11.2
Personnel on 31 Dec.	2,196	2,301

Comparable EBIT increased due to higher sales prices and delivery volumes. Variable and fixed costs were higher. In 2021, demand for spruce plywood was strong and demand for birch plywood was good.

Plywood can replace many substances that are made from non-renewable raw materials, such as aluminium, concrete and steel. Plywood stores more carbon dioxide than is released in its manufacturing process. Our products are long lasting, carbon storing and made from responsibly sourced wood.

Advantages of using WISA® plywood in building and construction include its structural strength, durability, and environmental certifications. Plywood is an excellent raw material for vehicle flooring due to its weight-to-strength ratio, which has a positive impact on fuel consumption.

Successful response to booming markets

In 2021, the market for spruce and birch plywood was strong. Thanks to robust demand from construction and renovation activities, our performance was at record levels in terms of both earnings and operations. Our commercial strategy and organisational agility helped us successfully respond to the challenges of the rapidly growing demand for birch and spruce plywood. Our efforts were rewarded with high customer satisfaction.

The panel trading business and demand in industrial end uses improved significantly. We greatly benefitted from the strategic asset portfolio development and the recent launch of new product categories. Furthermore, our services to stand out from the competition continued to strengthen the solutions we can offer our customers.

The most challenging markets were the LNG carrier markets due to seasonal slowing — fewer new vessels were ordered than planned. Also, the competition became more intense. In Europe, the plywood market faced some tension as a result of Brexit and the European Commission's anti-dumping investigation into Russian birch plywood.

Raw material costs increased throughout 2021, especially for chemicals, coatings and logs. In spite of this, we managed to achieve good operational efficiency, while improving our competitiveness with fewer plywood mills than in the previous year.

Seizing future growth potential

Our aim is to further strengthen our leading position in high- and medium-range standard products, and in demanding industrial applications.

Global megatrends and increasing environmental awareness support our commercial strategy and, together with application-specific customer requirements, continue to be the key drivers of our R&D activities. We are continuously evaluating different options to enable further growth and aiming to strengthen our position in selected markets outside Europe.

In December, UPM Plywood reached a 3-year labour agreement with employees and the Industrial Union. This modern agreement enables mill capacity to be used more efficiently and flexibly to respond to changes in market demand. UPM Plywood also announced a EUR 10 million investment in the UPM Joensuu plywood mill.

Sustainability makes us stand out

Our "Responsibility Made Easy" promise consists of six focus areas: responsibility as a business partner; responsibly produced wood material; responsibility for society and environmental performance; responsibility towards our customers; and innovations. The proven climate benefits of our products are reflected in the Environmental Product Declarations.

We have also begun scaling up our WISA® BioBond gluing technology for spruce plywood products. This approach partly replaces fossil-based phenol with bio-based lignin in plywood manufacturing.

Our positive carbon footprint aligns with our continuous efforts to offer our customers clear sustainability benefits. In 2021, our decision to gradually shift to only using zero-carbon electricity was an important step on our climate action path and the transition towards a low-carbon economy.

> www.wisaplywood.com

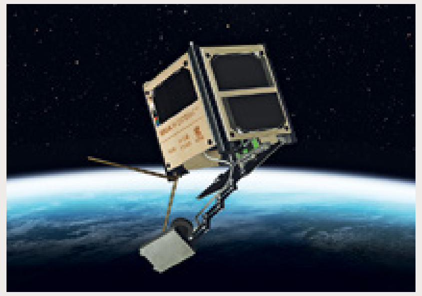
CASE

WISA WOODSAT - THE WORLD'S FIRST WOODEN SATELLITE

WISA Woodsat, which will be launched into space in 2022, will test the suitability of wood material, especially birch plywood, for spacecraft structures. The satellite exposes the material over an extended period to extreme conditions of space such as hot, cold, vacuum and radiation.

To observe the behaviour and changes in the colouring of the plywood surface, the satellite is equipped with a suite of sensors and a camera mounted on a 3D-printed metal selfie stick. The minimalistic 10x10x10 cm nanosatellite has been designed and built in Finland.

WISA Woodsat will be launched to polar orbit by Rocket Lab's Electron launch vehicle. The launch will take place from the Mahia Peninsula launch complex in New Zealand. The satellite will be deployed by rocket to an orbit 550 kilometres above our planet. Travelling at a speed of 28,000 kilometres per hour, it will take about 90 minutes for it to travel around the Earth.



In addition to UPM Plywood, the Finnish space companies Arctic Astronautics and Huld are involved in the joint project. Supported by the European Space Agency (ESA), the data from the mission will be used for further product development. Fossil materials such as carbon fibre can be replaced by renewable wood-based materials, also in demanding applications.

> www.wisawoodsat.space

UPM BIOFUELS

LOWER EMISSIONS WITH RENEWABLE FUELS

Strong market demand and attractive returns continued while moving ahead in biofuels growth plans.

OUR DIRECTION

- Unique, sustainable, advanced biofuels and biomaterials in various markets and segments
- Expanding biofuels business

OUR STRENGTHS

- Established producer of low-emission renewable diesel and naphtha
- Sustainable bio-based alternative to fossil feedstock in the petrochemical industry
- Advanced biofuels belong to the most demanding sustainability class of biofuels

We offer our customers ways to replace fossil raw materials and reduce their carbon footprint with wood-based advanced biofuels. Our UPM BioVerno diesel offers a low-emission solution for transportation by significantly decreasing the amount of greenhouse gas emissions compared to fossil fuels. UPM BioVerno naphtha works identically to fossil-based naphtha and can be used both for plastics and as a low-emission biocomponent for gasoline.

Our operations are based on a circular economy and our raw material, crude tall oil, is a residue from pulp production. Our production process and development focus stresses further emission reductions and material efficiency.

Year of strong demand but disturbances in production

The biofuels market remained strong in 2021, with continuous demand growth driven by climate targets. Market prices were at a high level. The profitability of the UPM Biofuels business was strong and clearly above UPM's average return targets.

Production rates of the UPM Lappeenranta Biorefinery were at a very high level excluding the maintenance shutdowns and repair work time needed due to a fire in the summer. The scheduled maintenance break in Q1 was completed safely and successfully ahead of schedule despite the challenging COVID-19 situation.

In May, a major incident occurred at the biorefinery when the rupture of a process gas line caused an explosion and a fire. The fire spread to the cabling and the roof structures of a utility building. No one was injured and the fire was quickly extinguished. Production resumed in August.

We received great feedback from a customer survey, especially for our high professionalism in customer relationships.

We aim to maximise the customer value added and started to develop ways of working based on the lean leadership principles in 2021. The personnel have practiced value stream mapping and coaching to improve the business agility and to enable continuous improvement.

Next generation biorefinery

Global demand for biofuels is expected to rise substantially by 2030. Advanced biofuels play an important role in UPM's Biofore strategy (page 22) by offering innovative and sustainable alternatives to fossil-based products.

In January, we moved forward with biofuel growth plans and started the basic engineering phase of a next generation biofuels biorefinery to define the business case, select the most innovative technology option and estimate the investment requirements.

The planned biorefinery would improve the long-term competitiveness and sustainability performance of UPM Biofuels by introducing several sustainable feedstocks. It would also enhance material efficiency with solutions based on the use of waste and residues without compromising global food production or biodiversity.

The use of green hydrogen is studied as part of the technology concept. In 2021, we completed site assessments in Kotka and Rotterdam. Work continues in Rotterdam, in the Netherlands, where the operating environment is more favourable for the biofuels business.

Enabling green growth

Fossil substitution plays a key role in enabling the EU's green growth. In the EU, an overall CO_2 reduction of 55% is needed by 2030 to move towards a zero-carbon economy by 2050. UPM Biofuels facilitate the EU's targets for greenhouse gas (GHG) reduction. UPM BioVerno reduces GHG emissions by over 80% compared to fossil diesel. It is a drop-in solution suitable for all diesel engines.

Predictable regulation is one of the key elements that enables green growth investments and transformation beyond fossils (page 67). We support the increased emission reduction targets in transport and the increased mandate for advanced biofuels as proposed in REDIII, while believing that even further ambition can be put on the role of sustainable biofuels. The inclusion of e-fuels, which are regulated by a separate mandate, opens new opportunities for effective climate change mitigation.

Our products comply with the most comprehensive sustainability criteria and certification including the RSB and ISCC international sustainability standards.

> www.upmbiofuels.com

CASE

BRINGING CIRCULAR ECONOMY TO THE BEAUTY INDUSTRY

CUTRIN, a pioneer in Nordic hair design, uses sustainably procured raw materials in its products. The company finds it important to extend its sustainability message to be visible also on its product packaging.

The AINOA Moisture Treatment is packaged in recyclable plastic containers that are mostly made from recycled plastic. The label on the jar is a 100% wood-based solution originating from sustainably managed forests. UPM Raflatac Forest Film™ PP label material utilises UPM BioVerno naphtha, a fossil-free raw material made from crude tall oil. This bio-based label material is a renewable alternative for plastics.

CUTRIN is a part of the beloved Finnish beauty brand Lumene. It has worked on developing products while aiming to utilise ingredients developed from side streams and residues of the food and wood industries. When designing new products, a lot of attention is also paid to packaging recyclability.

Lumene aims to use PCR plastics (plastic made from post-consumer recycled materials) and bio-based materials. When recycled plastic comes specifically from consumer products and not from industry, it has indeed made a full cycle. A matching label material also enhances packaging recyclability and it will go straight to the right recycling stream.

> www.upmraflatac.com

UPM BIOCHEMICALS

NEW BUSINESS IS COMING TO LIFE

The first-of-its-kind biorefinery in Leuna is taking shape, while a robust business platform is being built and customer engagement points to a promising commercial future.

OUR DIRECTION

- Establish renewable biochemicals as a premium category
- Enter the renewable materials market
- Open new end-use markets
- Successfully launch the business to scale

OUR STRENGTHS

- Unique and innovative technology concept
- Sustainable feedstock
- High quality products for plastics, textile and rubber applications, as well as industrial liquids, with a sustainability footprint that sets us apart
- High brand appeal for many consumer products in packaging, automotive, textiles and various industrial segments
- A robust, scalable business platform

After the ground-breaking ceremony in October 2020, good progress was made in building the new-to-the-world biorefinery in Leuna, Germany, which will produce biochemicals from sustainably sourced wood.

The EUR 550 million investment will open completely new markets for us, with large growth potential for the future. The biorefinery will produce a range of 100% wood-based biochemicals, the main products being bio-monoethylene glycol (BioMEG), bio-monopropylene glycol (BioMPG) and renewable functional fillers, with a total annual capacity of approximately 220,000 tonnes.

In 2021, detailed engineering, procurement and permit processes continued progressing well, and building at the site took off. However, the pandemic materially slowed down the completion of the detailed engineering. Disruptions to global supply chains affected both the availability and costs of critical construction materials. As a result, we estimate that the start-up will take place by the end of 2023. The capital expenditure estimate will also be updated.

At the same time, the business platform was further strengthened. We have continued building a team of international experts with a strong chemical industry background to further advance our research and development, build strong commercial operations, and then establish the service and supply infrastructure to meet our customers' specific needs. We also started hiring and training the operations personnel for the biorefinery. The innovative digital twin of our biorefinery supports the establishment of robust production processes and a competent, well-trained team.

Market demand and customer interest confirmed

Consumers are pushing for sustainable products globally. Global brands have embraced ambitious CO_2 reduction targets and are innovating their portfolio to offer sustainable choices for consumers.

While recycled materials have become the mainstream choice for sustainable materials, UPM's biochemicals made from renewable raw materials will offer a missing link to achieve a sustainable circular bioeconomy: rubber and plastics based on renewable chemicals. Our glycols and Renewable Functional Fillers (RFF) work well in existing production and recycling processes, and will support the transition away from oil-, gas- and coal-based materials (right).

This distinct sustainability value add is reflected in the positive feedback we have received throughout our commercial engagement in 2021. We have made strong progress in opening sales channels in various glycol end-use industries, mainly in packaging, automotive and textile applications.

We have started joint product development with potential customers in various rubber applications to validate the technical performance of our RFFs and bring sustainable alternatives to CO_2-heavy rubbers to the market. We also launched UPM BioMotion™, the renewable functional fillers set to significantly reduce the carbon footprint and weight of rubber and plastic applications.

The possibilities of our new biochemical products are endless. This was demonstrated by a co-operation announcement with the Coca-Cola Company, who have unveiled their new 100% plant-based recyclable bottle, highlighting UPM's industrial-scale biorefinery as a breakthrough for the production of a new generation of biochemicals that will help produce the sustainable packaging of the future.

Our biorefinery project has also received positive external recognition. We were among the seven finalists of the prestigious German Sustainability Award and our contribution to the sustainability transformation was recognised by the jury. We were selected as a finalist in the Chemical Week's Sustainability Awards 2021 and climbed up to 3rd place in the European Rubber Journal's top 10 elastomers for sustainability ranking.

> www.upmbiochemicals.com

CASE

RENEWABLE FUNCTIONAL FILLERS WILL BE A REAL GAME-CHANGER

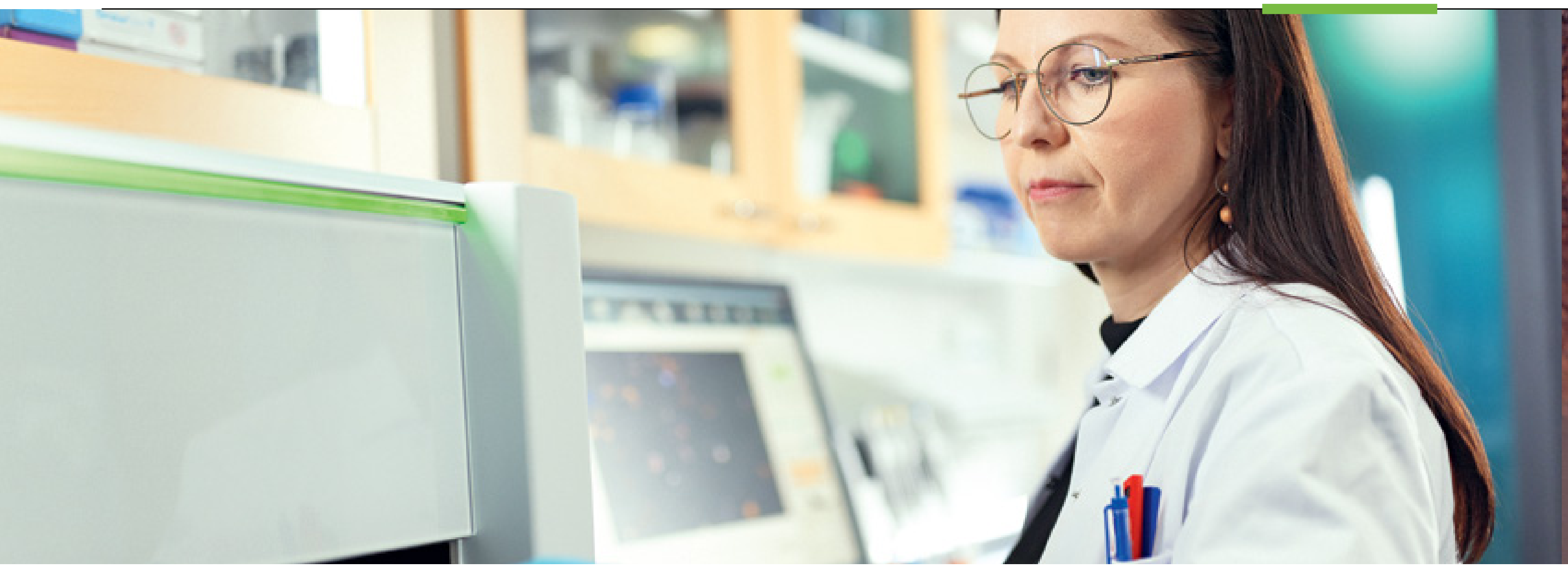
Today, about 15 million tons of oil-based carbon black and silica are used annually to reinforce rubbers and plastics in tyres, hoses, sealing systems and other rubber and plastic products. Industries are intensively looking for more sustainable business alternatives.

The wood-based renewable functional fillers to be produced in the future biorefinery will have the same performance level as fossil-based fillers. When they enter the market, they will significantly reduce the carbon footprint of various rubber and plastic products. According to our calculations, RFFs have an over 90% lower CO_2-footprint than industrial carbon black. When used in combination with bio-based rubbers and plasticisers, they enable final compounds to contain up to 85% renewable substances.

Wood-based fillers are also much lighter. Lightness in the automotive industry means better mileage, lower costs and a reduction of CO_2 emissions.

The market size for RFF is huge — carbon black is one of the top 10 petro-based products in the world. Industrial carbon black used in tires constitutes around one third of their component materials and profiles can account for up to half.

For industrial use, the composition of each rubber compound must be carefully optimised. We aim to perfect our new customised product quickly and effectively through close customer collaboration.



UPM BIOMEDICALS

OPENING NEW MARKETS

UPM Biomedicals is at the forefront of innovation and commercialisation, with a particular focus on personalised medicine.

CASE

MAKING LIFE EASIER FOR RESEARCH

The collaboration with PerkinElmer offers researchers a solution for high-throughput screening (HTS) of 3D cell cultures in the early stages of the drug discovery process, combining the cell imaging solutions and knowledge of PerkinElmer and the animal-free hydreogels of UPM. The instrument, software and cell culture matrices advance research and accelerate the drug development process in which thousands of molecules are screened, to eventually introduce a new drug onto the market.

PerkinElmer's automated high-content screening system using GrowDex hydrogels has been successfully used in a number of research projects, including automated drug sensitivity and resistance testing of patient-derived cells for personalised cancer treatment research.

UPM Biomedicals develops and supplies innovative and sustainable wood-based biomedical products for medical and life science applications. The main component in our products is high-quality nanocellulose, extracted from birch wood.

We actively collaborate with universities, research centres and key industrial partners in the fields of high-throughput drug screening, personalised medicine, advanced cell therapies, 3D bioprinting, tissue engineering and advanced wound care. More than 520 patents and patent applications protect our existing and future products.

In life science, our main products are GrowDex®, a range of hydrogels for 3D cell culturing, and GrowDase™, an enzyme to release the cells from the gel. The nanocellulose ensures excellent compatibility with even the most demanding cells, such as stem cells and patient-derived cells. Our gels are animal free and do not introduce animal DNA into the test results. In 2021, we entered into a global distribution agreement with PerkinElmer Health Sciences, Inc. for the UPM GrowDex® and GrowDase™ products (left).

GrowInk™ is a range of bioinks for 3D bioprinting, used in areas like cancer research, where models of tumours can be printed to test their response to different treatments. Launched in 2021, our collaboration with CELLINK will allow us to develop the technology to print organs or tissue that, in the future, could be transplanted into patients.

In the clinical field, FibDex® wound dressings were marketed and sold to healthcare professionals and hospitals in Finland, and work is ongoing to expand into other European markets.

› www.upmbiomedicals.com

UPM BIOCOMPOSITES

A YEAR OF GROWTH

UPM Biocomposites is mitigating climate change and creating circular economy solutions through the manufacture of innovative composite materials and decking products.

UPM ProFi utilises post-consumer plastic waste and post-industrial label waste to manufacture high-quality composite decking. The label production side streams from UPM Raflatac and its customers are collected and delivered to Germany, where the composite decking is manufactured. Recycled plastic from European post-consumer waste is also utilised in the manufacturing process. UPM ProFi's latest product launches in the UPM ProFi Piazza product range consist of up to 75% recycled materials. UPM ProFi is a member of the EU Circular Plastics Alliance, which aims to boost the EU market for recycled plastics to 10 million tonnes by 2025.

In 2021, UPM ProFi achieved significant sales growth across many European markets with its renewed product portfolio. Thanks to its local European operations, operating efficiency and marketing capabilities, it also benefitted from the increase in home renovations during the COVID-19 lockdowns.

UPM Formi creates and manufactures wood-based biocomposites, which enables up to an 80% reduction in the carbon footprint of the end product, compared to similar products made from fossil-based materials. The composite materials are suitable for various end uses, including kitchenware, personal care and acoustic devices. The materials meet the highest quality standards, allowing the products to pass food standards or similar quality requirements.

In 2021, UPM Formi, in conjunction with key business development partners, experienced volume growth among new and existing customers as a result of new end-use areas. Strong demand for UPM Formi EcoAce continued. UPM Formi's customers were recognised with prestigious awards for using sustainable materials, such as the Red Dot Design Award and the iF Gold Award.

› www.upmprofi.com
› www.upmformi.com

CASE

THE LIMITLESS OPPORTUNITIES OF SUSTAINABLE DESIGN

Reform Design Lab's Reform Lounge Chair, introduced at the Stockholm Creative Edition design week, was created using 3D printing. Using this cellulose-reinforced biocomposite material, UPM Formi 3D can reduce the product's carbon footprint by up to 80%, compared to its similar fossil-based counterparts.

The carbon footprint is further reduced by the zero waste production process and the fact that transportation costs can be kept to a minimum by printing the furniture in close proximity to the end users.

› www.reformlab.se/black/

HOW WE EXECUTE OUR STRATEGY

GROUP AND ALL BUSINESSES

Actions 2021
Continuous improvement programmes
Actions to secure business continuity and construction of transformative projects
Study on climate-related substitution and the storage effects of products, joining The Climate Pledge
EUR 500 million Green Bond issued
Work to strengthen the engaging safety culture and global health concept
Diversity and inclusion work
Social responsibility targets revised
Closing the unexplained gender pay gap
Internal dialogue on purpose and values started
UPM Experience programme initiated
Development of the sustainable product design concept

Actions planned for 2022 *)
Pursue continuous improvement programmes
Disciplined and effective capital allocation
Work towards climate neutrality
Renew the Code of Conduct
Strengthen the safety culture with special focus on process safety
Continue diversity and inclusion work
Implement UPM Experience programme incl. future ways of working, wellbeing and digital capabilities

UPM FIBRES

Actions 2021
Construction of the pulp mill in Paso de los Toros and in the port of Montevideo
Construction of a third nursery in Uruguay
Implementation of an upgraded biodiversity strategy in Uruguay
Actions to improve operational efficiency in Finnish pulp mills
Actions to improve efficiency and environmental footprint for sawn timber
UPM announcement that its sawmills are powered entirely by renewable energy
A 3-year collective labour agreement signed at UPM Timber

Actions planned for 2022 *)
Continue the construction of the pulp mill site in Paso de los Toros and in the port of Montevideo
Increase organisational capabilities to respond to increasing sales
Finalise the construction of a third nursery in Uruguay
Continue actions to improve operational efficiency in Finnish pulp mills
Continue actions to improve efficiency and environmental footprint for sawn timber

UPM ENERGY

Actions 2021
Continued development of the service offering for industrial-scale electricity consumers
Continued refurbishment of the Kuusankoski hydropower plant
Commissioning of OL3
Ultracapacitator introduced for hydropower plants

Actions planned for 2022 *)
Continue the refurbishment of the Kuusankoski hydropower plant
Start up of regular electricity production of OL3

UPM RAFLATAC

Actions 2021
Investment to scale up the linerless labelstock business with a new production line in Poland
Growth opportunities captured and product portfolio developed, commercial excellence and digitalisation
Continued development of new concepts in sustainability and the circular bioeconomy
Three-year productivity programme progressed as planned
Introduced RAFNXT+ as the world's first CarbonNeutral® certified labelling material

Actions planned for 2022 *)
Capture growth opportunities and develop product portfolio and service offering
New concepts in sustainability and the circular bioeconomy continue
Continue to improve productivity

UPM SPECIALTY PAPERS

Actions 2021
Output of new capacity increased
Growth in specialty grades thanks to product portfolio development and co-creation initiatives
Actions to improve cost competitiveness and operational excellence
Continuous improvement of safety and environmental performance

Actions planned for 2022 *)
Achieve targeted commercial success and prepare for future growth
Co-create product portfolio and leverage flexible production platform
Improve safety, cost competitiveness and efficiency

UPM COMMUNICATION PAPERS

Actions 2021
Closed a total of 970,000 tonnes of graphic paper capacity in Finland and in the UK after the closure of the UPM Kaipola mill and the sale of the UPM Shotton mill
Actions to streamline organisation
Focus on customer interface and digitalisation
Continued to reduce our environmental impact

Actions planned for 2022 *)
Continue improvements in cost efficiency
Focus on customer interface and digitalisation
Continue to reduce our environmental impact

UPM PLYWOOD

Actions 2021
Operational excellence and improved product offering
Increased offering of WISA® BioBond to replace fossil-based phenol
Further enhanced effective raw material usage and agile supply chain capabilities
Actions to reduce our environmental impact
New 3-year collective labour agreement signed

Actions planned for 2022 *)
Focus on operational excellence
Strengthen position in new end-uses and markets
Continue to develop new products and assess growth opportunities
Further enhance effective raw material usage and agile supply chain capabilities
Investment in the competitiveness of the UPM Joensuu plywood mill

UPM FOREST

Actions 2021
Efforts in operational excellence and productivity, focus on the plantation expansion in Uruguay and cost efficiency and sustainability in Finland
Enhanced activity in private wood trade
Begin implementation of the new global forest programme
Study on availability and quality of competitive wood for UPM's growth projects
Study on decaying wood to improve biodiversity started

Actions planned for 2022 *)
Ensure availability and quality of competitive wood for UPM's mills and growth projects
Enhance activity in private wood trade
Further develop digital platform
Increase broad-leaved trees in Finnish forests
Study on decaying wood to improve biodiversity continues

UPM BIOFUELS

Actions 2021
The basic engineering phase of a next-generation biorefinery
Continued evaluation of growth opportunities and new sustainable feedstocks in biofuels

Actions planned for 2022 *)
Basic engineering and permitting continue in Rotterdam
Assess the growth opportunities and new sustainable feedstocks

UPM BIOCHEMICALS

Actions 2021
Construction of biochemicals refinery producing 100% wood-based biochemicals in Leuna, Germany
Commercial preparations for entering the market
Collaboration with The Coca-Cola Company introduced
UPM BioMotion™ renewable functional fillers launched

Actions planned for 2022 *)
Construct the biorefinery at Leuna, Germany
Planning business readiness for entering the market
Assess the growth opportunities

UPM BIOMEDICALS

Actions 2021
Strategy development towards regenerative medicine and scale-up of business
Increased sales of OEM product range
Collaboration in 3D bioprinting and screening of 3D cell cultures
Strengthened product distribution

Actions planned for 2022 *)
Continue strategy development towards regenerative medicine and scale-up of business

UPM BIOCOMPOSITES

Actions 2021
Focus on operating efficiency and marketing capabilities
Strengthened UPM ProFi market position and growth with renewed product portfolio
Growth in new end-use areas in UPM Formi
Actions to reduce carbon footprint

Actions planned for 2022 *)
Continue to focus on operating efficiency and marketing capabilities
Grow with renewed product portfolio in UPM ProFi
Grow in new end-use areas in UPM Formi
Continue actions to reduce carbon footprint

*) not a complete list

OUR RESPONSIBLE WAY OF OPERATING

CREATING A POSITIVE IMPACT IN FORESTS AS CARBON SINKS

After the use of fossil energy, deforestation is one of the main causes of increased CO_2 emissions. At UPM, we plant 50 million trees every year and manage our forests sustainably to maintain their health and ability to grow and absorb more carbon. Over the last five years, the annual average carbon sink of UPM's own and leased forests in Finland and Uruguay amounted to 3.8 million tonnes of CO_2 equivalents.

> Read more about our positive impact on UPM's website

CREATING VALUE WITH PEOPLE

ACTIVE STAKEHOLDER ENGAGEMENT

Understanding the views and expectations of our stakeholders plays a crucial role in the success of our company and the acceptability of our operations.

The impact of UPM's operations extends from the local level to wider society. We aim to provide a fact-based, balanced view of the economic, environmental and social aspects of our business activities. Active and open dialogue with our stakeholders provides valuable input for our development efforts.

Continuous dialogue with stakeholders

Our goal is to provide our stakeholders with a clear picture of what our future course is, how we implement our Biofore strategy and how we create long term value for our stakeholders. We disclose relevant and accurate information in accordance with market regulations.

In 2021, many stakeholder events were organised virtually. As many of our stakeholders view UPM primarily as an economic operator, financial success, stability, good governance, future outlook and growth were the key themes discussed.

Stakeholder mapping, active dialogue and the systematic gathering of feedback play an essential role in our stakeholder relations work. We analyse the feedback carefully to understand the expectations of our stakeholders. Then, we take these expectations into consideration during our development work and decision-making. We received approximately 400 (350) enquiries or concerns from general public in 2021.

Every year, we conduct a materiality analysis (page 66) that highlights the most important responsibility issues for us and our stakeholders. The analysis is based on several surveys, customer enquiries and stakeholders' concerns.

IMPACT

- Stakeholder engagement provides predictability and a competitive advantage
- Continuous dialogue improves the understanding of key risks, challenges and opportunities in the operating environment

TARGETS

- We understand the stakeholders' needs for information and expectations for UPM, and consider them in strategic development and decision-making processes

OUR WAY

- We engage in active dialogue with our stakeholders to discuss our operations and targets
- The UPM Code of Conduct sets the standards for responsible behaviour and collaboration
- Stakeholder engagement is measured by several indicators
- Stakeholder relations are coordinated globally at Group level, while businesses are responsible for continuous dialogue with customers and business partners, as well as the local communities

Green recovery high on the policy agenda

Through public affairs work, we aim to foster the necessary prerequisites for our operations, particularly in Finland, Uruguay, Germany and China. Active influencing at the EU level is also important.

We co-operate with a number of trade associations, the most important being the Finnish Forest Industries Federation (FFIF) and the Confederation of European Paper Industries (CEPI). As we enter new businesses, we also need to find new ways and forums for co-operation. For example, UPM is a founding member of the Advanced Biofuels Coalition in the EU and also a member of the European Chemical Industry Council (CEFIC).

For decision-makers and politicians, 2021 continued to be challenging because of the COVID-19 pandemic and the resulting lockdowns. Despite the need to prioritise measures related to the global pandemic, there was significant progress in several policy fields with impacts for UPM. We were active in discussions on the Finnish operating environment. We emphasised competitiveness, predictability, innovations and climate change solutions.

Climate change mitigation and our commitment to the UN's 1.5-degree agenda garnered a lot of interest among our stakeholders. Discussions were carried out with environmental organisations, certification bodies, authorities and decision-makers. The climate impact of forests is linked to policies on land use, land-use change and forestry (LULUCF). We have highlighted the importance of sustainable forest management and manufacturing products from renewable raw materials that replace fossils as effective ways to mitigate climate change.

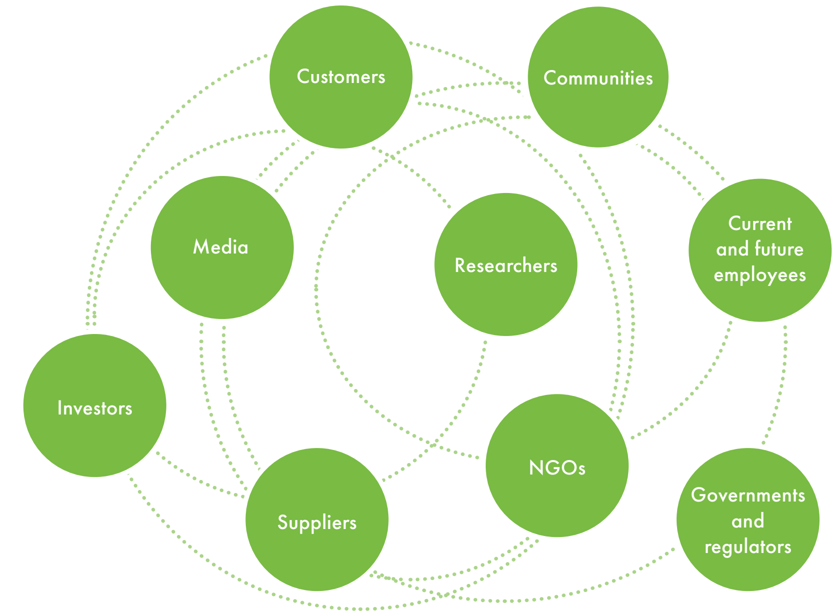
In July the EU Commission published the Fit for 55 package, which includes several initiatives to update the EU climate and energy legislation to be in line with EU's climate targets. The process for finalising the proposals in EU institutions is expected to take a few years.

We actively promote the cost-competitive and consistent implementation of climate change policies. UPM calls for predictable regulation that enables green growth investments and further transformation beyond fossils. Therefore, EU policies, as well as the upcoming negotiations between the European Parliament and the EU member states, must ensure sustainable forest use and the availability of wood as a key resource for the circular bioeconomy and green growth.

Decarbonising traffic through renewable energy and biofuel policies continued. For us, it is very important to get recognition for advanced and residue-based biofuels with high GHG reduction.

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.



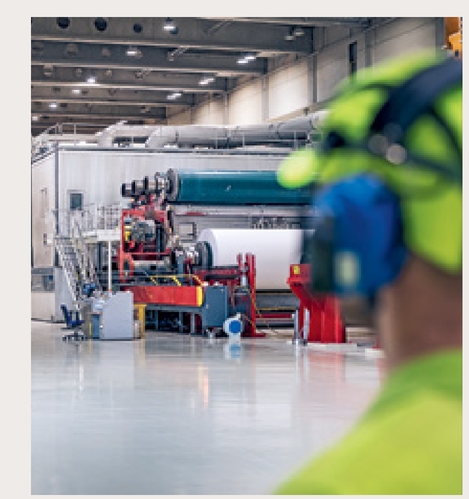
CASE

TOWARDS BUSINESS-SPECIFIC COLLECTIVE AGREEMENTS IN FINLAND

After the Finnish Forest Industries Federation resigned from collective bargaining, the terms of employment are agreed between forest products companies and trade unions. Our aim was to sign new business-specific agreements for the shopfloor employees before the previous agreements ended on 31 December 2021.

For each UPM business, the products, markets and operating environment differ significantly. The best result can be achieved for everyone by agreeing on ways of organising work, working hours and salaries, as well as competence development within businesses. We offer benefits that surpass the standards set in law and collective labour agreements in many respects, and they apply to all personnel in Finland regardless of the personnel group or collective labour agreement. They also ensure safety in varying life situations. As of 2022, the salaried employees' terms of employment will be organised in the same way as for senior salaried employees.

UPM Plywood and UPM Timber signed a business-specific collective labour agreement in December 2021. The Paperworkers' Union is the contractual party for five businesses. Since spring the businesses sought to enter business-specific collective bargaining with the union on terms of employment. The Paperworkers' Union has required one company-specific collective labour agreement. On 1 January 2022, the union began a strike in the businesses where it is the contracting party.



World-class commitment to corporate responsibility

In November, UPM was listed as the forest and paper industry leader in the Dow Jones European and World Sustainability Indices for 2021–2022. In September, the UN recognised UPM as the only forest industry representative and also the only Finnish company among the 37 LEAD participants. UPM continued active participation in the UN Global Compact initiatives. UPM also chaired the Global Compact Finland Network.

We continued our co-operation with different stakeholders on responsibility issues on a voluntary basis, addressing themes such as ecolabels, fish migration and nature conservation.

We were an active international stakeholder member of the PEFC (the Programme for the Endorsement of Forest Certification, PEFC/02-44-41) and participated in the development of the PEFC forest certification system, reflecting our aim to promote sustainable forest management globally. In Finland, we participated in updating the forest management standards in both the FSC™ (Forest Stewardship Council™, FSC N003385) and the PEFC schemes. We also collaborated with the Finnish Osprey Foundation and Vida Silvestre in Uruguay.

Together with the Natural Resources Institute Finland, we studied the impact of actions to improve biodiversity in commercial forests. Responsibility issues were also raised in customer enquiries, with product safety, sustainable forest management and climate change as key themes. Globally, we continued active co-operation with local permit authorities. In 2021, we continued our collaboration with different parties to integrate our responsibility targets into the company's long term financing.

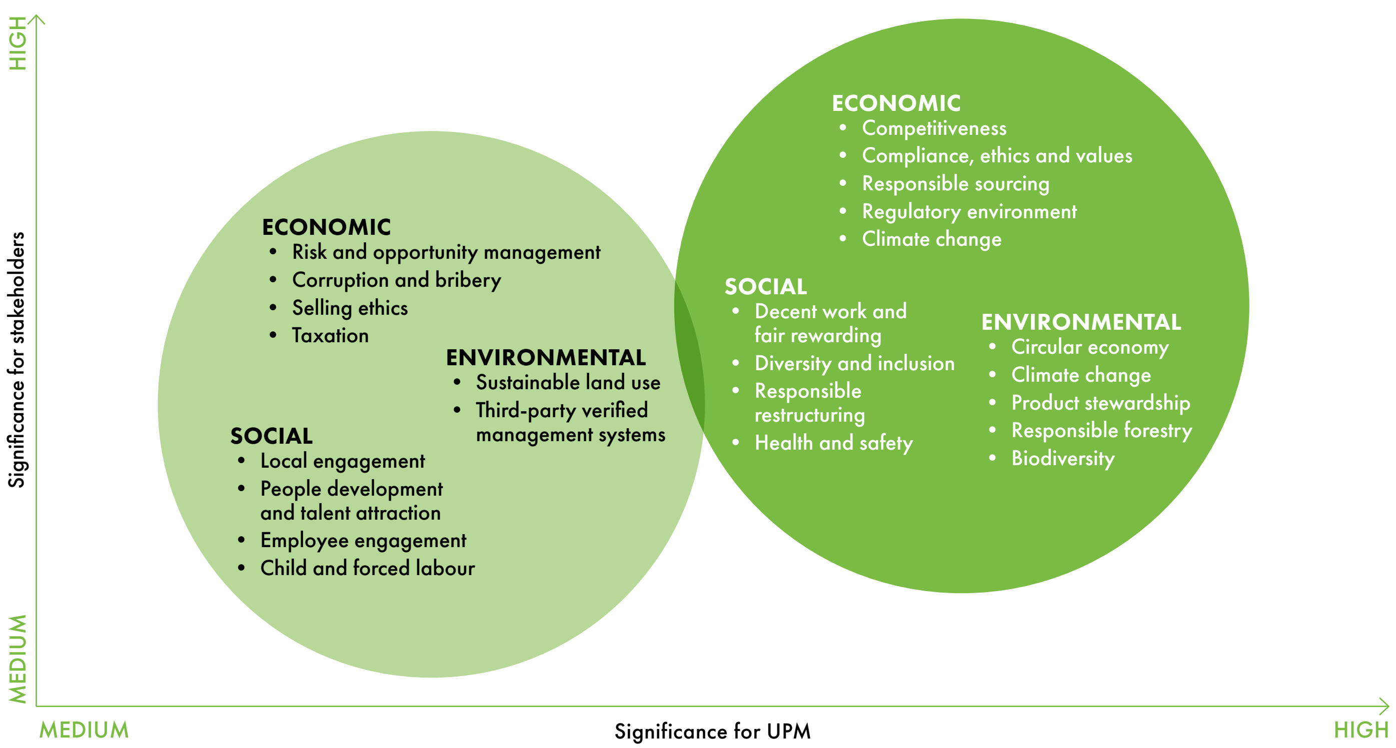
UPM'S MATERIALITY ANALYSIS 2021

Materiality analysis is carried out annually. The results highlight the sustainability topics UPM has a significant impact on, or which have a significant impact on the company. The analysis covers both positive and negative impacts on the economy, the environment and people.

The current sustainability impacts are assessed based on a follow up of the interests and concerns of various stakeholder groups; communities, employees, NGOs, customers, suppliers, government and regulators, investors, researchers and the media. The assessment is completed with an analysis of potential impacts that could occur, based on the signals from the stakeholders and potential future scenarios.

All customer questions and stakeholder concerns received during the year are taken into consideration. We also conduct specific stakeholder surveys regularly.

Most of the material economic, environmental and social responsibility topics identified in the analysis are presented below. UPM's responsibility focus areas and targets (pages 32-33) reflect these material aspects. We do not distinguish between topics within the section and consider them all equally material.



Emphasis on local communities and impacts

Our mills in Europe, China and Uruguay can be among the biggest employers and taxpayers in the locations where they operate. In Uruguay, we have been building a second pulp mill since 2019. Stakeholder engagement around the project has been active.

We aim for engagement and open dialogue with local communities. For example, our Kymi, Kaukas and Steyrermühl mills have their own forums for local dialogue. We also co-operate with local schools and education networks, organising virtual events, for example. In addition, it is crucial for us to have active dialogue with local forest owners, neighbours of harvesting sites and other individuals involved in forest management.

Our EMAS (EU Eco-Management and Audit Scheme) statements cover societal impacts in addition to environmental performance, providing more detailed information on the local impacts of our pulp and paper mills. The EMAS statements also include information on co-operation with local stakeholders, such as sponsorship of local organisations or co-operation with educational institutions. These mill-specific statements complement UPM's corporate EMAS reporting. They are compiled annually and published on the UPM website www.upm.com/responsibility.

The Biofore Share and Care programme continues

UPM's Biofore Share and Care programme demonstrates our dedication to responsibility and local community involvement through sponsorships, donations and employee voluntary work. We share our resources with causes that respect sustainable development and work in line with our purpose and values.

Our new 2030 social responsibility targets highlight our local commitment and positive impact on communities. We assess and measure the quality of community relationships and define business specific long-term initiatives in line with our programme.

In 2021, we supported projects with a focus on reading and learning, Beyond Fossils initiatives and community engagement. For example, we collaborated closely with the Guides and Scouts of Finland to increase the dialogue and understanding between young people, companies and policy makers on topics such as climate change and responsibility. The collaboration will continue in 2022. UPM does not financially support political parties or individual candidates.

Employee volunteering strengthens local commitment and impact. However, the number of employee volunteering hours was limited due to prevailing COVID-19 situation in 2021.

The local sponsorships and other contributions amounted to approximately EUR 0.8 million (EUR 1.3 million) within the Biofore Share and Care Programme. The figure includes support for the Uruguayan UPM Foundation, which continued with a contribution of USD 400,000 (USD 465,000). The foundation supports and encourages training, entrepreneurship, employment, healthy living and entertainment in local communities in the Uruguayan countryside.

In addition, EUR 498,700 (EUR 499,500) was donated to charities or other non-profit causes such as Aalto University, the University of Helsinki, Economy and youth TAT, the Children and Youth Foundation, UNICEF, the Association of Forest Kindergartens in Bayern and the China Green Foundation.

CASE

LEGISLATION PLAYS A MAJOR ROLE IN THE DEVELOPMENT OF THE BIOFUELS BUSINESS

Advocacy co-operation is an important means to promote the development of advanced biofuels regulatory frameworks in the EU. Influence comes from dialogue with policy makers, public authorities, organisations and the media as well as understanding the factors that influence business regulation.

In 2021, the EU Commission presented Fit for 55, a major package of climate legislation proposals. It sets new targets for the use of advanced biofuels.

We want to promote investments and market entry of advanced biofuels. Our message in the discussions is that advanced biofuels are needed to meet the emission reduction targets for transport. We also explain what should be done to increase investments in reducing emissions. The EU's energy independence will increase when advanced biofuels are produced from industrial and agricultural and forestry side streams, waste and residues.

UPM's biofuel business is based on the EU-wide biofuel blending obligation. In the past, regulation focused on the Renewable Energy Directive. With the proposals in the Fit for 55 package, the business will be affected by a number of different directives. The industry-wide Advanced Biofuels Coalition takes position on the issues related to the EU-wide mandate for advanced biofuels in aviation, maritime and transport sectors. UPM also wants sufficiently clear criteria on how sustainability is defined.

› www.upm.com/responsibility

CREATING VALUE WITH PEOPLE

ENABLING THE PERFORMANCE OF OUR PEOPLE

Our culture of Aiming Higher encourages all UPMers to grow, as individuals and as a company. Our values—Trust and be trusted, Achieve together and Renew with courage—guide us along the way.

We are determined to be a responsible and attractive employer now and in the future. Developing UPM Experience is an important focus area for the future. We want to make an impact that strengthens employees' sense of belonging and the feeling that they are doing meaningful work; promotes productivity; increases engagement and wellbeing; and enables meaningful collaboration as well as diversity and inclusion.

According to the OHI (Organizational Health Index) survey, which measures overall organisational health, we are in the top decile of this global benchmark. The fact that our organisational health has been strengthened further since the last survey in 2017 is a sign of a job well done across the company. The OHI results also show that efforts put into people performance management have paid off.

Our values remain the foundation of who we are. Building a culture of Aiming Higher is essential to our success in today's rapidly changing world. We are accountable and performance driven, and we want to maintain these strengths while developing new ones. We have set the additional goal of becoming more human-centric and eager to learn and grow.

Our aim is to increase employee motivation to drive performance. We want to have fair compensation while differentiating and rewarding high performance. Our Enabling Performance approach encompasses frequent and 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.

Our co-operative body, the UPM European Forum, focuses on issues related to our business environment and changes within the company. The forum organises regular meetings for employee representatives from business units in Europe. There are also co-operative bodies in UPM countries, which operate in accordance with country-specific rules, regulations and company practices. The aim is to promote employee participation and dialogue: dialogue between the business areas and country-level management, and between employee representatives and employees on a national level. After the Finnish Forest Industries Federation resigned from collective bargaining, the terms of employment are agreed between forest products companies and trade unions (page 65).

We measure our progress regularly. The annual Employee Engagement Survey (EES) has invited all employees across the company to evaluate different aspects of their work every year since 2007. The survey was renewed in 2021.

The high participation rate of 83% (83%) indicates that UPMers are keen to improve their workplace. The new average engagement score was 68. Aligned with the global trend, engagement decreased compared to the previous year. Outside Finland, it was close to the global benchmark of 77, while in Finland it was significantly lower.

Encouraging learning

In a changing and increasingly complex business environment, enhancing employees' capabilities and wellbeing is important for both business success and sustained employability. Our long term goal is to ensure high performance and continuous professional development.

We invest in the growth of our people and expect individuals to develop. All employees are encouraged to create an individual development plan and keep it up to date. In 2021,

IMPACT
- Improved performance, engagement and professional growth

TARGETS
- Aim higher in performance
- Lead with passion
- Create the future beyond fossils
- Raise the bar in our safety performance

OUR WAY
- Lead according to our values and with integrity
- Develop an inclusive and diverse working environment
- Engage employees to create active dialogue and a future beyond fossils
- Enable performance with agile goal setting and feedback
- Invest in the growth of our people and develop new capabilities
- Provide a safe and healthy working environment and foster the wellbeing of employees and contractors

2030 TARGETS — Employee engagement clearly above benchmark by 2030

8 DECENT WORK AND ECONOMIC GROWTH — **68** average score achieved, which is 9 points below global benchmark

2030 TARGETS — Goal setting discussions and development plans for employees, 100% completion rate by 2030

8 DECENT WORK AND ECONOMIC GROWTH — **88%** of employees had completed individual goal setting or annual discussion

70% of employees had a development plan documented

CASE

DIALOGUE ON PURPOSE AND VALUES ACROSS UPM

In early 2021, we redefined our visionary purpose to We create a future beyond fossils. It describes why we do our work and how we can create a unique, positive impact. All UPMers play an important role in making our purpose and values come to life. To ensure that everyone has a chance to make a personal connection with the company purpose and values, and to discuss these topics with colleagues, we launched a company-wide process to initiate a dialogue on the subject.

Every UPMer has received a printed guide on UPM's purpose and values. To ensure inclusivity across UPM units and locations, the materials were produced in 18 languages. Team discussions started in late 2021 and will continue in 2022. Team leaders received training and support materials, including a digital workbook for running the team dialogue, to help promote an inspiring and meaningful conversation. Furthermore, dozens of facilitators were trained in 2021.

The aim of the dialogue on company purpose and values is to create internal cohesion and a feeling of belonging by creating a stronger sense of meaningful work and value-based behaviours. In addition, we aim to strengthen the UPM community and the joy of working together. During 2022, we will share and highlight the experiences of both teams and individuals around the world. Progress will also be tracked in the 2022 employee engagement survey.

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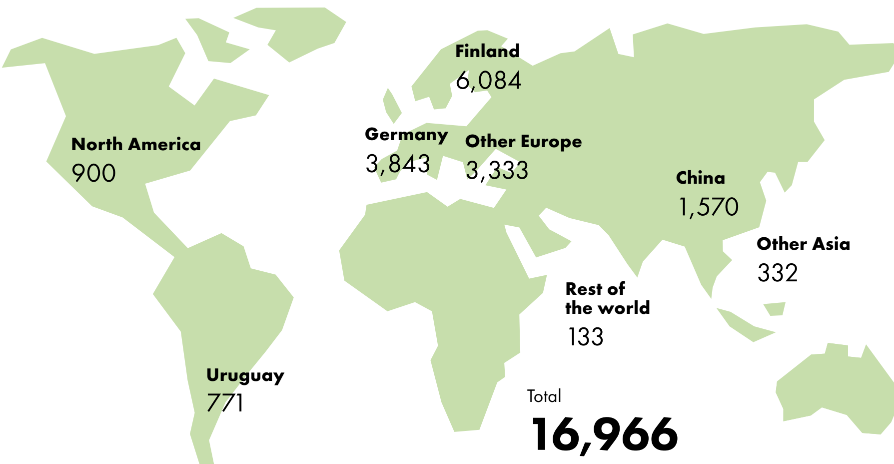
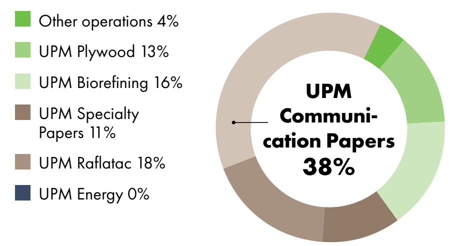
OUR EMPLOYEES BY REGION



UPM's personnel by business area 2021



Full time	Part time
97%	3%

Permanent	Fixed term
90%	10%

70% of employees had development plans. In the engagement survey, the result on the question about good opportunities to learn and grow at UPM was 62.

We apply the 70-20-10 learning and development framework: 70% of the learning takes place on the job; 20% comes from sharing with, and learning from, colleagues; and 10% comes from off-the-job training.

Digitalisation is enriching our ways of learning. As the global pandemic has changed our ways of working, we have introduced new e-learning content and programmes on an ongoing basis. These materials provide support to leaders in managing their teams remotely and encourage individuals to strengthen their self-leadership skills and resilience. Employees can share digital learning content flexibly on our learning platform. E-learning content is offered to develop skills in areas such as commerce, finance, compliance, safety and leadership.

Developing employee experience and enabling renewal

Our apprenticeship programmes are a way to ensure the required level of expertise for future employees. The programmes are typically targeted at shop-floor positions in production or maintenance. We run the programmes with regional vocational schools. In Finland and Germany, approximately 100 people join the programmes annually. Most of the graduate apprentices have carried on working at UPM.

Being the employer of choice has become crucial when recruiting new employees, especially younger professionals. We have organised several successful graduate programmes in recent years. We have extended our employer brand to new growth areas.

Developing employee experience is a key aspect in developing UPM as a workplace. To strengthen our work community, we have started a dialogue on our purpose and values (page 69). All UPMers are given a chance to create a personal and team-based connection to our purpose, values and Aiming Higher mindset. Managers have been provided with support to facilitate productive and inspiring discussions in their teams.

We have also launched projects to develop future ways of working and digital capabilities, and to create global health and wellbeing concepts. We have continued to develop our career experiences after employees are hired. We use a design-thinking approach and enable employees to contribute to projects. Based on the targets set for career experience in 2020, we started to redefine our development planning process and tools in 2021.

Following our systematic employer branding work, our position among students and professionals was recognised by external parties in Finland and China.

Leading by example

Achieving our ambitious targets requires committed input from skilled people and teams empowered by inspiring leaders.

We continuously invest in developing leadership capabilities and management teams. Our development programmes support the three cornerstones of leadership at UPM: leading oneself, leading people and leading the business. In recent years, the key areas of development have been inspiring leadership, coaching capabilities, self-leadership and resilience. Purposeful leadership was added to these areas in 2021.

In 2021, leadership development focused on team leaders and middle managers, as they lead most of our employees. We have continued to foster a growth mindset and improve the skills needed to enable performance, such as conversation and feedback skills. By the end of 2021, nearly 40% of managers had participated in the programme on achieving quality conversation skills and improved feedback.

Rewarding and recognising high performance

We reward and recognise high performance. Our approach to rewarding and recognising employees consists of both tangible and intangible components. Tangible remuneration and recognition consists of 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 remuneration and recognition consists of, for instance, a safe and healthy working environment, interesting and meaningful work, and good leadership and career opportunities. We have designed our reward policy to increase employee commitment to, and motivation for, high performance.

Each employee belongs to a unified annual Short Term Incentive (STI) scheme. The scheme covers group- and business-level targets, personal and team performance targets, and individual performance evaluation, to differentiate and reward high performance.

The annual incentives paid in 2021 for the 2020 STI plan amounted to EUR 58 million, and the estimated amount of annual incentives for the 2021 plan is EUR 60 million. We recognise significant individual or team success with 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. Launched annually, the plans cover approximately 400 employees.

Restructuring to ensure cost competitiveness

In 2021, UPM closed the Kaipola paper mill in Finland, sold the Shotton paper mill in the UK and closed one log line at the Kaukas sawmill. UPM also reorganised activities in several businesses and global functions.

The closures, reorganising and streamlining of businesses and functions decreased the number of personnel by 884 in total.

We provide support for employees who are affected by the redundancies. This includes outplacement services and training opportunities that support the affected employees in finding new jobs.

Our From Job to Job programme, run in conjunction with local authorities and partners, mitigates the effects of employee redundancies following the closure of the Kaipola paper mill. In addition to our statutory obligations, we have implemented several voluntary measures, including training, a business start-up allowance, and support for temporary housing and education.

› Our renewed social resposibility targets on page 32

UPM PERSONNEL IN FIGURES	2021	2020	2019
Employees	16,966	18,014	18,742
Turnover, %	14.5	10.4	9.2
Turnover, % (voluntary)	5.6	3.5	4.0
Average age	44.3	44.6	44.3

CASE

WORKING CONDITIONS ASSESSED IN THE WOOD SUPPLY CHAIN

UPM Forest's supply chain includes more than 100 logging and transport companies. As the supply chain becomes more international, we aim to gain greater visibility on recruitment, employment contracts, working hours, payment practices, travel and accommodation of employees and to ensure that they comply with the UPM Supplier Code.

A supply chain supplier audit project was launched in 2020 by training auditors and developing audit materials. The actual audits began in 2021 with the aim to audit all contractors over the next four years.

The companies' seasonal labour comes from abroad, mainly from the Baltic states and Russia. During the audits, we look at their management system, their responsibility issues and how they manage the foreign labour on their payroll.

The audits have identified some areas for improvement such as the coordination of administrative systems. There is also room for improvement in the transition to local employee negotiation system, in the sharing of information on legislative changes and reforms between different actors, and in finding a common language across the geographical spectrum of the supply chain.

Safety at work is one of the areas for development. In logging and forest logistics, heavy equipment is used and heavy loads are moved. There are risks in the working environment that need to be known and managed.

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CREATING VALUE WITH PEOPLE

CREATING A DIVERSE AND INCLUSIVE WORKING ENVIRONMENT

We are committed to developing an organisational culture and local conditions that ensure a diverse and inclusive working environment.

We value diversity and strive for an inclusive culture and working environment. We respect the privacy of our employees and promote equal opportunities and objectivity in employment and career development.

All UPM employees are treated as individuals regardless of gender, age, ethnic origin or nationality, and we welcome the talent of people with various skills and backgrounds to our global team. Promoting diversity and inclusion in the workplace is not only the right thing to do, but also a prerequisite for our business success. The richness of points of view improves decision-making and business success.

Diversity and inclusion is part of our Aiming Higher mindset and thus part of our cultural development plan. We also want to develop our future ways of working.

Three action areas

Our Diversity & Inclusion initiative consists of three action areas: commitment to diversity and inclusion, creating and leading inclusive culture, and regular reviews of our data and processes.

We signed an EU Diversity charter in 2016. We have set social responsibility targets and communicate our progress towards them regularly.

We carried out a gender pay equity review in 2021, closing the gender pay gap that cannot be explained by the factors that typically determine a person's salary and its development (right). We continue to monitor this development annually and make corrections if needed.

To further develop inclusive leadership and culture, we started a dialogue with management teams in 2019, and this work continued in 2020 and 2021 across the company. Over 1,600 people had participated in the dialogue by the end of 2021. Inclusive behaviours are integrated into our leadership development programmes and included in the UPM Code of Conduct training.

In 2021, we set a new target for the sense of belonging where we compare ourselves to the top 10% of benchmark companies. Our Employee Engagement Survey (EES) measures also authenticity, i.e. feeling comfortable being oneself, and fair treatment which are important strengths for us. We continuously follow up on them and the 2021 results are along the lines of the global benchmark.

Regular monitoring

We regularly review our diversity status and data. Our management teams conduct self-assessments that include diversity and inclusion. Managers and HR have dashboards with diversity data. Processes such as rewarding and recruitment are followed up regularly.

We also regularly report progress to several external indices. We have been included in the Bloomberg GEI (Gender-Equality Index) for a fourth consecutive year. The index awards the publicly traded companies that are most committed to disclosing their efforts to support gender equality.

Shop-floor	Salaried
58%	42%
Women	**Men**
22%	78%

Women leaders	Multinational teams
21%	22%

Age-diverse teams
54%

Authenticity score	Fair Treatment score
78	75

2030 TARGETS — UPM is among top 10% companies by 2030 on employees' sense of belonging at UPM

8 DECENT WORK AND ECONOMIC GROWTH — 67 average score on EES question. This is 13 points below benchmark of top 10% companies

CASE

CLOSING THE UNEXPLAINED PAY GAP

One cornerstone of our Aiming Higher mindset is to ensure a diverse and inclusive working environment. To live that mindset, we need to make sure that our employees are also fairly rewarded.

In 2021, we carried out a company-wide initiative to close the unexplained gender pay gap. It was triggered by the observation that we have a small pay gap that disadvantages women. This gap persisted after we had adjusted for example by performance, work experience, job and location, the typical drivers of pay. The gap stemmed from minor disparities in starting salaries, and not from how men and women were treated within the company. Very encouragingly, we found that annual salary reviews, promotions and also bonus decisions were free of any gender-related disparities.

Approximately 2.3% or 400 UPMers received a pay adjustment in 10 countries on 1 January 2022. Yet the work continues. We will monitor the situation annually using a rigorous process and take corrective actions if needed. We will also address the root cause by ensuring equitable starting salaries. Our long-standing efforts to balance gender representation and offer equal career opportunities continue.

This initiative is exceptional among our peer companies. It shows our strong commitment to the fair treatment of all UPM employees.

CREATING VALUE WITH PEOPLE

STRENGTHENING SAFETY CULTURE

Our proactive safety culture is based on our values, the UPM Code of Conduct and UPM Safety Rules.

Our safety work is based on long term planning, effective communications and leadership. Safety is integrated in all our new and ongoing projects, and proactive safety is well integrated in project plans and site practices. For us, good quality means thorough investigation and effective risk management, and this has played an important role in making our operations safe. We have also shared safety observations and best practice in our business units to improve safety.

We aim to have zero accidents. However, our safety results didn't reach the previous year's record good figures despite our broad proactive work. Long term progress of the safety results is still on the right track.

We recognise exemplary safety performance with company-wide awards. The UPM Raflatac labelstock factory in Changshu, China, received the UPM Safety Award for continuous improvement in 2021.

ISO 45001 Occupational Health and Safety certification continued. In 2021, UPM Raflatac and UPM Timber businesses received their certifications in addition to the previously certified paper and pulp businesses. As this 2030 target on OHS management system is almost achieved, we replaced it with a new target in 2021.

We also developed remote audit concepts and e-learning to improve the quality of internal safety auditing. Most internal safety audits were conducted remotely. A new auditing module was introduced, and training on it was provided in our OneSafety management tool. This module improves audit action follow-up.

Due to the pandemic, most of the safety trainings were conducted remotely. More than 150 UPMers attended a machinery safety training session. The trainings also focused on the human factor of safety; the difference our daily decisions make and how they contribute to our safety. The same topics were also discussed at the Safety Forum 2021, which involved more than 70 safety personnel from all over the organisation.

In May, a major incident occurred at the UPM Lappeenranta Biorefinery when the rupture of a process gas line caused an explosion and a fire. No one was injured, and the fire was quickly extinguished. The fire was thoroughly investigated both internally and with the authorities. To prevent similar events from reoccurring, a number of corrective actions were defined such as mapping the current state of process safety at the Lappeenranta Biorefinery and the Finnish pulp mills. Based on the outcome of the mapping, a group-wide target on process safety was introduced and the next development steps were defined.

In 2021, a total of

44,000

Safety-related near-miss and safety observation reports

31,000

safety walks and discussions

UPM WORKFORCE INCLUDING CONTRACTORS	2021	2020	2019
Total injuries per one million hours worked, TRIF	7.2	6.2	6.8
Lost-time accidents per one million hours worked, LTAF	3.5	3.5	3.3
Serious accidents	3	2	3
Fatalities	0	0	1

UPM WORKFORCE	2021	2020	2019
Total injuries per one million hours worked, TRIF	6.3	5.3	7.1
Lost-time accidents per one million hours worked, LTAF	3.1	2.8	2.9
Serious accidents	2	1	3
Fatalities	0	0	1
% absence hours from theoretical working time*	4.1	3.9	4.0
Occupational diseases*	5	1	6

* Reflects own employees

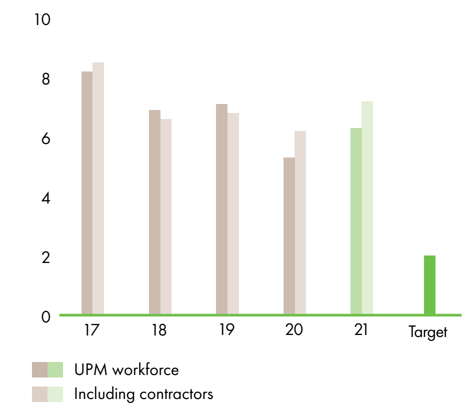
Persistent prevention during the pandemic

Our actions to ensure business continuity are based on long-term, continuous risk assessments. We have addressed both local and global coordination, and our company-wide coronavirus response team has developed global guidelines to be implemented in our businesses and sites. Rapid actions and preventive measures have helped us to guarantee a safe working environment for our employees.

We have supported our employees' wellbeing with a variety of health and safety measures globally, including support and tools for remote working, such as an info hub on the intranet and an application for taking breaks and boosting wellbeing at work. We also offer online training to build up resilience. We have distributed face masks for our employees to use at any given time and we offer in-house COVID-19 testing and voluntary screening (below).

› The renewed OHS-related targets on pages 32-33

Total recordable injury frequency (TRIF)



2030 TARGETS — TRIF below 2 for UPM workforce and including contractors

7.2 achieved for total injuries per one million hours worked

2030 TARGETS — Absenteeism rate below 2 for UPM employees

4.1 achieved for "% absence hours from theoretical working time"

CASE

INTENSIFIED TESTING AS THE PANDEMIC HAS PROGRESSED

Business continuity has been ensured through effective testing programmes and support for vaccination. We have actively sought the most appropriate testing methods available on the market.

All measures are based on risk assessment and local conditions. The measures have required close internal communication within the mills and co-operation with doctors outside the mill. In case of possible and confirmed cases of infection, immediate quarantine measures have been followed.

In Germany, we started our own vaccination campaign in the spring to support the national vaccinations. This required procuring the necessary medical equipment, the vaccine itself and additional medical staff. The free-of-charge vaccinations were administered by UPM's own doctors, assisted by external medical staff and volunteers. We vaccinated around 1,400 people, including employees and their family members.

In Finland, we offered the sports hall at the mill in Lappeenranta to the occupational health services for six days for vaccinations. In Rauma and Pietarsaari, the occupational health services provided vaccinations at the health care centre. Following the start of major renovation work at the Lappeenranta biorefinery, an efficient and extensive testing and screening system was set up. The biorefinery used PCR testing for the diagnosis of viral infections by the healthcare system, as well as home testing.

› www.upm.com/responsibility

RESPONSIBLE FOUNDATION OF OUR BUSINESS

COMPLIANCE UNDERPINS PERFORMANCE

Regardless of the location, circumstances or people involved, we are committed to complying with applicable laws and regulations, as well as our Code of Conduct.

IMPACT
- Committed and engaged employees
- Competitive business with no disruption
- Maintaining our reputation and the trust of business partners and other stakeholders

TARGETS
- Compliant operations and behaviour
- An engaging work environment where employees feel safe to voice their concerns
- Responsible value creation

OUR WAY
- We are all responsible for building a culture of integrity, with everything we do and every choice we make
- We do not compromise our standards of integrity under any circumstance
- Accountability for compliance extends down from the Board of Directors and senior management to all employees

Our Code of Conduct and our values help us make the right choices and guide our work in a changing business environment. This lays the foundations for long-term success.

We strive to ensure compliance with our values and commitments by implementing a company-wide compliance programme through our compliance system (right). The compliance system is embedded in our governance model and is designed to bolster company performance and a culture of integrity at all levels. We follow how this culture is developing with the help of favourable responses to an integrity-related question in our annual Employee Engagement Survey (EES). The EES was renewed in 2021 and the new integrity-related question is:

- People at UPM behave ethically (UPM overall: 74) (the external benchmark: 78).

Risk assessment

With the support of our compliance team, each business area, function and unit is responsible for identifying and managing compliance risks related to its own operations. The results of annual risk assessments are used to guide compliance activities and mitigation actions in businesses and functions.

Risk assessments and mitigation actions are updated throughout the year to respond to changes in the risk environment. The progress of mitigation actions is reported to the Audit Committee of the Board of Directors and businesses on a quarterly basis.

Policies and procedures

Policies and procedures form the basis of our compliance programme and their update needs are reviewed annually in accordance with our policy management process. Based on this annual review in 2021, we updated our Risk Management Policy and Association Participation Rules. Our Code of Conduct is updated every three years. The next time will be in 2022 and the preparations have started in 2021.

Training and communication

Policies and procedures are implemented through training sessions and communication. In 2021 we updated our personal data protection training module and launched a new module (association participation) relating to our competition law programme.

In April, we also launched new digital team discussion materials based on real-life cases to engage teams to discuss our culture of integrity and ethical dilemmas. By the end of the year more than 1,600 employees participated these discussions.

Available compliance e-learnings with the target group and completion rates at year end are listed in the table on page 79. Our e-learning modules are available on the same HR platform and are easily accessible to our employees. The completion of mandatory e-learnings is as a prerequisite for short-term incentive payments.

The e-learning modules are complemented with face-to-face and virtual compliance training with specific target groups, which are determined on the basis of risk assessments. The compliance training sessions are supported by active communication. We launched a microlearning video series concerning key compliance topics in 2021.

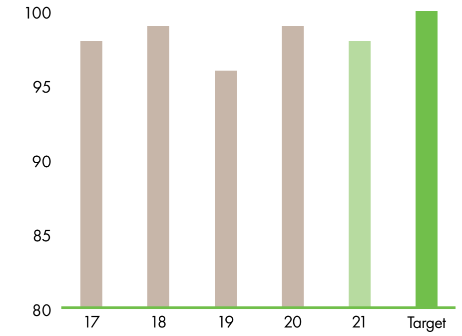
Monitoring

Our monitoring activities are aimed at ensuring compliance at all levels of the organisation. The activities are based on a group company risk matrix that considers the country risk and complexity and the extent of our operations in each country. Our compliance team has a three-year monitoring plan for its unit-specific compliance reviews that are based on this matrix. On top of these general reviews covering all business integrity topics, we conduct risk-based reviews around specific topics such as competition law or anti-corruption.

The reviews to be performed each year are agreed with the businesses during the annual risk assessment process and coordinated with the Internal Audit. The most important compliance review findings and recommendations are reported to the Audit Committee of the Board of Directors and businesses. These recommendations are then carried out in collaboration with said businesses.

In 2021, the compliance team conducted compliance reviews in 7 local units in South America, Asia, and Europe. Due to COVID-19 most reviews were conducted remotely. Another example of our compliance team's monitoring activity is the counter-

Code of Conduct training



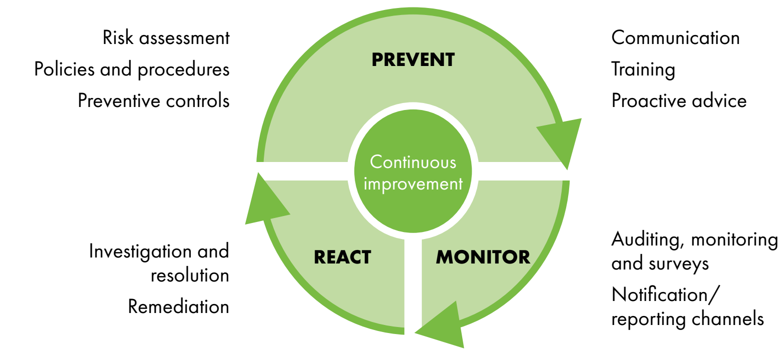
2030 TARGETS
100% coverage of participation in UPM Code of Conduct training (continuous)

98%

of active employees completed the UPM Code of Conduct training

UPM COMPLIANCE SYSTEM

Company performance
Corporate reputation, financial performance, operational excellence



Culture of integrity

party screening procedures demonstrated in the illustration on the right.

Voicing concerns

It is an important part of our culture of integrity that employees feel comfortable voicing any concerns they have and that they can trust UPM to take the appropriate action. If we are worried about anything, we must speak up and act. We do not tolerate retaliation against any person who, in good faith, reports suspected misconduct or participates in an investigation to resolve suspected misconduct.

In 2021, we published our first internal Integrity Report, the purpose of which is to communicate to our employees examples of misconduct cases and how they have been handled within the company (right).

The table below summarises the number of cases recorded in our misconduct case management system in 2021 and provides examples of cases handled. The misconduct case management system was renewed in 2020 and the increase in number of reported cases seems to imply that the new system captures potential cases more efficiently. 18 cases led to disciplinary action, including warnings and terminations of employment. The misconduct investigations include a root cause analysis that aims to identify whether improvements of compliance programme are necessary.

› The reports related to e.g. alleged discrimination or harassment, inappropriate behaviour, breach of safety rules and alleged breach of labour laws in connection with recruitment or termination of employment.

› Employee had not declared a conflict relating to a customer that the employee was responsible for and that was owned by a person close to the employee. The employee had caused loss to UPM by approving sales to the customer under market price. Termination of employment.

› Protect assets and information: Investigation revealed that employee had submitted tens of falsified invoices as business expenses. The employee admitted having bypassed internal controls knowingly. Termination of employment.

ALLEGED MISCONDUCT CASES

UPM Code of Conduct section	2021	2020
Our commitment on integrity	1	1
Our people and operations		
Respect people and human rights	19	4
Taking care of the environmental impact and product safety	2	1
Business integrity		
Zero-tolerance for corruption and bribery	0	3
Avoid conflicts of interest	8	7
Compliance with competition laws	5	2
Protect assets and information	23	3
Our stakeholders		
Know with whom you trade	8	2
Total	**66**	**23**

COMPLIANCE MONITORING

REGULAR COMPLIANCE REVIEWS based on group company risk matrix

REGULAR DISCUSSIONS WITH MANAGEMENT, monitoring significant projects, training rate monitoring, implementation of risk mitigation plan

UPM BUSINESS AREAS AND OTHER OPERATIONS

REGULAR DISCUSSIONS WITH EMPLOYEES, third party due diligence and risk monitoring, reports through UPM Report Misconduct channel, EES and other employee surveys

COUNTERPARTY SCREENING PROCEDURES

- Business partner screening against public sources
  - Business integrity (trade sanctions, anti-corruption, anti-money laundering, competition law, fraud)
  - Human rights
  - Environment
- Supply chain risk assessments

Low risks
Mitigating identified risks
Avoiding high risks
UPM business partner portfolio

PREVENT
- Supplier qualification
  - Supplier and Third-Party Code
  - Specific requirements
- Enhanced due diligence on selected business partners
- Onboarding and contracting process

MONITOR
- Supplier audits and corrective action plans
- Supplier assessments

REACT
- Incident analysis and investigation
- Blocking procedure
- Contract termination

COMPLIANCE TRAINING FOR SPECIFIC TARGET GROUPS IN 2021	COMPLETION RATES AS OF 31 DECEMBER 2021	SIZE OF TARGET GROUP
Code of Conduct e-learning	98	16,300
Personal data protection e-learning	97	6,800
Anti-Corruption e-learning	96	6,800
Confidentiality e-learning	98	6,800
Competition law e-learning	95	2,900
Insider Policy e-learning	96	110
Association participation e-learning	96	490

CASE

BUILDING TRUST WITH THE FIRST INTEGRITY REPORT

Although we have published the statistics of the misconduct cases, we had not systematically communicated internally about them. Therefore, we published our first Integrity Report for our employees. It builds upon the work of the past and sheds light on misconduct reporting and handling.

Corporate transparency is an important part of our organisational culture and employees should be able to express their concerns, see their concerns being addressed, and trust that we will implement the necessary actions, if required.

With the Integrity Report, we take a closer look at misconduct statistics and how many cases there were in the previous year, where they occurred, and how they were reported. The report also provides anonymous examples of misconduct cases, and describes the consequences of each case, as well as the lessons learned. Conflict of interest misconduct was the largest reported area in 2020.

Corporate transparency is a critical tool around issues like anti-corruption and corporate governance. The information shared with personnel strengthens the perception of organisational justice and drives the compliance within the company.

One of the key messages in the UPM Code of Conduct is 'Speak up'. The updated Report Misconduct channel seems to have lowered the threshold of raising concerns.

› www.upm.com/compliance

RESPONSIBLE FOUNDATION OF OUR BUSINESS

GENERATING TAX REVENUE

The winds of change are blowing through the global principles of taxation.

Throughout 2021, the OECD, G20 and European Union (EU) introduced solutions to address the tax challenges arising from the digitalisation and globalisation of economies. For example, these solutions are aiming for a minimum level of taxation of companies in the countries in which they operate (the OECD's Statement on a Two-Pillar Solution), as well as for a standardised public tax reporting by companies (the EU's public country-by-country reporting).

We have implemented our transparent and responsible Tax Strategy for several years. Therefore, we welcome any initiatives for more standardised global tax reporting by corporations, as well as those for fair and responsible tax payments in the countries where corporations operate. We will modify our tax reporting accordingly, alongside our current GRI-reporting, as soon as the final definitions of these projects are available.

IMPACT

- Taxes contribute to society on local, regional and national level.

TARGET

- We are strongly committed to continuously improving our economic and social performance
- Our good financial performance also generates higher tax revenues
- Our businesses also play a leading role in contributing to societal development in the surrounding communities through the tax revenue we generate

OUR WAY

- Based on the standards of the UPM Code of Conduct, the UPM Tax Strategy describes the main principles of and guidelines for our taxation
- Taxes are paid in accordance with local tax laws and regulations that apply to the country in question
- We pay corporate income taxes in the countries where added value is created and profit is generated

Corporate income taxes vary by countries

UPM's effective tax rate in 2021 was 15.5% (22.9%) and its cash tax rate was 17.8% (19.8%). Due to the fast recovery of our profitability from the pandemic that hit in 2020, the corporate income tax reported in 2021 was EUR 240 million (EUR 169 million) and the corporate income tax paid in 2021 was EUR 276 million (EUR 146 million). In addition to taxes on income, our various production inputs and outputs are also subject to taxation, which is either paid by us (e.g. energy tax or property tax, such as taxes on real estate) or collected by us (e.g. VAT, payroll tax and social security contributions). UPM paid real estate and similar taxes in various countries to the sum of EUR 30 million (EUR 32 million).

The table on the right displays the corporate income tax and property tax paid in our main countries of operation. Based on our corporate and operational structure, UPM mainly reports and pays its corporate income tax in countries where production and innovating activity takes place.

In Finland, we have significant production operations across our six business areas, as well as research and development operations. As a result, UPM is one of the major taxpayers in Finland. UPM's corporate income tax in Finland in 2021 is estimated to be EUR 235 million (EUR 88 million), with subsidiaries reporting and paying approximately EUR 122 million (EUR 79 million). The remaining figure of approximately EUR 113 million (EUR 9 million) will be reported and paid by the UPM-Kymmene Corporation.

In Uruguay, the government has granted several free-trade zone permits for domestic and foreign investments. The Uruguay government has granted our pulp mill a permit to operate in a free-trade zone, and therefore taxes in Uruguay mainly consist of property tax and annual tax-like charges paid to the Uruguay government for the development of the zone. The new pulp mill under construction in Uruguay will also be located in a similar free-trade zone.

In China, as a fine paper producer, UPM qualifies as a high-tech enterprise with a reduced corporate income tax rate of 15%. UPM also pays withholding tax on dividends in China.

In countries where our companies are using tax losses from previous years to offset the tax liability of the year in question, such as Germany, limited corporate income tax is paid.

In accordance with UPM's Tax Strategy, the locations of our companies are driven by commercial rationale and business reasoning. We do not transfer any value created, nor have any investments in production or service operations, in jurisdictions defined by the Council of the European Union as non-cooperative jurisdictions for tax purposes, or in any similar secrecy jurisdictions. A list of UPM subsidiaries and joint operations, and their country of incorporation, can be found on pages 204-206.

Furthermore, our sites contribute to local employment, income tax and purchasing power, and are engaging in projects with communities. Information can be found in the pulp and paper mills' EMAS-verified reports on environmental and societal responsibility.

Energy taxation at various levels of the value chain

In addition to changes in global income taxation in the future, as described above, the European Commission also proposes to reform the current taxation of energy products and electricity as part of the European Green Deal development programme and its Fit for 55 climate package.

Energy taxation is relevant to us, not only as a significant electricity producer but also in the manufacturing processes of our products, in terms of the taxation of end products as well as at various levels of the supply chain. Therefore, we will monitor the implementation of the EU's reform with great interest and welcome all initiatives to create a future beyond fossils in accordance with our values.

Electricity produced by us is subject to electricity taxation, regardless of which sources are used. The majority of our electricity production is CO_2 emission-free hydropower and nuclear power.

Also our renewable products, UPM BioVerno diesel and naphtha, which are produced from a residue of pulp production, are subject to energy taxation charged by fuel distributors to their customers. However, the energy tax rates for transport fuels from renewable and sustainable sources, like UPM BioVerno, are lower than those from fossil fuels.

Most of the energy used in the production processes is subject to energy tax, although there are various tax rates and exemptions, depending on the type of use. We also pay a significant amount of energy tax on fuels for logistics costs, especially for road transportation.

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

Our tax governance and tax compliance

The Board of Directors' Audit Committee is responsible for the supervision of tax risk management as part of our 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. A more thorough review of the tax practices of customers and suppliers is a part of our counterparty risk management processes.

The UPM Tax Strategy is supported by internal instructions, benchmark analyses of best practice and related internal controls. Tax matters are managed by our tax function, which is complemented by third-party tax services to comply with local tax reporting and filing, as well as other requirements.

We aim to co-operate transparently and proactively with tax authorities, and value dialogue with other important stakeholders concerning taxation. In Finland, UPM co-operates with the Finnish Tax Administration.

CORPORATE INCOME TAXES PAID AND PROPERTY TAXES BY COUNTRY

EURm	2021	2020
Finland	**225**	91
Germany	**20**	14
Uruguay	**15**	13
China	**24**	28
United States	**8**	8
United Kingdom	**3**	4
Austria	**0**	6
Russia	**4**	4
Poland	**2**	1
Estonia	**1**	2
France	**2**	3
Other	**2**	4
Group total	**306**	178

DIRECT ECONOMIC VALUE GENERATED AND DISTRIBUTED BY UPM IN 2021 (EUR MILLION)

Direct economic value created		Economic value distributed	
		Operating costs	-7,010
Sales	9,814	Employee wages and benefits	-1,094
Income from sale of assets	181	Payments to providers of loans	-28
Income from financial investments	3	Dividend distribution	-693
Other income	107	Corporate income taxes paid and property taxes	-306
Total	**10,105**		**-9,131**
Economic value retained 974			

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.

RESPONSIBLE FOUNDATION OF OUR BUSINESS

RESPONSIBLE SOURCING

An effective and responsible supply chain guarantees the availability of sustainably produced, cost-competitive and innovative materials and services globally in all market situations.

Suppliers are an essential part of our value chain. We buy products, materials and services from about 20,000 B2B suppliers globally. Our sourcing network includes suppliers from start-up companies to international corporations. We also buy wood from some 23,000 private forest owners.

The main sourcing categories are fibre, chemicals, other raw materials, indirect purchases, logistics and energy. When selecting suppliers, our most important criteria include reliable long-term deliveries, product and service quality, suppliers' financial stability, social and environmental responsibility and product safety.

Exceptional circumstances continued

Due to the continued COVID-19 pandemic, we strongly focused on guaranteeing business continuity and the progress of our transformative growth projects in Uruguay and Germany.

Many global commodity prices increased in the recovering global economy. The adverse energy market situation in Europe and in China added to our energy costs. However, we were able to protect our business continuity well despite the challenges in logistics and global supply chains.

We gave our digital platform a wider use to standardise and simplify sourcing processes. This platform, implemented in 2020, will improve efficiency in demand planning, tendering, contracting and purchase transactions. We also carried out trainings to increase our supplier auditing capabilities. The development of the platform and the trainings will continue in 2022.

IMPACT

- Providing more sustainable choices to customers and consumers
- Enhancing positive brand perception for both UPM and our customers

TARGETS

- We are a trustworthy and future-oriented partner
- We ensure the efficiency, compliance and responsibility of the supply chain
- We create long-term business opportunities in the value chain in collaboration with our partners

OUR WAY

- Focus on long-term, co-operative relationships and promoting methods for responsible sourcing
- Clear requirements and expectations for our suppliers
- Continuous monitoring and development of our suppliers' performance
- Process development with key suppliers
- Responsible practices in the supply chain
- Focus on 2030 responsibility targets

Standards of integrity

We are committed to responsible sourcing practices, as per our Code of Conduct. All the minimum requirements for suppliers are defined in the UPM Supplier and Third-Party Code. We require suppliers to promote the same requirements in their own supply chains. In 2021, 86% (84%) of our total spend was with suppliers who are committed to the Code.

All contractors working at our production sites must comply with UPM's safety requirements. Various additional requirements are applied to wood, chemicals, pulp, packaging materials and logistics.

All our wood, pulp and recovered paper suppliers are continuously evaluated in regard to environmental issues, social responsibility and their involvement in the local community. These raw materials are either FSC™ (N003385) and PEFC (PEFC/02-44-41) certified or comply with the FSC Controlled Wood standard or Due Diligence requirements for PEFC.

Strict requirements for wood-based materials

All the wood we use is legally logged and comes from sustainably managed forests. We don't use wood harvested from tropical rainforests or accept wood from plantations that have been established by converting natural forests. We don't accept wood from regions that do not respect the rights of indigenous peoples.

In addition to third-party certification, we also verify that the wood supplied to our mills is compliant with the EU Timber Regulation, the US Lacey Act and other regional requirements.

We source all wood assortments to ensure optimal utilisation of this valuable raw material. In 2021, we purchased 26.0 (24.9) million cubic metres of wood worldwide.

We buy approximately 1.7 million tonnes of pulp from external suppliers annually. We set further requirements to pulp suppliers for environmental performance, social responsibility, forestry, wood sourcing and reporting.

We are also one of the world's leading users of recovered paper for the production of graphic paper. In 2021, we used approximately 1.7 (1.8) million tonnes of recovered paper. Recycled fibre accounted 22% (26%) of all fibre raw materials used in UPM's paper production. The decrease is due to the closure of one newsprint mill and the sale of another.

Know your supplier

We identify our supply chains with a high risk of potential negative environmental and social impacts. Collecting and analysing data on the environmental and social responsibility of our key suppliers is an integral part of our supplier risk and performance management. We create development plans together with our suppliers based on these analyses. We also monitor the performance of our other raw material suppliers through various surveys.

With the counterparty risk management tool, we can better evaluate counterparty-related risks through automated screening and support businesses in ethical and prudent decision-making. Effective third-party management plays an essential role in securing business continuity and compliance.

The responsibility risk assessment is based on the country of origin, sourced material or service and complexity of supply chain. We use EcoVadis and other assessments, supplier audits and joint development plans to carry out more detailed evaluations of suppliers' activities.

If any non-conformities are identified, the supplier is required to take corrective measures. We monitor the implementation of these measures and provide support for improving the suppliers' operations if needed. However, some contracts may have to be discontinued due to insufficient measures or the seriousness of UPM's findings. In 2021, we assessed the working conditions of the service providers in the wood procurement value chain (page 71).

Working together towards more responsible supply chains

In relation to CO_2 emissions caused by supply chains, our focus is on reducing emissions from logistics and selected raw materials such as chemical pulp, pigments, chemicals and paper. Close co-operation with suppliers is needed to achieve this target.

Climate impacts will become an important factor when selecting suppliers in the future. In 2022, a group-wide programme to manage supply chain emissions will be started (page 94).

Global co-operation in sustainability

In 2021, our co-operation with Together for Sustainability (TfS), a chemical industry initiative continued. TfS promotes responsible practices within the supply chains of its members. The co-operation improves transparency and the efficiency of our assessments and audits.

As a member of TfS, we have access to a wider pool of EcoVadis assessments and TfS audit reports. In 2021, we conducted some 340 (290) environmental and social risk assessments with EcoVadis. The number of on-site audits was limited due to COVID-19 restrictions; however, on-site audits were carried out at logging sites and at some mills. Last year, our own trained auditors and external auditors carried out 124 (117) audits, based on identified risks, including human rights, social and environmental topics. In addition, about 300 contractor reviews with focus on working conditions were carried out.

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

› Safety culture on page 74
› Compliance on page 76
› Sustainable product design on page 86
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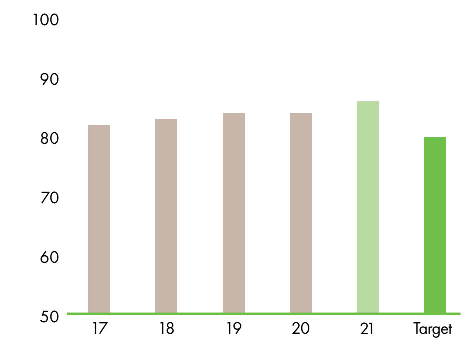
› Reducing energy use and emissions to air on page 92
› www.upm.com/about-us/for-suppliers/

Spend covered by UPM Supplier Code



2030 TARGETS

80% of total supplier spend covered by UPM Supplier and Third-Party Code (continuous)

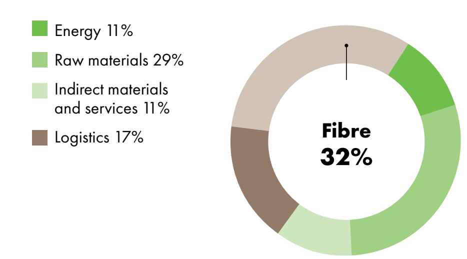
8 DECENT WORK AND ECONOMIC GROWTH

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

86% achieved

UPM'S FIVE LARGEST SUPPLIERS 2021
1. Suzano, a pulp supplier, Brazil
2. Andritz, a technology supplier, Austria
3. Lechwerke AG, an energy supplier, Germany
4. Pohjolan Voima, an energy supplier, Finland
5. Stora Enso, a pulp supplier, Finland

UPM's external purchasing spend 2021



RESPONSIBLE FOUNDATION OF OUR BUSINESS

SUSTAINABLE FORESTRY

Our business is based on sustainable forest management. We grow and harvest wood to produce renewable and sustainable materials and products.

Finland and Uruguay are UPM's main wood sourcing regions. At the end of 2021, we owned approximately 900,000 hectares of forest land in Finland, Uruguay and the USA. Most of this land is in Finland, totalling around 516,000 hectares. In Uruguay, we have about 305,000 hectares of eucalyptus plantations, grasslands and conservation areas and in the USA 76,000 hectares of forest. We also lease about 160,000 hectares in Uruguay and manage about 1.3 million hectares of private forests in Finland. We apply the same strict sustainability standards everywhere we operate.

About 180,000 hectares (20%) of the land we own is protected. Protected areas include valuable habitats, natural forests and other areas of high value.

UPM has three modern nurseries: one in Finland and two in Uruguay. A fourth nursery is under construction in central Uruguay to ensure sufficient wood supply for the new Paso de los Toros pulp mill.

There were uncommonly wide fires in Uruguay at the end of 2021, caused by exceptionally high temperatures and drought. The fires affected approximately 10,000 hectares of plantations owned and leased by UPM. We have supported partners in the area and operations continue as usual.

High-quality seedlings will ensure good growing conditions for the forests and provide an important basis for research. In Finland, we also produce hardwood seedlings, which supports our goal of doubling the number of deciduous trees in our forests. Vibrant mixed forests contribute to biodiversity, climate goals and forest well-being.

In 2021, we introduced our new global forest responsibility programme. The programme covers also sustainability criteria related to water, soil, economic and social contribution (page 30).

Forests and climate

We are committed to climate-positive forestry and improving biodiversity. Forests and forest diversity are beneficial for the climate. We ensure that our forests continue to act as carbon sinks, remain resilient and diverse in changing climate conditions, and grow well for future generations.

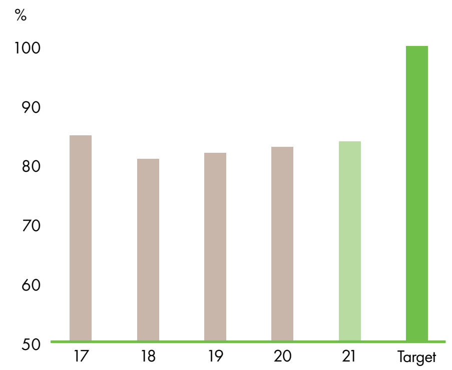
For our forests to remain carbon sinks, they need to grow more than we use them. We are improving the health, growth and carbon sequestration of our forests. The annual carbon sink from owned and leased forests in Finland and Uruguay has averaged 3.8 million tonnes of CO_2 equivalent over the past five years. In 2021, soil carbon accounting models for Uruguayan plantations were developed. Due to the developed calculation method, the published figures are not comparable with previous years. Development of calculation method continues together with scientific community to further improve reliability and accuracy.

Improving biodiversity

We are continuously working to improve biodiversity in our forests. We promote biodiversity as part of our everyday forest management and through conservation and collaborative stakeholder projects. Based on indicators developed in co-operation with researchers, we monitor biodiversity development in relation to the target we have set. In Finland, the indicators are:

- Tree species
- Forest age
- Forest structure
- Protected areas
- Valuable habitats
- Habitat restoration
- Species and habitat projects
- Indicator development

Certified fibre share



2030 TARGETS 100% certified fibre by 2030

84% achieved

In 2021, quantitative indicators showed a positive trend, except protected areas and valuable habitats. Total restriction areas decreased due to the changes in external land use plan restrictions, however, strictly protected areas increased by 9% from the previous year. Valuable habitats decreased due to refined calculation method, which made the previous year's results incomparable. We constantly review and develop indicators and their monitoring and calculation processes to provide more accurate and comprehensive information on biodiversity. For example, regular monitoring of the amount of decaying wood in Finnish forests is an important indicator for the future (right).

In the company-owned land in Uruguay, we implemented an upgraded biodiversity strategy to increase biodiversity in the long term (page 43).

UPM FORESTS AND PLANTATIONS

	2008	2021
Forest and plantation land, own and leased (1,000 ha)	1,012	**1,057**
Forest growth (million m³)	4.3	**8.8**
Wood harvested from UPM forests and plantations (million m³)	2.2	**3.6**
Value of forests and plantations, including land (EURm)	1,270	**3,241**

Third-party verified supply chain

We always know the origin of our wood. We do not source wood from illegal sources or from areas where human rights or high conservation value forests are threatened. Our wood sourcing does not cause land-use change. We don't use genetically modified trees. Compliance with these requirements is verified by an independent third party.

All UPM-owned forests are certified, or in the process of being certified if the site is new. We also promote forest certification for private forest owners and other customers. We have established the FSC group certification scheme. The forest area covered by UPM's FSC group covered approximately 520,000 hectares in Finland and over 13,000 hectares in Uruguay in 2021.

CDP recognised UPM as a Forest A List company for its significant actions to mitigate climate change and prevent deforestation.

Co-operation with stakeholders

We have a long history of working with researchers, academia, environmental organisations and other stakeholders to develop sustainable forest management. Long-term co-operation with the Osprey Foundation in Finland and with Aves Uruguay and Vida Silvestre in Uruguay continued in 2021.

In Finland, together with the Finnish Natural Resources Institute Finland, we investigated the occurrence of endangered species in commercial forests. The aim of the project was to determine the importance of natural management measures in commercial forests for species. We implemented species and habitat projects with stakeholders, such as the development of a network of nesting sites for birds of prey, together with the Ornithological Society of North Karelia and the Osprey Foundation. We also carried out biodiversity-enhancing drainage and removed invasive species. We carried out management measures in the habitats of endangered species in commercial forests to ensure the presence of endangered species.

We continued to participate in forest and environmental stakeholder forums. In Finland, we took part in biodiversity roundtables coordinated by the Ministry of Environment and the Ministry of Agriculture and Forestry. Active co-operation with the international FSC and PEFC continued to promote sustainable forest management globally.

› Responsible sourcing on page 82
› Sustainable product lifecycle on page 86

IMPACT

- Sustainable forest management is an important means to adapt to climate change
- Forests and wood-based products play a unique role in climate change mitigation
- Demand for wood-based products creates a strong economic incentive for good forest management and growth
- Forestry builds wealth and prosperity for local communities
- Sustainably managed commercial forests provide well-being and recreation

TARGETS

- Climate-positive forestry and maintenance of carbon sinks
- Efficient production of quality wood
- Increasing biodiversity
- Safeguarding forest ecosystem services

OUR WAY

- Third-party verified and certified wood origin monitoring systems to ensure full traceability
- No wood sourced from tropical rainforests or from forest plantations that have been established by converting natural forests
- No operations in areas where indigenous peoples' rights are at risk
- No plantations in areas where water is scarce
- Strong stakeholder engagement
- Focus on 2030 responsibility targets

CASE

DECAYING WOOD AS AN INDICATOR OF BIODIVERSITY

One clear difference between natural and commercial forests is the amount of decaying wood. More than a fifth of Finland's forest species depend on decaying wood at some point in their lives. Different species such as fungi and insects are best adapted to live on a particular type of decaying wood, and the species that live on a tree are influenced by the tree species, the size of the tree, the position of the decaying wood and the stage of decay.

We will investigate the effects of nature management measures in commercial forests, such as leaving retention and decaying trees in regeneration fellings, on the structural features and species of forests that are important for biodiversity.

The study started in autumn 2021 in co-operation with the Natural Resources Institute of Finland. In the first phase, 30-50 regeneration areas harvested in 2000-2018 in Southern Finland will be inventoried. In addition to species and structural inventories, we aim to create a reliable method for assessing the impact of nature management measures.

The study seeks to verify how UPM's conservation of retention and decaying trees in its own forests has affected the amount and species distribution of biodiversity important structural features (large decaying trees, coarse decaying wood). We will also develop a list of indicator species based on three species groups to monitor the impact of nature management on species diversity.

› www.upm.com/forests

RESPONSIBLE FOUNDATION OF OUR BUSINESS

SUSTAINABLE PRODUCT LIFECYCLE

Our products help to mitigate climate change by replacing fossil-based products with renewable alternatives.

The products store carbon for the entire duration of their lifecycle, especially when recycled multiple times. We actively develop solutions based on the circular bioeconomy model.

Our target is also to provide solutions and concepts that improve our customers' business processes and performance, creating mutual benefit and societal value. Our innovative and sustainable wood-based biomedical products, as well as our pharmaceutical and healthcare labelling solutions, are examples of where we create direct societal impact. Many of our products are made from side streams and residues or from materials recovered after product use, thus supporting circular bioeconomy (page 88).

Continuous dialogue and collaboration with customers

UPM's businesses offer a variety of products and services. Each business has its own customer relationship management process and way of interacting with customers. A comprehensive understanding of each market, as well as knowledge of the end uses of products and the needs of our customers, underpins our approach to customers.

We have a continuous dialogue with our customers and also engage in various product-related development projects with them.

Our businesses conduct regular customer satisfaction surveys. Based on these results, overall satisfaction with UPM as a supplier is 86% (86%). They also help us to define our areas of improvement. Product safety, sustainable forest management, recyclability, circularity and other environmental topics, such as ecolabels and carbon footprints, are some of the most important factors for our customers. Actions to mitigate climate change and enhance biodiversity have become more important than ever before.

IMPACT

- Bio-based and recyclable raw materials and products reduce the world's dependency on fossil-based raw materials and contribute to climate change mitigation
- We offer sustainable everyday products to consumers

TARGETS

- Creating innovative renewable and responsible solutions for a future beyond fossils
- Taking care of the entire lifecycle
- Enabling consumers to make more sustainable choices

OUR WAY

- Use of a sustainable product design concept in product development
- Improved chemical management to enhance product safety
- Strong commitment to long-term customer relationships
- Co-operation across the value chain
- Open and transparent product communication supported by ecolabels, certificates and product declarations
- Focus on 2030 responsibility targets

SUSTAINABLE PRODUCT LIFECYCLE

UPM supports the Sustainable Development Goals

New lifecycle approach

We can contribute to environmental and societal sustainability of our products by use of our new Sustainable Product Design concept. All the elements of the lifecycle need to be considered in the design phase so that the new product or service supports UN SDGs (left). In 2021, we further developed our Sustainable Product Design concept (below).

Life Cycle Assessments (LCAs) are an important part of the sustainable product design toolbox. We use LCAs to provide reliable, documented information on the environmental impacts of our materials and production processes. In 2021, UPM Pulp started a comprehensive project to develop a generic LCA model that will be in line with the EU's Product Environmental Footprint (PEF) method. To further improve the data quality of the model, the aim is to use primary data for used chemicals instead of generic datasets.

Product safety requirements renewed

The ISO 9001 Quality and ISO 22000 Food Safety management systems provide a framework for continuously improving our performance. All our production sites are ISO 9001 certified. All our pulp mills, UPM Raflatac sites and UPM Specialty Papers production lines in Europe have a certified ISO 22000 Food Safety management system. UPM Changshu paper machine 3 has both a certified ISO 22000 Food Safety management system and a certified FSSC 22000 Food Safety management system. This allows us to offer a number of products that are designed and produced to meet food packaging requirements.

We have developed the way in which we communicate our product safety requirements to our chemical and raw material suppliers, as well as to our customers.

Together with a number of paper and chemical companies, we have increased transparency in the supply chain and accelerated the exchange of information. A new questionnaire enables us to pre-assess the chemicals used in products and to ensure the compliance of our products with legal requirements and additional commitments, such as ecolabel criteria.

For customer communications, we have created Product Safety Profiles and updated Non-Use Warranty documents. In 2021, we updated the chemicals management standard. In 2022, we will modernise our chemical database to improve access to advanced reporting and control features.

Ecolabels and product declarations increase transparency

We offer product declarations and environmental data for most of our products. They tell our customers about the environmental performance of our products and help them make sustainable choices.

Most of our products are certified with widely recognised ecolabels, such as the EU Ecolabel and national ecolabels for graphic paper, RSB (Roundtable on Sustainable Biomaterials) certification for biofuels or ISCC (International Sustainability and Carbon Certification) for UPM Biofuels, UPM Formi and four UPM Raflatac production sites. In 2021, UPM Raflatac's label range RAFNXT+ was the world's first CarbonNeutral® certified label material to help mitigate climate change (page 47).

All UPM businesses have FSC and PEFC chain of custody certification (page 85). It verifies the origin of the wood and guarantees that all wood used in our products is legally harvested from sustainably managed forests and does not originate from controversial sources.

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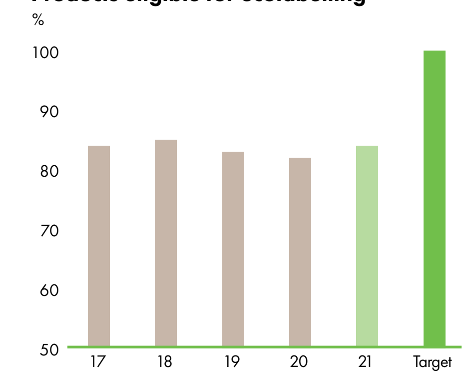
› Responsible sourcing on page 82
› Sustainable forestry on page 84
› Circular bioeconomy on page 88

Products eligible for ecolabelling



2030 TARGETS 100% of applicable products eligible fo ecolabelling

84% achieved

CASE

INTRODUCING NEW TOOLS FOR SUSTAINABLE PRODUCT DESIGN

With our new sustainable product design concept we ensure that all elements of the lifecycle are considered and that the new product has a proven sustainability value proposition and it supports the SDGs. The concept was first tested with lignin products and in 2021 testing continued with packaging and biocomposites. We applied various design thinking models that follow a holistic approach to the product lifecycle.

Life Cycle Assessments (LCA) have already improved production efficiency and the logistics chain. By incorporating the variables of our new lifecycle approach, we can improve circularity, material efficiency and social aspects.

We want to begin collaboration with the customer already in the design phase to find optimal solutions to their sustainability challenges. We will continue to explore the concept to develop novel flexible packaging solutions and sustainable fibre-based materials that can be used in nonwovens and hygiene products, for example.

The new sustainable product design concept and the complementing toolbox help businesses in their product development process and support collaboration with customers.

ACTIONS FOR ENVIRONMENT

CIRCULAR BIOECONOMY AT UPM

We are using materials, energy and water efficiently, and many of our products are made from side streams, residues or recovered materials.

Our goal is to minimise waste, maximise the use of side streams and create added value through smart solutions. We are constantly looking for partners to co-create circular innovations linked to side stream use, product development and supply chain efficiency.

In response to climate change, we are actively developing new solutions to accelerate the transition to a circular bioeconomy and aim to continuously reduce our environmental impact.

Our new sustainable product design concept includes circularity aspects throughout the product lifecycle (page 87). Our environmental 2030 targets ensure resource efficiency and contribute to the UN Sustainable Development Goals.

IMPACT

- Resource efficiency and circular bioeconomy respond to resource scarcity, contribute to climate change mitigation and provide new sustainable solutions for customers and consumers

TARGETS

- Efficient use of all material streams and the implementation of a circular bioeconomy; reduce, reuse and recycle

OUR WAY

- Circularity as part of our Sustainable Product Design concept
- Circular use of materials, nutrients and water
- Use of residues, side streams and recovered materials
- Cross-industry and cross-business collaboration
- Focus on 2030 responsibility targets

Our circularity targets

By 2030, we will not deposit any process waste at landfill sites, and no process waste will be incinerated without recovering the energy. On average in 2021, 89% (89%) of our process waste was recycled or recovered, of which 21% is energy recovery. 59% (57%) of our production sites use 100% of process waste already today. The total amount of waste to landfills decreased by 3% compared to 2020. This was partly due to the sale of UPM Shotton and partly due to improved recovery and recycling at production sites.

We share best practices, research results and ideas throughout the company, and have several internal working groups focusing on the use and valorisation of side streams. Green liquor dregs is a side stream originating from pulp production and one of our most challenging residues to use. We are putting a lot of emphasis on developing ways to find sustainable use for it (page 91).

Our other circularity target is the use of 100% nutrients from recycled sources in our effluent treatment by 2030. In 2021, 35% (28%) was achieved (page 96).

CASE

4EVERGREEN PROMOTES THE RECYCLING OF FIBRE-BASED PACKAGING

The 4evergreen alliance involves nearly 90 different companies: pulp, paper and board manufacturers, packaging producers and converters, waste management companies, brand owners, recyclers, and retailers, including global brands such as Ikea, L'Oréal, Kellogg's and Nestlé.

The alliance aims to achieve a 90% recycling rate of fibre-based packaging by 2030 throughout Europe. Member companies share best practices and jointly boost innovation, such as new kind of recycling technology. As a material supplier, UPM has been actively involved with the workstreams. By collaborating we can achieve goals that no company would be able to reach on its own.

The packaging material must be designed for the existing recycling streams. Therefore, it is important to test the components in the packaging. The factors preventing recycling in the packaging and those increasing recycling are analysed. Information is also gathered on how packaging is collected from the end users and how that loop works in different countries.

The alliance also addresses regulatory challenges as well as the adaptation of different packaging solutions to current recycling loop. The circularity-by-design guidelines help us design just the right kind of new materials for consumers.

› www.4evergreenforum.eu

CASE

RECYCLING BUDDIES TO THE RESCUE

When it comes to protecting our environment, is there such a thing as starting too early? The 32-page Recycling Buddies activity book contains a variety of creative tasks for preschoolers in Finland, and the accompanying teacher's material provides practical tips for the classroom.

While the school curriculum in Finland includes themes such as circular economy and recycling, research showed that preschoolers and preschool teachers were lacking proper materials to address these themes. The book, developed according to the principles of the national board of education of Finland, is designed to both educate and awaken interest in the circular economy.

The book was distributed free of charge, and it has been a major success. The first 60,000 copies were distributed within four days, leading to a decision to make an additional 30,000 copies. The book was a joint effort by UPM, Arla Finland and grocery retailer K Group, and the material was produced by Sanoma Pro.

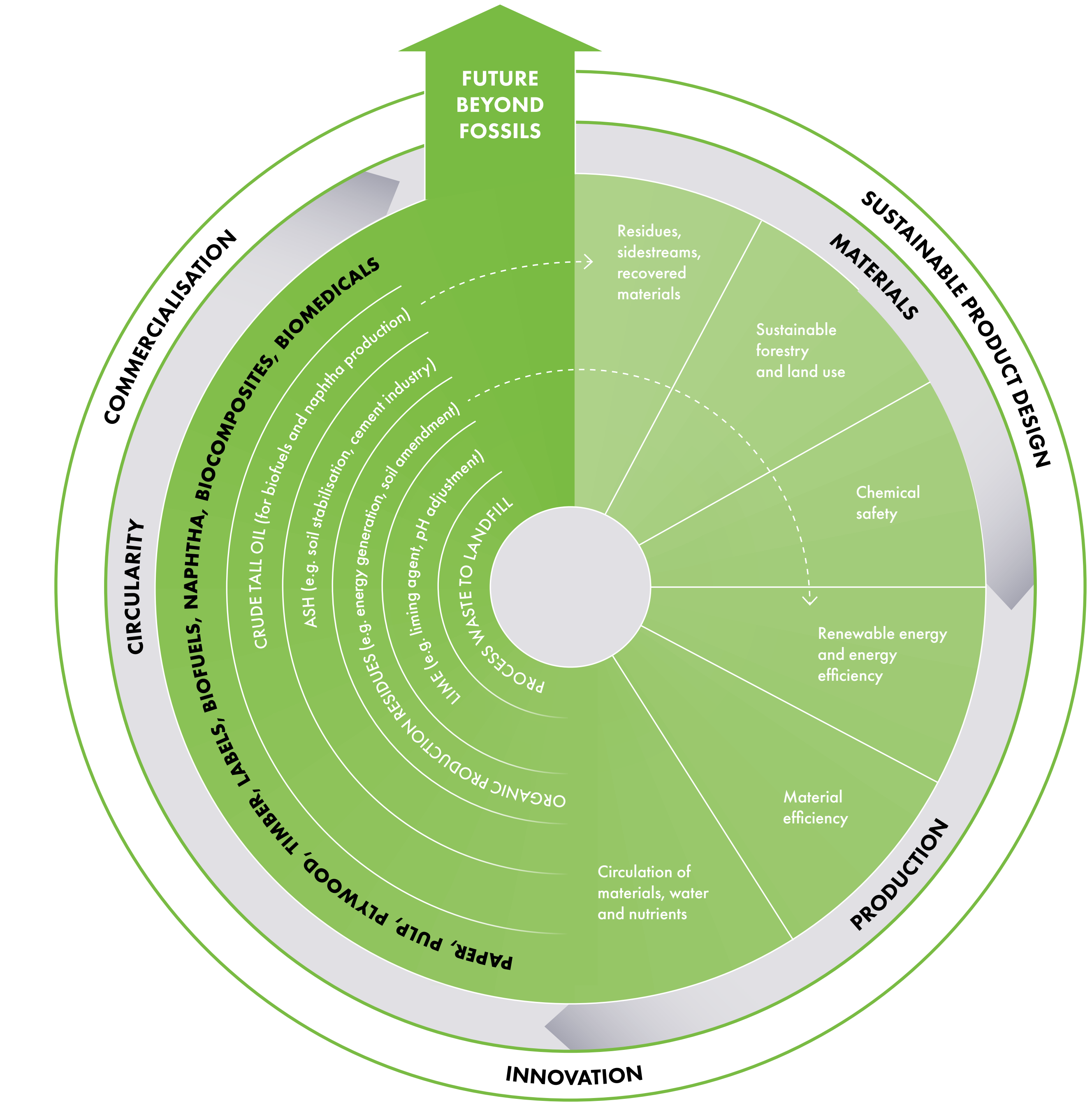
The survey Arla and UPM conducted indicated that almost every third Finnish family recycled more if their children were interested in recycling. Also, over 90% of respondents thought that companies should encourage consumers in recycling and provide information on the recyclability of product packaging. The project was a unique opportunity for the three companies to share knowledge and work towards a common goal.

Making use of residues, side streams and recovered materials

Most organic production residues, such as bark, wood residues and fibre-containing solids from deinking and effluent treatment, are used to generate energy for mill sites. The fibrous residues that are not incinerated are used in brick manufacturing or as soil amendment materials.

Overall, ash originating from biomass-based energy generation makes up the largest share of our solid waste. In 2021, 96% of the ash was used in various applications, such as in soil stabilisation, road construction and the cement industry,

CIRCULAR BIOECONOMY AT UPM



or internally to replace caustic soda or as raw material for paper filler production. In particular, the UPM Caledonian paper mill in Scotland has significantly improved the use rate of their ash. The mill has experienced challenges due to changes in local regulation. During recent years, several recovery options were explored. Using ash in manufacturing of cement blocks is today the main end use and has resulted to good ash utilisation rate of 98% in 2021.

UPM BioVerno renewable diesel and naphtha are produced from crude tall oil, a residue from chemical pulp production. Lignin, a side stream of pulp production, is used in WISA BioBond gluing technology, replacing fossil-based phenol used in plywood manufacturing. The use widened in 2021 and will be further expanded in 2022. If lignin is not used as material its energy content is recovered. Lime is another side stream of pulp production which can be used as liming agent or for pH adjustment.

We are also actively enhancing circularity over the product lifecycle by using recovered materials. UPM Raflatac collects label waste from more than 250 partners globally and recycles it with its RafCycle® service. The service takes the self-adhesive label waste and gives it new life as paper liner, magazine paper or biocomposite material. UPM Specialty Papers has developed UPM LinerLoop™, a unique concept where collected release liners are desiliconised and used to produce new high-performance release liner base papers. We also have a long history of using recovered paper to produce new graphic paper. In 2021, we used approximately 1.7 (1.8) million tonnes of recovered paper. Recycled fibre accounted for 22% (26%) of all fibre materials used in UPM's paper production.

Active engagement with circular economy networks

We are a member of INGEDE (International Association of the Deinking Industry), and a shareholder of CLIC Innovation Ltd., a Finnish open innovation cluster with the aim of finding breakthrough solutions in bioeconomy, circular economy and energy systems. We are also a member of 4evergreen, a cross-industry alliance to promote low-carbon and circular fibre-based packaging (page 88).

UPM Raflatac is an active member of the Ellen MacArthur Foundation, the global thought leader of the transition towards a circular economy. UPM Specialty Papers and UPM Raflatac are members of CELAB, to further promote the development of a circular business model in the self-adhesive label industry.

Together with Pohjolan Voima, we are participating in the Finnish UUMA4 programme targeting to enhance the use of secondary raw materials in earth construction. We are also active in several projects related to side stream use.

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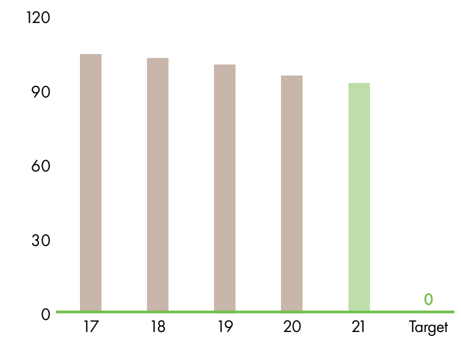
Process waste to landfills

1,000 t



2030 TARGETS — No process waste to landfills or to incineration without energy recovery

89% recycling or recovery achieved for our total process waste

2030 TARGETS — 100% of nutrients used at effluent treatment from recycled sources by 2030

35% achieved

CASE

CIRCULAR ECONOMY PRODUCTS FROM PULP SIDE STREAMS

UPM Pulp and Tapojärvi Oy, a Finnish specialist in mining and mill services, are working together to find new ways to use the side streams generated from pulp mills. Moist green liquor dregs are one of the trickiest side streams to recycle and UPM has been trying to find a solution to this for a long time. UPM's three pulp mills in Finland generate approximately 60,000 tonnes of waste dregs a year.

In the project, green liquor dregs are processed into construction materials, such as belite cement, the production of which generates up to 85% fewer CO_2 emissions than conventional cement. Another product under development, low-carbon stabilising cement, can be used to strengthen and reinforce the soil, increasing its bearing capacity.

The treatment of green liquor dregs requires the proper machinery and this was found at the UPM Tervasaari mill in Valkeakoski, Finland. Extensive industrial-scale trials will be carried out in the spring of 2022 in the decommissioned lime kiln. The idea is to utilise both green liquor dregs and ash.

Use of side streams improves the resource efficiency of the pulp business. Green liquor dregs will soon no longer be dumped into landfills but instead be used as raw material for products with the potential to decrease emissions in the construction industry.

> www.upm.com/responsibility

ACTIONS FOR ENVIRONMENT

REDUCING ENERGY USE AND EMISSIONS TO AIR

Our energy portfolio consists mostly of energy sources that do not cause fossil CO_2 emissions. We use energy efficiently and increase the share of renewable and low-emission energy.

We are constantly seeking new solutions to minimise our environmental impact by selecting optimised energy sources and generation methods, as well as by improving energy efficiency.

We favour the use of renewable and other carbon-neutral energy sources. Biomass-based fuels account for 70% (72%) of our fuel usage.

As the use of weather-dependent energy sources increases around the world, the need for balancing power within energy systems will grow. Hydropower is the most effective and sustainable method of producing balancing power and we have significant hydropower assets in Finland.

The majority of our energy consumption originates from the paper and pulp mills' production where electricity and heat are needed in mechanical pulping, pumping and drying. We generate steam and electricity through combined heat and power (CHP) plants at all of our pulp mills and at almost all of our paper mills. At some mills, all or part of this energy is produced by external or co-owned power plants.

IMPACT

- Minimising the use of fossil fuels is the most important way to mitigate climate change

TARGETS

- Significantly cut fossil CO_2 emissions across the whole supply chain and increase energy efficiency
- Minimise other air emissions in production and transportation

OUR WAY

- Committed to the UN Business Ambition for 1.5°C and The Climate Pledge
- Committed to continuous improvements in energy efficiency and to an increased share of renewable and low-emission energy
- Scientific verification of our CO_2 emission reduction targets
- Use of Best Available Techniques (BAT)
- Focus on 2030 responsibility targets

Continuous improvement in energy efficiency

We are looking for ways to improve our energy efficiency across our operations with audits, innovations and investments. In 2021, we reached our annual target of increasing energy efficiency by 1%.

As a result of the energy-saving investments carried out in 2021, we reduced our energy costs by EUR 1.7 (0.3) million, avoided emitting 5,400 (2,400) tonnes of CO_2 and achieved a 33,000 (13,000) MWh reduction in energy consumption. The annual savings are EUR 1.9 (0.8) million, 6,100 (8,600) tonnes of CO_2 and 35,000 (44,000) MWh of energy.

Reducing emissions to air in production

In 2021, we decreased our fossil CO_2 emissions from energy generation (Scope 1) and purchased electricity (Scope 2) by 8% compared to the previous year. This was possible due to an increase in electricity purchased from CO_2 free sources and due to a paper mill closure in Finland and the sale of a paper mill in the UK.

At the UPM Nordland paper mill in Germany, we are building a natural gas-based combined heat and power (CHP) plant. At the UPM Hürth paper mill in Germany, we have partnered with E.ON to replace the fossil fuel-based steam supply with a biomass-fired boiler that will provide steam for the mill. Both projects are expected to be finalised in 2022. After completion, they will contribute to reaching our fossil CO_2 emission reduction target for 2030.

UPM Energy is investing in CO_2 free power generation. TVO's Olkiluoto 3 EPR nuclear power plant unit in Finland is scheduled to commence regular electricity production in July 2022. The extensive modernisation project at our hydropower plant in Kuusankoski, Finland will also be finalised in the first quarter of 2023 (page 44).

The UPM Changshu paper mill in China has actively participated in the newly opened green electricity market in China by signing a contract for 14 GWh of solar power for 2021 with the first batch of companies. This is a step forward for the mill in using renewable energy.

UPM Timber became the first business to use only renewable energy in production in 2020. In 2021, UPM Plywood decided to gradually shift to only using zero-carbon electricity. Currently, six of UPM Raflatac's ten factories use 100% renewable electricity.

In 2021, we set a new target to stop using coal and peat in on-site energy genera-

CASE

STATE-OF-THE-ART VESSELS FOR SUSTAINABLE SEA TRANSPORTATION

Nearly 11 billion tonnes of cargo are transported by ship each year. UPM is dependent on shipping to get its products to customers across the world. It also provides shipping services to other companies. The whole sector is scrambling to rapidly reduce emissions by investing in energy-efficient vessels with new technologies and cleaner fuels.

We have invested in a fleet of seven new vessels built and owned by Bore Ltd and Wijnne Barends BV but operated by UPM. Emissions, mainly NOx, SO_2 and soot particles but also CO_2, will be reduced thanks to LNG fuel. The new vessels replacing the current ones are more fuel efficient and they can be transformed to use biofuels in the future.

The vessels will sail from Finland to Poland, Sweden, Germany, the Netherlands, the UK, France and Spain. Cargoes will consist of UPM products such as paper, pulp, timber and plywood, while northbound routes will see raw materials such as china clay, woodchips and pulpwood being carried for use by various businesses. UPM will become the first forest industry company to upgrade its transportation network with environmentally smart vessels. The first vessel is planned to be delivered to UPM in early 2022 and the rest of the fleet during 2022.

tion by 2030. Currently coal is the main fuel at the UPM Changshu mill in China, where alternatives have not been available historically. Peat is used in Finland. On the whole, coal and peat usage decreased by 9% compared to year 2020.

At UPM Changshu, the modification of the natural gas boiler was finalised in 2020, resulting in a further reduction of NOx emissions and achieving a very low emission rate of 50 mg/Nm3.

Odour issues have been reported at some of our pulp and paper mills, especially during the summer. Odour is mainly generated by an accumulation of solids in the process and the related sulphur compounds, which is then typically released through cooling towers and aerators. The problem is usually solved by keeping process delays within the operating window, avoiding any accumulation of solids and limiting the usage of sulphur. In some cases, oxidation may be required to improve the situation. In line with our Clean Run approach, we investigated the cases thoroughly and shared best practices across mills.

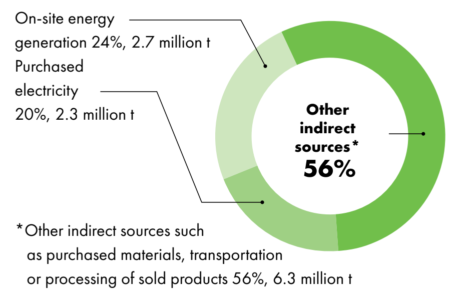
Collaboration with supply chain to reduce emissions

In addition to fossil CO_2 emissions from our own energy generation (Scope 1) and purchased electricity (Scope 2), we also evaluate the emissions from other indirect sources (Scope 3), such as purchased materials, transportation and the processing of sold products. Our evaluation shows that 44% of our overall CO_2 emissions are directly related to our energy use and 56% to Scope 3.

In early 2020, we set a target to reduce the fossil CO_2 emission levels of our supply chain by 30% by 2030 (from 2018 levels). Our focus is on reducing emissions from logistics and the most relevant raw materials such as pulp, pigments, chemicals and paper.

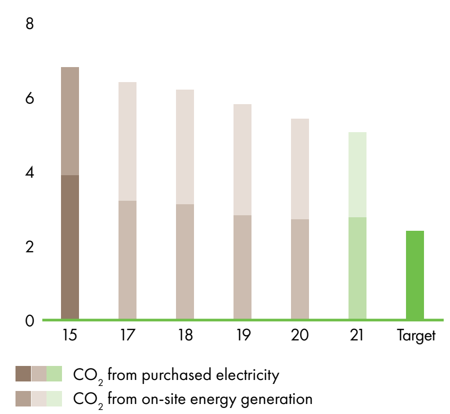
We are collaborating with Together for Sustainability (TfS), a chemical industry initiative, to create standardised ways of reporting emissions from purchased products, raw materials and transportation. In 2021, we continued to work closely with several suppliers about their CO_2 emission reporting. We aim to receive more actual data from our suppliers instead of using average CO_2 factors from databases. For example, already 64% of our pigment

Sources of UPM's fossil CO_2 emissions



*Other indirect sources such as purchased materials, transportation or processing of sold products 56%, 6.3 million t

Fossil CO_2 emissions



2030 TARGETS — 65% reduction of UPM's total CO_2 emissions (Scope 1 and 2) from 2015 levels

27% reduction achieved for UPM's total CO_2 emissions (Scope 1 and 2)

2030 TARGETS — No coal and peat usage in on-site energy generation by 2030

9% reduction achieved in 2021

2030 TARGETS — 20% reduction of acidifying flue gases from 2015 level

27% achieved for the UPM average product

suppliers were able to provide us their CO_2 emission data in 2021 and about 60% of our maritime deliveries are calculated with supplier data. Close co-operation with suppliers is needed to achieve the reduction target.

In 2022, a group-wide programme to manage supply chain emissions will be started.

Another positive development is the emission reduction of maritime transport with an investment in modern vessels (left).

> Climate change on page 31
> Responsible sourcing on page 82
> Clean Run concept on page 138

ELECTRICITY GENERATION THROUGH OWN POWER PLANTS AND SHAREHOLDINGS

TWh	2021	2020
Mill CHP	5.5	5.2
Hydropower	3.5	3.5
Nuclear power	4.7	4.9
Thermal power	0.3	0.1
Total	**14.0**	**13.7**

ELECTRICITY CONSUMPTION

TWh	2021	2020
Total	**11.7**	**11.9**

CAPACITY TO GENERATE POWER THROUGH OWN POWER PLANTS AND SHAREHOLDINGS

	Nominal MW
Hydropower	726
Nuclear power	588
Thermal power	154
UPM Energy in total	**1,468**
Mill site combined heat and power (CHP)	1,164
Mill site hydropower	7
Mill site power generation in total	**1, 171**
Total UPM	**2,639**

FUEL AND HEAT RESOURCES USED

TWh	2021	2020
Black liquor	20.1	19.4
Bark and other biomass	5.9	6.5
Heat recovered from TMP production	0.8	1.1
Renewable fuels total	**26.8**	**27.0**
Peat	0.5	0.6
Purchased heat	0.4	0.3
Natural gas	7.2	6.4
Oil	0.5	0.6
Coal	2.5	2.7
Fossil recovered fuel	0.3	0.2
Total	**38.2**	**37.8**

CASE

NEW CO_2 REPORTING TOOL HELPS US REACH OUR TARGET OF REDUCING EMISSIONS BY 65%

All mills report their energy consumption (fuels, heat, and electricity) and tonnes of emitted CO_2 monthly in our new reporting tool, introduced in 2021.

Our goal is to reduce CO_2 emissions from fuels and purchased electricity by 65% by 2030. The development is compared to 2015, and the corresponding data has been uploaded to the tool retrospectively. The progress of the emission reduction target can thus be monitored comprehensively and transparently.

The tool helps us with strategic planning, decision making and analysis of the measures taken at our sites. If the numbers show that we are behind our annual reduction target, we can react immediately.

Different businesses previously used various systems. The new tool integrates all data in one place, making it easier to analyse and compare data. The tool also helps businesses and individual sites by providing real-time data on their emissions and increases the reliability of information reported to customers and other stakeholders. The same data can be used in product development.

> www.upm.com/responsibility

ACTIONS FOR ENVIRONMENT

RESPONSIBLE WATER USE

Water has a crucial role in our business, from sustainable forestry to production. It is also an important source of renewable energy.

As a signatory of the UN Global Compact's CEO Water Mandate, we follow recognised principles in water stewardship. We aim to use water in a way that is environmentally sustainable, socially equitable and economically beneficial.

CDP recognised UPM an A- score for its significant actions to enhance water stewardship.

Continuous improvement in water management

The water we need for our pulp and paper production processes is circulated and reused as much as possible. 88-98% of the water we use in our pulp and paper mill processes is internally recirculated, and thus only a small fraction eventually leaves the process as effluent and needs to be replaced by fresh water. Using less water also means using less electricity, fewer chemicals and less thermal energy.

All effluents from our pulp and paper mills are cleaned in both mechanical and biological effluent treatment processes. We manage a global water specialist network to share best practices to get the best possible treatment results.

One of our 2030 environmental targets is to use 100% nutrients from recycled sources in our effluent treatment. In 2021, we continued testing several side streams from our own or other industries' operations as potential nutrient sources. We also mapped potential collaboration partners for recycled nutrients UPM wide. For example, UPM Changshu paper mill in China has replaced 50% of urea with its boiler desulphurisation process side stream product, ammonia sulphate. Reject waters from the biogas plant were taken into regular use to replace urea at the UPM Tervasaari wastewater treatment. Testing will continue at several mills in 2022 (page 91).

All our pulp and paper mills have a plan to reach their targets for reducing water use and effluent load by 2030. In 2021, further mills started to use advanced process controls or predictive analytic models to optimise the operation of the treatment plant. Exploring new ways of working, new technologies and new partnerships with potential chemical and machinery suppliers continued, and some of these technologies were piloted. For example, some mills have successfully tested a new filtration unit to further treat super clear filtrates with the target to replace warm water used on paper machine showers. The work will continue in 2022.

The UPM Changshu paper mill has decreased its process wastewater volume and COD load significantly during recent years. As a consequence, a too low incoming load has caused some technical challenges at the wastewater treatment plant. These were solved by introducing a new operating model that enables adjusting the process conditions based on incoming COD and nitrogen. As a result, we can expect a further reduction of COD and additional energy savings.

Collaboration with stakeholders

Our responsible water use highlights the importance of water resources and good water management all over the world.

In 2021, UPM joined a two-year project "Circular Economy of Water in Industrial Processes" together with several industrial and academic partners. The project was initiated by the Finnish innovation cluster CLIC.

In Uruguay, UPM supports the Rio Negro Initiative to improve the status of the river. UPM is also funding the improvement of the municipal wastewater treatment plant and sewer systems in Paso de los Toros and neighboring towns where temporary and permanent housing facilities have been installed.

Minimising the impact of hydropower facilities

UPM Energy is the second-largest electricity producer in Finland and has been a hydropower producer for over a century. While hydropower is a cost-effective, renewable and CO_2 free way to generate electricity, it can also have an adverse impact on watercourses and their surroundings. In order to minimise these impacts, we work closely with authorities and other stakeholders. In addition to the regulatory compensations, we also support and implement voluntary measures to protect and revitalise migratory fish stocks with our migrating fish programme.

The programme continued in Finland. UPM submitted an application for a permit for dismantling of a decommissioned water intake dam structures in Arvajankoski, Jämsä, and for the further fishery rehabilitation of Arvajankoski. UPM's goal is to start the fisheries' rehabilitation in co-operation with local stakeholders. In addition to the ongoing fish migration obstacle removal and rehabilitation projects, UPM is participating in practical local projects and research activities to promote fish migration.

IMPACT

- Our measures ensure that the impact of our operations on watercourses are minimised so that clean water is available for surrounding communities
- Our efforts to protect and restore aquatic ecosystems enhance the quality of watercourses and the natural habitat of species living there

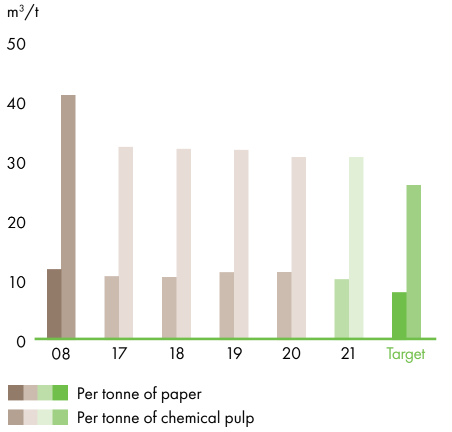
TARGETS

- Use water responsibly
- Continuously reduce the effluent load and wastewater volume generated by our operations
- Use only recycled nutrients in effluent treatment

OUR WAY

- Water-intensive operations in areas with sufficient water resources
- Efficient water use with appropriate recycling techniques
- Treatment of used water according to the Best Available Techniques
- Returning water to its original watershed when possible
- Co-operation with local stakeholders to further improve the quality of local waterways
- Focus on 2030 responsibility targets

Process wastewater volumes



2030 TARGETS — 30% reduction of wastewater volumes from 2008 level

18% reduction achieved for the UPM average product

2030 TARGETS — 40% reduction in effluent load (COD) from 2008 level

38% reduction achieved for the UPM average product

CASE

ASSESSING WATER RISKS USING WWF WATER RISK FILTER TOOL

We first evaluated our pulp and paper mills on Water Stress Index maps a decade ago. A few years ago, we used the WWF Water Risk Filter, an online tool to assess water risks. The tool helped us conduct, measure and interpret the results of our water risk assessment and our water work more effectively.

During 2021, we updated the water risk analysis and extended scope to all plywood mills, labelstock factories and terminals as well as new projects in Uruguay and Germany, in addition to pulp and paper mills globally.

The risk assessment confirms that our production sites are located in areas with low to medium basin risk. The tool also provides 2030 and 2050 scenarios of water risks, based on climate and socio-economic changes, to enable us to understand and prepare for future water risks and opportunities.

Based on those climate scenarios, our Changshu paper mill near Shanghai is expected to see the greatest rise in water basin risk by 2050. In recent years, however, the mill has made substantial improvements in water efficiency. Besides improving water efficiency, the mill has also reduced its effluent load by 40% since 2008.

OUR SOCIETAL AND ENVIRONMENTAL IMPACTS

Our activities and products have impacts on society. Understanding these impacts is a prerequisite to develop our operations. Direct and indirect inputs and outputs provide a comprehensive picture of the value chain and form the basis for the impact assessment. Environmental, social and economic aspects are considered. In 2021, we further developed our assessment of impacts in monetary terms. We looked at the different steps in the process, the choices that need to be made in terms of impact valuation objectives and the challenges in the calculation. We are also studying the potential benefits of the method and how it could be applied in decision-making.

› UPM's detailed material balance is available at www.upm.com/responsibility

INDIRECT UPSTREAM	
Number of b-to-b suppliers	20,000
Private forest owners supplying wood to UPM	23,000
Seedlings planted	50 million
Supplier spend covered by UPM Supplier Code	86%
Certified wood	84%
Percentage of wood origin known	100%
Fossil CO_2 emissions (Scope 2 upstream)	2.3m t
Fossil CO_2 emissions (Scope 3 upstream)	4.0m t
Water intensive production sites located in water abundant areas	100%
New hires	2,200
Restricted chemical substances in UPM screening	5,600
Own and leased forests and plantations	1,057,000 ha

DIRECT UPSTREAM	
Raw materials	
Wood	26m m³
Market pulp	1.7m t
Recovered paper	1.7m t
Minerals	2.0m t
Purchased paper for converting	0.5m t
Plastic, adhesives, resins, films	0.2m t
Costs, raw materials	EUR 5.4 billion
Water uptake	
Surface water	390m m³
Ground water	20m m³
Communal water	4m m³
Energy	
Renewable fuels	26,000 GWh
Fossil fuels	11,000 GWh
Purchased electricity and heat	13,600 GWh

DIRECT DOWNSTREAM	
Products	
Paper	7.4m t
Chemical pulp	3.8m t
Converting materials	0.6m t
Plywood and veneer	0.7m m³
Sawn timber	1.7m m³
Electricity and heat	12,000 GWh
Sales	EUR 9,814m
Comparable EBIT	EUR 1,471m
Granted patents and patents validations	329
People and society	
Employees	17,000
Shareholders	123,300
Training hours per employee	7
Total recordable injury frequency incl. contractors	7.2
Dividend distribution	EUR 693m
Employee wages and benefits	EUR 1,094m
Corporate income taxes paid and property taxes	EUR 306m

[1] Based on study by Luke Finland: 5-year average of carbon sink and sources in UPM own and leased forests in Finland and Uruguay. [2] Read more on pages 84-85 [3] Read more on pages 30-31 [4] Calculated using societal cost of carbon EUR 100/tCO_2 (average damage cost per tonne of CO_2). Source: EEA. Using European emissions allowance price would result in EUR 300m.

DIRECT DOWNSTREAM	
Emissions to air	
Nitrogen oxides	7,700 t
Sulphur dioxide	820 t
Particulates	1,100 t
VOC	390 t
Fossil CO_2 emissions (Scope 1)	2.7m t
Biogenic CO_2 emissions (Scope 1)	9,8m t
Emissions to water	
Process wastewater	190m m³
Cooling water	190m m³
Biological oxygen demand (7days)	7,300 t
Chemical oxygen demand	59,000 t
Absorbable organic halogens	280 t
Process waste and by-products	
Material recycling	615,000 dry t
Energy recovery	192,000 dry t
Composting	6,600 dry t
Landfilling	93,000 dry t
Temporary storage	8,300 dry t
Incineration without energy recovery	2,300 dry t
Hazardous waste for special treatment	5,600 t

INDIRECT DOWNSTREAM	
Number of customers	11,400 in 120 countries
People using UPM products	over 200 million
Biofore Share and Care donations and sponsorships	EUR 1.3m distributed to about 171 groups
Virgin materials replaced	2.5m t
Value of products eligible for ecolabelling	EUR 8.2 billion
Fossil CO_2 emissions (Scope 3 downstream)	2.3m t
Carbon content in UPM products	17m t
Carbon sink in UPM own and leased forests	3.8m t CO_2 eq [1]

IMPACTS
Increasing knowledge and quality of life through our products
Vitality and prosperity for area of influence
Increased social capital and skills of employees
Wellbeing and safety of employees and contractors
Biodiversity enhanced in managed forests and through conservation [2]
Ecosystem services secured through sustainable forest management
Climate change mitigation through UPM´s carbon actions [3]
Value added **EUR 2.7** billion
Societal value of carbon sink of UPM own and leased forests **EUR 380m** [4]
Societal cost of GHG emissions (Scope 1-3) **EUR -1,130m** [5]
Societal cost of other air emissions **EUR -133m** [6]
Recreational value of UPM forests **EUR 80m** [7]
Value of ash used as raw material **EUR 15m** [7]
Impact of paid taxes on social capital **EUR 327m** [8]

[5] Calculated using societal cost of carbon EUR 100/tCO_2 (average damage cost per tonne of CO_2. Source: EEA. Using European emissions allowance price would result in EUR -900m. [6] Calculated using societal cost of each air pollutant. Source: EEA [7] Based on pilot study by Gaia. Read more on upm.com/responsibility [8] Calculated using corporate income and property taxes, and health utility of taxes. Source: Vionnet et al. (2021) The Health Utility of Income and Taxes. Part B.

GOVERNANCE

CREATING A POSITIVE IMPACT IN SUSTAINABLE LABELLING

Attractive packaging and label design play an important role in consumers' purchasing decisions. Sustainable label materials make a difference in environmentally sound packaging. We enable our customers and brand owners to make responsible labelling choices, from renewable raw materials to recyclability and reuse. Our high-quality label materials ensure that important product information is carried even in the most challenging conditions.

> Read more about positive impact on UPM's website

ENABLING GROWTH

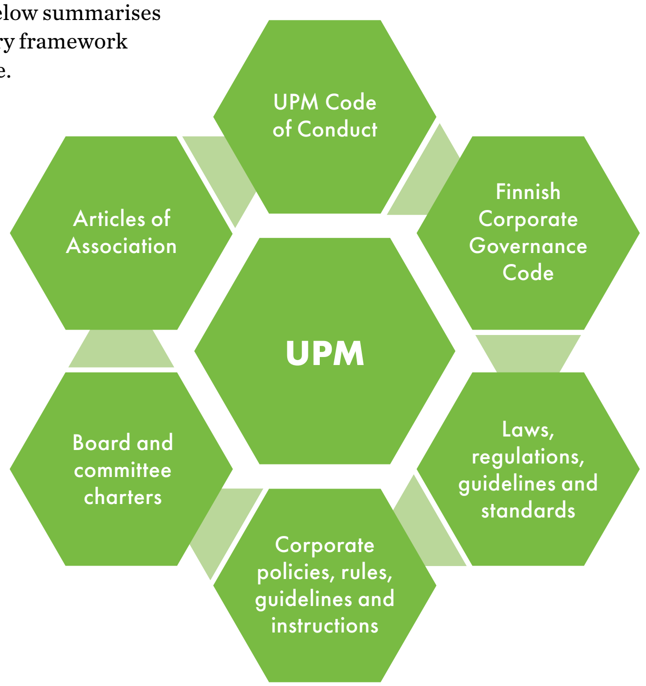
Our decision-making, management and operations are guided by our values and by the UPM Code of Conduct. Our governance structure supports good management, responsible business operations and compliance at all levels, with clear responsibilities and reporting lines.

UPM complies with all recommendations of the Finnish Corporate Governance Code (CG Code) for listed companies, which is issued by the Finnish Securities Market Association. In accordance with the CG Code, we have published our Corporate Governance Statement (CG Statement) for the financial year 2021. It is available on the corporate website at www.upm.com/governance. We can refer to the CG Statement for information on:

- Our governance structure and management system
- The duties and responsibilities of the Board of Directors and its Committees
- The duties and responsibilities of our management bodies
- Our management and control procedures related to internal control, risk management, internal audit, insider administration and related party transactions

Governance framework

The illustration below summarises the basic regulatory framework for our governance.



General Meeting of shareholders

Our Annual General Meeting (AGM) 2021 took place in Helsinki on 30 March 2021. The proposals of the Board of Directors and the Nomination and Governance Committee to the AGM were published in January and the notice of the AGM was published in February. In order to prevent the spread of the COVID-19 pandemic, the AGM was arranged under the Finnish temporary legislative act (677/2020) and held without the shareholders' and their proxy representatives' presence at the meeting venue. UPM also offered a proxy authorisation service, whereupon shareholders had the possibility to authorise an independent proxy representative nominated by the Company.

This exceptional AGM arrangement was necessary to ensure the health and safety of the shareholders, employees and other stakeholders, as well as to organise the meeting in a predictable way, allowing equal means for shareholders to participate while also ensuring compliance with the prevailing restrictions set by the authorities at that time. The shareholders could participate and exercise their shareholder rights at the AGM by voting in advance, and by submitting counterproposals and asking questions in writing in advance. A total of 2,542 (2,524) shareholders were represented at the meeting and they represented 54.2% (52.0%) of the Company's shares and voting rights at the time of the AGM. The AGM supported all the proposals, and all decisions at the meeting were made in accordance with the proposals by the Board of Directors, as well as the Board's Nomination and Governance Committee.

The shareholders and the public were able to follow the whole meeting, including greetings by the Board Chair and a review by the President and CEO through a webcast. The recorded speeches were further made available after the AGM on the corporate website at www.upm.com/agm2021.

The AGM adopted the Company's Financial Statements and decided to distribute the same dividend of EUR 1.30 per share, as in the previous year, and released the members of the Board of Directors and the President and CEO from liability for the financial year 2020. The dividends, totalling EUR 693 million, were paid on 12 April 2021 to shareholders who were registered on our list of registered shareholders on 1 April 2021. UPM's Remuneration Report 2020 for governing bodies was presented to and adopted by the AGM for the first time. Information on other decisions made at the AGM can be found later on in this section and on the corporate website at www.upm.com/agm2021.

The AGM 2022 will be held on 29 March. For the year 2021, the Board of Directors has proposed a dividend of EUR 1.30 per share. Due to continued COVID-19 pandemic the meeting will be arranged under the Finnish temporary legislative act (375/2021). Shareholders can only participate and exercise their shareholder rights in the AGM by voting in advance via an electronic voting or proxy service provided by the Company as well as by submitting counterproposals and asking questions in writing prior to the meeting. The AGM, as well as speeches by the Chair of the Board and the President and CEO, can be followed through a webcast. Detailed instructions for shareholders are available on the corporate website at www.upm.com/agm2022.

Board of Directors

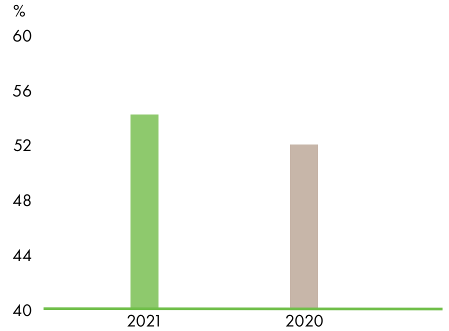
- Sets the Company's strategic objectives
- Reviews and approves financial and other plans relevant to the achievement of these objectives
- Reviews the management team's performance in terms of meeting these objectives

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

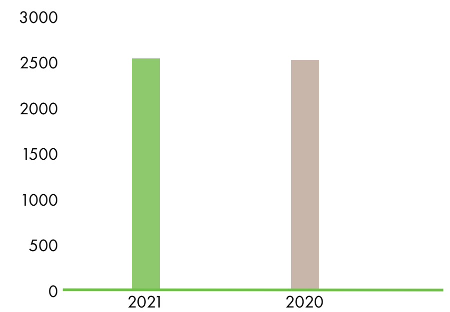
Board composition

The composition of the Board changed in 2021 when Ari Puheloinen, UPM's Director since 2014, and Veli-Matti Reinikkala, UPM's Director since 2007, announced that they would not be available for re-election. The Nomination and Governance Committee conducted its annual review of the structure, size, composition, diversity and succession needs of the Board as a whole, including whether the Board reflects an appropriate balance of sound judgement and a diverse range of business expertise, skills, experience, independence, availability of service to the Company and other desired qualities. As a result of a careful selection process, the Nomination and Governance Committee decided to propose nine members be elected to UPM's Board of Directors for a one-year term.

Percentage of represented shares and voting rights in the AGM



Number of shareholders present or represented in the AGM



As proposed by the Nomination and Governance Committee, Berndt Brunow, Henrik Ehrnrooth, Emma FitzGerald, Piia-Noora Kauppi, Marjan Oudeman, Martin à Porta, Kim Wahl and Björn Wahlroos were re-elected, whilst Jari Gustafsson was elected as a new director to the Board. All directors are non-executive and their term of office will end upon the closure of the AGM 2022. The shareholders were asked to vote on a single slate for the Board of Directors, as this has been, unlike in many other countries, a market practice in Finland. The Nomination and Governance Committee also believes that this practice helps to ensure that the Board works effectively as a whole, whilst comprising sufficiently diverse members with varied experience and versatile areas of expertise that mutually complement each other. The composition of the Board is presented in the table below.

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

BOARD COMPOSITION, 31 DECEMBER 2021

DIRECTOR [1]	DIRECTOR SINCE	NO. OF TERMS	AGE (AT THE END OF 2021)	INDEPENDENCE OF THE COMPANY	NON-EXECUTIVE / EXECUTIVE DIRECTOR
Björn Wahlroos (Chair)	2008	14	69	Independent	NED
Berndt Brunow (Deputy Chair [2]	2002	20	71	Independent	NED
Henrik Ehrnrooth	2015	7	52	Independent	NED
Emma FitzGerald	2020	2	54	Independent	NED
Jari Gustafsson	2021	1	63	Independent	NED
Piia-Noora Kauppi	2013	9	46	Independent	NED
Marjan Oudeman	2018	4	63	Independent	NED
Martin à Porta	2020	2	51	Independent	NED
Kim Wahl	2012	10	61	Independent	NED

[1] At the AGM 2021 Ari Puheloinen and Veli-Matti Reinikkala's terms ended due to their announcement that they were not available for re-election.
[2] Not available for re-election at the AGM 2022.

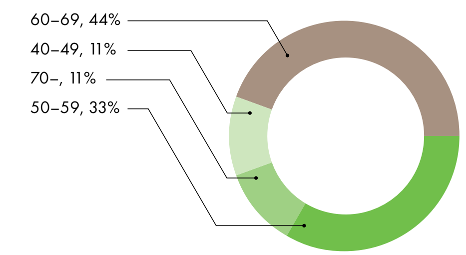
The new director, Jari Gustafsson (born 1958), is a Finnish citizen and holds a Master's degree in Political Science from the University of Helsinki. Gustafsson has been the Ambassador of Finland to Greece and Albania since 2020. Previously, he has worked as the Permanent Secretary of the Ministry of Economic Affairs and Employment, Finland, as the Ambassador of Finland to the People's Republic of China and Mongolia and as the Ambassador of Finland to Japan. He has also been a Board Member at the European Bank for Reconstruction and Development (EBRD) UK and the Deputy Director General at the Ministry for Foreign Affairs of Finland in the Department for External Economic Relations.

Board diversity

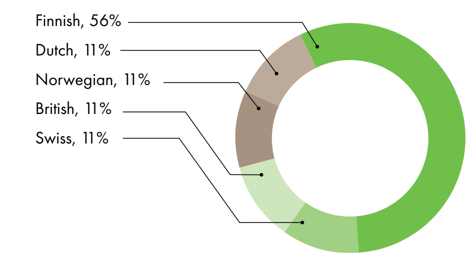
The overall aim of diversity is for the Board, as a whole, to have a broad range of skills, experience and perspectives, as well as knowledge of UPM and relevant industries, so that the Board can effectively accomplish its responsibilities, in particular those pertaining to strategy and risk management. With regard to other factors relevant to Board diversity, it is the Board's objective to include an appropriate number of directors of different nationalities, ages, genders and lengths of service, as presented in the pie charts below. Information on the professional backgrounds of the Board of Directors and their other significant commitments is available on pages 112–113 of this report.

The Board's diversity principles are included in the Board and Committee Charters and, more specifically, in the Board's Diversity Policy which is available at www.upm.com/governance. More information on UPM Board diversity, related objectives and the results obtained is available in our CG Statement 2021.

Board diversity – age



Board diversity – nationality

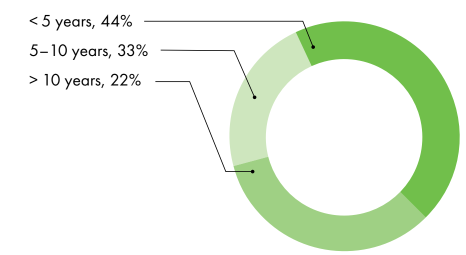


Board diversity – gender

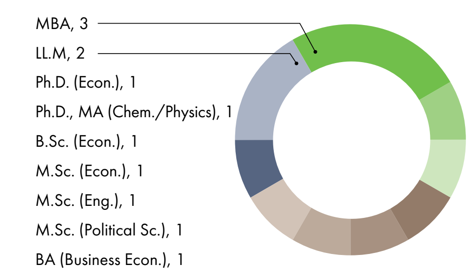
33%

67%

Board diversity – tenure



Board diversity – education



ATTENDANCE AT BOARD AND COMMITTEE MEETINGS 2021

DIRECTOR	ATTENDANCE / NO. OF BOARD MEETINGS	ATTENDANCE %	ATTENDANCE/NO. OF COMMITTEE MEETINGS	ATTENDANCE %	AVERAGE ATTENDANCE %
Björn Wahlroos, Board and NGC Chair	9/9	100	6/6	100	100
Berndt Brunow, Deputy Chair and NGC member	9/9	100	6/6	100	100
Henrik Ehrnrooth, RC member, RC Chair as of 30 March	8/9	89	6/6	100	94
Emma FitzGerald, AC member until 30 March and as of 27 April, RC member as of 30 March	9/9	100	9/9	100	100
Jari Gustafsson, Board and AC member as of 30 March	8/8	100	4/4	100	100
Piia-Noora Kauppi, AC Chair until and NGC member as of 30 March	9/9	100	6/6	100	100
Marjan Oudeman, AC member	9/9	100	5/5	100	100
Martin à Porta, RC member	9/9	100	6/6	100	100
Ari Puheloinen, Board and NGC member until 30 March	1/1	100	1/1	100	100
Veli-Matti Reinikkala, Board and RC Chair until 30 March	1/1	100	1/1	100	100
Kim Wahl, AC member, AC Chair as of 30 March	9/9	100	5/5	100	100

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

Director independence

The Board of Directors evaluates the independence of its members both annually and on a continuous basis, with the assistance of the Board's Nomination and Governance Committee. Director independence is assessed based on the independence criteria of the Finnish CG Code. The majority of the members of the Board of Directors must be independent of the Company, and at least two of these independent members must be independent of any significant shareholders.

The independence evaluation of director candidates is one of the key factors in the preparation of the Nomination and Governance Committee's annual proposal for the composition of the Board. The Committee assesses the independence of members of the Board of Directors on a continuous basis. It also reviews a report on any changes in professional engagements and other commitments at every meeting to ensure that members are compliant with the independence criteria. The Committee also assesses how such changes may affect the Board members' availability for Board-related work and reports to the Board on the outcome of such assessments. In particular, the Committee assesses Board members' positions in other publicly listed companies to ensure that the members adhere to the best practice related to overboarding. According to the Nomination and Governance Committee's assessment, all directors are independent of both the Company and the significant shareholders. High attendance rates at the Board and Committee meetings prove the Board members' commitment and availability for Board-related work. The attendance rates at the meetings by each member are in the table on the previous 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 have announced a holding of 10% or more of the Company's shares or votes attached thereto.

All directors are non-executive, and the Board has also concluded that all directors are independent of the Company, including Berndt Brunow and Björn Wahlroos, who have been non-executive directors of the Company for more than ten consecutive years. Based on the Board's overall evaluation of the independence of these directors, their long-standing service does not compromise their independence, and no other factors or circumstances have been identified that could affect their independence.

Board-related work in 2021

The Board convened according to its original meeting schedule and held nine meetings in 2021. Its work was not disrupted, even during the continued exceptional circumstances caused by the COVID-19 pandemic.

There is no minimum meeting attendance requirement for Board members. Instead, Board members are expected to attend all meetings unless there is a valid reason for not attending. The average attendance of the Board members at the Board meetings was 98.8% (95.6%), and at the Committee meetings 100% (90.9%). The personal attendance rate of each Board member is presented in the table on page 105. In connection with its meetings, the Board also held non-executive sessions and non-executive sessions with the auditor.

Strategic focus points in 2021

In line with its main duties and responsibilities, the Board reviewed and approved strategic plans during its strategy session in May. The main focus points of the UPM Biofore strategy continue to be growth, performance, innovation, responsibility and portfolio. Read more about our strategy on pages 22–33. An essential part of the Board's annual strategy-related work is to oversee the assessment and management of risks related to the Company's strategy and operations. These risks and opportunities, and their impact on operations and strategy, are described on pages 34–35.

In 2021, the Board continued to focus on major strategic investments, the pulp mill project in Uruguay and the biochemicals biorefinery in Germany. The Board has been closely monitoring the status and the feasibility of the project in Uruguay since 2016 and has conducted several status reviews, including risk assessments, in its meetings since then. The investment will raise UPM's pulp production capacity by more than 50% and significantly contribute to future earnings. Read more on this strategic investment on pages 42–43 and on the corporate website at upm.uy/en/growth.

The investment decision on the new biorefinery in Germany was made in January 2020 and the Board has regularly reviewed the status and feasibility of the project. The biorefinery will produce a range of 100% wood-based biochemicals that enable a switch from fossil raw materials to sustainable alternatives in various consumer-driven end-uses. Read more on this strategic investment on pages 56–57 and on the corporate website at www.upm-biochemicals.com/biorefinery.

COMMITTEE MEMBERS 2021

AUDIT COMMITTEE
Kim Wahl (Chair as of 30 March)
Emma FitzGerald (member until 30 March and as of 27 April)
Jari Gustafsson (member as of 30 March)
Marjan Oudeman
Piia-Noora Kauppi (Chair and member until 30 March)

REMUNERATION COMMITTEE
Henrik Ehrnrooth (Chair as of 30 March)
Emma FitzGerald (member as of 30 March)
Martin à Porta
Veli-Matti Reinikkala (Chair and member until 30 March)

NOMINATION AND GOVERNANCE COMMITTEE
Björn Wahlroos (Chair)
Berndt Brunow
Piia-Noora Kauppi (member as of 30 March)
Ari Puheloinen (member until 30 March)

Board performance evaluation

The Board of Directors conducts an annual evaluation of its performance and working methods, including an evaluation of the performance and working methods of its committees.

In 2021, the evaluation was conducted as a self-evaluation in November and its results were reviewed and discussed at the Board meeting in December. The Board members evaluated the performance of the Board and its committees in relation to their respective duties and responsibilities, the Board and committee compositions and structure, the Board culture, the effectiveness of the Board and committee meetings, the individual performance of the Board members and the performance of the Chair of the Board.

The overall results of the 2021 self-evaluation were highly favourable and indicated that the Board, Chair of the Board and the Board committees are performing effectively, and that the Board members are committed to the Board work. Identified areas for improvement are considered when planning the Board-related work, and the Nomination and Governance Committee takes the results into consideration when preparing its proposal for the composition of the Board to the Annual General Meeting.

Board committees

The Board has established the following three committees to further improve the preparation of matters to be decided by the Board:

- The Audit Committee
- The Remuneration Committee
- The Nomination and Governance Committee

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 Chairs. The members were appointed to the Board committees in the Board's constitutive meeting on 30 March 2021 and the composition of the Audit Committee was complemented on 27 April 2021. The committee compositions are presented in the table on the left. 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 purpose, composition, operations and duties of each committee, as well as the prerequisites of committee membership. Each committee is responsible for performing the duties assigned to it in its Charter. The Committee Charters are presented in the CG Statement and are also available at www.upm.com/governance.

The committees hold their meetings prior to Board meetings in order to prepare matters to be decided by the Board. The chairs of each committee report on matters discussed and actions taken by the committees during the Board meetings. In addition, minutes from the committee meetings are available to the Board members for information purposes.

Committee-related work in 2021

The importance and extent of the work of the Committees has increased in recent years and will further increase following the continuous changes in the regulatory framework and the Company's business environment. This is also reflected in the Committee Charters and in the topics and matters the committees were involved with in addition to their regular duties throughout the year.

Audit Committee

The Audit Committee is responsible for overseeing the Company's financial reporting processes and financial reporting, internal control, internal audit and risk management, and for monitoring the Company's audit and compliance procedures. In 2021, the Audit Committee held five meetings. In addition to the Audit Committee's assigned matters and regular reports as listed above, it also reviewed reports on and discussed non-financial matters (together with the review of non-financial reporting), ESG, cyber security and the audit tendering process. The Committee also replied to a thematic review of the European audit committees launched by the Committee of European Auditing Oversight Bodies (CEAOB).

The lead audit partner attended all Committee meetings and reported to the Committee on the interim procedures and findings, as well as quarterly audit and non-audit fees and services. The Committees' standard procedures also include quarterly sessions with the internal auditor, with the lead audit partner, with management and among Committee members.

The Audit Committee has prepared the Board's proposal for the election and remuneration of the auditor to be presented at the AGM 2022. In this context, the

CASE

ALL-ROUND EXPERTISE

Massimo Reynaudo was appointed to lead UPM Communication Papers as of October 2021. He joined UPM in 2017, taking responsibility for the UPM Raflatac self-adhesive label business in Europe, Middle East, India and Africa.

Before joining UPM, he spent 22 years at Kimberly-Clark in various positions. He says that this gave him the opportunity to invest in gathering a very wide set of experience. "During my career I've moved across multiple roles and worked in different countries. This has taught me to work across businesses and different cultures."

The four years of Reynaudo at the helm of the EMEIA Region in UPM Raflatac saw a strong business performance. "We've streamlined the organisation and made the business more agile. Enabling our teams to make more decisions, the business has been fast to adapt and has performed strongly, also during the turbulent times of the pandemic."

He's not only driven by results but by transparency and collaboration as well. The future is built on a strong foundation, coupled with the right ingredients for success.

"The paper business has traditionally performed at a high level. I believe that operational and commercial efficiency, engagement, and the motivation of the people are surely the key ingredients to continue delivering high performance."

CASE

A TEAM PLAYER

Mika Kekki joined UPM Plywood as Executive Vice President and a member of the Group Executive Team in October 2021. Kekki's UPM career started in 1994 at the softwood plywood mills as an operating engineer and later as mill manager. During 10 years, the Pellos mill developed into the largest in Europe and one of the largest plywood mills in the world after several investment phases.

Later, the road led to responsibility for the distribution business mill's production, the production of spruce-based mills and the support functions for plywood production. Kekki has been working in the management team of the plywood business since 2011 and has since been responsible for all mills and support functions.

"These years have been very rewarding, as together with the management team and the whole organisation we turned a weak, even loss-making business into a highly profitable one, with seven consecutive years of profit improvement."

A passionate and active sports enthusiast, Kekki describes himself as a team player for whom leadership is all about trust, honesty and openness. "You win as a team and you lose as a team", he sums up.

"I see the plywood business as having a very successful future. It is growing globally at 2-4% per year. My role is to ensure that UPM Plywood keeps pace with this growth. We have a good opportunity to take our share of the growth and we will continue to do so with higher value-added and more demanding quality products."

Committee evaluated the qualifications and independence of the auditor, as well as the audit-related and non-audit-related services provided by the auditor. The evaluation included an assessment of the effectiveness of the audit process, the quality of the audit, the performance of the lead auditor and the audit team, and the co-operation with the auditor's international audit network.

As a result of the evaluation, the Committee recommended to the Board the re-election of PricewaterhouseCoopers Oy as the Company's auditor. The Board concurred with this proposal and has made a corresponding proposal to the AGM 2022. Following the stipulations of the Audit Regulation, the last financial year that PricewaterhouseCoopers Oy can act as the Company's auditor is 2023.

According to PricewaterhouseCoopers Oy, Authorised Public Accountant Mikko Nieminen would continue as the lead audit partner.

Remuneration Committee

The Remuneration Committee is responsible for preparing the Company's remuneration principles and practices, and for planning the remuneration and succession of the President and CEO as well as other senior executives.

In 2021, the Committee held six meetings. In addition to the Remuneration Committee's assigned matters and regular reports as listed above, in 2021 it also focused on the Remuneration Report presented to shareholders at the AGM 2021 for the first time. It also made recommendations to the Board concerning the terms of service agreements of the Executive Vice President, Technology; Executive Vice President, UPM Communication Papers and Executive Vice President, UPM Plywood appointed in 2021.

Nomination and Governance Committee

The Nomination and Governance Committee is responsible for the composition, diversity and remuneration of the Board of Directors and corporate governance. If necessary, the committee also identifies individuals who are qualified to serve as the President and CEO.

In 2021, the Committee held six meetings. In addition to the Nomination and Governance Committee's assigned matters and regular reports as listed above, in 2021 it also focused on the arrangements of the AGM under the Finnish temporary legislative act (677/2020) prevailing at that time. The Committee further reviewed and proposed certain rotation to the composition of the committees, as well as assisted the Board in the preparation of the Remuneration Report presented to the AGM for the first time.

The Nomination and Governance Committee conducted its annual review of the structure, size, composition, diversity and succession needs of the Board as a whole. This included whether the Board reflects an appropriate balance of sound judgement and a diverse range of business expertise, skills, experience, independence, availability of service to the Company and other desired qualities.

As a result of careful research and selection efforts, the Nomination and Governance Committee has proposed that Topi Manner be elected as a new member of the Board at the AGM 2022. Of the incumbent directors, Berndt Brunow will not be available for re-election. The Nomination and Governance Committee's proposal on the composition of the Board in 2022, along with the Board's assessment of the independence of potential Board members, is available on the corporate website at www.upm.com/agm2022.

Executive management

Jussi Pesonen has been the President and Chief Executive Officer of UPM-Kymmene Corporation since January 2004. According to his service agreement, Jussi Pesonen was entitled to retire at the age of 60. At the request of the Company's Board of Directors, he continues as the President and CEO with no set retirement age.

The President and CEO's duty is to manage and oversee the Company's day-to-day business operations in accordance with the instructions and orders given by the Board of Directors. In the operative management of the Company, the President and CEO is assisted by the Group Executive Team, consisting of the executives leading the business areas or global functions, the

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

› Read more on our management system in the CG Statement 2021 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 114–115 of this report.

RESPONSIBILITY AREAS OF THE MEMBERS OF THE GROUP EXECUTIVE TEAM

PRESIDENT AND CEO JUSSI PESONEN

Tapio Korpeinen	**CFO** [1]	**UPM Fibres** [4]	Bernd Eikens
Juha Mäkelä	**General Counsel**	**UPM Energy**	Tapio Korpeinen
Kari Ståhlberg	**Strategy**	**UPM Raflatac**	Antti Jääskeläinen
Winfried Schaur	**Technology** [2]	**UPM Specialty Papers**	Jaakko Nikkilä
Riitta Savonlahti	**Human Resources**	**UPM Communication Papers**	Massimo Reynaudo
Pirkko Harrela	**Stakeholder Relations** [3]	**UPM Plywood**	Mika Kekki

[1] Incl. Finance & Control, Treasury, IR, IT, Sourcing and Real Estate (incl. Finnish forest assets)
[2] Incl. Investment Management, R&D and UPM Biorefining business unit (UPM Biofuels, UPM Biochemicals, UPM Biomedicals and UPM Biocomposites)
[3] Incl. Communications & Brand, Responsibility, Public Affairs
[4] Incl. UPM Pulp and UPM Timber

Business Area Boards and the Strategy Team. He makes decisions on matters that are relevant to the Company's daily business operations. The President and CEO chairs the Group Executive Team. The compositions of these management bodies are presented in the table above.

Management responsibilities

Members of the Group Executive Team have primary responsibility for the business areas and global functions that they lead. These areas of responsibility are shown in the illustration above.

Remuneration

In accordance with the CG Code, we have published our Remuneration Report for the financial year 2021. The Remuneration Report and information on the remuneration of the Group Executive Team members is available on the corporate website at www.upm.com/governance.

The Remuneration Report for governing bodies presents the remuneration of the directors and the President and CEO and has been prepared by the Board of Directors' Remuneration Committee and the Nomination and Governance Committee. The Remuneration Report 2021 for governing bodies will be presented at the AGM 2022. The Remuneration Policy sets out the framework for the remuneration of the Company's governing bodies and is available on the corporate website at www.upm.com/governance.

Remuneration of the members of the Group Executive Team and information on the Company's short- and long-term incentive schemes and plans, as well as on the terms and conditions of the aforementioned executives' service agreements, is available on the corporate website at www.upm.com/governance.

Remuneration of the Board of Directors

In accordance with the Nomination and Governance Committee's proposal, at the AGM 2021 it was decided that the remuneration of the members of the Board of Directors be raised so that the Chair of the Board will be paid an annual base fee of EUR 195,000, the Deputy Chair of the Board EUR 140,000 and other members of the Board EUR 115,000. The annual committee fees remained unchanged.

The approved annual fees and total remuneration of each Board member, as well as the number of shares purchased, are presented in the tables on the next page.

Board members did not receive any other financial benefits for their Board or Committee membership in addition to the annual base and committee fees. Travel and lodging expenses incurred from meetings held elsewhere than in a director's place of residence were paid against invoice. Shares purchased for the Board members in 2021 may not be transferred for two years from the purchase date (28 April 2021) or until the membership of the respective Board member has ended, whichever occurs first.

It is a long-standing custom at UPM to remunerate Board members in both shares and cash. 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 the interests of Board members with those of shareholders.

BOARD REMUNERATION AND PAYMENT MECHANISM

ANNUAL BASE FEE (EUR)	2021	2020	PAYMENT MECHANISM
Chair	195,000	190,000	• Approx. 40% in company shares, rest in cash to cover taxes. The Company paid costs and transfer tax related to the purchase of the Company shares. • Shares may not be transferred within two years from the purchase date or until the Director's membership in the Board has ended, whichever occurs first.
Deputy Chair	140,000	135,000	
Member	115,000	110,000	

COMMITTEE FEES AND PAYMENT MECHANISM

ANNUAL COMMITTEE FEES 2020-2021 (EUR)	CHAIR	MEMBERS	PAYMENT MECHANISM
Audit Committee	35,000	15,000	cash
Remuneration Committee	20,000	10,000	
Nomination and Governance Committee	20,000	10,000	

BOARD REMUNERATION IN 2021

DIRECTOR [1]	ANNUAL BASE FEE (EUR)	OF WHICH 40% FOR SHARES (EUR)	OF WHICH 60% IN CASH (EUR)	ANNUAL COMMITTEE FEE (EUR)	TOTAL REMUNERATION (EUR)	NUMBER OF SHARES PURCHASED AS PART OF ANNUAL BASE FEE [2]
Björn Wahlroos	195,000	78,000	117,000	20,000	215,000	2,383
Berndt Brunow	140,000	56,000	84,000	10,000	150,000	1,710
Henrik Ehrnrooth	115,000	46,000	69,000	20,000	135,000	1,405
Emma FitzGerald	115,000	46,000	69,000	25,000	140,000	1,405
Jari Gustafsson	115,000	46,000	69,000	15,000	130,000	1,405
Piia-Noora Kauppi	115,000	46,000	69,000	10,000	125,000	1,405
Marjan Oudeman	115,000	46,000	69,000	15,000	130,000	1,405
Martin à Porta	115,000	46,000	69,000	10,000	125,000	1,405
Kim Wahl	115,000	46,000	69,000	35,000	150,000	1,405
Total	1,140,000	456,000	684,000	160,000	1,300,000	13,928

[1] At AGM 2021 Ari Puheloinen and Veli-Matti Reinikkala's terms ended due to their announcement that they were not available for re-election. No Board fees were payable to them during the financial year 2021.
[2] Transaction date 28 April 2021.

Remuneration of executive management

Remuneration at UPM is designed to encourage our value-based behaviour and the achievement of ambitious strategic targets, as well as compensate performance accordingly.

The aim of the remuneration process for the Company's management team is to promote the Company's long term financial success, competitiveness and favourable development of shareholder value. Remuneration comprises fixed and variable components. These components are shown in the table on the right.

The variable components are linked to pre-determined and measurable performance criteria, and thresholds have been set for the payable amount. The payable amounts of incentives are linked to the management team member's position, as well as their achievement of performance measures and targets set on an annual basis.

The Company has the right to reclaim any paid or due variable remuneration under certain circumstances, such as violation of law or other legal obligation, or violation of the UPM Code of Conduct or other Company policies. Overall circumstances will be considered before exercising this right.

The Company also has the right to cancel, recover or restate any paid or due variable remuneration in the event that financial or other calculations are found to be incorrect.

Salaries, benefits and incentives earned by the President and CEO and members of the Group Executive Team are shown in the tables on the right.

In 2021, costs under the Finnish statutory pension scheme for the President and CEO amounted to EUR 329,000 (EUR 349,000). Payments under the voluntary pension plan amounted to EUR 1,200,000 (EUR 1,421,000). The President and CEO's voluntary pension benefit was arranged through a defined contribution plan in 2021.

In 2021, costs under the Finnish and German statutory pension schemes for GET members (excluding the President and CEO) amounted to EUR 860,000 (EUR 785,000). Payments under the voluntary pension plan amounted to EUR 1,035,000 (EUR 964,000). Please also see the Remuneration Report 2021 (subject to adoption in the AGM 2022) and Note 3.2 of the consolidated Financial Statements.

Auditor and audit fees

At the AGM 2021, PricewaterhouseCoopers Oy, a firm of Authorised Public Accountants, was re-elected as the Company's statutory auditor for a one-year term, with Authorised Public Accountant Mikko Nieminen as the lead audit partner. Mr Nieminen has held this position since 4 April 2019. He is the CEO of PwC Finland.

The Company has started a tendering process for auditing services as the previous tendering process was carried out in 2013. Following the stipulations of the Auditor Regulation, the last financial 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 table below.

COMPONENTS OF MANAGEMENT REMUNERATION

COMPONENT	PAYABLE IN	BASIS OF PAYMENT	TIME OF PAYMENT
Base salary	Cash	Service agreement/ Executive contract	Monthly
Fringe benefits	For example, company car and phone	Service agreement/ Executive contract	Monthly
Short-term incentives	Cash	Short-Term Incentive Plan	Annually
Long-term incentives	Shares	Performance Share Plan (PSP)	Annually following a three-year earning period

REMUNERATION OF THE PRESIDENT AND CEO

SALARIES AND BENEFITS (EUR 1,000)	2021	2020
Salary, **paid** during the financial year	1,093	1,093
Short-term incentives, **earned** during the financial year	1,309[1]	708[2]
Share rewards, **earned**	2,997[3]	1,902[4]
Benefits, **paid** during the financial year	31	31

[1] Paid in February 2022
[2] Paid in February 2021
[3] PSP2019-2021 (shares delivered in February 2022)
[4] PSP 2018-2020 (shares delivered in February 2021)

REMUNERATION OF THE GROUP EXECUTIVE TEAM (EXCLUDING THE PRESIDENT AND CEO)

SALARIES AND BENEFITS (EUR 1,000)	2021	2020
Salaries, **paid** during the financial year	3,958	4,132
Short-term incentives, **earned** during the financial year	2,739[1]	2,054[2]
Share rewards, **earned**	9,347[3]	5,979[4]
Benefits, **paid** during the financial year	142	134

[1] Paid in February 2022
[2] Paid in February 2021
[3] PSP2019-2021 (shares delivered in February 2022)
[4] PSP 2018-2020 (shares delivered in February 2021)

AUDITOR'S FEES

EUR MILLION	2021	2020	2019
Audit fee	**3.4**	3.8	3.1
Audit-related services	**0.2**	0.1	0.2
Tax services	**0.4**	0.4	0.5
Other services	**0.2**	0.2	0.2
Total	**4.2**	**4.5**	**4.0**

BOARD OF DIRECTORS


Björn Wahlroos

Chair of the Board
- Chair and member since 2008
- Chair of the Nomination and Governance Committee
- Independent of the Company and significant shareholders
- Born 1952, Finnish citizen
- Ph.D. (Econ.)
- UPM shares 270,700

President and CEO of Sampo plc 2001–2009. Chair of the Board of Mandatum Bank plc 1998–2000, CEO and Vice Chair 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.

Chair of the Board of Sampo plc. Board member of the Finnish Business and Policy Forum EVA and the Research Institute of the Finnish Economy ETLA. Board member of the Mannerheim Foundation.


Berndt Brunow

Deputy Chair of the Board
- Member since 2002, Deputy Chair 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 316,462

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 within the UPM Group.


Henrik Ehrnrooth

Member since 2015
- Chair of the Remuneration Committee
- Independent of the Company and significant shareholders
- Born 1969, Finnish citizen
- M.Sc. (Econ.)
- UPM shares 12,719

President and CEO of KONE Corporation since 2014 and KONE Corporation's Chief Financial Officer and Executive Board member 2009–2014. Previously 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 for Industry (ERT).


Emma FitzGerald

Member since 2020
- Member of the Audit Committee and Remuneration Committee
- Independent of the Company and significant shareholders
- Born 1967, British citizen
- MBA, D.Phil., MA (Surface Chemistry/Solid-State Physics)
- UPM shares 8,213

CEO and Executive Director of Puma Energy Ltd. 2019–2021. Executive Director responsible for water and waste service businesses and member of the Board of Severn Trent plc. 2015–2018, CEO of Gas Distribution Networks for the UK National Grid 2013–2015, Vice President, Global Retail Network, Shell International Ltd. 2010–2013, Vice President, Downstream Strategy and Consultancy, Shell International Ltd. 2007–2010, Managing Director, Shell China/Hong Kong 2004–2007 and Shell Gas Ltd. 2001–2004, Shell International Ltd., Global R&D, sales and marketing roles 1992–2001. Board member of Seplat Energy plc and Newmont Corporation. Portfolio Advisor of Oxford Sciences Enterprises, Mentor of Creative Destruction Lab - Climate work stream. Expert Advisor of World Economic Forum supporting acceleration of energy transition in developing markets.


Jari Gustafsson

Member since 2021
- Member of the Audit Committee
- Independent of the Company and significant shareholders
- Born 1958, Finnish citizen
- M.Sc. (Political Science)
- UPM shares 1,405

Ambassador of Finland to Greece and Albania since 2020. Permanent Secretary of the Ministry of Economic Affairs and Employment, Finland 2015–2020. Ambassador of Finland to the People's Republic of China and Mongolia 2013–2015. Ambassador of Finland to Japan 2009–2013. Board Director at the European Bank for Reconstruction and Development (EBRD) UK 2007–2009. Deputy Director General, Ministry for Foreign Affairs of Finland 2003–2006. Deputy Director General, Ministry of Trade and Industry, Finland 1998–2003. Counsellor (Industry, Energy, Trade), Finnish Mission to the OECD, France 1995–1998. Head of the Foreign Trade Division, Senior Advisor and Commercial Secretary, Ministry of Trade and Industry, Finland 1987–1995.


Piia-Noora Kauppi

Member since 2013
- Member of the Nomination and Governance Committee
- Independent of the Company and significant shareholders
- Born 1975, Finnish citizen
- LL.M.
- UPM shares 22,604

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 Gofore plc. Chair of the Board of the SOS-Children's Villages Foundation. Board member of 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

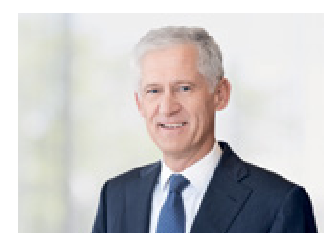
Member since 2018
- Member of the Audit Committee
- Independent of the Company and significant shareholders
- Born 1958, Dutch citizen
- LL.M., MBA
- UPM shares 8,163

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, most recently Executive Director responsible for Corus Strip Products business and CEO of Corus Nederland BV. Various positions in Hoogovens Group NV. 1982–1999, most recently Managing Director of Hoogovens Packaging Steel business. Board member of SHV Holdings NV., Solvay SA., Novolipetsk Steel PJSC and Koninklijke Luchtvaart Maatschappij N.V. (KLM).


Martin à Porta

Member since 2020
- Member of the Remuneration Committee
- Independent of the Company and significant shareholders
- Born 1970, Swiss citizen
- M.Sc. (Eng.)
- UPM shares 20,413

President and CEO of Pöyry plc. 2015–2019, most recently EVP of ÅF Pöyry AB.'s Management Consulting Division until 2019, various positions in Switzerland, China, Hong Kong and Qatar with Siemens companies 2001-2015, most recently as CEO of Siemens Building Technologies Division Europe, Head of Engineering Section and Project Manager, Electrowatt Engineering Ltd., 1996–2000. Board member of Stantec Inc.


Kim Wahl

Member since 2012
- Chair of the Audit Committee
- Independent of the Company and significant shareholders
- Born 1960, Norwegian citizen
- MBA (Harvard)
- BA (Business Econ.)
- UPM shares 24,518

Chair of the Board of Strømstangen AS. since 2009. Deputy Chair 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. and Civita AS. Chair 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 the UPM Group since 1987
- UPM shares 529,549

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.

Deputy Chair of the Board of the Finnish Forest Industries Federation (FFIF). Board member of 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 the UPM Group since 2005
- UPM shares 195,624

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.

Chair of the Board of Pohjolan Voima Oy. Vice Chair 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 Fibres
- Ph.D. (Eng.)
- Born 1965, German citizen
- Member of the Group Executive Team since 2013, employed by the UPM Group since 1998
- UPM shares 113,036

Executive Vice President, UPM Biorefining, Executive Vice President, UPM Specialty Papers 2016–2019. 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 the UPM Group since 1985
- UPM shares 77,265

Executive Vice President, Corporate Communications 2004–2013. Vice President, Corporate Communications of UPM 2003. Several positions in Communications at Finnpap and UPM Paper Division 1985–2002.

Board member of the Finnish Forest Industries Federation (FFIF). Member of S-Group's CSR and Sustainability Advisory Group. Member of the Board of Trustees for WWF Finland. Member of the Advisory Board of Deutsch-Finnische Handelskammer. Board member of the Satalinna Foundation. Chair of the Board of 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 the UPM Group since 2014
- UPM shares 46,201

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.

Board member of Vaisala Corporation.


Mika Kekki

Executive Vice President, UPM Plywood
- B.Sc. (Eng.)
- Born 1969, Finnish citizen
- Member of the Group Executive Team since October 2021, employed by the UPM Group since 1994
- UPM shares 1,400

Vice President, Productions & Operations, UPM Plywood 2013–2021. Director Spruce Mills & Operations, UPM Plywood 2011–2013. Mill Manager, UPM Plywood 2007–2011. Several operations managerial positions at UPM Plywood 1994–2007.

Board member of the Federation of the Finnish Woodworking Industries. Chairman of the Board, Järvi-Suomen Voima Oy


Juha Mäkelä

General Counsel
- LL.M.
- Born 1962, Finnish citizen
- Member of the Group Executive Team since 2008, employed by the UPM Group since 2005
- UPM shares 88,895

Group General Counsel since 2005. Positions as legal counsel and senior legal counsel at KONE Corporation 1997–2004. Several positions in law firms 1991–1996.

Supervisory Board member of Kemijoki Oy.


Jaakko Nikkilä

Executive Vice President, UPM Specialty Papers
- M.Sc. (Eng.), eMBA
- Born 1967, Finnish citizen
- Member of the Group Executive Team since July 2019, employed by the UPM Group since 1995
- UPM shares 7,790

Senior Vice President, UPM Specialty Papers ENA 2018–2019. Vice President, APAC Sales, UPM Fine and Specialty Papers, China 2012–2017. Vice President, Converters, Paper Business Group, Finland 2011–2012. Area Sales Director, APAC Converters, Paper Business Group, Hong Kong 2005–2011. Production manager, Fine and Specialty Papers 2001–2005. Technical Customer Service Manager, Fine and Specialty Papers 1995–2000. Analyst, Jaakko Pöyry Consulting 1993–1995.


Massimo Reynaudo

Executive Vice President, UPM Communication Papers
- M.Sc. (Eng.)
- Born 1969, Italian citizen
- Member of the Group Executive Team since October 2021, employed by the UPM Group since 2017
- UPM shares 4,675

Senior Vice President, UPM Raflatac EMEIA 2017–2021. Several senior business positions at Kimberly-Clark Corporation 1995-2017.


Riitta Savonlahti

Executive Vice President, Human Resources
- M.Sc. (Econ.)
- Born 1964, Finnish citizen
- Member of the Group Executive Team since 2004, employed by the UPM Group since 2004
- UPM shares 24,928

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 the Ilmarinen Mutual Pension Insurance Company. Member of the Work, Education and Skills Committee of the Finland Chamber of Commerce.


Winfried Schaur

Executive Vice President, Technology and UPM Biorefining
- Dipl. Eng. (FH)
- Born 1965, German citizen
- Member of the Group Executive Team since 2016, employed by the UPM Group since 2001
- UPM shares 71,262

Executive Vice President, UPM Communication Papers 2016–October 2021. 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.

Chair of the Board of the German Pulp and Paper Association (VDP). Vice Chair 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).


Kari Ståhlberg

Executive Vice President, Strategy
- M.Sc. (Eng.)
- Born 1971, Finnish citizen
- Member of the Group Executive Team since 2013, employed by the UPM Group since 2007
- UPM shares 56,972

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.

Vice Chair of the Board of Steveco Oy.

This is our Communication on Progress in implementing the principles of the United Nations Global Compact and supporting broader UN goals.

We welcome feedback on its contents.

UPM'S CORPORATE RESPONSIBILITY REPORTING IN ACCORDANCE WITH GRI STANDARDS AND AA 1000

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.

Our GRI index document shows where the disclosures of material topics and general disclosures are addressed in the Annual Report, on UPM's webpage or in the GRI index document itself. It also includes information on omissions, additional explanations and disclosures on the management approach. The document is available on the UPM webpage www.upm.com/responsibility.

UPM is also committed to the principles of inclusivity, materiality, responsiveness and impact as defined in the AA 1000 AccountAbility Principles Standard (2018).

The English version of the corporate responsibility information for 2021 has been assured by an independent third party, PricewaterhouseCoopers Oy (see the Independent Assurance Report on the right) and identified in the GRI content index. Congruence between the English and Finnish version has been checked.

AA1000
Licensed Assurance Provider
000-29

Independent practitioner's limited assurance report on UPM's Corporate Responsibility reporting

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 2021 to 31 December 2021, disclosed in UPM-Kymmene Annual Report 2021 and on its website in section "Responsibility" (hereinafter "CR Reporting"). The assured information is indicated in the Company's GRI Content Index 2021 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 UPM-Kymmene Corporation reporting instructions described in UPM-Kymmene Corporation's Annual Report 2021 and GRI Standards Sustainability Reporting Guidelines of the Global Reporting Initiative.

The Management of UPM-Kymmene Corporation is also responsible for the Company's adherence to the AA1000 AccountAbility Principles of inclusivity, materiality, responsiveness and impact as set out in AccountAbility's AA1000 AccountAbility Principles Standard 2018.

The Management of UPM-Kymmene Corporation is also responsible for such internal control as the management determines is necessary to enable the preparation of the CR Reporting that is free from material misstatement, whether due to fraud or error.

Practitioner's independence, other ethical requirements and quality control

We have complied with the independence and other ethical requirements of the International Code of Ethics for Professional Accountants (including International Independence Standards) issued by the International Ethics Standards Board for Accountants (IESBA Code), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

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.

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*". This 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 2018. For conducting a Type 2 assurance engagement as agreed with the Company, the AA1000AS (2018) 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 information in the CR Reporting, and about the Company's adherence to the AA1000 AccountAbility Principles. The procedures Selected depend on the practitioner's judgment, 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 representatives of senior management of the Company.
- Visiting the Company's Head Office as well as two sites in Finland.
- Interviewing employees responsible for collecting and reporting the selected information on responsibility indicators at the Group level.
- 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 related information based on these topics.
- Performing a media analysis and an internet search for references to the Company during the reporting period.
- 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.
- Considering the disclosure and presentation of the CR Reporting.

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's CR Reporting for the reporting period ended 31 December 2021 is not properly prepared, in all material respects, in accordance with the Reporting criteria.

Furthermore 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.

When reading our limited assurance report, the inherent limitations to the accuracy and completeness of corporate responsibility 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 (2018). These observations and recommendations do not affect the conclusions presented above.

Regarding Inclusivity: UPM-Kymmene Corporation has processes in place for stakeholder inclusivity both at the group and at the business level. Due to recent investment operations in Uruguay and Germany additional stakeholder expectations and needs have been considered. We recommend that the Company continues continuous monitoring of changes across stakeholder expectations through established procedures to ensure inclusivity of stakeholders.

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 periodically. The company has also considered the financial impacts of the climate change. We recommend that the Company continues to elaborate and update its material aspects also from the viewpoint of the financial materiality.

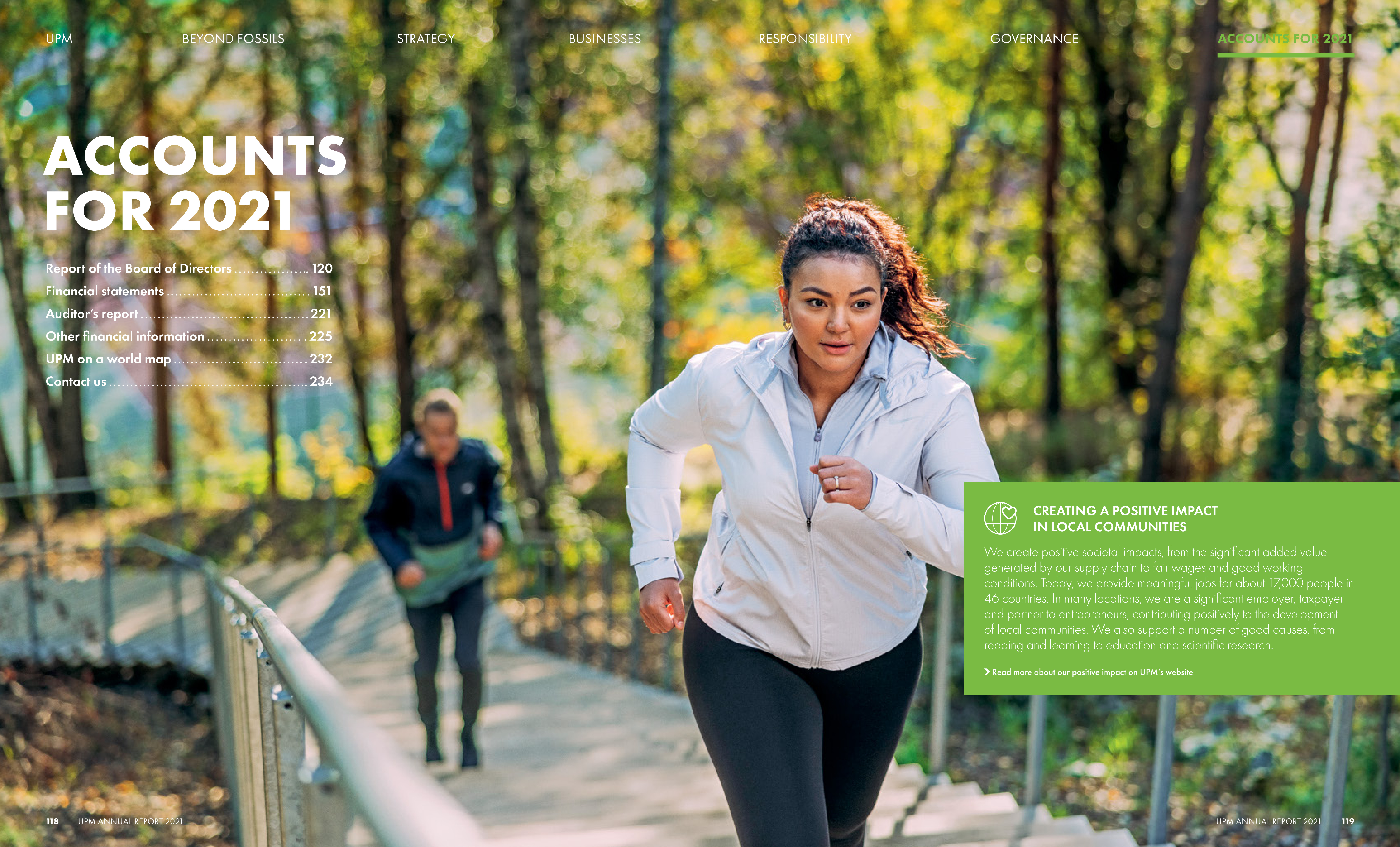
Regarding Responsiveness: UPM-Kymmene Corporation has processes in place for responding to stakeholder needs. Introduction of green finance required adjustment in the responsiveness towards stakeholder expectations. We recommend that the Company maintains its systematic approach to respond to stakeholder's expectations and considers the increased green finance related stakeholder needs.

Regarding Impact: UPM-Kymmene Corporation has a process in place to monitor and measure the economic, environmental and social impacts of its business activities. Biodiversity is recognised as one of the material impact topics and methodology to measure biodiversity impact are a further developing area. We recommend UPM to continue systematic development of biodiversity impact measurement and related disclosures.

Helsinki 18 February 2022
PricewaterhouseCoopers Oy
Authorised Public Accountants

Tiina Puukkoniemi
Partner, Authorised Public Accountant (KHT)
Sustainability Assurance and Reporting Lead

Mikko Nieminen
Partner, Authorised Public Accountant (KHT)
Lead Financial Audit Partner



ACCOUNTS FOR 2021

CREATING A POSITIVE IMPACT IN LOCAL COMMUNITIES

We create positive societal impacts, from the significant added value generated by our supply chain to fair wages and good working conditions. Today, we provide meaningful jobs for about 17,000 people in 46 countries. In many locations, we are a significant employer, taxpayer and partner to entrepreneurs, contributing positively to the development of local communities. We also support a number of good causes, from reading and learning to education and scientific research.

> Read more about our positive impact on UPM's website

Report of the Board of Directors

UPM introduction and business model

As a frontrunner in forest industry, UPM provides sustainable solutions to the growing global consumer demand. Products are made from renewable materials and are recyclable.

UPM invests in sustainable growth and innovates for a future beyond fossils across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. The business areas are competitive with strong market positions.

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 adding, 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 project	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 2021

The world economy recovered from the severe global recession of 2020. The year 2021 began with rising optimism about growth driven by an upswing in global output and consumer spending, as well as vaccine rollouts in developed countries. Global recovery continued throughout the year despite disruptions in global supply chains, inflationary pressure and the growing uncertainty caused by weakening pandemic dynamics towards end of the year. Global real GDP growth is projected at 5.6% in 2021.

In Europe, the economy rebounded from the pandemic recession faster than initially expected. Domestic demand was strong, and the reopening of the economy made good progress. Global supply-chain bottlenecks and disruptions also weighed on activity in Europe, particularly in integrated manufacturing sector. In addition, the sharp increase in energy prices impacted on consumption and investments. Economic growth in Europe is projected at 5.6% in 2021.

In the US, accumulated savings, federal stimulus and wage growth provided strong support for economic recovery. Nevertheless, expansion faced mounting headwinds as worker shortages, disruptions in the supply of raw materials and container ship backups threatened to slow down recovery. Economic growth in the US is projected at 5.7% in 2021.

China's economy swiftly rebounded in 2021 with its best growth since 2011. Industrial output, construction and foreign trade surpassed pre-pandemic levels in spite of the power shortages that hit the country's manufacturing and industrial activities during H2. Growth lagged in retail sales and service industries. Private consumption continued to be impacted by the pandemic due to the increase in household saving and lockdowns limiting opportunities to spend. In China, economic growth is projected at 8.1% in 2021.

Multilateral efforts to mitigate and adapt to climate change remained a key global focus and priority. The United Nations Climate Change Conference (COP26) finalised the Paris Agreement to limit the rise in global temperature to 1.5C. However, that goal will not be reached without further action and collaboration between governments, businesses and civil society to deliver on climate goals more quickly. Over 90% of global GDP is now covered by net zero commitments.

In terms of global biodiversity preservation, the drivers of change are largely the same as for climate change mitigation. The year 2021 saw key developments in terms of the global post-2020 biodiversity framework and its expected adoption. Large economies have shown strong aspirations to put biodiversity on a path to recovery and companies are increasingly working to incorporate targets to tackle nature loss into their strategies.

Inflation increased rapidly in many countries, especially in the United States, Germany and some emerging markets. UPM's input costs were significantly higher in comparison with the previous year, most notably in fibre and energy.

The US dollar strengthened against the euro and other major world currencies during 2021. The impact of changing currencies on UPM's businesses was moderate in 2021.

Market demand for UPM's products was good, particularly in Europe and North America, and sales prices increased in most businesses. Demand for graphic papers in Europe increased by 4% from a low comparison period in the previous year. Market prices increased slightly for most paper grades.

The growth in demand for chemical pulp continued good in Europe but slowed in China. The average market prices for both northern bleached softwood (NBSK) and bleached hardwood kraft pulp (BHKP) increased in Europe. In China, market prices reached historic highs in H1 and declined in H2, while remaining at a good level.

Demand for advanced renewable diesel and naphtha continued to be strong in 2021, with continuous growth in demand driven by climate targets. Market prices were at a high level.

Finland's electricity consumption was good in 2021. Electricity sales prices in Finland were at a record high, especially toward the end of the year, due to high commodity and emission allowance prices and the dry hydrological situation in the Nordic market.

The growth of global demand for self-adhesive label materials was healthy, especially in consumer goods and e-commerce-driven labelling. Market prices increased in all main markets.

The growth in demand for label, release and packaging papers was good and market prices increased. In H1 2021, demand for office paper in the Asia-Pacific region was good but in H2, demand became weaker. Market prices for office paper in China increased sharply in H1 but decreased below the long-term average price levels in H2.

Market demand for plywood in Europe was strong. Demand for spruce plywood was driven by high levels of activity in the building and construction industry. Demand for birch plywood was good in panel trading, vehicle flooring and construction-related industrial applications. Market prices increased in many end-uses.

Impact of the COVID-19 pandemic

The COVID-19 pandemic, the related containment measures around the world and rapid changes in the global economy continue to represent significant uncertainty.

Global economy

The COVID-19 pandemic and the related containment measures resulted in a sharp decline in the global economy in 2020. During the first phase of the recession, the pandemic containment measures and lockdowns around the world severely limited or temporarily stopped significant parts of the economy. In 2021, the global economy has started to recover, but it is uncertain how long-lasting the recovery will be. Despite progress with vaccinations, additional waves of the epidemic in different parts of the world remain possible.

The recovery in the global economy from the deep downturn in 2020, combined with the ongoing pandemic have created tightness and disruptions globally in many supply chains, including logistics and energy, causing rising costs and uncertainty on price and availability of many raw materials and energy.

Safety and business continuity

UPM has implemented extensive precautions to protect the health and safety of its employees and to ensure business continuity and the progression of its strategic projects during the pandemic. Despite these efforts, the operation of one or more units or the supply chain and logistics could be temporarily disrupted during the pandemic, the related lockdown measures, or the following economic recovery. In these circumstances some units may need to limit operations or be temporarily shut down.

So far UPM has been able to protect its employees and business continuity well.

Demand for UPM products

Many of UPM's products serve essential everyday needs and have therefore seen resilient demand during the crisis. These products include pulp, specialty papers and self-adhesive label materials. However, even in these businesses, demand is influenced by general economic activity.

Demand for graphic papers is more prone to be impacted by the lockdowns and economic cycles. The lockdowns limit a wide range of consumer-driven services and retail, as well as work at the office. This has had a negative impact on printed advertising and graphic paper demand during the pandemic.

The lockdowns and the level of economic activity may also influence demand for electricity, plywood and sawn timber.

In Q2 2020, graphic paper demand in Europe decreased by 32% from the previous year, as particularly advertising-driven paper consumption and office paper demand being impacted by the lockdowns across Europe. These impacts moderated to some extent as the year progressed, and graphic paper demand decreased by 18% in Q3 2020 and by 14% in Q4 2020 year-on-year. During Q1 2021 the pandemic and the related containment measures continued to impact the business environment, and graphic paper demand decreased by 14% from last year. In Q2 2021, as economies in Europe started to gradually open, graphic paper demand increased by 28% from the low comparison base in previous year. In Q3 2021, demand grew by 6% and in Q4 2021 by 4% from the previous year.

Pulp demand has held up relatively well, supported by good demand for tissue and hygiene products as well as for some packaging and specialty paper products. Pulp consumption in graphic paper production decreased in 2020, but improved in 2021.

Demand for self-adhesive label materials and specialty papers has grown during the pandemic, as consumers have shifted some of their spending from away-from-home categories to packaged daily consumer goods. E-commerce has continued to grow, supporting some labelling and specialty paper applications. Demand for self-adhesive labels in Europe grew by 7% in Q1 2020 and 9% in Q2 2020 year-on-year, decreased by 4% in Q3 2020 due to destocking in the customer value chain, and resumed growth at 6% in Q4 2020. Demand for self-adhesive labels in Europe increased in Q1 2021 by 1% and in Q2 2021 by 9%. In Q3 2021, demand grew by 15% from last year and in Q4 by 3%, somewhat impacted by the supply chain constraints.

Adjusting to different scenarios

The potential impacts on UPM are likely to differ by business and phase and waves of the pandemic, lockdown measures, changes in consumer behaviour, and the recession and recovery thereof. UPM has used shift arrangements, temporary layoffs, or reduced working hours as required to adjust its operations in different scenarios. During Q3 2020, the company also announced plans to permanently reduce graphic paper production capacity and other plans to improve cost efficiency in different businesses and functions. The UPM Kaipola paper mill was closed in January 2021.

Projects and maintenance shutdowns

The pandemic and the required health and safety measures add challenges to large investment projects and maintenance shutdowns. UPM's transformative pulp project in Uruguay and biochemicals project in Germany are proceeding with strict health and safety controls. Despite these efforts, some changes to the detailed timeline and costs of the projects are possible during the pandemic, the related containment measures, or due to the tight global logistics and supply chains.

In April 2020 TVO announced that fuel loading into the OL3 reactor would not happen as originally planned in June 2020. TVO announced an updated schedule in August 2020, and the fuel loading was completed in April 2021.

UPM rescheduled two pulp mill maintenance shutdowns from Q2 2020 to Q4 2020 due to the pandemic. Both shutdowns were successfully completed in Q4 with strict health and safety controls. For 2021, UPM rescheduled the maintenance shutdown at the UPM Kymi pulp mill from Q2 2021 to Q4 2021.

Financing
UPM's financial position is strong. UPM's net debt was EUR 647 million at the end of 2021. Cash funds and unused committed credit facilities totalled EUR 2.5 billion at the end of 2021. This includes the sustainability-linked EUR 750 million committed syndicated revolving credit facility of which EUR 50 million is maturing in 2025 and EUR 700 million is maturing in 2026 and EUR 159 million equivalent rolling overdraft facility. During Q4 2020, UPM successfully issued a EUR 750 million Green Bond under its EMTN (Euro Medium Term Note) programme. A second EUR 500 million Green Bond was issued in Q1 2021. The facilities and UPM's outstanding debt have no financial covenants.

Key figures

	2021	2020	2019
Sales, EURm	9,814	8,580	10,238
Comparable EBITDA, EURm	1,821	1,442	1,851
% of sales	18.6	16.8	18.1
Operating profit, EURm	1,562	761	1,344
Comparable EBIT, EURm	1,471	948	1,404
% of sales	15.0	11.1	13.7
Profit before tax, EURm	1,548	737	1,307
Comparable profit before tax, EURm	1,457	924	1,367
Profit for the period, EURm	1,307	568	1,073
Comparable profit for the period, EURm	1,204	737	1,119
Earnings per share (EPS), EUR	2.41	1.05	1.99
Comparable EPS, EUR	2.22	1.37	2.07
Return on equity (ROE), %	12.7	5.8	10.7
Comparable ROE, %	11.7	7.5	11.2
Return on capital employed (ROE), %	12.4	6.7	12.3
Comparable ROCE, %	11.7	8.3	12.8
Operating cash flow, EURm	1,250	1,005	1,847
Operating cash flow per share, EUR	2.34	1.89	3.46
Equity per share at the end of period, EUR	20.34	17.53	18.87
Capital employed at the end of period, EURm	13,759	11,555	11,474
Net debt, EURm	647	56	-453
Net debt to EBITDA	0.35	0.04	-0.24
Personnel at the end of period	16,966	18,014	18,742

» Refer Other financial information Alternative performance measures for definitions of key figures.

Results

2021 compared with 2020
Sales in 2021 were EUR 9,814 million, 14% higher than the EUR 8,580 million for 2020. Sales increased in all business areas, driven by higher sales prices and delivery volumes.

Comparable EBIT increased by 55% to EUR 1,471 million, 15.0% of sales (948 million, 11.1%).

Sales prices increased for UPM Biorefining, UPM Energy, UPM Specialty Papers, UPM Raflatac and UPM Plywood and decreased for UPM Communication Papers.

Variable costs increased in all business areas, especially in UPM Communication Papers, UPM Specialty Papers and UPM Raflatac. At the group level, the positive impact of higher sales prices more than offset the negative impact of higher variable costs.

Delivery volumes were higher in all business areas. Fixed costs decreased by EUR 2 million. Costs in the comparison period were reduced by temporary measures to adjust to the COVID-19 pandemic. The industry-wide strike in Finland impacted both delivery volumes and fixed costs in Q1 2020.

Depreciation, excluding items affecting comparability, totalled EUR 463 million (471 million) including depreciation of leased assets totalling EUR 74 million (73 million). The change in the fair value of forest assets net of wood harvested was EUR 111 million (-25 million).

Operating profit totalled EUR 1,562 million (761 million). Items affecting comparability in operating profit totalled EUR 91 million in the period (-187 million), including the EUR 133 million gain on the sale of Shotton Mill Ltd in UPM Communication Papers business area and EUR 50 million impairment charges of newsprint related assets. In 2020, Items affecting comparability in operating profit included EUR 90 million in restructuring charges related to the closure of the UPM Kaipola paper mill, EUR 85 million in restructuring charges related to closure of the UPM Chapelle paper mill, EUR 23 million in restructuring charges related to the closure of the Jyväskylä plywood mill, EUR 6 million in charges related to the restructuring of the functions of UPM Communication Papers, EUR 9 million in charges related to restructuring of the functions of UPM Raflatac, earnings of EUR 12 million on the sale of the group's share in Kainuun Voima Oy and earnings of EUR 11 million on the sale of other non-current assets.

Net interest and other finance income and costs were EUR -12 million (-26 million). The exchange rate and fair value gains and losses were EUR -3 million (2 million). Income taxes totalled EUR -240 million (-169 million).

Profit for 2021 was EUR 1,307 million (568 million), and comparable profit was EUR 1,204 million (737 million).

Financing and cash flow

In 2021 cash flow from operating activities before capital expenditure and financing totalled EUR 1,250 million (1,005 million). Working capital increased by EUR 115 million (93 million).

Net debt was EUR 647 million at the end of 2021 (56 million). The gearing ratio as of 31 December 2021 was 6% (1%). The net debt to EBITDA ratio, based on the last 12 month's EBITDA, was 0.35 at the end of the period (0.04).

On 31 December 2021 UPM's cash funds and unused committed credit facilities totalled EUR 2.5 billion. This includes the sustainability-linked five-year EUR 750 million revolving credit facility signed in Q1 2020 and the EUR 159 million equivalent rolling overdraft facility.

On 13 November 2020 UPM issued a EUR 750 million Green Bond and on 15 March 2021 a EUR 500 million Green Bond under its EMTN (Euro Medium Term Note) programme.

A dividend of EUR 1,30 per share (totalling EUR 693 million) was paid on 12 April 2021 for the 2020 financial year.

Capital expenditure

In 2021, capital expenditure totalled EUR 1,483 million, which was 15.1% of sales (903 million, 10.5% of sales). Capital expenditure does not include additions to leased assets.

In 2022, UPM's total capital expenditure, excluding investments in shares, is expected to be about EUR 1,500 million, which includes estimated capital expenditure of approximately EUR 1,300 million in transformative projects. Transformative projects consist of the new pulp mill, port operations, local investments outside the mill fence in Uruguay and the biochemicals biorefinery in Germany.

In January 2019, UPM announced that it would invest in the refurbishment of the 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.

In July 2019, UPM announced that it would invest in a 2.1 million tonne greenfield eucalyptus pulp mill near Paso de los Toros, central Uruguay. Additionally, UPM will invest in port operations in Montevideo and in local investments outside the mill fence. The updated schedule for the start-up of the mill is by the end of Q1 2023, and the total investment estimate is USD 3.47 billion.

In October 2019, UPM announced that it would invest EUR 95 million in a Combined Heat and Power (CHP) plant at the UPM Nordland paper mill in Germany. The plant is planned to go on grid in Q3 2022. The annual cost savings of more than EUR 10 million will begin in 2023. The investment is estimated to decrease UPM's CO_2-footprint by 300,000 tonnes.

In January 2020, UPM announced that it would invest EUR 550 million in a 220,000 tonnes next-generation biochemicals biorefinery in Leuna, Germany. The updated schedule for the start-up of the facility is by the end of 2023.

In December 2021, UPM announced that it is investing EUR 10 million in the development of UPM Plywood's plywood mill in Joensuu, Finland. The investment includes new production lines, new workspaces and 720 square metres of completely new production space.

Personnel

In 2021, UPM had an average of 17,512 employees (18,557). At the beginning of the year the number of employees was 18,014 and at the end of 2021 it was 16,966.

Further information about personnel is available in ***» Our People*** *section in UPM Annual report 2021.*

Uruguay pulp mill investment

On 23 July 2019, UPM announced that it would invest USD 2.72 billion in a 2.1 million tonne greenfield eucalyptus pulp mill near Paso de los Toros, central Uruguay. Additionally, UPM would invest approximately USD 280 million in port operations in Montevideo and USD 70 million in local investments outside the mill fence, including a new residential area in Paso de los Toros. In May 2020, an electrical grid reinforcement investment of USD 70 million was added to the scope of the project to fully utilize and sell the surplus energy of the mill.

The investment will grow UPM's current pulp capacity by more than 50%, resulting in a step change in the scale of UPM's pulp business as well as in UPM's future earnings.

With a combination of competitive wood supply, scale, best available techniques and efficient logistics, the mill is expected to reach a highly competitive cash cost level of approximately USD 280 per delivered tonne of pulp. This figure includes the variable and fixed costs of plantation operations, wood sourcing, mill operations and logistics delivered to the main markets. Furthermore, the safety and sustainability performance of the value chain from plantations to customer delivery is expected to be on an industry-leading level.

Competitive wood supply
Eucalyptus availability for the mill is secured through UPM's own and leased plantations, as well as through wood sourcing agreements with private partners. The plantations that UPM owns and leases in Uruguay cover 466,000 hectares. They will supply the current UPM Fray Bentos mill and the new mill near Paso de los Toros.

State of the art mill design

The pulp mill has been designed as an efficient single-line operation. The machines, materials, level of automation and standards enable a high operating rate and maintainability, as well as a high energy output. This ensures excellent safety, high environmental performance, and low operating costs during the long lifecycle of the mill.

The mill is designed to fully meet strict Uruguayan environmental regulations, as well as international standards and recommendations for modern mills, including the use of the latest and best available technology (BAT). The mill's environmental performance will be verified through comprehensive and transparent monitoring.

The mill's initial annual production capacity is 2.1 million tonnes, and the environmental permits enable further capacity potential. When in operation, the mill generates more than 110 MW surplus of renewable electricity.

Efficient logistics set-up

An efficient logistics chain will be secured by the agreed road improvements, extensive railway modernisation and port terminal construction.

The Public-Private-Partnership agreement between the government and the construction company for the construction of the central railway was signed in May 2019. Works on the central railway are proceeding, but the overall rail project is delayed, and the railway is scheduled to start operations in May 2023. UPM has a contingency plan in place to ensure logistics with truck transportation during this delay.

UPM is proceeding with the construction of a deep-sea pulp terminal at Montevideo port with an investment of approximately USD 280 million. Direct rail access from the mill to a modern deep-sea port terminal creates an efficient supply chain to world markets. The Montevideo deep-sea port also enables synergies in ocean logistics with UPM's existing Uruguay operations.

UPM entered into a port terminal concession agreement in 2019 and signed an agreement on rail logistics services in October 2020. Both agreements are considered in accordance with IFRS 16 Leases. The total amount of such lease payments is expected to be USD 200 million.

Significant impact on the Uruguayan economy

Based on independent socioeconomic impact studies, the mill is estimated to increase Uruguay's gross national product by about 2% and the annual value of Uruguay's exports by approximately 12% after completion.

In the most intensive construction phase, more than 6,000 people will be working on the site. When completed, approximately 10,000 permanent jobs are estimated to be created in the Uruguayan economy of which approximately 4,000 would involve direct employment by UPM and its subcontractors. About 600 companies are estimated to be working in the value chain.

The mill will be located in one of Uruguay's many free trade zones and will pay a fixed annual tax of USD 7 million. The mill's value chain is expected to contribute USD 170 million in annual taxes and social security payments and to contribute USD 200 million annually in wages and salaries.

Project schedule and capital outflow

The mill was originally scheduled to start up in the second half of 2022. The successive waves in the pandemic and tight global supply chains have caused some challenges to the project. Hence, the start-up schedule has been updated to take place by the end of Q1 2023, and the total investment estimate has been increased by 10% to USD 3.47 billion.

More than 6,000 people are currently working on the project at the various construction sites. Strict COVID-19 protocols have been maintained at all UPM's construction sites.

At the pulp mill site in Paso de los Toros, the installation phase with mechanical erection continues to progress in all main process areas and EIA erection works have started. Majority of large civil works have been completed. Power boiler pressure test was done successfully in December. Commissioning works will proceed in the coming months.

Large scale cargo transfers from the UPM Fray Bentos port to the new mill site continue and include the transports of the machinery, equipment, and structures necessary for the construction of the UPM Paso de los Toros mill.

A large part of the pulp terminal area in Montevideo has been completed, including the structure and roofing of the pulp warehouse – an area of 50,000 square meters. The unloading lines for the railway were also completed and construction of railway has continued. Piping, pipe bridge, auxiliary machinery and electrical installation work continues on the port basin.

The total capital expenditure of USD 3.47 billion will take place in 2019-2023, with 2021 and 2022 being the most intensive years. UPM will hold 91% ownership of the project and a local long-term partner which has also been involved in UPM Fray Bentos, owns 9%. UPM's investment will mainly be financed from operating cash flow complemented by regular group financing activities.

Biochemicals refinery investment

On 30 January 2020 UPM announced that it would invest EUR 550 million in a 220,000 tonnes next-generation biochemicals refinery in Leuna, Germany. Originally, the biorefinery was scheduled to start up by the end of 2022. However, the pandemic has slowed down the completion of the detailed engineering in Leuna. Disruptions to global supply chains have affected both the availability and costs of critical construction materials. Hence the start-up schedule has been updated to take place by the end of 2023. The capital expenditure estimate will be updated in due course.

The biorefinery will produce a range of 100% wood-based biochemicals, which will enable a switch from fossil raw materials to sustainable alternatives in various consumer-driven end-uses. The investment opens up totally new markets for UPM, with large growth potential for the future.

The industrial scale biorefinery will convert solid wood into next generation biochemicals: bio-monoethylene glycol (BioMEG) and renewable functional fillers. In addition, the biorefinery will produce bio-monopropylene glycol (BioMPG) and industrial sugars. Once the facility is fully ramped up and optimized, it is expected to achieve the ROCE target of 14%.

A combination of sustainable wood supply, a unique technology concept, integration into existing infrastructure at Leuna as well as the proximity to customers will ensure the competitiveness of operations. The safety and sustainability of the value chain will be based on UPM's high standards.

InfraLeuna GmbH, in the state of Saxony-Anhalt, offers very competitive conditions for constructing a biorefinery with its logistics arrangements and infrastructure for various services and utilities. In October 2020, UPM entered into service agreements with InfraLeuna GmbH related to wood handling, wastewater treatment and other utilities, which will be recognised as lease assets and liabilities under IFRS 16 Leases upon the commencement date. The total amount of such lease assets and liabilities is estimated to be EUR 100 million.

Construction at biorefinery-site in Leuna continues and we have now started erecting the overground structures. Permitting has proceeded in accordance with German legislation.

Commercial activities continue to proceed positively in different product and application areas. After the launch of UPM BioMotion™ Renewable Functional Fillers (RFF) in October, joint product development activities with potential customers in the rubber value chain have progressed further as have discussions with OEMs, especially in the automotive sector, with promising results regarding both technical and commercial viability of our product. We made further progress in taking renewable monoethylene glycols (bMEG) to market, advancing sales capabilities and also in this category extending pre-commercial discussions with potential customers as well as end-users in packaging, textile and automotive end-uses.

The environmental benefits of the UPM Biorefinery and the UPM Biochemicals portfolio continue being publicly acknowledged with nominations as finalist for the German Sustainability Award and the Chemical Week's sustainability awards and an improved sustainability ranking in the European Rubber Journal.

Research and development facilities on site in Leuna are being extended and application development centres for rubber and glycols are now operational. The hiring process for the operations teams has progressed and we have started a comprehensive training and simulation programme for our new operations teams based on the Digital Twin solution of biorefinery and its processes.

Biofuels business development

In January 2021, UPM announced that it moves forward with biofuels growth plans and starts the basic engineering phase of a next generation biorefinery. The potential biorefinery would have an annual capacity of 500,000 tonnes of high-quality renewable fuels including sustainable jet fuel. The products would significantly reduce the carbon footprint of road transport and aviation, as well as replace fossil raw materials with renewable alternatives in chemicals and bioplastics. In the feedstocks, wood biomass-based residues and side streams play a substantial role. In addition, it would use sustainable liquid waste and residue raw materials.

UPM is proceeding with a detailed commercial and basic engineering study to define the business case, select an innovative technology option and sustainable feedstock mix and estimate the investment need.

During the study UPM has completed site assessments in two locations: Kotka, Finland and Rotterdam, the Netherlands. Work continues in Rotterdam, where the operating environment is more favourable for the biofuels business.

If all preparations are concluded successfully, UPM would initiate the company's standard procedure of analysing and preparing an investment decision. Due to the current challenging investment environment for new major projects like this, further decisions are not planned before the end of 2022.

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 (Supplier), is constructing OL3 as a turnkey project.

The start of regular electricity production, originally scheduled for April 2009, has been revised several times by the Supplier.

As announced by TVO, fuel loading of OL3 was completed in early April 2021. On 16 December 2021 TVO announced, that the Radiation and Nuclear Safety Authority in Finland (STUK) had granted the permission for making the OL3's reactor critical and conducting lower power tests. The electricity production of OL3 is scheduled to start at in February 2022, and the regular electricity production in June 2022. On 21 December 2021, TVO announced that OL3's reactor started up, i.e. the first criticality of OL3 was reached.

As announced by TVO earlier, Areva, the Supplier party, was preparing a financial solution to ensure necessary funding to complete the OL3 project. TVO and the Supplier also negotiated on the terms of completing the OL3 project. On 17 May 2021 TVO announced that TVO and the Supplier reached a consensus in their negotiations regarding the main principles of the OL3 project completion. The agreements regarding the amendments to the Global Settlement Agreement of 2018 entered into force on 13 July 2021.

When completed, OL3 will supply electricity to its shareholders on a cost-price principle (Mankala-principle) which is widely applied in the Finnish energy industry. Under the Mankala-principle electricity and/or heat is supplied to shareholders in proportion to 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.

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 TVO will have a secure solution for the final disposal of used fuel.

Events during the year 2021

On 19 January, UPM announced that it would invest EUR 13 million in UPM Raflatac's new production line in Nowa Wieś, Poland. The investment will increase UPM Raflatac's Direct Thermal (DT) Linerless annual production capacity by 100 million m2. The start-up of the new production line was at the end of 2021.

On 28 January, UPM announced that it moves forward with biofuels growth plans and starts the basic engineering phase of a next generation biorefinery.

On 17 February, UPM announced that it has joined The Climate Pledge, a cross-sector community of world-class companies working together to crack the climate crisis and to decarbonise our economy. These companies are committed to reach the targets of the Paris Agreement well in advance.

On 15 March, UPM announced that it has issued a new EUR 500 million Green Bond under its EMTN (Euro Medium Term Note) programme and its Green Finance Framework. The bond matures in March 2031 and pays a fixed coupon of 0.50%.

On 19 March, UPM announced that it has applied for listing of a EUR 500 million Green Bond under its Euro Medium Term Note (EMTN) programme on the Irish Stock Exchange plc, trading as Euronext Dublin.

On 25 March, UPM announced that UPM Timber has completed the employee consultation process that started in early February regarding its plans to improve profitability and strengthen competitiveness. Based on the negotiations, the number of positions at UPM Timber will decrease by 43. In addition, the small log line at the Kaukas sawmill will be closed by the end of June 2021 and the operating model of the Korkeakoski sawmill will be optimised.

On 26 March, the Radiation and Nuclear Safety Authority (STUK) gave a fuel loading permit for the OL3 EPR unit.

On 27 March, the fuel loading of the OL3 EPR unit started.

On 30 March, UPM held its Annual General Meeting.

On 14 April, UPM announced that it aims to increase the efficiency of its global functions by reorganising and streamlining operations in Finland, Germany, and Austria. The employee consultation process was completed in Finland in June and in Germany and Austria in July. As a result, the number of employments will decrease by 35.

On 15 April, UPM announced that it has improved its outlook for 2021.

On 27 April, Emma FitzGerald was appointed as the fourth member of UPM's Audit Committee.

On 7 May, UPM received a rating of AAA in the MSCI ESG Ratings assessment.

On 14 May, UPM announced that is has signed an agreement to sell its Shotton newsprint mill site in North Wales, United Kingdom and all related assets to Eren Paper Ltd.

On 29 June, UPM announced that UPM Raflatac has completed its employee consultation processes. As a result, the number of positions at UPM Raflatac will decrease by 129.

On 6 July, global sustainability ratings provider EcoVadis recognised UPM on the highest possible Platinum level for its responsible performance in 2021. The assessment is based on UPM's performance as a supplier.

On 20 September, UPM announced that it has been recognised as one of the world's 37 most sustainable companies by the UN Global Compact. UPM has had LEAD status since 2016.

On 30 September, UPM announced that the transaction of UPM Shotton newsprint mill was closed and newsprint production has ended. The gain on sale of the mill amounted to EUR 133 million.

On 12 October, UPM announced that European Commission's competition authorities had started an unannounced inspection at UPM's premises. The Commission has concerns that the inspected companies in the wood pulp sector may have violated EU antitrust rules that prohibit cartels and restrictive business practices.

On 15 October, UPM announced that it has signed an agreement to sell its Chapelle Darblay newsprint mill in Grand-Couronne, France, site to a consortium of two partners Samfi and Paprec France SAS. UPM has permanently ceased production at its Chapelle newsprint mill in June 2020.

On 18 October, UPM announced that it has sold the Kaipola mill site in Jämsä, Finland, to Kaipola Green Port Oy. UPM closed the Kaipola paper mill permanently in January 2021.

On 15 November, UPM announced that it has been listed in the Dow Jones European and World Sustainability Indices (DJSI) for 2021-2022 as the only company in its industry.

On 7 December, UPM announced that it has been recognized with a CDP 'A' score for its sustainable forestry operations.

On 13 December, UPM announced that it is investing EUR 10 million in the development of UPM Plywood's plywood mill in Joensuu, Finland. The investment includes new production lines, new workspaces and 720 square meters of completely new production space.

On 14 December, UPM announced that the Finnish Paperworkers' Union has issued a strike announcement to UPM, declaring a three week's strike to all work under the expiring paper industry collective agreement at UPM.

On 21 December, the OL3 EPR unit started up.

Events after the balance sheet date

On 1 January, UPM announced that members of the Paperworkers' Union, the Finnish Electrical Workers' Union and the Trade Union Pro have started strikes at UPM mills in Jämsänkoski, Kouvola, Lappeenranta, Pietarsaari, Rauma, Tampere and Valkeakoski. UPM businesses falling under the strikes in Finland are UPM Pulp, UPM Biofuels, UPM Communication Papers, UPM Specialty Papers and UPM Raflatac. According to the unions, the strikes would continue until 22 January 2022 unless a new collective labour agreement is reached before that. The duration of the strike has since been extended twice (on 5 January and 20 January) by the Paperworker's union and currently is due to last until 19 February 2022, unless new agreements are reached before that.

Outlook for 2022

UPM's earnings recovered to the strong pre-pandemic level in 2021 and overall, 2022 is expected to be another good year for the company.

There are significant uncertainties in the outlook for 2022, related to the ongoing pandemic, continuation of the global economic recovery, the unusual energy market situation, tight raw material supply chains and the labour negotiations in Finland.

Good demand is expected to continue for most UPM products in 2022. In the early part of the year, production and earnings are affected by the strike at the Finnish units of UPM Pulp, UPM Biofuels, UPM Raflatac, UPM Specialty Papers and UPM Communication Papers.

Sales prices for many UPM products are expected to increase in the beginning of 2022, most notably the graphic and specialty paper prices. Sales prices for pulp and energy are expected to continue on good levels in the early part of the year.

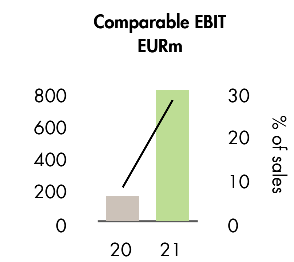
Many variable cost items are expected to increase in 2022 or stay at elevated level. UPM will continue to manage margins with product pricing, optimising its product and market mix, efficient use of assets as well as by taking measures to improve variable and fixed cost efficiency.

UPM's comparable EBIT in H1 2022 is expected to be on similar level compared to H1 2021.

Business area reviews

UPM Biorefining

UPM Biorefining consists of pulp, timber and Biofuels businesses. UPM Pulp offers a versatile range of pulp grades suitable for a wide range of end uses. UPM Timber offers certified sawn timber and 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 the petrochemical industry.



	2021	2020
Sales, EURm	2,945	2,183
Comparable EBITDA, EURm	1,016	348
% of sales	34.5	15.9
Change in fair value of forest assets and wood harvested, EURm	-9	-8
Share of results of associates and joint ventures, EURm	2	2
Depreciation, amortisation and impairment charges, EURm	-191	-176
Operating profit, EURm	817	166
% of sales	27.8	7.6
Items affecting comparability in operating profit, EURm	–	–
Comparable EBIT, EURm	817	166
% of sales	27.8	7.6
Capital employed (average), EURm	4,437	3,620
Comparable ROCE, %	18.4	4.6
Pulp deliveries, 1,000 t	3,724	3,664

2021 compared with 2020

Comparable EBIT increased due to significantly higher pulp and timber sales prices.

The average price in euro for UPM's pulp deliveries increased by 35%.

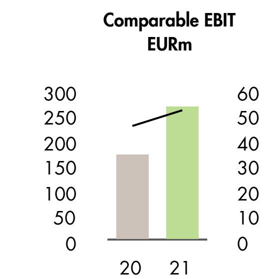
Market environment

- In China, chemical pulp demand growth was slowing down in 2021 though showing some improvement at the end of the year. In Europe, demand was good.
- In 2021, the average European market price in euro was 37% higher for NBSK and 44% higher for BHKP, compared with 2020. In China, the average market price in US dollars was 46% higher for NBSK and 42% higher for BHKP, compared with 2020.
- Strong demand for advanced renewable diesel and naphtha.
- In 2021, demand for sawn timber was strong in 2021. Market prices were at a high level.

Sources: FOEX, UPM

UPM Energy

UPM Energy generates cost-competitive, zero-carbon electricity. Operations also include physical electricity and financial portfolio management as well as services to industrial electricity consumers and producers.



	2021	2020
Sales, EURm	526	379
Comparable EBITDA, EURm	277	178
% of sales	52.7	47.0
Depreciation, amortisation and impairment charges, EURm	-7	-10
Operating profit, EURm	270	184
% of sales	51.3	48.7
Items affecting comparability in operating profit, EURm [1]	0	14
Comparable EBIT, EURm	270	171
% of sales	51.3	45.0
Capital employed (average), EURm	2,375	2,313
Comparable ROCE, %	11.4	7.4
Electricity deliveries, GWh	9,300	9,168

[1] In 2020 items affecting comparability include EUR 3 million charges related to restructuring of ownership in Alholmens Kraft power plant, EUR 12 million gain on sale of group's share in Kainuun Voima Oy and EUR 5 million income relating to reversal of unused restructuring provisions.

2021 compared with 2020

Comparable EBIT increased due to higher electricity sales prices. Nuclear power generation was lower due to longer maintenance breaks in 2021.

UPM's average electricity sales price increased by 43% to EUR 52.1/MWh (36.5/MWh).

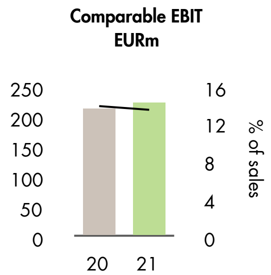
Market environment

- The Nordic hydrological balance was below normal at the end of December. In Finland, the hydrological situation was close to normal.
- The CO_2 emission allowance price of EUR 80.1/tonne at the end of 2021 was significantly higher than at the end of 2020 (EUR 32.7/tonne).
- The average Finnish area spot price on the Nordic electricity exchange in 2021 was EUR 72.3/MWh, 158% higher than in 2020 (28.0/MWh).

Sources: The Norwegian Water Resources and Energy Directorate, Svensk Energi, Finnish Environment Institute, Nord Pool, NASDAQ OMX, Bloomberg, UPM

UPM Raflatac

UPM Raflatac offers innovative and sustainable self-adhesive label materials for branding and promotion, information and functional labelling in the food, beverage, personal care, pharmaceutical and logistics segments, for example.



	2021	2020
Sales	1,671	1,560
Comparable EBITDA, EURm	259	252
% of sales	15.5	16.2
Depreciation, amortisation and impairment charges, EURm	-36	-39
Operating profit, EURm	222	205
% of sales	13.3	13.2
Items affecting comparability in operating profit, EURm [1]	-1	-9
Comparable EBIT, EURm	223	214
% of sales	13.3	13.7
Capital employed (average), EURm	553	542
Comparable ROCE, %	40.2	39.5

[1] Items affecting comparability include restructuring charges.

2021 compared with 2020

Comparable EBIT increased due to improved mix and margin management. Variable costs were higher.

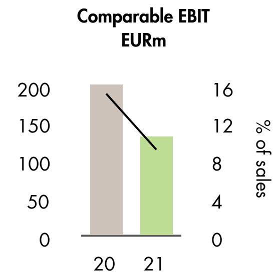
Market environment

- Global demand for self-adhesive label materials continued healthy in 2021. However, supply constraints towards end of the year hold back market growth somewhat.
- In Asia, demand was particularly strong in H1 2021. In H2, demand was softening.
- In Europe and in the Americas, the robust demand growth continued from the previous year.

Sources: UPM, FINAT, TLMI

UPM Specialty Papers

UPM Specialty Papers offers labelling and packaging materials as well as office and graphic papers for labelling, commercial siliconising, packaging, office use and printing.



	2021	2020
Sales	1,482	1,324
Comparable EBITDA, EURm	209	273
% of sales	14.1	20.6
Depreciation, amortisation and impairment charges, EURm	-75	-73
Operating profit, EURm	135	206
% of sales	9.1	15.5
Items affecting comparability in operating profit, EURm [1]	–	6
Comparable EBIT, EURm	135	199
% of sales	9.1	15.0
Capital employed (average), EURm	864	897
Comparable ROCE, %	15.6	22.2
Paper deliveries, 1000 t	1,658	1,596

[1] 2020 items affecting comparability include gains on sale of non-current assets.

2021 compared with 2020

Comparable EBIT decreased due to higher input costs. Sales prices increased and delivery volumes were higher.

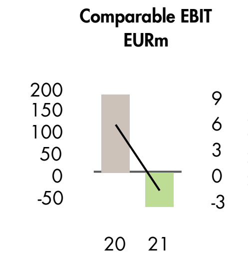
Market environment

- Global demand for label, release and packaging paper was good in 2021. Demand was driven by fast moving consumer goods and e-commerce. Market prices increased.
- In H1 2021, fine paper demand in the Asia-Pacific region was good but in H2 2021 demand became weaker.
- In H1 2021, fine paper market prices in China increased sharply from the previous year. However, in H2 2021 market prices decreased below long-term average price levels.

Sources: UPM, RISI, Pöyry, AWA

UPM Communication Papers

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



	2021	2020
Sales	3,577	3,333
Comparable EBITDA, EURm	23	300
% of sales	0.6	9.0
Share of results of associates and joint ventures, EURm	0	0
Depreciation, amortisation and impairment charges, EURm	-155	-179
Operating profit, EURm	14	9
% of sales	0.4	0.3
Items affecting comparability in operating profit, EURm [1]	93	-170
Comparable EBIT, EURm	-79	180
% of sales	-2.2	5.4
Capital employed (average), EURm	1,275	1,446
Comparable ROCE, %	-6.2	12.4
Paper deliveries, 1000 t	5,828	5,466

[1] 2021 items affecting comparability include gain on sale of Shotton Mill Ltd EUR 133 million, impairment charges of newsprint fixed assets EUR 50 million, gain on sale of non-current assets EUR 6 million and restructuring charges EUR 4 million. 2020 items affecting comparability include EUR 74 million restructuring charges and EUR 11 million impairment charges related to closure of Chapelle mill in France, EUR 43 million restructuring charges and EUR 47 million impairment charges relating to closure of Kaipola mill in Finland. EUR 6 million charges relate to restructuring of business functions and EUR 11 million income to prior capacity closures.

2021 compared with 2020

Comparable EBIT decreased due to higher variable costs and lower sales prices. Delivery volumes were higher as the comparison period was impacted by the COVID-19 pandemic and related lockdown measures. Fixed costs decreased.

The average price in euro for UPM's paper deliveries decreased by 1%.

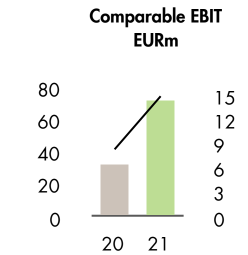
Market environment

- In 2021, demand for graphic papers in Europe was 4% higher than in 2020. Newsprint demand decreased by 1%, magazine papers increased by 1% and fine papers increased by 10% compared to 2020.
- In 2021, publication paper prices in Europe remained unchanged and fine paper prices were 1% higher compared to 2020.
- In 2021, demand for magazine papers in North America is estimated to have increased by 1% compared to 2020. The average price in US dollars for magazine papers increased by 11% compared to 2020.

Sources: PPI/RISI, Euro-Graph, PPPC

UPM Plywood

UPM Plywood offers high quality WISA® plywood and veneer products for construction, vehicle flooring, LNG shipbuilding, parquet manufacturing and other industrial applications.



	2021	2020
Sales	492	405
Comparable EBITDA, EURm	99	59
% of sales	20.0	14.6
Depreciation, amortisation and impairment charges, EURm	-25	-35
Operating profit, EURm	80	10
% of sales	16.2	2.5
Items affecting comparability in operating profit, EURm [1]	8	-23
Comparable EBIT, EURm	72	33
% of sales	14.6	8.0
Capital employed (average), EURm	286	292
Comparable ROCE, %	25.1	11.2
Plywood deliveries, 1,000 m3	738	683

[1] In 2021 items affecting comparability include EUR 6 million restructuring charges reversals and EUR 1 million impairment reversals related to Jyväskylä plywood mill closure in 2020. In 2020, items affecting comparability include EUR 15 million restructuring charges and EUR 8 million impairment charges related to closure of Jyväskylä plywood mill in Finland.

2021 compared with 2020

Comparable EBIT increased due to higher sales prices and delivery volumes. Variable and fixed costs were higher. The comparison period was impacted by a strike in Finland in Q1 2020.

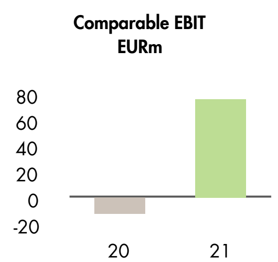
Market environment

- In 2021, demand for spruce plywood was strong, driven by the building and construction industry.
- In 2021, demand for birch plywood was good in panel trading, vehicle flooring and construction-related industrial applications.

Source: UPM

Other operations

Other Operations includes UPM Forest, UPM Biochemicals, UPM Biocomposites and UPM Biomedicals business units as well as group services. UPM Forest secures competitive wood and biomass for UPM businesses and manages UPM-owned and privately-owned forests in North Europe. In addition, UPM Forest offers forestry services to forest owners and forest investors.



	2021	2020
Sales, EURm	280	225
Comparable EBITDA, EURm	-19	34
Change in fair value of forest assets and wood harvested, EURm	120	-17
Share of results of associated companies and joint ventures, EURm	–	1
Depreciation, amortisation and impairment charges, EURm	-25	-30
Operating profit, EURm	75	-15
Items affecting comparability in operating profit, EURm [1]	-1	-3
Comparable EBIT, EURm	76	-12
Capital employed (average), EURm	1,992	1,901
Comparable ROCE, %	3.8	-0.6

[1] In 2021 and 2020, items affecting comparability relate to restructuring charges.

2021 compared with 2020

Comparable EBIT for other operations increased. The change in the fair value of forest assets net of wood harvested was EUR 120 million (-17 million). The increase in the fair value of forest assets was EUR 171 million (63 million). The cost of wood harvested from UPM forests was EUR 51 million (81 million). In 2021, the increase in fair value was impacted by increased forest growth and higher stumpage price estimates used in valuation.

Board of Directors and the Group Executive Team

At the Annual General Meeting held on 30 March 2021, the number of members of the Board of Directors was confirmed as nine instead of the previous ten, and Berndt Brunow, Henrik Ehrnrooth, Emma FitzGerald, Piia-Noora Kauppi, Marjan Oudeman, Martin à Porta, Kim Wahl and Björn Wahlroos were re-elected to the Board. Jari Gustafsson was elected as a new director to the Board. The directors' term of office will end upon the closure of the next AGM.

Björn Wahlroos was re-elected as Chair, and Berndt Brunow as Deputy Chair of the Board of Directors of UPM-Kymmene Corporation at the Board of Directors' constitutive meeting that took place following the Annual General Meeting.

In addition, the Board of Directors elected the chairs and other members to the Board committees from among its members. Kim Wahl was elected to chair the Audit Committee, and Jari Gustafsson and Marjan Oudeman were elected as other committee members. Henrik Ehrnrooth was elected to chair the Remuneration Committee, and Emma FitzGerald and Martin à Porta were elected as other committee members. Björn Wahlroos was re-elected to chair the Nomination and Governance Committee, and Berndt Brunow and Piia-Noora Kauppi were elected as other committee members.

On 27 April 2021, Emma FitzGerald was appointed as the fourth member of UPM's Audit Committee.

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 owned a total of 685,197 (716,348) UPM-Kymmene Corporation shares. These represent 0.13% (0.13%) of the shares and 0.13% (0.13%) of the voting rights. At the end of the year, President and CEO Jussi Pesonen owned 529,549 shares. At the end of the year, the other members of the Group Executive Team owned a total of 688,048 shares.

» Refer Note 3.2 Key management personnel, of the consolidated financial statements 2021 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 2021 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.

Risk management is an integral part of UPM's management system as risk taking is a normal part of business operations. While executing strategies, UPM and its business areas, functions and manufacturing units are exposed to a number of risk and opportunities. Each business area, function and unit is responsible for identifying, measuring and managing of 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.

The Risk Management Committee, chaired by the CFO, is responsible for recommending risk tolerances and profile to the President and CEO and the Strategy Team. The Strategy Team is responsible for aligning risk management priorities, business and risk management strategies and policies.

The Board of Directors, assisted by the Audit Committee, monitors and assesses the effectiveness of the company's risk management systems and oversees the assessment and management of risks related to the company's strategy and operations. The Audit Committee oversees that risk management activities are aligned with the Risk Management Policy, and that risk assessments are used to guide internal audit activities.

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, and financial risks. Risks may also arise from legal proceedings incidental to UPM's operations.

Strategic risks

Uncertainties in the economic and political operating environment

The main short-term uncertainties in UPM's earnings relate to sales prices and delivery volumes of its products, as well as to changes in the main input cost items and currency exchange rates, most of which are affected by uncertainty in the global, regional or local economic and political conditions. Political developments are causing uncertainties to the global economy. Such uncertainties also affect UPM's customers influencing the demand for UPM's products.

Examples of such developments are the trade tensions between the United States, the EU and China, the nature of the relationship between the EU and the UK after its exit from the EU as well as increased geopolitical tensions that may lead to military activity or economic sanctions or export and/or import restrictions that could limit or prevent UPM's business in a country or area. UPM is also exposed to the impacts of certain governmental protection and trade protection measures that safeguard domestic industries and other changes affecting international trade. Restrictions on import and export and other national interests may affect the availability or cost of necessary raw materials, and changes in the international trade agreements. The new variants of the SARS-CoV-2 virus, COVID-19 related containment measures, effectiveness of vaccination programs and the economic downturn or global power struggles continue to cause high uncertainty to global trade, geopolitics or trajectories of economies.

UPM is especially exposed to the economic and political conditions in countries in which UPM has significant production operations and ongoing investment projects, such as Finland, Uruguay and Germany. UPM also has significant production operations in a number of developing markets, such as China and Russia, where 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 them.

Cyclical and highly competitive markets

In all markets UPM operates in, the price level is determined by a combination of demand and supply and an imbalance between them could cause the prices of UPM's products to fluctuate significantly. Imbalances in demand and supply may be caused by factors such as decreases or increases in the end-use demand, changes in customer preferences or a new production capacity entering the market or an old production capacity being closed, all of which may affect both the volume and price level of UPM's products.

Competitor behaviour may also influence the market price development. UPM may, from time to time, experience price pressures from competitors in its main business areas and geographic market areas as well as particularly large fluctuations in operating margins due to this competitive environment.

The majority of UPM's revenue comes from sales of graphic and specialty papers, pulp and label materials, and UPM principally competes with several large multinational paper and forest product companies as well as with numerous regional or more specialised competitors.

Changes in consumer behaviour

Demand for UPM's products may be affected by the introduction of substitute or alternative products. The demand for graphic papers in the mature markets is forecast to continue to decline. This will likely increase the pressure on UPM's graphic paper deliveries and sales prices as well as the scarcity of recycled fibre. The COVID-19 pandemic may further amplify the speed of changes adopted by consumers in consuming and communicating information. Changes in demand could also cause overcapacity in some of UPM's products, affecting the sales prices and deliveries of such products.

Depending on the product area, the shifts in consumer demand may either have a positive or an adverse effect on the consumption of UPM's products. For example, UPM expects that there will continue to be a growing need for renewable and recyclable solutions, which creates various opportunities for UPM and drive demand growth for most of UPM's products. At the same time digitalisation and e-commerce have changed consumer behaviour and resulted in decline in demand for graphic papers for various end uses.

Changes in legislation

UPM is exposed to a wide range of laws and regulations globally. The performance of UPM's businesses, for example the paper, energy, and biofuels businesses, are to a high degree dependent on the regulatory framework for these areas. Changes in regulation, direct and indirect taxation or subsidies, aid, grants or allowances could have a direct effect on UPM's performance and its relative competitiveness, and structurally restrict or exacerbate UPM's ability to compete for raw material.

UPM also operates in industries that are subject to extensive environmental laws and regulations governing, among others, emissions, water quality, energy efficiency, as well as waste handling, recycling and disposal. Environmental laws and regulations have become more stringent and may continue to develop to be even more stringent due to various global, regional and national level regulatory initiatives. As these environmental laws and regulations are amended or as their application or enforcement is changed, additional costs in complying with new and more stringent regulations may be imposed on UPM.

UPM's operations require UPM to obtain multiple environmental permits and other licences from relevant authorities and comply with their terms and conditions. These permits and licences may be subject to modification, renewal or, subject to certain conditions, revocation by the issuing authorities. UPM monitors regulatory changes in order to better adapt to the effects of such changes.

Shareholdings in Pohjolan Voima Oyj

UPM is a shareholder of Pohjolan Voima Oyj (PVO), which is the majority shareholder of Teollisuuden Voima Oyj (TVO). TVO is in the process of constructing a third nuclear power plant unit, OL3 EPR, at the Olkiluoto site (OL3). When completed, OL3 will supply electricity to its shareholders on a cost-price principle (so called 'Mankala-principle') that is widely applied in the Finnish energy industry. Under the Mankala principle, electricity 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. OL3 is expected to increase UPM's electricity generation capacity significantly. 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 (Supplier). Under the plant contract, the consortium companies have joint and several liability for the contractual obligations.

Originally commercial electricity production at OL3 was scheduled to start in April 2009. However, completion of the project has been delayed. Supplier has updated the schedule for the commissioning of OL3 several times.

In March 2018 TVO announced that it had signed a Global Settlement Agreement (the 2018 GSA) with Supplier and the Areva Group parent company, Areva SA, a company wholly owned by the French state. The 2018 GSA concerns the completion of the OL3 project and related disputes and entered into force in late March 2018.

According to TVO, in the 2018 GSA the Supplier consortium companies committed to ensuring that the funds dedicated to the completion of the OL3 project are sufficient and 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.

TVO announced in its Q3 2021 interim report that replenishing the trust was finished according to the terms of the 2018 GSA, but it was replenished according to the amendment agreement which entered into force in July 2021. The additional compensation in accordance with the 2018 GSA has been recorded as EUR 400 million in total which decreases the historical costs of the property, plant and equipment in TVO's balance sheet.

As announced by TVO, the fuel loading of OL3 was completed in April 2021. TVO announced on 16 December 2021, that the Radiation and Nuclear Safety Authority in Finland (STUK) had granted the permission for making the OL3's reactor critical and conducting lower power tests. The electricity production of OL3 is scheduled to start in February 2022, and the regular electricity production in June 2022. On 21 December 2021, TVO announced that OL3's reactor started up, i.e. the first criticality of OL3 was reached.

As announced by TVO earlier, Areva, the Supplier party, was preparing a financial solution to ensure necessary funding to complete the OL3. TVO and Supplier also negotiated on the terms of completing the OL3 project. On 17 May 2021 TVO announced that TVO and Supplier reached a consensus in their negotiations regarding the main principles of the OL3 project completion, and the key matters are:

- Areva companies' trust mechanism, set up in the GSA 2018, is to be replenished with approximately EUR 600 million as of the beginning of January 2021.
- Both TVO and Supplier are to cover their own costs as of July 2021 until end of February 2022.
- In the case that the Supplier consortium companies would not complete the OL3 project until the end of February 2022, they would pay additional compensation for delays, depending on the date of completion.

On June 3, 2021 TVO announced that it had signed agreements regarding amendments to the GSA 2018 with Supplier consortium companies and Areva Group parent company Areva SA. The agreements regarding the amendments to the GSA 2018 entered into force on 13 July 2021, when all related conditions were fulfilled.

The coronavirus pandemic may have significantly added uncertainty to the progress of the project. According to TVO significant arrangements have been made at the OL3 site preventing the coronavirus infections. Despite of coronavirus restrictions, work has been able to continue under special arrangements.

On 16 December 2020 TVO announced that the shareholders of TVO have signed an additional shareholder loan commitment, comprising a total of EUR 400 million new subordinated shareholder loan agreements. According to TVO with the new shareholder loan commitment, TVO prepares to maintain a sufficient liquidity buffer and equity ratio in order to complete the OL3.

TVO announced on April 1, 2021 that S&P Global Ratings (S&P) affirmed its long-term corporate credit rating 'BB' on TVO and changed the outlook from negative to positive.

Further delays to the OL3 project 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 may be higher than the market price of electricity at that time.

Climate change

UPM is exposed to a variety of risks related to climate change. Strategic risks related to climate change include risks concerning competition, markets, customers, products and regulation. For example, unpredictable regulation, subsidies or EU policies and resulting national legislation in EU countries may distort raw material, energy and final product markets and changing costs of greenhouse gas emissions may influence UPM's financial performance. UPM believes that forest, wood-based products and low-carbon energy hold significant value creation potential with respect to renewable and recyclable products.

Other risks related to climate change particularly concern UPM's supply chain as well as the availability and price of major inputs, such as wood and electricity. Climate change may cause exceptional weather events, such as severe storms, floods and draughts, which could, for example, result in unpredictable hydropower availability and wood harvesting conditions. Exceptionally mild winter conditions with a reduced period of frozen soil in the Nordics could affect the harvesting and transport of wood, consequently undermining the stability of raw material supply and potentially increasing the cost of wood. These could also increase the risk of production limitations.

Loss of major customers and industry consolidation

UPM has several major customers, and the largest customer in terms of sales represented approximately 2% of UPM's sales in 2021, and the ten largest customers represented approximately 15% of such sales. Although UPM is not dependent on any specific customer or group of customers, the loss of its major customers, if not replaced on similar terms, could have a material effect on UPM's business. Also, as the size of UPM's customers could increase in connection with industry consolidation, such customers could exert increased bargaining power on all of their suppliers, including UPM. UPM is also exposed to risks related to any deterioration of a major customer group's financial condition.

Product development, innovation and intellectual property rights

Research and product development are an important part of UPM's strategy, particularly with regard to new businesses, such as wood-based biofuels, biochemicals and biomedicals. The return on investment of new or enhanced existing products and solutions may not meet targets or improve UPM's competitiveness.

UPM has a broad patent portfolio that provides value creation potential in the future; however, it also exposes UPM to risks related to the protection and management of intellectual property, including patents and trademarks.

Corporate acquisitions and divestments

UPM's strategy is to grow businesses with strong long-term fundamentals and sustainable competitive advantage. This may result in acquisitions of new businesses or divestments of existing businesses or parts thereof. Carrying out corporate mergers, acquisitions and divestments involves risks relating to the successful implementation of a divestment and the ability to integrate and manage acquired businesses, systems, culture and personnel successfully. In addition, the cost of an acquisition may prove high and/or the anticipated economies of scale or synergies may not materialise. Hidden liabilities of an acquired company (e.g., competition law liabilities) may also constitute a significant risk in relation to potential acquisitions.

UPM may divest operations or assets to focus on strategic areas. Any future divestments may be affected by many factors that are beyond UPM's control, such as the availability of financing to potential buyers, interest rates and acquirers' capacity, and divestments may also expose UPM to indemnity claims. Furthermore, divestments may involve additional costs due to historical and unaccounted liabilities. The profitability of corporate acquisitions and divestments may differ from UPM's expectations.

Operational risks

Fluctuations in the prices of major inputs as well as changes in their availability

The main inputs required in the manufacturing of UPM's products are wood, fibre, chemicals, energy and water. The prices for many of these major production inputs have been volatile in the recent years and are expected to remain volatile for the foreseeable future, which may have an effect on the general profitability of the industries in which UPM operates. Climate change may contribute to the increase of the price volatility of UPM's major production inputs. Also, any changes in the current forestry practices and level of harvesting due to negative public opinion towards harvesting could have an effect on the raw material supply and may increase the cost of wood.

Governmental protection and trade protection measures could also have an effect on the price and availability of raw materials as countries may, for example, enact export ban policies to protect forests or to bolster their domestic timber industry, which could have a material effect on the cost and availability of wood as a raw material for UPM. It is also uncertain how the EU energy policies may affect the availability and costs of fibre and energy. Significant increases in the prices of UPM's major inputs could increase UPM's operating expenses.

Supplier and subcontractor network and raw materials procurement

UPM's business operations depend on a large number of suppliers and contractors. The majority of UPM's need of wood is covered by suppliers, and other production inputs, such as chemicals, fillers and recovered paper, are fully obtained from suppliers. Disruptions in the supply of key inputs or transportation services could have a significant effect on manufacturing operations. This could, for example, result in interruption or downscaling of production, change in the product mix or increased costs resulting from price increases for critical inputs or transportation services as well as shifts in the availability and price of wood. Supplier consolidation could also limit the number of suppliers from which UPM would be able to source its production inputs and could materially affect the prices paid by UPM for these inputs.

The UPM Supplier and Third Party Code defines the minimum level of performance that UPM requires from its suppliers and third-party intermediaries. UPM carries out supplier risk assessments on, for example, operational, financial, quality and responsibility perspectives. Based on the risk assessment, selected suppliers' activities are evaluated in more detail through annual surveys, supplier audits and joint development plans. If any non-conformities are discovered, the supplier is required to take corrective measures, which UPM follows up on. Some contracts may also be discontinued due to the seriousness of the finding or insufficient corrective measures.

Management and execution of large investment projects

Investment projects in UPM's businesses are often large and take one or more years to complete. 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. Currently, UPM's largest ongoing investment project is the construction of a new world-class pulp mill in Uruguay, which includes other related investments as well (port, Free Trade Zone infra and housing). Particular to this project is its size, complexity with a number of interconnected sub-projects as well as the level of cooperation with permit and other authorities. Additionally, the second largest ongoing project is the construction of a biochemicals refinery in Germany. This project involves the development of new business concepts and technologies.

UPM is responsible for many projects in several of its countries of operation at any given time. All projects involve technical and operational risks, and projects require continuous operational planning, steering and supervision, quality control, input procurement, scheduling as well as resource and cost monitoring. Managing several projects requires that UPM has sufficient resources and efficient processes. Persistent port congestion issues, transportation bottlenecks, and rising logistics costs, all of which could be resulting from external events or market conditions beyond the control of UPM, may have an effect on the execution or profitability of investment projects. The COVID-19 pandemic and the required additional health and safety measures have also added a new challenge to large investment projects. UPM's transformative pulp project in Uruguay and biochemicals project in Germany are proceeding with strict health and safety controls, but despite these efforts, some changes to the detailed timeline of the projects may occur due to containment measures or infections affecting project workers, suppliers or infrastructure.

Unavailability of information systems as well as cybersecurity breaches

UPM's production and business operations depend on the availability of supporting information systems and network services. Unplanned interruptions in UPM's or a supplier's critical information system services, loss of critical, financial or personal data due to reasons beyond UPM's or its suppliers' control, such as power cuts, software or telecommunication errors or other major disasters, such as fires or natural disasters, as well as user errors by UPM's own personnel or suppliers, can potentially cause major damage to UPM's businesses and disruptions to the continuity of operations.

UPM's or its suppliers' information systems may be exposed to various cybersecurity risks. Malicious cyber intrusion could cause leakage of sensitive information, violation of data privacy regulations, theft of intellectual property, production outages and damage to UPM's reputation.

Litigation and compliance

UPM operates globally in a large number of jurisdictions and complex regulatory frameworks. UPM may from time to time be involved in litigation and other similar proceedings or it could become subject to various claims and actions based on various grounds.

On a global scale, enforcement activities and jurisdictional reach regarding competition issues and anti-corruption have increased. Also, the recent development of Renewable Energy Sources Act (EEG) related lawsuits in Germany for alleged non-payment of EEG based surcharges may have an adverse impact on UPM, albeit UPM is not currently a party to any such lawsuits. The UPM Code of Conduct sets the standards of responsible behaviour and it 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 has significant manufacturing operations or sourcing in several developing countries, some of which 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. Breaches of applicable laws and regulations or corporate policies by UPM employees may lead to legal processes, sanctions and fines as well as reputational damages effecting UPM's operations. For example, In October 2021 the European Commission conducted an unannounced inspection at UPM's premises. According to the Commission's press release on 12th October, the Commission has concerns that the inspected companies in the wood pulp sector may have violated EU antitrust rules that prohibit cartels and restrictive business practices. Commission states that the unannounced inspections are a preliminary step in an investigation into suspected anticompetitive practises, and the fact that the Commission carries out such inspections does not mean that the companies are guilty of anti-competitive behaviour nor does it prejudge the outcome of the investigation itself. UPM continues to support the Commission with any investigation activity that may follow.

Industrial actions

UPM is subject to risk of industrial actions, which could disrupt its business operations or the business operations of its stakeholders. Uncertainty may increase in the Finnish labour market amid the announcement of the Finnish Forest Industries Federation in fall 2020 to transfer collective bargaining to companies. For example, in the beginning of 2022, members of the Paperworkers' Union, the Finnish Electrical Workers´ Union and the Trade Union Pro started strikes at UPM mills in Jämsänkoski, Kouvola, Lappeenranta, Pietarsaari, Rauma, Tampere and Valkeakoski, Finland. These strikes or other industrial actions in UPM's business operations or related sectors could have an effect on UPM's business operations. For example, industrial actions in the transport sector or among other stakeholders important to UPM, may disrupt UPM's operations. Additionally, public dissatisfaction with UPM's labour-related decisions may, in extreme cases, lead to unanticipated boycotts or disruptions at its facilities or construction sites.

A natural disaster, fire, accident or other calamity at UPM's production facilities

UPM operates a significant number of production facilities globally that are exposed to risks related to environment, fires, natural events, site security and occupational health and safety risks. If UPM's production facilities were to experience a major accident or were forced to shut down or curtail production due to such unforeseen events, such as a leak or spill due to malfunction or human error, this could cause major interruptions in UPM's operations and result in significant costs in order to clean up and repair any potential damages to the production plant and the surrounding areas. Any failure to maintain high levels of safety management could also result in physical injury, sickness (such as a COVID-19 infection) or liability to UPM's employees, contractors or third parties. These risks are managed through established management procedures, health and safety precautions and loss prevention programmes. UPM's insurance programme provides coverage for insurable hazard risks, subject to insurance terms and conditions.

Forests and plantations

UPM's plantations and forests may be affected by the impacts of climate change, which include more frequent and severe extreme weather conditions such as heavy rainfall, storms, floods and drought. Climate change is expected to have the biggest physical effect on UPM's forest lands in Finland, where temperatures are expected to rise more significantly and rapidly compared with other countries where UPM owns forest. Although forest growth will likely accelerate, particularly in Finland, due to the longer growing season, extreme weather conditions will intensify, presenting new risks. The increase of droughts and fires are estimated to pose the most significant risks for UPM's business. Also, damages caused by insects and tree diseases are becoming increasingly common, which could have an effect on the value of UPM's forest assets. Should these risks materialise, they could harm UPM's forest and plantations resulting in production interruption and additional costs.

Strategic partners

UPM collaborates with many partners. For example, product development in the biofuels, bioenergy or biochemicals increases the importance of partnerships in the search for new products and businesses or higher efficiency. Partnerships may, however, create risks to the profitability, for example, through changes occurring within the partner entity or changes in how the partnership operates. UPM is also subject to the risk that its strategic partners do not comply with UPM's Code of Conduct with anti-corruption, competition law, HR practices, human rights, responsible sourcing and environmental matters.

Partnership arrangements may also be too rigid to enable timely changes required, for example, in connection with changes in the market conditions or the economy. UPM's partners may have different targets with respect to the business of the partnerships. As UPM may not have sole control over strategic direction and operational output of these entities, its partners may have the right to make certain decisions on key business matters with which UPM does not agree. In some cases, strategic partners may choose not to continue partnerships that they have with UPM.

Intellectual property rights of third parties

Molecular bioproducts form one of UPM's three strategic focus areas for growth. Initiatives within this strategic focus area are technology-intensive and require increasing investments in such technologies either through internal development or through third party licences or technological partnerships. In addition to UPM's own IPR portfolio, UPM licences certain technologies developed by third parties. Evaluating the rights related to the third party technologies UPM uses or intends to use is increasingly challenging. Licensing third party technology exposes UPM to such risks as the increase of overall licensing costs, loss of negotiation power, the validity of such licensing arrangements and potential infringement claims, which could restrict UPM's ability to use certain technologies, prevent the delivery of UPM's products and/or result in costly and time-consuming litigation. Risk related to IPR claims and disputes relating to technological partnerships have been assessed to increase.

Building capabilities to growth areas

The success of UPM's business largely depends on the ability to build the necessary new capabilities required for future growth. UPM is continuously developing its employee experience, leadership culture, evaluating its recruitment, compensation policies and career development opportunities and taking measures to attract and retain diversely skilled personnel for current and future growth areas.

Financial risks

Financial risks are described in consolidated financial statements 2021.

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
Counterparty risk	6.2 Derivatives and hedge accounting

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 66). The focus areas cover economic, social and environmental responsibility. Mitigation of and adaptation to climate change is becoming more important all the time, and it is relevant for UPM throughout the whole value chain: land use, sourcing, production and products. Thus, climate-related targets have been established for all of these areas. In 2021, UPM renewed its social responsibility targets to strengthen the social commitment. This is also reflected in corresponding updates of the non-financial key performance indicators.

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.

Connecting sustainability performance to financing demonstrates the importance of responsible business practices to UPM's long term value creation. In 2020, UPM tied its syndicated revolving credit facility to both biodiversity and climate targets, and also issued a first green bond. In 2021, UPM published its first Green Bond report and issued a second green bond.

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.

Since 2003, UPM is 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. And since 2016, UPM has the LEAD participant status for its commitment to the UN Global Compact. In 2021, UPM was globally one of only 37 companies to receive this recognition, and the only representative of the forest industry and Finland.

Regarding climate change UPM committed to the Science Based Targets (SBT) initiative in 2017 and received validation of its tightened CO_2 targets in 2020. To further strengthen its climate approach, UPM committed to the UN's Business Ambition for the 1.5°C pledge. In 2021, UPM joined The Climate Pledge to reach the targets set by the Paris Agreement by 2040.

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 and rules or statements approved by the Group Executive Team, business areas or global functions. These policies, rules and statements cover such topics as treasury, taxes, disclosures, insider matters, anti-corruption, competition law, confidentiality, human resources, responsibility, 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, latest updates effective as of beginning of 2020.

The UPM Code of Conduct was last updated in 2019, and will be updated in 2022. The preparations for the upcoming update started in 2021.

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.

In line with its main duties and responsibilities, the Board reviewed and approved strategic plans during its strategy session in May 2021. The main focus areas of the UPM Biofore strategy continue to be performance, growth, innovation, responsibility and portfolio development. This strategy is enhanced by the UPM purpose: We create a future beyond fossils (read more on pages 22-23). An essential part of the Board's annual strategy work is to review and assess strategic and operational risks and opportunities (see UPM Governance Statement 2021). These risks and opportunities and their impact on operations and strategy are described on pages 34-35.

The Board had decided to set environmental, social and governance related (ESG) related measures in the Company's performance share plan (PSP) long-term incentive plan as of January 2022. They decided to set three distinct ESG performance measures and the total weighting of these measures accounted for 20% of all measures.

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. Reliable long-term deliveries, product and service quality, financial sustainability of suppliers, social and environmental responsibility and product safety 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 financial and non-financial 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. Since 2018, all production sites have a certified ISO 14001 environmental management system. Almost all production sites and wood-sourcing operations implemented integrated management systems for environmental protection, quality management and occupational health and safety in accordance with ISO 14001, ISO 9001 and ISO 45001 standards. All pulp and paper mills in the EU, 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). Many of the sites also have energy management systems certified under ISO 50001 or the Finnish ETJ+ system, and food safety management systems certified under ISO 22000, if relevant.

Should stakeholders have any concerns or suspect misconduct, they are encouraged to contact UPM or to use the UPM Report Misconduct channel. The new service is available on the corporate website for both the company's employees and external stakeholders. Operated by an independent external service provider, the channel is accessible in over 40 languages, 24/7. In 2021, 66 (23) cases were reported either through the UPM Report Misconduct channel or directly to internal audit or compliance team. 9 of these cases related to alleged discrimination or harassment. 18 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. UPM also follows the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) (see page 139).

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-Corruption 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-corruption 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. UPM also has corresponding due diligence procedures for joint ventures, including mergers and acquisitions.

UPM has a dedicated anti-corruption e-learning platform. The anti-corruption training covers all white-collar employees. In 2021, the company organised tailored anti-corruption training workshops for selected target groups across the company and performed risk-based compliance reviews in selected jurisdictions and operations.

Respect for human rights

UPM is committed to respect and promote human rights in line with the United Nations Guiding Principles on Business and 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 2021, UPM was announced as one of the leading companies in the SIHTI (Status of Human Rights Performance of Finnish Companies) project initiated by the Government of Finland assessment and research services. In connection, a report of UPM's Human Rights Responsibility was published. UPM reviewed its human rights risks as part of UPM compliance process quarterly. The assessment of salient human rights issues on a business area level as well as the integration of the process to unit specific management systems continued.

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. 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 identifies its supply chains with a high risk of potential negative environmental and social impacts. These responsibility-related risks are determined by the country of origin, sourced material or service, and complexity of supply chain. Based on the risk identification, selected suppliers' activities are evaluated in more detail through EcoVadis and other assessments, supplier audits and joint development plans.

In 2021, UPM focused on increasing auditing capabilities of its sourcing employees and continued the digital platform implementation. UPM Forest proceeded with their supply chain audit project.

UPM continued its co-operation with Together for Sustainability (TfS), a chemical industry initiative that promotes and improves sustainability practices within the supply chains and its participation to UN Global Compact Action Platform on Decent Work in Global Supply Chains. In 2021, UPM conducted some 340 (290) EcoVadis assessments and 124 (117) supplier audits. In addition, about 300 (350) contractor reviews with focus on working conditions were carried out.

Social and employee-related matters

UPM's responsibility focus areas in social and employee-related matters are: learning and development, responsible leadership, diversity and inclusion, fair rewarding as well as safe and healthy working environment.

UPM is committed to active employee participation and consultation, organised in accordance with international and national rules and regulations. After the Finnish Forest Industries Federation resigned from collective bargaining, the terms of employment are agreed between forest products companies and trade unions (see page 65).

UPM aims to empower and engage employees at all levels through responsible leadership. UPM encourages its employees to pursue professional growth, expects development 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. In 2021, UPM implemented gender pay equity review process closing the unexplained gender pay gap. 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 focused on leadership and to create a safe, inclusive & diverse working environment, as well as aiming higher in performance and ensuring growth of our people. UPM is creating the future by building resilience, developing future ways of working and developing digital capabilities. In 2021, UPM continued the enabling performance approach by strengthening feedback culture, agile goal setting and frequent manager-employee discussions. Development programmes to support growth and performance were continued and implemented virtually. To further develop inclusive leadership and culture, UPM continued the dialogue on diversity and inclusion widely in the organisation.

The proactive safety of employees and contractors has remained an important focus area in 2021. Safety and wellbeing of our employees during global pandemic has been the key priority.

Product stewardship

Majority of UPM's products are made from renewable raw materials and are recyclable. UPM products help to mitigate climate change by replacing fossil-based products with bio-based renewable alternatives. Product stewardship covers the entire lifecycle of all UPM products from the development phase to the end-use and beyond.

In 2021, the new Sustainable Product Design concept was developed further and piloted with few UPM businesses. The approach applies lifecycle thinking and lifecycle assessment data, both integrated in sustainable product design practices. During the process, the whole raw material chain, production and distribution efficiency, sustainable use and circularity are considered.

UPM provides product declarations to provide customers with easy access to information concerning the products' environmental and product safety aspects or the wood origin. Together with a number of paper and chemical companies the exchange of information in the supply chain was improved. This facilitates to pre-assess chemical used and to ensure compliance with legislations and ecolabels.

Most of UPM products are certified with widely recognised ecolabels, such as the EU ecolabel and national ecolabels for graphic paper or ISCC and RSB certification for biofuels, biocomposites and labels. In 2021, UPM Raflatac's label range RAFNXT+ was the world's first CarbonNeutral® certified label material to help mitigate climate change.

All of UPM pulp mills, UPM Raflatac sites and UPM Specialty Papers' production lines have implemented food management systems in accordance with ISO 22000 or FSSC 22000. The respective products are designed and produced to meet food packaging requirements.

Environment

UPM's responsibility focus areas in environmental matters are forests and biodiversity, water, waste and climate. 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 third-party-verified FSC™ and PEFC chain of custody certification covers all sites using wood raw materials. This ensures that the wood it legally sourced from sustainably managed forests. All UPM owned forests are certified, or in the process of certification if acquired recently.

UPM is continuously working to improve biodiversity in its forests. In 2021, all eight quantitative biodiversity indicators which were developed and are monitored for UPM's forests in Finland showed a positive trend. In Uruguay, UPM implemented a strategy to increase biodiversity in the long-term, and monitors biodiversity with three main indicators. In 2021, we further raised the bar with a new global forest responsibility programme that will be launched in 2022 and reaches until 2030. The new programme covers not only climate and biodiversity targets and commitments but also sustainability criteria related to water, soil and social and economic contribution.

All of UPM's production plants are located in areas where there is sufficient water available. In 2021, a comprehensive water risk analysis confirmed the earlier results, and provided scenarios for 2030 and 2050. 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 4 million annually. In 2021, wastewater volume decreased by 12% per tonne of paper and remained on the previous year's level per tonne of pulp.

Circular economy thinking is at the core of our operations. We have developed innovative ways to reduce and recover waste and to use side streams, residues and recovered materials. For example, tall oil is used for the production of UPM BioVerno renewable diesel and naphtha and ash is utilised in soil stabilisation, cement industry or as raw material for paper filler production. Regulatory changes may have an impact on the options for waste or residue use, either by restricting the end uses and thus causing higher costs for alternative solutions, or by creating new opportunities. In 2021, 89 (89)% of UPM's process waste was recycled or recovered, of which 21% is energy recovery.

In 2021, UPM's environmental investments totalled EUR 5 million (6 million). The largest investment was the capacity increase of the electrostatic precipator at UPM Kymi pulp mill's lime kiln to reduce dust emissions. UPM's environmental costs, which were mainly attributable to effluent treatment and waste management, totalled EUR 111 million (110 million), including depreciation.

The company-wide Clean Run programme, launched in 2012, aims to improve UPM's environmental performance by bringing environmental issues to the forefront of everyday work. All sites systematically follow up any deviations, proactively report observations and near misses, carry out walks and discussions, and compile detailed risk assessments. Despite the global pandemic, approximately 1,400 (1,700) environmental walks were organised and 2,500 (2,700) preventive environmental observations and near misses were reported in 2021.

Until 2020 there has been a significant decrease in the number of environmental non-conformances since UPM's internal Clean Run programme was launched in 2012. However, in 2021 the number increased by 8 to a total of 25 (17) temporary deviations from permit, contractual or other obligations. The deviations were minor contraventions of obligations. 12 cases were related to air, 12 to water and one to soil. All deviations were immediately reported to the authorities and, where relevant, to local stakeholders. Appropriate measures were taken to normalise the situation, and will be taken to prevent similar occurrences. No major environmental incidents occurred at UPM production plants in 2021.

As part of Clean Run development, UPM launched in 2021 a new process to collect, share and improve the implementation of environmental related best practices across our operations. A best practice can be a procedure, instruction, practice or technology, worth sharing with others who could benefit from knowing it and possibly implementing it.

Climate

The management of climate change related issues is integrated to management of other non-financial issues and is reported to the Board depending on the context and matter. For example: 1) risks are reported to the Board by CFO, 2) related compliance and regulatory issues are briefed quarterly to Audit Committee (Board) by Compliance Officer, 3) annual progress on 2030 responsibility targets is reported by EVP Stakeholder Relations or 4) if there are specific climate-related topics, then responsible topic owner briefs the Board. Additionally, major climate-related issues such as scenario analyses, commitments and UPM's overall approach of acting through forests, emission reductions in production and supply chain and through climate-positive products are reported directly to UPM management bodies led by CEO.

UPM's position and resilience in different climate scenarios (IPCC RCP 2.6, RCP 4.5, RCP 8.5, IEA B2DS, IEA NPS and IEA CPS) have been evaluated for the businesses and functions from both physical and transitional angles, involving expertise from scientific community. Generally, in low- and medium-emission scenarios the transition impacts play a bigger role and UPM is well positioned as its business portfolio allows for flexibility regarding recognised risks and opportunities. In the high-emission scenario physical impacts dominate with severe consequences not only to UPM but the ecosystems and societies over the globe.

UPM's main target related to climate change is reducing fossil CO_2 emissions (scope 1 and 2) by 65% from 2015 level by 2030. This target was validated by Science-Based Target initiative to be aligned with the 1.5°C pathway according to Paris agreement. In 2021, fossil CO_2 emissions (scope 1 and 2) summed up to 5.0 (5.4) million tonnes, which is a decrease of 8% compared to 2020.

Further targets related to climate change are reducing fossil CO_2 emissions from supply chain (Scope 3) by 30% from 2018 level by 2030, climate-positive land use and developing climate-positive product portfolio. Concerning land use, forestry and product portfolio, UPM has engaged with scientific partners in order to gain credible data and approaches.

UPM favours the use of renewable and other carbon-neutral energy sources. Biomass-based fuels make up 70% (72%) 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 10 per tonne, it would mean additional costs of approximately EUR 27 million annually.

UPM climate related disclosures according to TCFD (Task Force on Climate-related Financial Disclosures) are presented in UPM annual report as follows:

REQUIREMENTS	PAGES
GOVERNANCE	
a) The role of the Board in overseeing climate-related issues	Page 136, paragraph "Roles of the group management and functions in leading non-financial matters"
b) The role of management in assessing and managing climate-related issues	Page 136, paragraph "Roles of the group management and functions in leading non-financial matters"
STRATEGY	
a) The climate related risks and opportunities over the short, medium and long term	Pages 131-134, chapter "Risks" Pages 34-35, chapter "Risks and opportunities" Pages 10-13, chapter "Beyond fossils"
b) The impact of climate-related risks and opportunities on business, strategy and financial planning	Pages 34-35, chapter "Risks and opportunities" Pages 10-13, chapter "Beyond fossils" Page 132-134, paragraphs "Climate change", "Forest and plantations"
c) The resilience of strategy, taking into consideration climate-related scenarios	Page 138, paragraph "Climate" Pages 10-13, chapter "Beyond fossils"
RISK MANAGEMENT	
a) Processes for identifying climate-related risks	Page 131, paragraph "Risk management" Page 136, paragraph "Roles of the group management and functions in leading non-financial matters"
b) Processes for managing climate-related risks	Page 131, paragraph "Risk management" Page 136, paragraph "Roles of the group management and functions in leading non-financial matters"
c) How processes for identifying, assessing, and managing climate-related risks are integrated into overall risk management	Page 131, paragraph "Risk management" Pages106-108, chapter "Governance"
METRICS AND TARGETS	
a) Metrics used to assess climate-related risks and opportunities	Pages 14–15, "Key figures 2021"
b) Scope 1, Scope 2 and Scope 3 emissions, and related risks	Page 138, paragraph "Climate" Page 94, graph "Sources of UPM's greenhouse gas emissions"
c) Targets used to manage climate-related risks and opportunities and performance against targets	Page 142, table "Material non–financial topics and key performance indicators" Pages 32-33, table "UPM Responsibility targets"

EU Taxonomy

In 2020, the European Union's Sustainable Finance Classification System (EU Taxonomy Regulation, 2020/852) was published. In 2021, the European Commission adopted the related EU Disclosures Delegated Act, which requires large financial and non-financial companies to provide information to investors about the environmental performance of their assets and economic activities. In annual reports published in 2022, large companies need to start to report the proportion of their economic activities that are considered as Taxonomy-eligible. An eligible economic activity is an activity that is included in the scope of delegated acts adopted pursuant to the Taxonomy Regulation. In 2023, large companies need to report activities that are considered as Taxonomy-aligned, i.e. which comply with the criteria for environmentally sustainable economic activities. In the beginning, the focus is on activities contributing to climate objectives, climate change mitigation and adaptation, according to the EU Climate Delegated Act.

Based on the regulation, UPM has carried out an assessment to identify the economic activities which would be eligible i.e. included in the scope of EU Taxonomy. The assessment was carried out with the support of several UPM functions and businesses, and led by UPM's finance and responsibility teams. EU NACE Classification (Statistical Classification of Economic Activities in the European Community) was used as reference in activity identification. In 2022, UPM will continue the assessment with a thorough evaluation of the alignment of activities with the sustainability criteria defined in the regulation.

The identified eligible activities focus on the climate change mitigation objective. The identified activities are: sustainable forest management, hydropower generation, biofuels and biocomposites businesses, paper production from mostly recycled content, part of renewable energy generation, sales of heat to local communities, part of the ongoing investment in a biochemicals refinery in Germany, some water transportation activities as well as R&D activities towards a future beyond fossils. In addition, water and wastewater related activities have been considered in the assessment. However, as those are not products or services of UPM, thus not directly contributing to UPM turnover, those have not been considered as Taxonomy-eligible activities. UPM´s main businesses are not included in the scope of EU Taxonomy.

The identified eligible activities correspond with following categories of the EU Taxonomy:

Activity no	EU Taxonomy activity	UPM activity	Relevant for turnover	Relevant for CapEx	Relevant for OpEx
1.1	Afforestation	Sustainable forest management	n/a	X	X
1.3	Forest management	Sustainable forest management	X	X	X
3.14	Manufacture of organic base chemicals	Part of the current investment in a biochemicals refinery in Germany	X	X	X
4.5	Electricity generation from hydropower	Electricity generation from hydropower	X	X	X
4.13	Manufacture of biogas and biofuels for use in transport	Biofuels business	X	X	X
4.15	District heating/cooling distribution	Sales of heat to local communities	X	X	X
4.19	Cogeneration of heat/cool and power from renewable non-fossil gaseous and liquid fuels	Part of renewable energy generation	X	X	X
4.20	Cogeneration of heat/cool and power from bioenergy	Part of renewable energy generation	X	X	X
5.9	Material recovery from non-hazardous waste	Paper production from mostly recycled content and biocomposites business	X	X	X
6.10	Sea and coastal freight water transport, vessels for port operations and auxiliary activities	Some water transportation activities	X	X	X
9.1	Close to market research, development and innovation	R&D activities towards a future beyond fossils	n/a	X	X

Non-financial undertakings falling under the scope of the Non-Financial Reporting Directive are required to disclose the KPIs, the turnover, CapEx (capital expenditure) and OpEx (operating expenses) in relation to economic activities which are Taxonomy-eligible as defined in Disclosures Delegated Act as well as such eligibility disclosures in relation to economic activities which are non-eligible under the Taxonomy.

The eligibility-related financial information to be disclosed pursuant to Article 8 of the Taxonomy Regulation is presented below. The group has ensured that activities are accounted only once when calculating KPIs.

2021	Absolute turnover, EURm	Proportion of turnover, %	Absolute CapEx, EURm	Proportion of CapEx, %	Absolute OpEx, EURm	Proportion of OpEx, %
Taxonomy-eligible activities	1,017	10 %	237	14 %	80	15 %
Taxonomy-non-eligible activities	8,798	90 %	1,429	86 %	444	85 %
Total	9,814	100 %	1,666	100 %	524	100 %

Accounting Policy

UPM consolidated financial statements that are prepared in accordance with International Financial Reporting Standards as adopted by the European Union (IFRS as adopted by the EU) and IFRIC Interpretations. UPM has calculated the KPIs using the financial information presented in group consolidated financial statements 2021. The definitions of CapEx and OpEx key performance indicators are based on group interpretation of definitions set out in the Disclosures Delegated Act.

Turnover

UPM has calculated turnover, as defined in Disclosures Delegated Act, based on the same accounting principles that apply for revenue in IFRS, i.e., covering all amounts derived from the sale of products and services in the course of ordinary activities. Total turnover corresponds to total sales as reported in group consolidated financial statements. Refer to Accounting policy in consolidated financial statements ***Note 2.2. Sales***. Taxonomy-eligible turnover includes only revenue from sales of products and services generated from activities that are in the scope of the Taxonomy. The majority of UPM´s products and services contributing to the turnover are not in the scope of the EU Taxonomy. In determining the eligible turnover any specific fragments of production inputs, such as use of sustainable raw material or energy, have not been included in the eligible turnover if the main activity is not in the scope of the Taxonomy.

UPM's Taxonomy-eligible turnover includes sales of wood and wood-based biomass (logs, pulpwood, forest residues etc.) to third-party customers, forestry services to forestry owners, sales of energy generated from hydropower, sales of wood-based renewable diesel for transport and renewable naphtha for transport and petrochemicals, distribution of district heat, sales of heat and power generated from biomass, gaseous and liquid fuels of renewable origin in combined heat and power plants, sales of biocomposites and sales of newsprint paper from mostly recycled content.

CapEx

UPM has included in CapEx, as defined in Disclosures Delegated Act, additions to tangible and intangible assets, before any depreciations, impairments, amortisation charges and fair valuations during the financial year, as accounted for in accordance with IAS 16 Property, Plant and Equipment, IAS 38 Intangible assets, IAS 41 Agriculture and IFRS 16 Leases. CapEx corresponds to cash payments to acquire fixed assets in the ***Consolidated cash flow statement*** adjusted with amounts accrued but not paid at the end of reporting period, and additions to leased assets. Refer to line items Capital expenditure and Additions to forest assets in Consolidated cash flow statement and ***Note 5.2. Leases*** in UPM consolidated financial statements 2021.

Taxonomy-eligible CapEx includes purchased and leased land for afforestation, purchased growing trees, capitalised forestry renewal costs during the growth cycle, part of capitalised investments in new biochemicals refinery, capitalised investments in hydropower plants, capitalised investments in biofuels biorefinery and other capitalised development costs of Taxonomy-eligible activities towards a future beyond fossils. Capital expenditure presented in the UPM Annual report within Other financial information differs from Taxonomy-CapEx as it does not include additions to forest assets and leased assets.

OpEx

UPM has included in OpEx, as defined in Disclosures Delegated Act, research and development costs as accounted for in accordance IAS 38 Intangible assets, short term lease expenses as accounted for in accordance IFRS 16 Leases, and costs of day-to-day servicing (i.e., repairs and maintenance) of property, plant and equipment as accounted for in accordance IAS 16. Costs of day-to-day servicing of property, plant and equipment include direct salaries of maintenance personnel, maintenance materials and maintenance services outsourced. In addition, as UPM owns a significant amount of forest assets, it considers forest management and support services as day-to-day servicing of assets as defined in EU Disclosures Delegated Act. OpEx is included in consolidated income statement line item Costs and expenses, refer ***Note 2.3. Operating expenses and other operating income***.

Research and development costs included in Taxonomy-eligible OpEx relate to technologies and products dedicated to the reduction of GHG emissions. These costs include mainly new biochemicals biorefinery and R&D related to the next generation biofuels refinery. Day-to-day servicing of property, plant and equipment included in Taxonomy-eligible OpEx includes maintenance costs of newsprint paper, hydropower and biofuels production facilities and combined heat power plants. Costs of day-to-day servicing of forest assets included in Taxonomy-eligible OpEx relate to forestry infrastructure maintenance, forest fire fighting, protection and environmental activities whereas forestry renewal costs, e.g., planting, growing of coppice and operation of forest tree nurseries, are included in CapEx.

Material non-financial topics and key performance indicators

TOPIC	MANAGEMENT	KEY PERFORMANCE INDICATOR	2021 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 participating in UPM Code of Conduct training (continuous)	98% (99%) of active employees completed training for the UPM Code of Conduct.
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	124 (117) supplier audits were conducted based on identified risks, including human rights, social and environmental topics. In addition, about 300 (350) contractor reviews with focus on working conditions were carried out.
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 covered by UPM Supplier and Third Party Code (continuous)	86% (84%) of supplier spend covered by 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. UPM's global leadership development portfolio develops capabilities to lead oneself, lead people and lead business. Programmes address, e.g., inspiring and purposeful leadership, coaching, conversation and feedback skills, resilience and leading in complexity.	Employee engagement clearly above benchmark by 2030	Employee engagement average score 68. This is 9 points below the global external benchmark.
Learning and development	UPM has a systematic process for goal setting and development planning 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	88% (82%) of employees had completed individual goal settings or annual discussions. 70% (63%) had a development plan documented.
Safe and healthy working environment	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 Total recordable injury frequency (TRIF) <2 by 2030, including contractors	0 (0) fatal accident, 3(2) serious accidents TRIF was 6.3 (5.3) for UPM workforce and 7.2 (6.2) including contractors.
Diversity	UPM wants to develop organisational culture and local workplace 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.	UPM is among top 10% companies by 2030 on employees' sense of belonging at UPM	Average score 67 on Employee Engagement Survey question about belonging. This is 13 points below the benchmark of top 10% companies.
Fair rewarding	UPM's rewarding and recognition philosophy is to reward high performance. We aim to ensure fair, equitable and competitive rewarding for all employees. In addition to competitive, robust and performance based rewarding practices, we have yearly review processes ensuring the gender pay equity and employees' pay meeting at least a living wage locally. UPM ensures that employees have sufficient information to understand what their rewarding comprises and how they can influence on its development.	Ensure gender pay equity for all employees by implementing yearly review process to identify and close unexplained pay gaps	Company-wide review done in 2021 and pay adjustments implemented to close identified statistically significant unexplained gaps related to gender.
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	84% (82%) 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. Strengthened targets for scope 1 and 2 to be in line with the commitment to Science Based Targets and 1.5° pledge.	Fossil CO_2 emissions from its own combustion and purchased electricity (Scope 1 and 2) reduced by 65% by 2030 (compared to 2015)	Fossil CO_2 emissions reduced by 27% compared to 2015 and 8% compared to 2020.
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)	18% 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	89% (89%) of all UPM's process waste was recovered and recycled. The total amount of waste to landfills decreased by 3% compared to 2020.
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	84% (83%) of all wood used by UPM is sourced from certified forests.

Material risks and their management is described on pages 131-135 of the Report of Board of Directors and in the Annual Report on pages 34–35. Information on the company's risk management system is available on the corporate website in the governance section and in the Corporate Governance Statement 2021, 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

Innovating for the future

Innovation and R&D programmes are essential in the development of new products and technologies. Research and development expenses cover the development of new technologies, businesses and processes. Our 2030 responsibility targets and our contribution to the UN SDGs are integrated into our R&D activities and product development (page 32).

In 2021, UPM spent EUR 266 (189) million on research and development, making up 21.3% (18.8%) of UPM's operating cash flow. In addition to direct R&D expenditure of EUR 46 (41) million, the figure includes negative operating cash flow and capital expenditure in developing businesses, transformative business prospects and digitalisation projects.

Expanding the infrastructure

UPM's Biofore Base research centres in Lappeenranta, Finland and Changshu, China are accelerating the development of new bio-based products and their launch to the markets. The Leuna Biofore Base in Germany was established at the end of the year. It works in connection with the upcoming biochemicals refinery and specialises in developing new biomolecular products.

The Biofore Base research centres unite UPM's various technologies with globally accumulated experience and expertise in the new and existing businesses. The centres also focus on piloting and analytics enabling seamless collaboration with customers, value chain partners and research organisations such as universities. The research centres work closely with mills, UPM businesses and their research centres in various countries.

Innovating climate-positive products

Our products offer solutions to mitigating climate change as they replace fossil raw materials with bio-based renewable alternatives. The products store carbon for the entire duration of their lifecycle, especially when recycled multiple times. New solutions are developed in collaboration with our businesses, technology partners and customers.

Molecular bioproducts form one of UPM's three strategic focus areas for growth. Our first-of-its-kind biochemicals biorefinery in Leuna, Germany, will enable a switch from fossil raw materials to wood-based sustainable alternatives in textiles, plastics, PET bottles, packaging and pharma or cosmetics products.

The commercialisation of biochemicals is taking significant steps forward. In 2021, UPM started a collaboration with The Coca-Cola Company to develop wood-based plastic materials for PET bottles. We also launched UPM BioMotion™ renewable functional fillers to significantly reduce the CO_2 footprint and weight of rubber and plastics in various end-uses (page 57).

The basic engineering phase of a next-generation biofuels biorefinery, announced in January 2021, is proceeding at full speed. The potential biorefinery would produce high-quality renewable fuels, including sustainable jet fuel. The products would significantly reduce the carbon footprint of road transport and aviation, as well as replace fossil raw materials with chemical and plastic alternatives from renewable sources.

UPM Biomedicals develops and supplies innovative and sustainable wood-based biomedical products for high-throughput drug screening, personalised medicine, advanced cell therapies, 3D bioprinting, tissue engineering and advanced wound care. More than 300 patents protect our existing and future products.

We are also examining new ways to utilise renewable fibre-based materials that are being developed for textiles, nonwovens, hygiene products, labels and flexible packaging, amongst other applications.

Solid patent portfolio

The significance of the patents, trademarks and intellectual property rights protecting our innovations is more pronounced in our new businesses, supporting the journey from innovation to business. We have nearly 3,000 patents and patent applications, and nearly 1,400 trademarks globally.

Licensing innovations and technologies provides an excellent basis for value creation with customers and technology partners. As an example, at the end of 2021, UPM Biochemicals owned 160 patents and patent applications and another 353 patents and patent applications were held by partners, covering technology and products throughout the value chain.

Value from data and digital solutions
We aim to significantly increase the accelerate and improve data-based decision-making. Our development work in data utilisation focuses on high-quality, compliant, secure and modern common data platforms and services. We use agile methods in defining and implementing new business-driven data and digital solutions together with our partners. As a result, we aim for data products and digital services that have identified business value.

We finalised our Digi and Data strategy in 2021 based on a solid operating model created in cooperation with businesses. Our target is to achieve greater impact from the digital and data-driven solutions both on a corporate and a business level. The development projects common to several businesses include digital customer experience and pricing, digital supply chain and intelligent operations. The implementation of the strategy and development projects will start in 2022.

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

The partnership with the European Joint Undertaking on Bio-Based Industries (BBI) focuses on strengthening the competitiveness of bio-based products in Europe. As a shareholder in the Finnish company CLIC Innovation Ltd, we aim to propel breakthrough solutions in the circular economy and cleantech. We collaborate with the European Chemical Industry Council (CEFIC) and Renewable Carbon Initiative (RCI) to promote making chemicals more sustainable and more climate smart. UPM Specialty Papers and UPM Raflatac actively collaborate with 4evergreen Alliance, an initiative by CEPI to raise the overall recycling rate of fibre-based packaging to 90% by 2030 (page 88).

UPM wants to be proactive in the developments that reduce greenhouse gas emissions. In 2021, UPM joined the EU's Clean Hydrogen Alliance and became a member of the Roundtable on Clean Hydrogen for industrial users. UPM also joined the newly established Finnish Hydrogen Cluster to accelerate investments in the hydrogen economy.

Sustainable product design
We want our products to create value for our stakeholders during the whole product lifecycle. We offer suitable solutions for the customers' sustainability challenges and ensure that the new product or service has a proven sustainability value proposition and supports UN Sustainable Development Goals (SDGs).

In 2021, we further developed our Sustainable Product Design concept, the methodology of which is based on design thinking and aims to steer our product development projects. Our approach applies lifecycle thinking and lifecycle assessment data, both incorporated in sustainable product design practices. We consider product development in six lifecycle steps.

The process starts with a holistic overview of the design, e. g. what purpose and use is the product developed for and considers all circularity and technology aspects. During the process, the whole raw material chain, production and distribution efficiency, sustainable use and circularity are considered. In 2021, we piloted the new concept with some of our businesses. Testing will continue in 2022 and the new concept will be gradually adopted in all businesses.

Market demand and customer interest confirmed in UPM Biochemicals
The first-of-its-kind biorefinery in Leuna is taking shape, while a robust business platform is being built and customer engagement points to a promising commercial future for UPM Biochemicals.

The EUR 550 million investment will open completely new markets for us, with large growth potential for the future. The biorefinery will produce a range of 100% wood-based biochemicals, the main products being bio-monoethylene glycol (BioMEG), bio-monopropylene glycol (BioMPG) and lignin-based renewable functional fillers, with a total annual capacity of approximately 220,000 tonnes.

In 2021, detailed engineering, procurement and permit processes continued progressing well, and building at the site took off. However, the pandemic materially slowed down the completion of the detailed engineering. Disruptions to global supply chains affected both the availability and cost of critical construction materials. As a result, the start-up is estimated to take place by end of 2023. The capital expenditure estimate will also be updated.

At the same time, the business platform was strengthened.We have continued building a team of international experts with a strong chemical industry background to further advance our research and development, build strong commercial operations, and then establish the service and supply infrastructure to meet our customers' specific needs. We also started hiring and training the operations personnel for the biorefinery. The innovative digital twin of our biorefinery supports the establishment of robust production processes and a competent, well-trained team.

UPM's biochemicals made from renewable raw materials will offer a missing link to achieve a truly sustainable circular economy: rubber and plastics based on renewable chemicals. Our glycols and Renewable Functional Fillers (RFF) are made from renewable resources, work well in existing production and recycling processes, and will support the transition away from oil-, gas- and coal-based materials.

We have made strong progress in opening sales channels in various glycol end-use industries, mainly in packaging, automotive and textile applications.

We have started joint product development with potential customers in various rubber applications to validate the technical performance of our RFFs and bring sustainable alternatives to CO_2-heavy rubbers to the market. We also launched UPM BioMotion™, the renewable functional fillers set to significantly reduce the carbon footprint and weight of rubber and plastic applications.

The possibilities of our new biochemical products are endless. This was demonstrated by a co-operation announcement with the Coca-Cola Company, who have unveiled their new 100% plant-based recyclable bottle, highlighting UPM's industrial-scale biorefinery as a breakthrough for the production of a new generation of biochemicals that will help produce the sustainable packaging of the future.

Our biorefinery project has also received positive external recognition. We were among the seven finalists of the prestigious German Sustainability Award and our contribution to the sustainability transformation was recognised by the jury. We climbed up to 3rd place in the European Rubber Journal's top 10 elastomers for sustainability ranking.

Opening new markets for UPM Biomedicals
UPM Biomedicals is at the forefront of innovation and commercialisation, with a particular focus on personalised medicine.

UPM Biomedicals develops and supplies innovative and sustainable wood-based biomedical products for medical and life science applications. The main component in our products is high-quality nanocellulose, extracted from birch wood.

We actively collaborate with universities, research centres and key industrial partners in the fields of high-throughput drug screening, personalised medicine, advanced cell therapies, 3D bioprinting, tissue engineering and advanced wound care. More than 520 patents and patent applications protect our existing and future products.

In life science, our main products are GrowDex®, a range of hydrogels for 3D cell culturing, and GrowDase™, an enzyme to release the cells from the gel. The nanocellulose ensures excellent compatibility with even the most demanding cells, such as stem cells and patient-derived cells. Our gels are animal free and do not introduce animal DNA into the test results. In 2021, we entered into a global distribution agreement with PerkinElmer Health Sciences, Inc. for the UPM GrowDex® and Grow- Dase™ products.

The collaboration offers researchers a solution for high-throughput screening (HTS) of 3D cell cultures in the early stages of the drug discovery process, combining the cell imaging solutions and knowledge of PerkinElmer and the animal-free 3D reagents of UPM. The instrument, software and cell culture matrices advance research and accelerate the drug development process in which thousands of molecules are screened, to eventually introduce a new drug onto the market.

PerkinElmer's automated high-content screening system using GrowDex hydrogels has been successfully used in a number of research projects, including automated drug sensitivity and resistance testing of patient-derived cells for personalised cancer treatment research.

GrowInk™ is a range of bioinks for 3D bioprinting, used in areas like cancer research, where models of tumours can be printed to test their response to different treatments. Launched in 2021, our collaboration with CELLINK will allow us to develop the technology to print organs or tissue that, in the future, could be transplanted into patients.

In the clinical field, FibDex® wound dressings were marketed and sold to healthcare professionals and hospitals in Finland, and work is ongoing to expand into other European markets.

A year of growth for UPM Biocomposites
UPM Biocomposites is mitigating climate change and creating circular economy solutions through the manufacture of innovative composite materials and decking products.

UPM ProFi utilises post-consumer plastic waste and post-industrial label waste to manufacture high-quality composite decking. The label production side streams from UPM Raflatac and its customers are collected and delivered to Germany, where the composite decking is manufactured. Recycled plastic from European post-consumer waste is also utilised in the manufacturing process. UPM ProFi's latest product launches in the UPM ProFi Piazza product range consist of up to 75% recycled materials. UPM ProFi is a member of the EU Circular Plastics Alliance, which aims to boost the EU market for recycled plastics to 10 million tonnes by 2025.

In 2021, UPM ProFi achieved significant sales growth across many European markets with its renewed product portfolio. Thanks to its local European operations, operating efficiency and marketing capabilities, it also benefitted from the increase in home renovations during the COVID-19 lockdowns.

UPM Formi creates and manufactures wood-based biocomposites, which enables up to an 80% reduction in the carbon footprint of the end product, compared to similar products made from fossil-based materials. The composite materials are suitable for various end uses, including kitchenware, personal care and acoustic devices. The materials meet the highest quality standards, allowing the products to pass food standards or similar quality requirements.

In 2021, UPM Formi, in conjunction with key business development partners, experienced volume growth among new and existing customers as a result of new end-use areas. Strong demand for UPM Formi EcoAce continued. UPM Formi's customers were recognised with prestigious awards for using sustainable materials, such as the Red Dot Design Award and the iF Gold Award.

R&D's role in different businesses

BUSINESS AREA	DESCRIPTION
UPM Biorefining UPM Pulp	In 2021, special effort was placed on supporting UPM's growth strategy and implementing the right solutions for our state-of-the-art pulp mill in Uruguay, scheduled to start up by the end of Q1 2023. To ensure good communication, cooperation and fast development at exceptional times with restrictions like during the COVID-19 pandemic, new operational models were brought in. Having structured processes and Technical Customer Service, Development and Research experts in all our targeted continents led to both successfully implementing better own solutions and meeting current needs as well as those of target customers. Good results were achieved in several end-use areas and regions, resulting in improved production efficiency both on our side and on the customers' side. Our improved level of digitalisation implementation throughout the value chain enabled more automated traceability and new cost-efficient ways to deliver the right pulp for right products.
UPM Biofuels	Collaboration for the development of new applications for renewable plastics based on UPM BioVerno naphtha continued. Piloting, research and process development continued to take place at the UPM Biorefinery Development Centre (BrDC). UPM was also studying and testing the use of several new feedstocks that meet sustainability criteria, such as wood residues and feedstocks from carbon farming for our possible growth plans.
UPM Energy	The focus was on improving the cost-competitiveness and environmental performance of hydropower production assets and on developing competencies and business operations related to the optimisation of industrial energy consumption and demand-side flexibility. UPM Energy participated in several research programmes and undertook development work with the aim of improving UPM's power generation and consumption operations in a changing electricity market, as well as developing means to mitigate the impact of hydro power operations on rivers and migratory fish.
UPM Raflatac	Research centres located at four sites (Finland, Poland, China, USA) support the product range expansion of paper, film and special products for global self-adhesive labelling business operations. Cost efficiency and product customisation requirements for various end-use segments were taken into account during the customer and market-orientated development phase. Global R&D continues to focus on technology platform development for coatings and polymer development. There was an increase in product safety and sustainable label material alternatives and new requirements were set for solutions supporting plastic recycling. Ongoing quality improvement remained an essential part of product and process development. Alternative solutions for raw materials and support meant that supply was a further compulsory top-priority topic.
UPM Specialty Papers	R&D and product development initiatives aim to enable high performance and efficiency in the value chain and to develop fibre-based alternatives for non-renewable materials. These initiatives also support growth targets by driving the innovation of products for new applications. In 2021, we added new barrier and Kraft paper grades to our portfolio. Looking towards the future, we continue to focus on co-creating sustainable packaging papers for increasingly demanding end-uses, together with the packaging value network; we currently have several ongoing co-creation initiatives. UPM Specialty Papers continues to develop release liner base papers to further improve efficiency and minimise the environmental impact of the value chain by, for example, downgauging and developing our offering of grades with recycled content. In 2021, the renewed Asian R&D centre "UPM Biofore Base" was inaugurated in Changshu, China. It is the first UPM Biofore base pilot outside Europe, providing seamless research, testing and laboratory analysis services. The new centre will cooperate closely with customers, universities, research institutions and suppliers. The Northern European Research Centre in Lappeenranta continues to strengthen its R&D capabilities for specialty papers, including packaging paper and release liner development.
UPM Communication Papers	Research & development centres in Lappeenranta, Finland and Augsburg, Germany, continued to focus on investigating fibre concepts for various paper grades. RCF quality controls also took place. Product portfolio development focused on the needs of key customer groups, as well as broadening the approach to address new and profitable end uses. Alongside its value chain partners, UPM Communication Papers has continued to conduct projects designed to explore and develop solutions that can replace and decrease the amount of plastic used in packaging. In the area of energy, the focus was on technological innovations that help minimise energy needs at the production sites. Paper mills also developed intelligent operations to enable increasing demand-side management towards the electricity markets and networks to support system stability and decrease emissions at peak times. In terms of operations efficiency, our R&D efforts concentrated on improving the efficiency of several mills for pinpointed efficiency supporting actions as well as safety-improving areas. Digital solutions were developed, built and tested to optimise RCF delivery flows and machine performance measurement, as well as improve order information machine reading. Contributions from the R&D teams contributed to helping meet the 2030 targets in the areas of energy, water consumption, effluent treatment and resource efficiency.
UPM Plywood	UPM Plywood product management and development provides competitive products within selected end-use areas in collaboration with our customers, superior technical expertise and support for customers, as well as support for the commercialisation of newly developed products and applications. For example, further expanding the use of lignin-based WISA BioBond gluing solution to new product lines.

Information on shares

Shares

UPM has one class of shares. Each share entitles the holder to one vote at the General Meeting of UPM.

On 31 December 2021, 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 2021, 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 2021, UPM shares worth a total of EUR 8,435 million (9,921 million) were traded on the Nasdaq Helsinki stock exchange. This is estimated to represent more than 70% of the total trading volume in UPM shares. The highest listing was EUR 35.37 in September and the lowest was EUR 29.11 in January.

Authorisations held by the Board of Directors

The Annual General Meeting held on 30 March 2021 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 held on 30 March 2021 authorised the Board of Directors to decide on the issuance of new shares, the transfer of treasury shares and the 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 shareholder's pre-emptive subscription right. 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 the number of shares that can be received on the basis of special rights. The authorisation will be valid for 18 months 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

	2021	2020	2019	2018	2017
Number of shares 1 January	533,735,699	533,735,699	533,735,699	533,735,699	533,735,699
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 2021

	NUMBER OF SHARES	HOLDING %
Ilmarinen Mutual Pension Insurance Company	11,601,000	2.17
Varma Mutual Pension Insurance Company	8,169,340	1.53
ELO Mutual Pension Insurance Company	5,224,719	0.98
The Society of Swedish Literature in Finland	2,877,070	0.54
Holding Manutas Oy	2,550,000	0.48
The State Pension Fund	2,350,000	0.44
OP-Suomi Investment fund	2,252,652	0.42
Mandatum Life Insurance Company	1,857,589	0.35
SECURITY TRADING OY	1,760,000	0.33
Kymin Osakeyhtiön 100-vuotissäätiö	1,696,360	0.32
Nominees & Registered foreign owners	355,786,834	66.66
Others	137,610,135	25.78
Total	533,735,699	100.00

Shareholders by category at 31 December, %

	2021	2020	2019	2018	2017
Companies	2.9	2.7	2.3	2.1	2.1
Financial institutions and insurance companies	3.7	3.8	3.0	2.9	2.4
Public bodies	5.8	6.0	5.7	6.8	5.1
Non-profit organisations	4.6	4.7	4.6	4.4	4.8
Households	15.8	15.6	15.2	15.0	15.1
Non-Finnish nationals	67.2	67.1	69.1	68.7	70.5
Total	100.0	100.0	100.0	100.0	100.0

Share distribution at 31 December 2021

SIZE OF SHAREHOLDINGS	NUMBER OF SHARE-HOLDERS	% OF SHARE-HOLDERS	NUMBER OF SHARES, MILLION	% OF SHARES
1 – 100	49,631	40.24	2.2	0.4
101 – 1,000	56,070	45.46	21.7	4.1
1,001 – 10,000	16,284	13.20	43.6	8.2
10,001 – 100,000	1,227	0.99	29.6	5.5
100,001 –	134	0.11	80.9	15.2
Total	123,346	100.00	177.9	33.3
Nominee-registered			355.8	66.7
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

	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Earnings per share (EPS), EUR	2.41	1.05	1.99	2.80	1.82	1.65	1.72	0.96	0.63	–2.14
Comparable EPS, EUR	2.22	1.37	2.07	2.24	1.88	1.65	1.38	1.20	0.91	0.74
Equity per share, EUR	20.34	17.53	18.87	18.36	16.24	15.43	14.89	14.02	14.08	14.18
Dividend per share, EUR [1]	1.30	1.30	1.30	1.30	1.15	0.95	0.75	0.70	0.60	0.60
Dividend to earnings ratio, %	53.9	123.7	65.4	46.4	63.0	57.6	43.6	72.9	95.2	neg.
Dividend to operating cash flow, %	55	69	38	52	42	30	34	30	43	30
Effective dividend yield, %	3.9	4.3	4.2	5.9	4.4	4.1	4.4	5.1	4.9	6.8
P/E ratio	13.9	29.0	15.5	7.9	14.2	14.1	10.0	14.2	19.5	neg.
Operating cash flow per share, EUR	2.34	1.89	3.46	2.49	2.74	3.16	2.22	2.33	1.39	1.98
Dividend distribution, EURm [1]	693	693	693	693	613	507	400	373	317	317
Share price at 31 Dec., EUR	33.46	30.47	30.91	22.15	25.91	23.34	17.23	13.62	12.28	8.81
Lowest quotation, EUR	29.11	20.31	21.10	21.69	20.82	13.71	13.19	10.07	7.30	7.82
Highest quotation, EUR	35.37	31.50	31.49	34.70	26.69	23.41	19.26	13.99	13.02	10.98
Average quotation for the period, EUR	32.15	26.09	25.73	28.86	23.89	17.51	16.37	12.26	9.42	9.21
Market capitalisation, EURm	17,845	16,250	16,485	11,813	13,818	12,452	9,192	7,266	6,497	4,633
Shares traded, EURm [2]	8,435	9,921	9,695	9,980	8,460	6,749	7,469	6,233	5,308	5,534
Shares traded (1,000)	262,377	380,237	376,801	345,822	354,053	385,355	456,168	508,318	563,382	600,968
Shares traded, % of all shares	49.2	71.3	70.7	64.8	66.4	72.2	85.5	95.6	106.7	114.4
Number of shares, average (1,000)	533,324	533,324	533,324	533,324	533,415	533,505	533,505	531,574	527,818	525,434
Number of shares at the end of period (1,000)	533,736	533,736	533,736	533,736	533,736	533,736	533,736	533,736	529,302	526,124
of which treasury shares (1,000)	412	412	412	412	412	231	231	231	231	231

[1] 2021 proposal

[2] Trading on the Nasdaq Helsinki Main Market. Treasury shares bought by the company are included in shares traded.

The definitions of adjusted 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 profit

The Board of Directors proposes to the Annual General Meeting of UPM-Kymmene Corporation to be held on 29 March 2022 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 2021 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 31 March 2022. The Board of Directors proposes that the dividend will be paid on 7 April 2022.

On the date of the dividend proposal, 27 January 2022, 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 2021, the distributable funds of the parent company were EUR 3,299,180,167.25 including EUR 469,282,175.70 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 2021

Helsinki, 27 January 2022

Björn Wahlroos
Chair

Berndt Brunow

Henrik Ehrnrooth

Emma FitzGerald

Jari Gustafsson

Piia-Noora Kauppi

Marjan Oudeman

Martin à Porta

Kim Wahl

Jussi Pesonen
President and CEO

Financial Statements 2021

Consolidated financial statements, IFRS

Consolidated income statement

EURm	NOTE	2021	2020
Sales	2.1, 2.2	9,814	8,580
Other operating income	2.3	254	116
Costs and expenses	2.3	-8,104	-7,371
Change in fair value of forest assets and wood harvested	4.2	111	-25
Share of results of associated companies and joint ventures		2	3
Depreciation, amortisation and impairment charges	2.3, 4.1, 4.4	-515	-541
Operating profit		1,562	761
Exchange rate and fair value gains and losses	5.4	-3	2
Interest and other finance costs, net	5.4	-12	-26
Profit before tax		1,548	737
Income taxes	7.1	-240	-169
Profit for the period		1,307	568
Attributable to:			
Owners of the parent company		1,286	560
Non-controlling interests	8.1	22	8
		1,307	568
Earnings per share for profit attributable to owners of the parent company			
Basic earnings per share, EUR	2.4	2.41	1.05
Diluted earnings per share, EUR	2.4	2.41	1.05

Consolidated statement of comprehensive income

EURm	NOTE	2021	2020
Profit for the period		1,307	568
Other comprehensive income for the period, net of tax			
Items that will not be reclassified to income statement:			
Actuarial gains and losses on defined benefit plans		96	-36
Changes in fair value of energy shareholdings		632	-251
Items that may be reclassified subsequently to income statement:			
Translation differences		337	-262
Net investment hedge		-21	5
Cash flow hedges		-127	-24
Other comprehensive income for the period, net of tax	7.2	918	-569
Total comprehensive income for the period		2,225	–
Attributable to:			
Owners of the parent company		2,194	-7
Non-controlling interests		31	6
		2,225	–

The notes are integral part of these consolidated financial statements.

Consolidated balance sheet

EURm	NOTE	2021	2020
ASSETS			
Goodwill	4.4	237	229
Other intangible assets	4.4	366	363
Property, plant and equipment	4.1	5,569	4,316
Leased assets	5.2	608	561
Forest assets	4.2	2,328	2,077
Energy shareholdings	4.3	2,579	1,936
Other non-current financial assets	5.3	133	166
Deferred tax assets	7.2	466	421
Net retirement benefit assets	3.4	79	26
Investments in associates and joint ventures		33	33
Other non-current assets		20	21
Non-current assets		12,420	10,149
Inventories	4.6	1,594	1,285
Trade and other receivables	4.6, 5.3	2,024	1,534
Other current financial assets	5.3	139	136
Income tax receivables		40	34
Cash and cash equivalents	5.1, 5.3	1,460	1,720
Current assets		5,257	4,709
Assets		17,676	14,858

EURm	NOTE	2021	2020
EQUITY AND LIABILITIES			
Share capital	5.5	890	890
Treasury shares		-2	-2
Translation reserve		329	25
Other reserves	5.5	1,938	1,430
Reserve for invested non-restricted equity	5.5	1,273	1,273
Retained earnings		6,419	5,735
Equity attributable to owners of the parent company		10,846	9,351
Non-controlling interests	8.1	261	162
Equity		11,106	9,513
Deferred tax liabilities	7.2	596	564
Net retirement benefit liabilities	3.4	676	771
Provisions	4.5	155	222
Non-current debt	5.2, 5.3	2,566	1,952
Other non-current financial liabilities	5.3	109	97
Non-current liabilities		4,102	3,606
Current debt	5.2, 5.3	86	90
Trade and other payables	4.6, 5.3	2,254	1,571
Other current financial liabilities	5.3	95	48
Income tax payables		32	30
Current liabilities		2,468	1,740
Liabilities		6,570	5,345
Equity and liabilities		17,676	14,858

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 1 January 2021	890	-2	25	1,430	1,273	5,735	9,351	162	9,513
Profit for the period	–	–	–	–	–	1,286	1,286	22	1,307
Translation differences	–	–	325	–	–	–	325	13	337
Cash flow hedges - reclassified to income statement, net of tax	–	–	–	63	–	–	63	–	63
Cash flow hedges - reclassified to PPE	–	–	–	-14	–	–	-14	-1	-16
Cash flow hedges - change in fair value, net of tax	–	–	–	-172	–	–	-172	-2	-174
Net investment hedge, net of tax	–	–	-21	–	–	–	-21	–	-21
Energy shareholdings - changes in fair value, net of tax	–	–	–	632	–	1	632	–	632
Actuarial gains and losses on defined benefit plans, net of tax	–	–	–	–	–	96	96	–	96
Total comprehensive income for the period	–	–	304	508	–	1,382	2,194	31	2,225
Share-based payments, net of tax	–	–	–	-1	–	-6	-6	–	-6
Dividend distribution	–	–	–	–	–	-693	-693	-13	-706
Other items	–	–	–	–	–	–	–	-1	–
Contributions by non-controlling interests	–	–	–	–	–	–	–	82	82
Total transactions with owners for the period	–	–	–	-1	–	-698	-699	68	-632
Total equity at 31 December 2021	890	-2	329	1,938	1,273	6,419	10,846	261	11,106
Value at 1 January 2020	890	-2	278	1,711	1,273	5,912	10,062	113	10,175
Profit for the period	–	–	–	–	–	560	560	8	568
Translation differences	–	–	-258	–	–	–	-258	-4	-262
Cash flow hedges - reclassified to income statement, net of tax	–	–	–	-34	–	–	-34	–	-34
Cash flow hedges - reclassified to PPE	–	–	–	-5	–	–	-5	–	-5
Cash flow hedges - change in fair value, net of tax	–	–	–	11	–	–	11	3	14
Net investment hedge, net of tax	–	–	5	–	–	–	5	–	5
Energy shareholdings - changes in fair value, net of tax	–	–	–	-252	–	1	-251	–	-251
Actuarial gains and losses on defined benefit plans, net of tax	–	–	–	–	–	-36	-36	–	-36
Total comprehensive income for the period	–	–	-253	-279	–	525	-7	6	–
Share-based payments, net of tax	–	–	–	-2	–	-9	-11	–	-11
Dividend distribution	–	–	–	–	–	-693	-693	-21	-714
Other items	–	–	–	–	–	–	–	–	-1
Contributions by non-controlling interests	–	–	–	–	–	–	–	64	64
Total transactions with owners for the period	–	–	–	-2	–	-702	-704	43	-662
Total equity at 31 December 2020	890	-2	25	1,430	1,273	5,735	9,351	162	9,513

» Refer Note 5.5 Share capital and reserves, for further information.

Consolidated cash flow statement

EURm	2021	2020
Cash flows from operating activities		
Profit for the period	1,307	568
Adjustments [1]	356	721
Interest received	1	3
Interest paid	-26	-37
Dividends received	2	3
Other financial items, net	-2	-14
Income taxes paid [3]	-275	-145
Change in working capital [2]	-115	-93
Operating cash flow	1,250	1,005
Cash flows from investing activities		
Capital expenditure	-1,432	-818
Additions to forest assets	-89	-57
Investments in energy shareholdings	0	-47
Proceeds from sale of property, plant and equipment and intangible assets, net of tax [3]	17	23
Proceeds from sale of forest assets, net of tax [3]	6	3
Proceeds from disposal of businesses and subsidiaries	157	0
Proceeds from disposal of energy shareholdings	1	2
Proceeds from disposal of joint operations	0	17
Net cash flows from net investment hedges	9	-4
Change in other non-current assets	6	3
Investing cash flow	-1,323	-879
Cash flows from financing activities		
Proceeds from non-current debt	600	861
Payments of non-current debt	-16	-31
Lease repayments	-84	-86
Change in current liabilities	0	-2
Net cash flows from derivatives	34	-17
Dividends paid to owners of the parent company	-693	-693
Dividends paid to non-controlling interests	-12	-23
Contributions paid by non-controlling interests	82	67
Change in investment funds	-100	0
Other financing cash flow	-5	-4
Financing cash flow	-194	71
Change in cash and cash equivalents	-268	197
Cash and cash equivalents at the beginning of the period	1,720	1,536
Exchange rate effect on cash and cash equivalents	8	-13
Change in cash and cash equivalents	-268	197
Cash and cash equivalents at the end of the period	1,460	1,720

[1] Adjustments

EURm	2021	2020
Change in fair value of forest assets and wood harvested	-111	25
Share of results of associated companies and joint ventures	-2	-3
Depreciation, amortisation and impairment charges	515	541
Capital gains and losses on sale of non-current assets	-146	-25
Financial income and expenses	15	24
Income taxes	240	169
Utilised provisions	-85	-55
Non-cash changes in provisions	1	130
Other adjustments	-70	-86
Total	356	721

[2] Change in working capital

EURm	2021	2020
Inventories	-271	45
Receivables included in working capital	-445	-6
Liabilities included in working capital	601	-133
Total	-115	-93

[3] Total income taxes paid in 2021 amounted to EUR 276 million (146 million). Income taxes paid related to investing activities are presented in investing cash flow.

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´s large product range covers pulp, graphic and specialty papers, selfadhesive 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 27 January 2022. 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, 2020.

Figures presented in these financial statements are rounded and therefore the sum of individual figures might deviate from the presented total figure.

In accordance with the European Single Electronic Format (ESEF) reporting requirements, UPM has published the Board of Directors' report and the financial statements as an XHTML file. In line with the ESEF requirements, the primary statements of the consolidated financial statements have been labelled with XBRL tags. XBRL tags are not audited.

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

Impact of COVID-19 on the financial statements
The impact of COVID-19 on UPM financial statements has so far been relatively limited. The group uses estimates and makes significant judgements when valuating certain assets and liabilities, including energy shareholdings, forest assets, retirement benefit obligations and provisions. The group has assessed the impact of COVID-19 to balance sheet items by considering indicators of impairment of goodwill and other intangible assets, recoverable amount of property, plant and equipment, recoverability of deferred tax assets, valuation of inventories, and collectability of trade receivables. The expectations of future cash flows, discount rates and other significant valuation inputs were revised to reflect changed economic environment. Based on these assessments, no significant adjustments to the carrying amounts of said assets were made due to COVID-19. However, the increased uncertainty in the economic environment can lead to significant adjustments to the carrying amount of assets.

The group expects that it will continue to operate and meet its liabilities as they fall due. UPM has a strong financial position. Net debt in the balance sheet amounted to EUR 647 million on 31 December 2021. Cash, investment funds, and unused committed credit facilities amounted to EUR 2.5 billion. The facilities and UPM's outstanding debt have no financial covenants.

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
A joint operation is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the assets, and obligations for the liabilities, relating to the arrangement. Joint control is a contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

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 but no control. Significant influence is the power to participate in the financial and operating policy decisions without the power to control or jointly control those policies. 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. Receivables and liabilities denominated in foreign currencies outstanding on the balance sheet date are translated into the functional currency using the balance sheet date exchange rate. 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 Changes in accounting policies

The group has reviewed IFRS standard amendments effective on periods starting 1 January 2021. The amendments effective as of 1 January 2021 did not have any impact on the group's financial statements.

2. Business performance

Sales
EUR **9,814 m**
(EUR 8,580m)

Comparable EBIT
EUR **1,471 m**
(EUR 948m)

Comparable ROE
11.7 %
(7.5%)

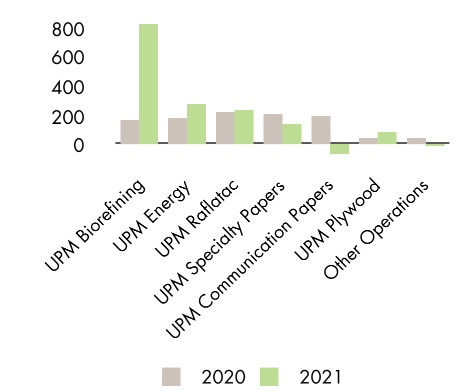
2.1 Business areas

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.

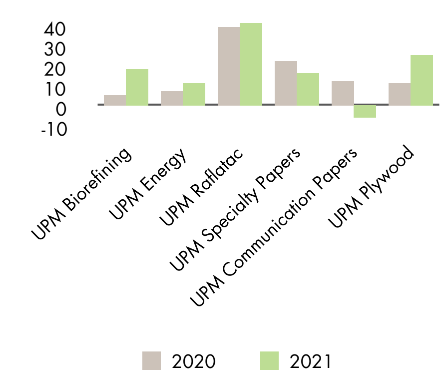
Accounting policies

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. 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.

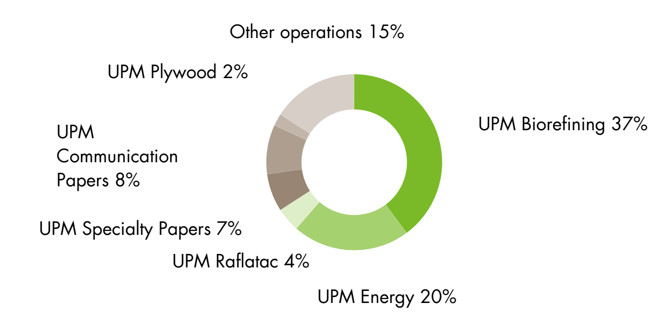
Comparable EBIT, EURm



Comparable ROCE, %



Capital employed 31 Dec 2021
EUR 13,759 million



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 Timber and UPM Biofuels business units. UPM Pulp offers a versatile range of responsibly-produced pulp grades suitable for a wide range of end uses such as tissue, specialty and packaging papers, graphic papers and board. UPM Timber offers certified sawn timber for joinery, packaging, furniture, planing and construction end-use segments. 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 the petrochemical industry.
UPM Energy	UPM Energy generates cost-competitive, zero-carbon electricity. Operations also include physical electricity and financial portfolio management as well as services to industrial electricity consumers and producers.
UPM Raflatac	UPM Raflatac offers innovative and sustainable self-adhesive label materials for branding and promotion, information and functional labelling in the food, beverage, personal care, pharmaceutical and logistics segments, for example.
UPM Specialty Papers	UPM Specialty Papers offers labelling and packaging materials as well as office and graphic papers for labelling, commercial siliconising, packaging, office use and printing.
UPM Communication Papers	UPM Communication Papers offers an extensive product range of sustainably produced graphic papers for advertising and publishing as well as home and office uses.
UPM Plywood	UPM Plywood offers high quality WISA® plywood and veneer products for construction, vehicle flooring, LNG shipbuilding, parquet manufacturing and other industrial applications.
Other operations	Other operations include UPM Forest, UPM Biochemicals-, UPM Biomedicals-, UPM Biocomposites- business units and group services. UPM Forest 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 offers innovative wood-based biochemicals for replacing fossil-based raw materials in various applications such as textiles, PET bottles, packaging, cosmetics, pharmaceuticals, detergents, rubbers and resins. UPM Biomedicals is the forerunner in producing nanofibrillar cellulose for clinical and life science applications in the field of drug screening, personalised medicine, advanced cell therapies, 3D bioprinting, tissue engineering and wound care. UPM Biocomposites is a pioneer in circular economy offering composite decking materials based on both recycled consumer and industrial waste. The product range also includes composite materials made from renewable fibres and polymers to replace fossil-based plastics.

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 2021

EURm, OR AS INDICATED	UPM BIO-REFINING	UPM ENERGY	UPM RAFLATAC	UPM SPECIALTY PAPERS	UPM COM PAPERS	UPM PLYWOOD	OTHER OPE-RATIONS	ELIMINATI-ONS AND RECONCILI-ATIONS [2]	GROUP
External sales	2,289	290	1,671	1,275	3,536	471	277	5	9,814
Internal sales	655	236	—	207	41	21	3	-1,163	—
Total sales	2,945	526	1,671	1,482	3,577	492	280	-1,157	9,814
Comparable EBIT	817	270	223	135	-79	72	76	-42	1,471
Items affecting comparability in operating profit	—	—	-1	—	93	8	-1	-9	91
Operating profit	817	270	222	135	14	80	75	-50	1,562
Finance costs, net									-15
Income taxes									-240
Profit for the period									1,307
Operating assets [1]	5,567	2,932	768	1,169	1,903	333	2,481	-516	14,635
Deferred tax assets									466
Other non-operating assets									139
Other financial assets									2,436
Total assets									17,676
Operating liabilities [1]	419	140	193	265	737	43	380	-468	1,710
Deferred tax liabilities									596
Other liabilities									863
Other financial liabilities									3,400
Total liabilities									6,570
Other items									
Change in fair value of forest assets and wood harvested	-9	—	—	—	—	—	120	—	111
Share of results of associates and joint ventures	2	—	—	—	—	—	—	—	2
Depreciation and amortisation	-190	-7	-36	-75	-103	-27	-25	—	-463
Impairment charges	-2	—	—	—	-52	1	—	—	-52
Capital employed, 31 December	5,148	2,792	575	903	1,165	290	2,101	785	13,759
Average capital employed	4,437	2,375	553	864	1,275	286	1,992	874	12,657
Capital expenditure	1,191	12	25	12	56	14	174	-1	1,483
Capital expenditure, excluding acquisitions and shares	1,191	7	25	12	56	14	172	-1	1,477
Comparable ROCE, %	18.4	11.4	40.2	15.6	-6.2	25.1	3.8	—	11.7
Personnel, 31 December	2,692	72	3,016	1,918	6,422	2,196	650	—	16,966

[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 changes in fair value of unrealised cash flow and commodity hedges that are not allocated to segments.

» 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 2020

EURm, OR AS INDICATED	UPM BIO-REFINING	UPM ENERGY	UPM RAFLATAC	UPM SPECIALTY PAPERS	UPM COM PAPERS	UPM PLYWOOD	OTHER OPE-RATIONS	ELIMINATI-ONS AND RECONCILI-ATIONS [2]	GROUP
External sales	1,720	252	1,560	1,148	3,296	385	221	-1	8,580
Internal sales	463	127	–	176	37	21	4	-827	–
Total sales	2,183	379	1,560	1,324	3,333	405	225	-828	8,580
Comparable EBIT	166	171	214	199	180	33	-12	-2	948
Items affecting comparability in operating profit	–	14	-9	6	-170	-23	-3	-3	-187
Operating profit	166	184	205	206	9	10	-15	-4	761
Finance costs, net									-24
Income taxes									-169
Profit for the period									568
Operating assets [1]	4,004	2,251	656	1,069	1,757	314	2,083	-235	11,898
Deferred tax assets									421
Other non-operating assets									82
Other financial assets									2,457
Total assets									14,858
Operating liabilities [1]	325	23	142	197	436	34	198	-220	1,135
Deferred tax liabilities									564
Other liabilities									1,023
Other financial liabilities									2,623
Total liabilities									5,345
Other items									
Change in fair value of forest assets and wood harvested	-8	–	–	–	–	–	-17	–	-25
Share of results of associates and joint ventures	2	–	–	–	–	–	1	–	3
Depreciation and amortisation	-176	-7	-39	-74	-121	-27	-29	–	-472
Impairment charges	–	-3	–	–	-58	-8	-1	–	-70
Capital employed, 31 December	3,679	2,228	514	871	1,321	280	1,885	777	11,555
Average capital employed	3,620	2,313	542	897	1,446	292	1,901	504	11,514
Capital expenditure	659	6	13	27	70	17	110	2	903
Capital expenditure, excluding acquisitions and shares	659	5	13	27	70	17	110	1	902
Comparable ROCE, %	4.6	7.4	39.5	22.2	12.4	11.2	-0.6	–	8.3
Personnel, 31 December	2,695	70	3,087	1,932	7,281	2,301	649	–	18,014

[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 the changes in fair value of unrealised cash flow and commodity hedges that are not allocated to segments.

*» **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	2021	2020
In operating profit		
Impairment charges	-52	-70
Restructuring charges	11	-137
Change in fair value of unrealised cash flow and commodity hedges	-8	-3
Capital gains and losses on sale of non-current assets	140	23
Total	91	-187
Total in profit before tax	91	-187
In income taxes		
Taxes related to items affecting comparability	12	21
Changes in tax rates	–	-3
Total	12	18
Total in profit for the period	103	-169

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 2021, items affecting comparability relate mainly to UPM Communication Papers and include a capital gain on sale of shares of Shotton Mill Ltd amounting to EUR 133 million and impairment charges of newsprint related fixed assets amounting to EUR 50 million.

In 2020, items affecting comparability in UPM Communication Papers include EUR 117 million restructuring charges and EUR 58 million impairment charges related to closure of UPM Chapelle paper mill and UPM Kaipola paper mill. In UPM Plywood business area, items affecting comparability include EUR 15 million restructuring charges and EUR 8 million impairment charges related to the closure of Jyväskylä plywood mill. Additionally, restructuring charges reported as items affecting comparability include prior capacity closures in UPM Communication Papers as well as restructuring costs related to the business functions of UPM Communications Papers and UPM Raflatac. Capital gains affecting the comparability comprise of a gain of EUR 12 million relating to sale of group's share in Kainuun Voima Oy as well as earnings of EUR 11 million on the sale of other non-current assets.

Total assets and capital expenditure by country

	Assets		Capital expenditure	
EURm	**2021**	**2020**	**2021**	**2020**
Finland	9,889	9,050	83	131
Germany	1,521	1,218	204	136
Uruguay	4,046	2,575	1,159	604
China	711	683	7	5
United States	412	328	5	6
United Kingdom	148	151	1	2
Austria	101	103	2	5
Russia	137	123	2	5
Poland	155	125	16	4
Estonia	51	53	1	3
France	33	43	1	1
Other EU countries	53	48	–	–
Other European countries	27	29	1	1
Rest of world	392	330	1	1
Total	17,676	14,858	1,483	903

Sales by destination country

EURm	2021	2020
Finland	1,046	865
Germany	1,395	1,304
United States	1,089	963
United Kingdom	617	520
China	1,058	953
France	378	326
Uruguay	63	25
Poland	336	277
Austria	151	122
Russia	194	159
Other EU countries	1,651	1,495
Other European countries	352	298
Rest of world	1,482	1,272
Total	9,814	8,580

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 2% (2%) of UPM's sales and the ten largest customers represented approximately 15% (14%) 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	2021	2020	CHANGE
UPM Biorefining	2,945	2,183	35 %
UPM Energy	526	379	39 %
UPM Raflatac	1,671	1,560	7 %
UPM Specialty Papers	1,482	1,324	12 %
UPM Communication Papers	3,577	3,333	7 %
UPM Plywood	492	405	21 %
Other operations	280	225	25 %
Eliminations	-1,157	-828	—
Total	9,814	8,580	14 %

External sales by major products

BUSINESS AREA	BUSINESS	2021	2020
EUR million			
UPM Biorefining	UPM Pulp, UPM Biofuels, UPM Timber	2,289	1,720
UPM Energy	UPM Energy	290	252
UPM Raflatac	UPM Raflatac	1,671	1,560
UPM Specialty Papers	UPM Specialty Papers	1,275	1,148
UPM Communication Papers	UPM Communication Papers	3,536	3,296
UPM Plywood	UPM Plywood	471	385
Other operations	UPM Forest, UPM Biochemicals, UPM Biomedicals, UPM Biocomposites	277	221
Eliminations and reconciliations		5	-1
Total		9,814	8,580

BUSINESS	PRODUCT RANGE
UPM Pulp	Softwood, birch and eucalyptus pulp
UPM Biofuels	Wood-based renewable diesel for transport and renewable naphtha for transport and petrochemicals
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
UPM Forest	Wood and wood-based biomass (logs, pulpwood, chips, forest residues etc.), full forestry service offering
UPM Biochemicals	Lignin products for industrial use
UPM Biomedicals	Wood-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	2021	2020
Papers in UPM Communication Papers	336	318
Fine and specialty papers in UPM Specialty Papers	126	114
Label materials in UPM Raflatac	167	156
Plywood	46	37
Sawn timber	49	31
Chemical pulp (net effect)	65	56

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 2020, 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 cash discounts and 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	2021	2020
Costs and expenses		
Raw materials, consumables and goods	5,446	4,551
Employee costs [1]	1,094	1,188
Other operating costs and expenses [2]	670	852
Delivery costs and other external charges	894	781
Total	8,104	7,371

[1] » Refer Note 3 Employee rewards, for further information.

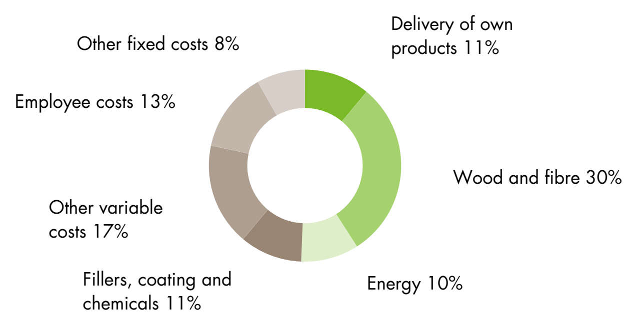
[2] Distribution of other operating costs and expense

EURm	2021	2020
Rents and lease expenses	25	15
Emission expenses [1]	-106	10
Losses on sale of non-current assets	0	0
Credit losses	-5	9
Maintenance and other operating expenses [2]	756	818
Total	670	852

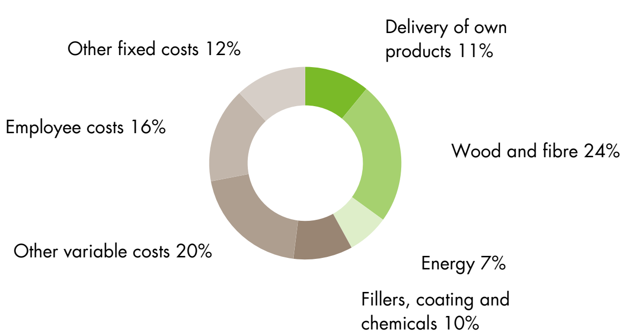
[1] Emission expenses include gains on sales of emission rights EUR 144 (13) million.

[2] Other operating expenses include, among others, energy as well as expenses related to services and group's administration.

Cost structure 2021
EUR 8,104 million



Cost structure 2020
EUR 7,371 million



Auditor's fees

EURm	2021	2020
Audit fee	3.4	3.8
Audit related services	0.2	0.1
Tax services	0.4	0.4
Other services	0.2	0.2
Total	4.2	4.5

In 2021, auditor's fees include EUR 0.2 (0.1) million related to audit services, EUR 0.0 (0.0) million related tax services and EUR 0.2 (0.2) million related to other services paid to PwC Oy.

Research and development costs

The research and development costs included in operating expenses were EUR 46 million (41 million) in 2021. The focus was on new technologies and developing businesses.

Government grants

In 2021, government grants recognised as deduction of operating expenses totalled to EUR 9 million (7 million) of which EUR 3 million (4 million) relates to Finland. EUR 4 million is related to COVID relief in Austria. In addition, the group received emission rights from governments amounting to EUR 75 million (57 million) of which EUR 22 million (21 million) relates to Finland, EUR 46 million (25 million) to Germany, EUR 1 million (3 million) to Austria and EUR 5 million (5 million) to UK.

Other operating income

EURm	2021	2020
Gains on sale of non-current assets	147	25
Rental income	13	13
Emission rights received	75	57
Derivatives, non-qualifying hedges	-22	24
Exchange rate gains and losses	-5	-30
Other	47	26
Total	254	116

In 2021, gains on sale of non-current assets include an EUR 133 millon gain from the disposal of Shotton Mill Ltd. » *Refer Note 8.1* Business acquisitions and disposals for further information. In 2020, gains on sale of non-current assets include an EUR 12 million gain from the disposal of UPM's 50 % share in the joint operation Kainuun Voima Oy.

Emission rights

The group has recognised EUR 75 million (57 million) of income in Other operating income and EUR 106 million of income (10 million of 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 39 million (21 million) and is recognised in provisions. The emission rights recognised in intangible assets are specified below:

EURm	2021	2020
Carrying value, at 1 January	95	80
Emission rights received and purchased	86	57
Deliveries and disposals	-78	-42
Carrying value, at 31 December	104	95
Accumulated costs	105	96
Accumulated impairments	-1	-1
Carrying value, at 31 December	104	95

§ ***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 2021 were EUR 693 million (EUR 1.30 per share) which is 69% of the operating cash flow per share and in 2020 EUR 693 million (EUR 1.30 per share). The Board of Directors proposes to the Annual General Meeting that a dividend of EUR 693 million, EUR 1.30 per share, will be paid in respect of 2021. The proposed dividend represents 55% of UPM's operating cash flow per share for the year 2021.

Earnings per share

EURm	2021	2020
Profit attributable to owners of the parent company, EURm	1,286	560
Weighted average no. of shares (1,000)	533,324	533,324
Basic earnings per share, EUR	2.41	1.05
Diluted earnings per share, EUR	2.41	1.05

§ ***Accounting policies***

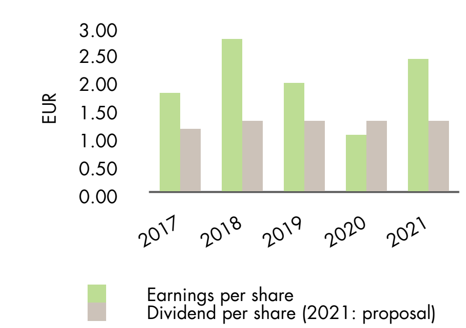
Earnings per share

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 2021 and 2020.

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.

Earnings and dividend per share



3. Employee rewards

3.1 Employee costs

EURm	2021	2020
Salaries and fees	877	979
Share-based payments	13	12
Pension and other post-employment benefits, defined benefit plans	16	13
Pension costs, defined contribution plans	95	89
Other indirect employee costs [1]	93	94
Total	1,094	1,188

[1] Other indirect employee expenses primarily include other statutory social expenses, excluding pension expenses.

3.2 Key management personnel

The remuneration of the members of the Board of Directors was resolved to be raised so that the Chair of the Board will be paid an annual base fee of EUR 195,000, the Deputy Chair of the Board EUR 140,000 and other members of the Board EUR 115,000.

The annual base fee was paid in company shares and cash so that approximately 40% of the fee was paid in the company shares to be purchased on the Board members' behalf, and the rest in cash. The company paid any costs and transfer tax related to the purchase of the company shares.

The Chair of Audit Committee received annual committee fee of EUR 35,000 and Chair of Remuneration Committee as well as Chair of Nomination and Governance Committee EUR 20,000. The members of Audit Committee received annual committee fee of EUR 15,000 and members of other committees EUR 10,000. The annual committee fees were paid in cash.

In 2021, 2,383 (3,123) company shares were purchased to the Chair, 1,710 (2,219) to the Deputy Chair and 1,405 (1,808) 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)	
	2021	2020	2021	2020	2021	2020
Board members						
Björn Wahlroos, Chair	270,700	268,317	195	190	20	20
Berndt Brunow, Deputy Chair	316,462	314,752	140	135	10	10
Henrik Ehrnrooth	12,719	11,314	115	110	20	10
Emma FitzGerald	8,213	6,808	115	110	25	15
Piia-Noora Kauppi	22,604	21,199	115	110	10	35
Marjan Oudeman	8,163	5,363	115	110	15	15
Jari Gustafsson [2]	1,405	–	115	–	15	–
Martin à Porta	20,413	6,008	115	110	10	10
Ari Puheloinen [1]	–	13,339	–	110	–	10
Veli-Matti Reinikkala [1]	–	46,135	–	110	–	20
Kim Wahl	24,518	23,113	115	110	35	15
Total	685,197	716,348	1,140	1,205	160	160

[1] Ari Puheloinen and Veli-Matti Reinikkala stepped down from the Board in 2021

[2] Jari Gustafsson was elected as new director to the Board in 2021

Salaries and benefits paid to the President and CEO and the Group Executive Team

	President and CEO Jussi Pesonen		Other members of Group Executive Team [1]	
EUR 1,000	2021	2020	2021	2020
Salaries	1,093	1,093	3,958	4,132
Short-term incentives	708	888	2,054	1,530
Share rewards	1,902	2,734	5,979	8,231
Benefits	31	31	142	134
Total	3,734	4,747	12,132	14,026

[1] 11 members in 2021 and 2020.

In 2021, costs under the Finnish statutory pension scheme for the President and CEO amounted to EUR 329,000 (349,000) and payments under the voluntary pension plan amounted to EUR 1,200,000 (1,421,000).

In 2021, costs under the Finnish and German statutory pension schemes for Group Executive Team (GET) members (excluding the President and CEO) amounted to EUR 860,000 (785,000) and payments under the voluntary pension plan amounted to EUR 1,035,000 (964,000).

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.

In 2021 and 2020, the short-term incentives are based on the company's Short-Term Incentive Plan and they are paid annually in cash. The amount of the incentive is linked to the executive's position and achievement of annually set targets. The maximum incentives amount to a total of 100% of the annual base salary to the Business Area Executives and to a total 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 3.8 million (3.4 million).

According to the service agreement, the President and CEO would have been entitled to retire in November 2020 at the age of 60 but at the request of the company's Board of Directors, the President and CEO has decided to continue in his position.

The President and CEO has a voluntary pension benefit in addition to the Finnish statutory pension scheme. The President and CEO's voluntary pension benefit was arranged through a defined benefit plan until the end of November 2020. The last contribution to the defined benefit plan was made in 2020. Under the defined benefit plan, the target pension was 60% of the average indexed earnings from the last ten full calendar years of employment calculated according to the Finnish statutory pension scheme. The income of the President and CEO's defined benefit pension plan in 2021 was EUR 1.3 million (1.6 million in 2020). The plan assets amounted to EUR 15.0 million (17.3 million) and the obligation amounted to EUR 12.8 million (14.9 million).

As of December 2020, the voluntary pension benefit is arranged through a defined contribution plan. First contribution to the defined contribution plan took place in 2021.

The retirement age of other members of the Group Executive Team is 63. Other Group Executive Team members are under defined contribution plans.

Should the company or the President and CEO give notice of termination of the service agreement, no severance pay will be paid in addition to the salary for the 12-month notice period. For GET members, 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 a GET member 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 service agreement within three months and each GET member within one month from closing the takeover 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 schemes: 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 the President and CEO and other Group Executive Team (GET) members as well as other selected members of the management. Under the ongoing plans UPM shares are awarded based on 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 2018-2020	PSP 2019-2021	PSP 2020-2022	PSP 2021-2023
No. of participants at 31 December 2021	25	26	28	27
Actual achievement	71.45 %	97.31 %	–	–
Max no. of shares to be delivered [1]				
to the President and CEO	60,089	91,541	85,589	83,272
to other members of GET	188,914	285,463	272,500	275,700
to other selected members of management	112,892	180,901	212,700	192,600
Total max no. of shares to be delivered	361,895	557,905	570,789	551,572
Share delivery (year)	2021	2022	2023	2024
Earning criteria (weighting)	Total shareholder return (100%)	Total shareholder return (100%)	Total shareholder return (100%)	Total shareholder return (100%)

[1] For PSP 2018–2020 and PSP 2019–2021, the gross number of shares actually earned.

Deferred Bonus Plan

The Deferred Bonus Plan (DBP) is targeted at other selected key employees 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 2018	DBP 2019	DBP 2020	DBP 2021
No. of participants (at grant)	370	390	393	428
No. of participants (at 31 December 2021)	316	334	366	410
Max no. of shares to be delivered (at grant)	450,000	460,000	429,558	459,912
Estimated no. of shares to be delivered at 31 December 2021 [1]	300,478	180,334	149,067	366,698
Share delivery (year)	2021	2022	2023	2024
Earning criteria	Group/Business Area EBITDA	Group/Business Area EBITDA	Group/Business Area EBITDA	Group/Business Area EBITDA

[1] For DBP 2018 and DBP 2019, the gross number of shares actually earned

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:

	2021					2020				
EURm	FINLAND	UK	GERMANY	OTHER COUNTRIES	TOTAL	FINLAND	UK	GERMANY	OTHER COUNTRIES	TOTAL
Present value of funded obligations	577	542	39	15	1,174	581	539	43	16	1,180
Fair value of plan assets	-632	-565	-2	-15	-1,214	-606	-515	-3	-16	-1,140
Deficit (+)/surplus (–)	-55	-23	36	–	-40	-25	24	40	–	39
Present value of unfunded obligations	–	–	548	68	616	–	–	606	74	679
Net defined benefit liability (+)/ asset (–)	-55	-23	585	68	576	-25	24	646	74	719
Net retirement benefit asset in the balance sheet	-56	-23	–	–	-79	-26	–	–	–	-26
Net retirement benefit liability in the balance sheet [1]	2	–	585	68	655	1	24	646	74	745

[1] Net retirement benefit liability in the balance sheet includes other long-term employee benefits of EUR 21 million (25 million) in 2021.

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 79% (81%) of group´s Finnish employees are insured with an insurance company and these arrangements qualify as defined contribution plans. Approximately 21% (19%) of employees are insured with TyEL foundation (UPM Sellutehtaiden 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.

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

EURm	Pension and other post-employment benefits 2021 PRESENT VALUE OF OBLIGATION	FAIR VALUE OF PLAN ASSETS	NET DEFINED BENEFIT LIABILITY/ (ASSET)	Pension and other post-employment benefits 2020 PRESENT VALUE OF OBLIGATION	FAIR VALUE OF PLAN ASSETS	NET DEFINED BENEFIT LIABILITY/ (ASSET)
Carrying value, at 1 January	1,859	-1,140	719	1,784	-1,092	691
Current service cost	15	–	15	14	–	14
Past service cost	-2	–	-2	-2	–	-2
Gains and losses arising from settlements	–	–	–	-6	–	-6
Interest expense (+) income (–)	12	-9	3	20	-14	7
Total included in employee costs (Note 3.1)	25	-9	16	27	-14	13
Actuarial gains and losses arising from changes in demographic assumptions	-12	–	-12	-3	–	-3
Actuarial gains and losses arising from changes in financial assumptions	-58	–	-58	163	–	163
Actuarial gains and losses arising from experience adjustments	4	–	4	-21	–	-21
Return on plan assets, excluding amounts included in interest expense (+) income (–)	–	-62	-62	–	-90	-90
Total remeasurement gains (–) and losses (+) included in other comprehensive income	-66	-62	-128	140	-90	50
Benefits paid	-64	64	–	-63	63	–
Settlements paid	-4	3	-1	–	–	–
Contributions by the employer	–	-33	-33	–	-33	-33
Translation differences	39	-36	3	-28	26	-2
Carrying value, at 31 December	1,790	-1,214	576	1,859	-1,140	719

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 99% 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 18 years (17 years) at the end of 2021.

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 39 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 11 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 25 million, in the UK by EUR 26 million and in Germany by EUR 26 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 2021	2020	UK 2021	2020	GERMANY 2021	2020	OTHER COUNTRIES 2021	2020
Discount rate %	0.80	0.33	1.90	1.35	0.82	0.37	1.11	0.67
Inflation rate %	2.03	1.33	3.40	2.95	1.70	1.70	2.00	1.83
Rate of salary increase %	2.01	1.33	–	–	2.50	2.50	2.58	2.54
Rate of pension increase %	1.02	0.62	3.25	2.90	1.70	1.70	1.13	0.87
Expected average remaining working years of participants	15.3	14.1	10.1	11.6	8.2	8.1	8.9	8.6

EURm	0.5% INCREASE 2021	2020	0.5% DECREASE 2021	2020
Discount rate %	-145	-156	162	173
Rate of salary increase %	13	15	-12	-13
Rate of pension increase %	81	92	-80	-88
Life expectancy +1 year	78	86	–	–

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.

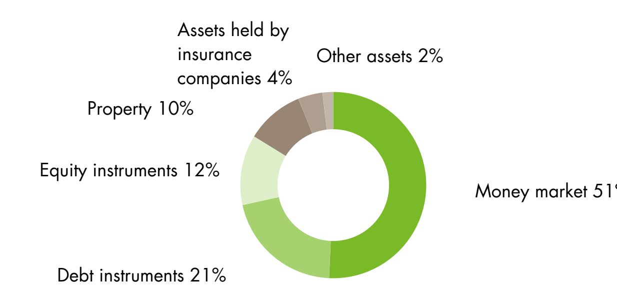
Plan assets by categories at 31 December

EURm	2021 Quoted	2021 Unquoted	2020 Quoted	2020 Unquoted
Money market	478	138	177	97
Debt instruments	–	253	225	107
Equity instruments	92	56	295	39
Property	–	123	21	94
Assets held by insurance companies	–	52	–	62
Other assets	–	23	–	24
Total	570	644	718	423

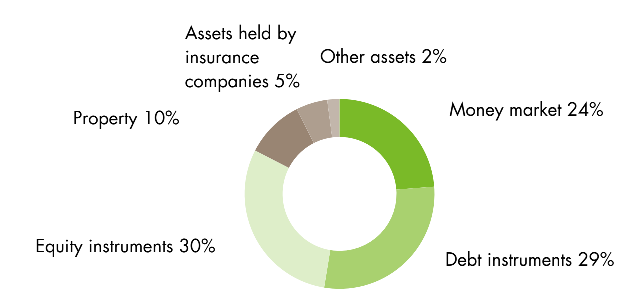
In 2021 plan assets include the company's ordinary shares with a fair value of EUR 0 million (2 million).

In 2022 contributions of EUR 32 million are expected to be paid to group's defined benefit plans. In 2021 contributions of EUR 33 million were paid to group's defined benefit plans.

Plan assets by categories 2021



Plan assets by categories 2020



§ ***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

	2021	2020
Property, plant and equipment	5,569	4,316
Leased assets	608	561
Forest assets	2,328	2,077
Energy shareholdings	2,579	1,936
Goodwill and other intangible assets	603	592
Operating working capital	1,204	1,247
Provisions	-155	-222
Net retirement benefit assets and liabilities	-597	-744
Cash and cash equivalents	1,460	1,720
Other assets and liabilities	290	215
Net deferred tax assets and liabilities	-130	-143
Total	13,759	11,555

4.1 Property, plant and equipment

EURm	LAND AND WATER AREAS	BUILDINGS	MACHINERY AND EQUIPMENT	OTHER TANGIBLE ASSETS	CONSTRUC-TION IN PROGRESS	TOTAL
2021						
Accumulated costs	859	3,452	13,136	834	2,069	20,349
Accumulated depreciation and impairments	-2	-2,604	-11,462	-712	—	-14,780
Carrying value, at 31 December	857	848	1,674	122	2,069	5,569
Carrying value, at 1 January	757	846	1,864	125	724	4,316
Additions	58	2	5	2	1,448	1,515
Disposals	-3	-3	-4	-1	—	-12
Depreciation	—	-71	-280	-17	—	-368
Impairment	—	-12	-38	-1	—	-52
Reclassifications	—	60	80	9	-150	-2
Reclassifications to assets held for sale	—	-3	-11	—	—	-13
Translation differences	44	29	58	6	47	185
Carrying value, at 31 December	857	848	1,674	122	2,069	5,569
2020						
Accumulated costs	797	3,423	13,182	839	724	18,965
Accumulated depreciation and impairments	-39	-2,577	-11,318	-714	—	-14,649
Carrying value, at 31 December	757	846	1,864	125	724	4,316
Carrying value, at 1 January	761	948	2,006	134	235	4,083
Additions	48	—	4	1	776	829
Disposals	-1	-5	—	—	—	-7
Depreciation	—	-73	-292	-18	—	-383
Impairment	-8	-27	-34	-1	—	-70
Reclassifications	—	30	235	16	-280	1
Reclassifications to assets held for sale	3	-3	-3	—	—	-2
Translation differences	-45	-26	-52	-6	-7	-136
Carrying value, at 31 December	757	846	1,864	125	724	4,316

Capital expenditure
Capital expenditure, excluding acquisitions and shares, amounted to EUR 1,477 million (902 million) in 2021.

In December 2021, UPM announced that it is investing EUR 10 million in the development of UPM Plywood's plywood mill in Joensuu, Finland. The investment includes new production lines, new workspaces and 720 square metres of completely new production space.

In January 2020, UPM announced that it would invest EUR 550 million in a 220,000 tonnes next-generation biochemicals biorefinery in Leuna, Germany. The schedule for the start-up of the facility is by the end of 2023.

In January 2019 UPM announced that it would invest in the refurbishment of the 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.

In July 2019 UPM announced that it would invest USD 2.7 billion in a 2.1 million tonne greenfield eucalyptus pulp mill near Paso de los Toros in central Uruguay. Additionally, UPM will invest approximately USD 280 million in port operations in Montevideo and USD 70 million in local investments outside the mill fence, including a new residential area in Paso de los Toros. The start-up schedule has been updated to take place by the end of Q1 2023, and the total investment estimate has been increased to USD 3.47 billion

In October 2019 UPM announced that it would invest EUR 95 million in a Combined-Heat-Power (CHP) plant at the UPM Nordland paper mill in Germany. The plant is planned to go on grid in Q3 2022. The annual cost savings of more than EUR 10 million will start as of 2023. The investment is estimated to decrease UPM's CO_2-footprint by 300,000 tonnes.

Capitalised borrowing costs
In 2021, the borrowing costs capitalised as part of non-current assets amounted to EUR 9 million (4 million). Amortisation of capitalised borrowing costs was EUR 2 million (3 million) and the average interest rate used 0.73% (1.31%), which represents the average costs to finance the projects. In 2021, capitalised borrowing costs were mainly related to the construction of the new pulp mill in Uruguay.

Government grants
In 2021, government grants recognised as deduction of non-current assets totalled to EUR 0 million (5 million).

Major capital commitments at 31 December

EURm	2021	2020
New biorefinery / Germany	315	471
CHP power plant / Germany	32	67
New pulp mill / Uruguay	1,406	2,139
Renovation and modernisation / Kuusankoski hydro power plant	10	16
Mill development / Plywood Joensuu	8	–

Impairment losses

In December 2021, UPM conducted an impairment test of UPM Communication Papers fixed assets. The costs of pulp, recycled fibre, logistics and energy increased significantly in 2021 and high production costs continue to challenge the operations in the foreseeable future. Fair value less cost to sell method was used in the calculation with an inflation rate of 2.0%, negative sales growth rate of 5.4% in real terms, and a post-tax discount rate of 6.7%. As a result of the test calculation, UPM recognised impairment charges of EUR 50 million related to newsprint property, plant and equipment.

In June 2020, UPM announced the plan that it has started a consultation process for the potential closure of the UPM Jyväskylä plywood mill in Finland. With the plan to permanently close the mill, UPM recognised impairment charges of EUR 8 million in the Plywood business area.

In August 2020, UPM announced the plans for the permanent closure of the UPM Kaipola paper mill in Finland. The mill was permanently closed in early January 2021. With the permanent closure of the mill, UPM recognised impairment charges of EUR 53 million in the 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 straightline 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.

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

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.

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 2,328 million (2,077 million) at the end of 2021. UPM's own and leased forest land areas are summarised in below table.

1,000 ha	FOREST LAND	PRODUCTIVE FOREST LAND	FORESTED LAND
Finland	515	426	420
Uruguay	305	182	173
Uruguay, leased land	161	130	124
United States	76	55	55
Total	1,057	793	772

At the end of 2021, carrying value of own forest land amounted to EUR 694 million (EUR 594 million) and leased forest land EUR 219 million (EUR 183 million).

Forest assets

EURm	2021	2020
Carrying value, at 1 January	2,077	2,097
Additions	104	53
Disposals	-6	–
Wood harvested	-98	-129
Net change in fair value	206	100
Translation differences	44	-45
Carrying value, at 31 December	2,328	2,077

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 111 million (-25 million) in 2021. In 2021, the increase in fair value was impacted by increased forest growth and higher stumpage price estimates used in valuation.

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. Own land is stated at cost whereas leased land is valued at cost less accumulated depreciation.

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 judgement 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 costs related to future risks. 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 future forest growth and environmental restrictions.

The pre-tax discount rate used to determine the fair value of the Finnish forests in 2021 was 7.0% (7.0%) and for Uruguayan plantations 9.9% (9.9%). A decrease (increase) of one percentage point in discount rate would increase (decrease) the fair value of forest assets by approximately EUR 270 million (260 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 2,579 million (1,936 million) at the end of 2021. 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.

In 2020, UPM issued a shareholder loan of EUR 47 million without a maturity date to PVO. Embedded into the loan terms is a right to issue new shares in the PVO B2 series against the remaining, unpaid nominal of the loan starting from 2021. The loan is valued at fair value and is taken into account as a part of the total fair valuation of the PVO B2 series valuation. In addition, in 2020 UPM issued a similar loan commitment of EUR 123 million to PVO, where also a right to issue new PVO B2 shares is embedded starting from 2023.

Energy shareholdings

	Number of shares	Group holding %	Carrying value, EURm 2021	2020
Pohjolan Voima Oyj, A series	8,176,191	61.24	473	362
Pohjolan Voima Oyj, B series	4,140,132	58.11	1,219	990
Pohjolan Voima Oyj, B2 series	2,869,819	51.22	424	191
Kemijoki Oy	179,189	7.33	327	273
Länsi-Suomen Voima Oy	10,220	51.10	131	114
Other	–	–	6	6
Carrying value, at 31 December			2,579	1,936

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.

Changes in energy shareholdings

EURm	2021	2020
Carrying value, at 1 January	1,936	2,145
Disposals	-1	-2
Changes in fair value recognised in other comprehensive income	643	-207
Carrying value, at 31 December	2,579	1,936

Accounting policies

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.

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.

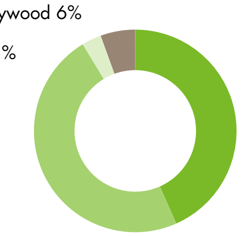
The electricity price estimate is based on a simulation of the Finnish area electricity price. A change of 5% in the electricity price used in the model would change the total value of the assets by EUR 370 million. The discount rate of 5.08% used in the valuation model is determined using the weighted average cost of capital method. A change of 0.5% percentage points in the discount rate would change the estimated fair value of the assets by approximately EUR 330 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 2021



Goodwill by business area

EURm	2021	2020
Pulp operations Uruguay	102	94
Pulp operations Finland	113	113
UPM Raflatac	7	7
UPM Plywood	13	13
Other operations	1	1
Total	237	229

Goodwill

EURm	2021	2020
Carrying value, at 1 January	229	238
Translation differences	8	-9
Carrying value, at 31 December	237	229

Other intangible assets

EURm	INTANGIBLE RIGHTS	SOFTWARE AND OTHER INTANGIBLE ASSETS	TOTAL
2021			
Accumulated costs	477	541	1,018
Accumulated amortisation and impairments	-279	-477	-756
Carrying value, at 31 December	198	64	262
Carrying value, at 1 January	199	69	267
Additions	3	13	15
Amortisation	-3	-18	-21
Reclassifications	–	1	1
Carrying value, at 31 December	198	64	262
Emission rights, carrying value [1]			104
Carrying value including emission rights, at 31 December			366
2020			
Accumulated costs	471	665	1,136
Accumulated amortisation and impairments	-272	-596	-868
Carrying value, at 31 December	199	69	267
Carrying value, at 1 January	199	47	246
Additions	3	34	37
Amortisation	-4	-12	-16
Reclassifications	–	1	1
Carrying value, at 31 December	199	69	267
Emission rights, carrying value [1]			95
Carrying value including emission rights, at 31 December			363

[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 2021.

Water rights of hydropower plants belonging to UPM Energy and reported in intangible rights amounted EUR 189 million at the end of 2021 and 2020. The values of water rights were tested based on expected future cash flows of each separate hydro power plant.

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 2021 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	9.41 % (2020: 7.84 %)	Pulp price, wood costs
Pulp operations Uruguay	Value in use	10 years + terminal value	7.50 % (2020: 7.84 %)	Pulp price, wood costs
UPM Raflatac	Value in use	10 years + terminal value	8.22 % (2020: 7.60 %)	Product prices, cost development
UPM Plywood	Value in use	10 years + terminal value	13.01 % (2020: 13.04 %)	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.

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.

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.

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	ENVIRON-MENTAL	EMISSIONS	OTHER	TOTAL
2021						
Provisions at 1 January	52	91	29	21	28	222
Provisions made during the year	5	6	2	41	11	64
Provisions utilised during the year	-22	-53	-1	-21	-10	-107
Unused provisions reversed	-11	-8	-1	-2	-2	-25
Provisions at 31 December	24	36	30	39	26	155
Non-current						68
Current						88
Total						155
2020						
Provisions at 1 January	30	36	20	18	41	144
Provisions made during the year	43	96	7	23	3	173
Provisions utilised during the year	-11	-33	-1	-19	-9	-73
Unused provisions reversed	-6	-7	–	-1	-7	-21
Reclassifications	-4	–	4	–	–	–
Provisions at 31 December	52	91	29	21	28	222
Non-current						100
Current						122
Total						222

UPM has undergone several restructuring 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 2021 and 2020, restructuring and termination provisions relate mainly to capacity closures and optimisation of operations in UPM Communication Papers business area. In 2021, there were no significant additions to restructuring and termination provisions. In 2020, additions to restructuring and termination provisions of EUR 106 million related to closure of UPM Chapelle paper mill and UPM Kaipola paper mill. In addition, termination provision made in 2020 related to restructuring of business functions of UPM Communication Papers and UPM Raflatac amounting to EUR 14 million. In UPM Plywood business Jyväskylä plywood mill was closed in 2020 and EUR 12 million restructuring and termination provision recognised.

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 104 million (95 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	2021	2020
Inventories	1,594	1,285
Trade receivables	1,320	1,098
Trade payables	-1,697	-1,128
Advances received	-14	-8
Total	1,204	1,247

Inventories

EURm	2021	2020
Raw materials and consumables	794	647
Work in progress	6	6
Finished products and goods	769	616
Advance payments	25	16
Total	1,594	1,285

Trade and other receivables

EURm	2021	2020
Trade receivables		
Trade receivables	1,345	1,129
Loss allowance provision	-25	-31
Total trade receivables	1,320	1,098
Prepayments and accrued income		
Personnel expenses	5	9
Energy and other excise taxes	20	48
Other items	175	130
Total prepayments and accrued income	200	186
Other receivables		
VAT and other indirect taxes receivable	166	135
Other receivables	339	115
Total other receivables	504	250
Total	2,024	1,534

Trade receivables ageing

	2021			2020		
EURm	TRADE RECEIVABLES	LOSS ALLOWANCE PROVISION	TRADE RECEIVABLES, NET OF PROVISION	TRADE RECEIVABLES	LOSS ALLOWANCE PROVISION	TRADE RECEIVABLES, NET OF PROVISION
Undue	1,005	-5	1,000	1,030	-4	1,025
Past due up to 30 days	314	-1	313	59	-1	58
Past due 31-90 days	6	-1	5	14	-3	11
Past due over 90 days	20	-19	2	26	-22	4
Total	1,345	-25	1,320	1,129	-31	1,098

Trade and other payables

EURm	2021	2020
Accrued expenses and deferred income		
Personnel expenses	191	180
Interest expenses	9	6
Indirect taxes	13	11
Customer rebates	119	92
Customer claims	6	5
Other items	111	59
Total accrued expenses and deferred income	449	354
Advances received	14	8
Trade payables	1,697	1,128
Other current liabilities	94	82
Total	2,254	1,571

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 15% (15%) of the trade receivables as at 31 December 2021 – i.e., approximately EUR 200 million (170 million).

In 2021, trade receivables amounting to EUR 5 million (10 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.

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.

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. Customer claims and customer rebates are typically expected to realise within the next 12 months.

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	Free cash flow
EUR **647 m**	EUR **-74 m**
(EUR 56m)	(EUR 126m)

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	2021	2020
Equity attributable to owners of the parent company	10,846	9,351
Non-controlling interest	261	162
Total equity	11,106	9,513
Non-current debt	2,566	1,952
Current debt	86	90
Total debt	2,652	2,042
Total capitalisation	13,759	11,555
Total debt	2,652	2,042
Less: Interest-bearing financial assets and investment funds	2,006	1,986
Net debt	647	56
Gearing ratio, % [1]	6	1
Net debt to EBITDA [1]	0.35	0.04

[1] Refer » *Other financial information* on Alternative performance measures.

Liquidity and refinancing risk

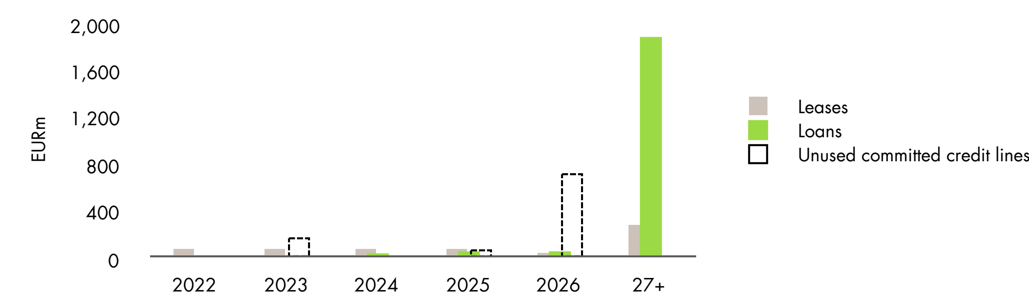
Under all circumstances, UPM seeks to maintain adequate liquidity, which depends on a number of factors, such as the availability of cash flows from operations and access to additional debt and equity financing. UPM aims to ensure sufficient liquidity by means of efficient cash management and restricting financial investments to investment types that can readily be converted into cash and by keeping a sufficient amount of unused committed credit lines or cash as a reserve. UPM aims to minimise refinancing risks by ensuring a balanced loan portfolio maturing schedule and sufficiently long maturities. The average loan maturity at 31 December 2021 was 7.3 years (7.6 years).

Liquidity and refinancing

EURm	2021	2020
Cash at bank	1,313	1,390
Cash equivalents	146	330
Investment funds	100	–
Committed credit lines	909	1,458
of which used	–	–
Loan commitments	-123	-123
Used uncommitted credit lines	-2	-2
Long-term loan repayment cash flow	-77	-80
Liquidity	2,267	2,973

Cash and cash equivalents comprise cash in hand, deposits held at banks and with original maturities of three months or less. Investment funds comprise fund investments with a redemption period of less than 12 months. Bank overdrafts are included in used uncommitted credit lines and presented within current debt in the balance sheet. In 2021, no impairment and no expected credit losses were recognised in profit or loss for loan receivables or cash and cash equivalents.

Repayments of debt and maturities of unused committed credit lines at the end of 2021



Maturity table of debt at the end of 2021

EURm	2022	2023	2024	2025	2026	2027+	TOTAL
Bonds	–	–	–	–	–	1,581	1,581
Loans from financial institutions	6	8	19	34	31	122	219
Lease liabilities	70	69	62	67	31	275	574
Other loans	1	–	–	–	–	163	164
Current loans	2	–	–	–	–	–	2
Principal payments	79	76	81	101	62	2,141	2,540
Interest payments	45	45	44	44	43	107	328

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 104 million and other non-cash adjustments decreasing carrying value by EUR 22 million.

Maturity table of debt at the end of 2020

EURm	2021	2022	2023	2024	2025	2026+	TOTAL
Bonds	–	–	–	–	–	1,056	1,056
Loans from financial institutions	4	4	17	8	16	77	126
Lease liabilities	75	63	53	50	54	248	544
Other loans	1	–	–	–	–	168	171
Current loans	2	–	–	–	–	–	2
Principal payments	82	67	71	59	70	1,550	1,898
Interest payments	44	40	39	38	37	127	325

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 157 million and other non-cash adjustments decreasing carrying value by EUR 18 million.

Maturity table of derivatives included in net debt and guarantees at the end of 2021

EURm	2022	2023	2024	2025	2026	2027+	TOTAL
Net settled interest rate swaps							
Net inflow	20	16	14	14	14	14	92
Net outflow	–	-1	-3	-4	-5	-11	-25
Gross settled derivatives							
Gross currency swaps							
Total inflow	7	7	7	7	7	178	213
Total outflow	-1	-1	-2	-2	-2	-171	-178
Forward foreign exchange contracts							
Total inflow	574	–	–	–	–	–	574
Total outflow	-574	–	–	–	–	–	-574
Guarantees	2	–	–	–	–	–	2

Maturity table of derivatives included in net debt and guarantees at the end of 2020

EURm	2021	2022	2023	2024	2025	2026+	TOTAL
Net settled interest rate swaps							
Net inflow	19	19	19	17	16	29	120
Net outflow	–	–	–	–	–	-3	-4
Gross settled derivatives							
Gross currency swaps							
Total inflow	6	6	6	6	6	188	220
Total outflow	-1	-1	-1	-1	-1	-170	-173
Forward foreign exchange contracts							
Total inflow	715	–	–	–	–	–	715
Total outflow	-711	–	–	–	–	–	-711
Guarantees	2	–	–	–	–	–	2

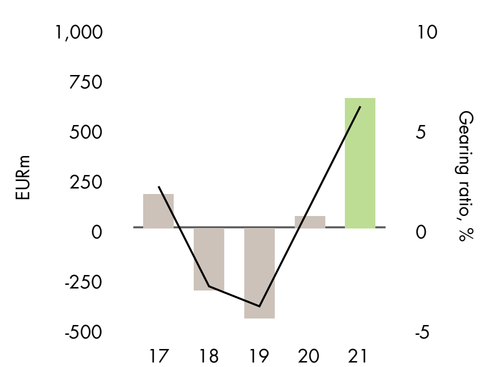
5.2 Net debt

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 2021, net debt increased by EUR 591 million. Net debt totalled EUR 647 million (56 million) at the end of 2021.

In October 2020 UPM established a EUR 3 billion Euro Medium Term Note (EMTN) programme and launched a Green Finance Framework. The independent second opinion concerning the framework was provided by CICERO Shades of Green. UPM's framework was rated with the highest-grade, CICERO Dark Green.

In March 2021, UPM successfully issued a new EUR 500 million Green Bond under its EMTN (Euro Medium Term Note) programme and its Green Finance Framework. The bond matures in March 2031 and pays a fixed coupon of 0.50%. In November 2020 UPM issued its first Green Bond under the EMTN programme with a nominal value of EUR 750 million. The bond matures in November 2028 and pays a fixed coupon of 0.125%. There are no financial covenants connected to the bonds. The net proceeds from the bonds are used for financing and/or refinancing Eligible Projects and Assets under UPM's Green Finance Framework. Both bonds are listed on the Irish Stock Exchange plc, trading as Euronext Dublin.

Net debt



Net debt

EURm	2021	2020
Bonds	1,624	1,153
Loans from financial institutions	213	121
Lease liabilities	504	469
Derivatives	23	–
Other loans	201	210
Non-current debt	2,566	1,952
Repayments of non-current debt	7	5
Repayments of lease liabilities	70	75
Derivatives	8	8
Other liabilities	2	2
Current debt	86	90
Total debt	2,652	2,042
Loan receivables	4	4
Derivatives	126	157
Other receivables	19	20
Non-current interest-bearing assets	148	181
Loan receivables	3	8
Derivatives	4	12
Other receivables	292	66
Investment funds	100	–
Cash and cash equivalents	1,460	1,720
Current interest-bearing assets	1,858	1,805
Total interest-bearing assets	2,006	1,986
Net debt	647	56

Accounting policies

Debt

Debt comprising of bonds, bank and pension loans, lease liabilities 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 2021

	Reported in financing activities in cash flow statement							
EURm	NON-CURRENT LOANS INCL. REPAYMENTS	LEASE LIABILITIES	CURRENT LOANS	NET DERIVA-TIVES	INVEST-MENT FUNDS	OTHER FINANCIAL ASSETS	CASH AND CASH EQUIVALENTS	NET DEBT
Carrying value, at 1 January	1,489	544	2	-161	–	-97	-1,720	56
Change in net debt, cash								
Proceeds from non-current debt	600	–	–	–	–	–	–	600
Payments of non-current debt	-16	–	–	–	–	–	–	-16
Lease repayments	–	-84	–	–	–	–	–	-84
Change in current liabilities	–	–	–	–	–	–	–	–
Net cash flows from derivatives	–	–	–	34	–	–	–	34
Transaction costs and discounts in operating cash flow	-7	–	–	–	–	–	–	-7
Change in other financial assets in operating cash flow	–	–	–	–	–	-224	–	-224
Change in other financial assets in investing cash flow	–	–	–	–	–	5	–	5
Change in investment funds	–	–	–	–	-100	–	–	-100
Change in cash and cash equivalents	–	–	–	–	–	–	268	268
	577	-84	–	34	-100	-219	268	476
Change in net debt, non-cash								
New contracts and subsequent additions	10	93	–	–	–	–	–	103
Lease liability reassessments	–	1	–	–	–	–	–	1
Fair value gains and losses	-53	–	–	28	–	–	–	-25
Exchange gains and losses	21	21	–	–	–	–	-8	33
Effective interest rate adjustment	3	–	–	–	–	–	–	3
	-20	115	–	28	–	–	-8	114
Carrying value, at 31 December	2,046	574	2	-99	-100	-317	-1,460	647

Change in net debt 2020

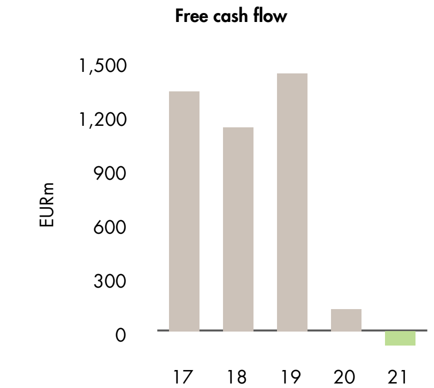
Reported in financing activities in cash flow statement

EURm	NON-CURRENT LOANS INCL. REPAYMENTS	LEASE LIABILITIES	CURRENT LOANS	NET DERIVATIVES	OTHER FINANCIAL ASSETS	CASH AND CASH EQUIVALENTS	NET DEBT
Carrying value, at 1 January	708	586	2	-159	-54	-1,536	-453
Change in net debt, cash							
Proceeds from non-current debt	861	—	—	—	—	—	861
Payments of non-current debt	-31	—	—	—	—	—	-31
Lease repayments	—	-86	—	—	—	—	-86
Change in current liabilities	—	—	-2	—	—	—	-2
Net cash flows from derivatives	—	—	—	-17	—	—	-17
Transaction costs and discounts in operating cash flow	-10	—	—	—	—	—	-10
Change in other financial assets in operating cash flow	—	—	—	—	-47	—	-47
Change in other financial assets in investing cash flow	—	—	—	—	3	—	3
Change in cash and cash equivalents	—	—	—	—	—	-197	-197
	820	-86	-2	-17	-44	-197	473
Change in net debt, non-cash							
New contracts and subsequent additions	1	64	—	—	—	—	65
Lease liability reassessments	—	5	—	—	—	—	5
Fair value gains and losses	4	—	—	15	—	—	20
Exchange gains and losses	-35	-25	—	—	—	13	-46
Effective interest rate adjustment	1	—	—	—	—	—	1
Reclassification between non-current and current loans	-3	—	3	—	—	—	—
Liabilities related to assets classified as held for sale	-8	—	—	—	—	—	-8
	-39	44	3	15	—	13	36
Carrying value, at 31 December	1,489	544	2	-161	-97	-1,720	56

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.

EURm	2021	2020
Operating cash flow	1,250	1,005
Investing cash flow	-1,323	-879
Free cash flow	-74	126
Dividends paid to owners of the parent company	-693	-693
Dividends paid to non-controlling interests	-12	-23
Contributions paid by non-controlling interests	82	67
Other financing cash flow	-5	-4
Transaction costs and discounts in operating cash flow	7	10
Change in other financial assets in operating cash flow	224	47
Change in other financial assets in investing cash flow	-5	-3
Change in net debt, cash	476	473
Change in net debt, non-cash	114	36
Change in net debt	590	509
Opening net debt	56	-453
Closing net debt	647	56



Bonds

FIXED RATE PERIOD	INTEREST RATE, %	CURRENCY	NOMINAL VALUE ISSUED, MILLION	CARRYING VALUE 2021 EURm	CARRYING VALUE 2020 EURm
1997-2027	7.450	USD	375	413	411
2020-2028	0.125	EUR	750	718	741
2021-2031	0.500	EUR	500	494	—
Value, at 31 December				1,624	1,153
Current portion				—	—
Non-current portion				1,624	1,153

Leases

Leases of property, plant and equipment where UPM, as a lessee, obtains substantially all of the economic benefits from the use of the identified asset and where UPM has the right to direct the use of the identified asset, are classified as leases. Approximately 36 % (33%) of leased assets recognised on the balance sheet consists of land areas in Uruguay, which the group uses for eucalyptus plantations. Approximately 30% (34%) of the leased assets on the balance sheet consist of five power plants. UPM uses the energy generated by these plants for its own production. In addition, the group has leased one waste water treatment plant as well as several warehouses, terminals, offices, railcars and vessels. UPM also leases some production machinery and equipment like forklifts and vehicles that are insignificant to the total leased assets portfolio.

In 2021, the total cash outflow for leased assets was EUR 84 (86) million. The expenses related to short-term leases recognised in the income statement in 2021 amounted to EUR 3 (7) million. The group had no significant variable lease payments in 2021.

The lease commitments for leases not commenced at year-end 31 December 2021 totalled approximately EUR 409 (412) million, which are mostly related to long-term charter agreements, railway service agreement in Uruguay and service agreements related to wood handling, waste water treatment and other utilities in Leuna, Germany.

Changes in leased assets

	LAND AREAS	BUILDINGS	MACHINERY AND EQUIPMENT	OTHER LEASED ASSETS	ADVANCE PAYMENTS [1]	TOTAL
2021						
Carrying value, at 1 January	214	245	86	12	4	561
New contracts and subsequent additions	30	47	13	5	4	98
Reassessments and disposals	4	-1	–	–	–	3
Depreciations	-13	-31	-21	-8	–	-74
Reclassifications	–	2	–	–	-2	–
Translation differences	18	2	2	–	–	21
Carrying value, at 31 December	252	264	80	8	4	608
2020						
Carrying value, at 1 January	212	262	104	12	–	590
New contracts and subsequent additions	28	16	10	7	4	65
Reassessments and disposals	3	2	-1	–	–	3
Depreciations	-12	-32	-22	-7	–	-73
Reclassifications	–	–	-2	–	–	-2
Translation differences	-16	-3	-3	–	–	-23
Carrying value, at 31 December	214	245	86	12	4	561

[1] Advance payments for leases not commenced at the year end reporting date 31 December.

Accounting policies

Leases

The group as a lessee

UPM assesses whether a contract is or contains a lease at inception of the contract. This assessment involves the exercise of judgment about whether it depends on a specified asset, whether UPM obtains substantially all the economic benefits from the use of that asset, and whether UPM has the right to direct the use of the asset.

The group recognises a leased asset and a lease liability at the lease commencement date, except for short-term leases. UPM applies this to all asset classes. Short-term leases are leases that, at the commencement date, have a lease term of 12 months or less. A lease that contains a purchase option is not a short-term lease. UPM recognises lease payments of short-term leases as an expense on a straight-line basis over the lease term.

The lease term is determined as the non- cancellable period of the lease taking into consideration the options to extend and terminate if it is reasonably certain that the group will exercise the extension option or will not exercise the termination option. If the contract is for an indefinite period of time and the group and the lessor both have a right to terminate the contract within a short notice period (12 months or less) without a significant economic penalties and termination cash payments, the contract is considered to be a short-term.

The lease liability is recognised at the commencement date and measured at the present value of the lease payments to be paid during the lease term. The group uses, as a basis, discount rate implicit in the lease and if that rate cannot be readily determined, UPM uses incremental borrowing rate which comprises of currency and lease term-based reference rate and specific credit spread as well as other specific terms and conditions of a lease. Lease payments can include fixed payments, variable payments that depend on an index or rate and extension option payments or purchase options if it is reasonably certain that the group will exercise them. The lease liability is subsequently measured at amortised cost using the effective interest rate method and remeasured (with corresponding adjustment to the related leased asset) when there is a change in future lease payments due to renegotiation, changes of an index or rate or reassessment of options.

Leased asset comprises the initial lease liability, initial direct costs and the obligations to refurbish the asset, less any incentives granted by the lessors. The leased asset is subsequently valued at cost less accumulated depreciation and impairment losses. Remeasurement takes place in case lease liability is remeasured and change in cash flows is based on contract terms that have been included in the original contract. The leased asset is depreciated over the shorter of the asset's useful life and the lease term. The leased asset is subject to testing for impairment if there is an indicator for impairment, as for own assets.

The group has elected to separate non-lease components such as service components and other variable components and account them for as expenses, if they can be separated from the leased asset. However, the group does not separate non-lease components from the lease contracts of company cars.

The group does not apply portfolio approach of leases with similar characteristics.

Leased assets are presented in the balance sheet as a separate financial statement line item. Lease liabilities are presented as part of non-current debt and current debt line items in the balance sheet. Lease liabilities are part of net debt calculation of the group. Short-term lease payments are reported as rents and lease expenses. Variable lease payments are recognised within the operating costs and expenses based on the nature of the payment. The interest expense on the lease liability is recognised as a component of finance costs in income statement. In cash flow statement, payments for the principal portion of the lease liability are recognised as financing cash flow while payments for interest portion of lease liability, short-term leases, and variable amounts not included in the measurement of the lease liability, are classified within operating cash flow.

The group as a lessor

At inception of a lease contract, the group makes an assessment whether the lease is a finance lease or an operating lease. If the lease transfers substantially all of the risks and rewards incidental to ownership of the asset, it is considered to be a finance lease; if not, the lease is considered to be an operating lease. The group has only a minor amount of operating lease contracts, whereby the lease payments are recognised on a straight-line basis over the term of the lease.

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. 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 2021

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	–	2,579	–	–	2,579
Other non-current financial assets					
Loans and receivables	–	–	–	8	8
Derivatives	–	–	126	–	126
	–	–	126	8	133
Trade and other receivables	–	–	–	2,024	2,024
Other current financial assets					
Loans and receivables	–	–	–	3	3
Derivatives	13	–	23	–	36
Investment funds	100	–	–	–	100
	113	–	23	3	139
Cash and cash equivalents	–	–	–	1,460	1,460
Total financial assets	113	2,579	149	3,494	6,335
Non-current debt					
Interest-bearing liabilities	–	–	–	2,543	2,543
Derivatives	–	–	23	–	23
	–	–	23	2,543	2,566
Other non-current financial liabilities					
Other liabilities [1]	–	–	–	107	107
Derivatives	–	–	2	–	2
	–	–	2	107	109
Current debt					
Interest-bearing liabilities	–	–	–	79	79
Derivatives	8	–	–	–	8
	8	–	–	79	86
Trade and other payables	–	–	–	2,254	2,254
Other current financial liabilities					
Derivatives	12	–	83	–	95
	12	–	83	–	95
Total financial liabilities	20	–	108	4,982	5,111

[1] Consists mainly of non-current advances received and a put liability that is not estimated to mature within 12 months.

Financial assets and liabilities by category at the end of 2020

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	–	1,936	–	–	1,936
Other non-current financial assets					
Loans and receivables	–	–	–	8	8
Derivatives	–	–	157	–	157
	–	–	157	8	166
Trade and other receivables	–	–	–	1,534	1,534
Other current financial assets					
Loans and receivables	–	–	–	8	8
Derivatives	32	–	96	–	129
	32	–	96	8	136
Cash and cash equivalents	–	–	–	1,720	1,720
Total financial assets	32	1,936	254	3,270	5,492
Non-current debt					
Loans	–	–	–	1,952	1,952
	–	–	–	1,952	1,952
Other non-current financial liabilities					
Other liabilities [1]	–	–	–	97	97
Derivatives	–	–	–	–	–
	–	–	–	97	97
Current debt					
Loans	–	–	–	82	82
Derivatives	8	–	–	–	8
	8	–	–	82	90
Trade and other payables	–	–	–	1,571	1,571
Other current financial liabilities					
Derivatives	19	–	29	–	48
	19	–	29	–	48
Total financial liabilities	27	–	29	3,703	3,759

[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 2,573 million (1,978 million) at the end of 2021. For quoted bonds, the fair values are based on the quoted market value as of 31 December. At the end of 2021, 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	2021				2020			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Financial assets								
Investment funds	–	100	–	100	–	–	–	–
Derivatives, non-qualifying hedges	–	13	–	13	–	32	–	32
Derivatives under hedge accounting	1	148	–	149	2	252	–	254
Energy shareholdings	–	–	2,579	2,579	–	–	1,936	1,936
Total	1	261	2,579	2,841	2	284	1,936	2,222
Financial liabilities								
Derivatives, non-qualifying hedges	–	20	–	20	–	27	–	27
Derivatives under hedge accounting	6	102	–	108	2	27	–	29
Total	6	122	–	128	2	54	–	56

There have been no transfers between levels in 2021 and 2020.

§ ***Accounting policies***

Fair value through profit or loss
This category includes derivatives that don't qualify for hedge accounting and investments funds. 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 OCI
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. For investment funds, the valuation is based on quoted prices (unadjusted) for identical assets in markets that are not active. For 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 quoted forward prices on the balance sheet date.

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.*

5.4 Financial income and expenses

EURm	2021	2020
Exchange rate gains and losses		
Derivatives	26	-18
Exchange gains and losses on financial liabilities measured at amortised costs	-21	34
Exchange gains and losses on financial assets measured at amortised costs	-7	-16
Other exchange rate gains and losses	—	4
	-1	3
Fair value changes		
Fair value gains and losses on derivatives designated as fair value hedges	-55	3
Fair value adjustment of debt attributable to interest rate risk	53	-4
	-1	-2
Total	-3	2
Interest and other finance income and costs, net		
Interest expense on lease liabilities	-12	-12
Interest expense on other financial liabilities measured at amortised cost	-35	-35
Interest income on derivatives	31	23
Interest income on loans and receivables	1	3
Other financial income and expenses, net	2	-5
	-12	-26
Total	-15	-24

Net gains and losses on derivatives included in the operating profit

EURm	2021	2020
Cash flow hedges reclassified from hedging reserve	-79	42
Non-qualifying hedges	-22	24
Total	-102	66

Foreign exchange gains and losses in the operating profit excluding non-qualifying hedges

EURm	2021	2020
Sales	6	-19
Other operating income	-5	-30
Total	1	-48

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 2021, 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

	2021	2020
Number of shares (1,000)	533,736	533,736
Share capital, EURm	890	890

Treasury shares

At 31 December 2021, the company held 411,653 (411,653) of its own shares, 0.08% (0.08%) of the total number of shares.

Reserves

EURm	2021	2020
Fair value reserve	2,012	1,380
Hedging reserve	-96	28
Share-based payments reserve	21	22
Total other reserves	1,938	1,430
Reserve for invested non-restricted equity	1,273	1,273
Translation reserve	329	25
Total reserves	3,539	2,728

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. In 2021, a gain of EUR 9 million was reclassified from the hedging reserve to other financial income as a result of inefficiency. In 2020, there were no reclassifications from the cash flow hedge reserve to profit or loss during the period resulting from inefficiency.

Hedging reserve

EURm	CURRENCY CASH FLOW HEDGES	ELECTRICITY PURCHASE AND SALES HEDGES	COST OF HEDGING	TAX	TOTAL
2021					
Hedging reserve, at 1 January	57	-26	-2	-1	28
Amounts reclassified to profit and loss	-5	85	-1	-16	63
Amounts reclassified to acquisition cost of a fixed assets	-14	—	—	—	-14
Change in fair value of hedging instruments recognised in OCI	-70	-143	2	38	-172
Hedging reserve, at 31 December	-32	-84	-1	22	-96

EURm	CURRENCY CASH FLOW HEDGES	ELECTRICITY PURCHASE AND SALES HEDGES	COST OF HEDGING	TAX	TOTAL
2020					
Hedging reserve, at 1 January	-4	78	-6	-14	55
Amounts reclassified to profit and loss	10	-61	9	8	-34
Amounts reclassified to acquisition cost of a fixed assets	-4	—	—	—	-5
Change in fair value of hedging instruments recognised in OCI	55	-43	-5	5	11
Hedging reserve, at 31 December	57	-26	-2	-1	28

Share-based payments reserve

The share-based payments reserve is used to recognise the fair value at the grant date 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.

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.

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.

Foreign exchange risk

As a consequence of the global nature of its business, UPM is exposed to risks associated with changes in exchange rates, primarily with respect to USD, GBP and JPY. Foreign exchange risk arises from contracted and expected commercial future payment flows (transaction exposure), changes in value of recognised assets and liabilities denominated in foreign currency and 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 2021, 49% (49%) of the forecast 12-month currency flow was hedged.

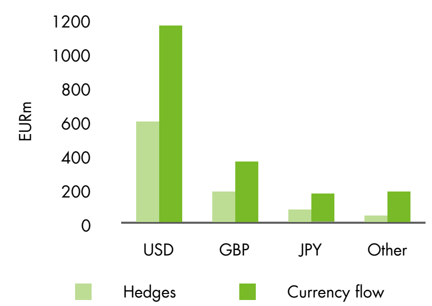
The group enters into external forward contracts, which are designated at group level as hedges of foreign exchange risk of specific future foreign currency flows. Cash flow hedge accounting is applied when possible. If hedge accounting is not possible, fair value changes of the hedging instrument are recognised through profit and loss immediately.

At the end of 2021, UPM's estimated net risk currency flow for the next 12 months was EUR 1,886 million (1,327 million).

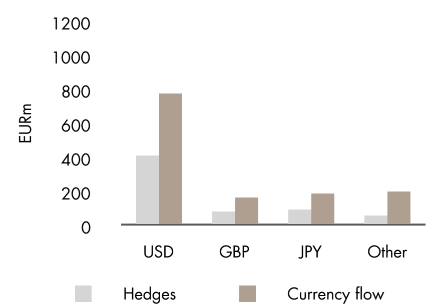
The weighted hedging rate by currency against EUR were USD 1.18, JPY 130.29 and GBP 0.86.

In addition to commercial foreign currency flow, the group has hedged risk currency flow related to investments. Cash flow or fair value hedge accounting is applied. At the end of 2021 the hedged net risk currency flow was EUR 360 million (EUR 470 million).

12 months net risk currency flow and hedges 2021



12 months net risk currency flow and hedges 2020



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. UPM aims to fully hedge this balance sheet translation exposure, however, UPM might have unhedged balance sheet exposures within the limits set in group Treasury Policy.

At 31 December 2021 the unhedged balance sheet exposures in net of interest-bearing assets and liabilities amounted to EUR 9 million (11 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 and UPM aims 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 352 million (540 million). Hedge accounting is not applied and all fair value changes of hedging instruments are recognised through profit and loss immediately.

UPM's net investments in foreign subsidiaries are also 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 2021, part of the foreign exchange risk associated with the net investments was hedged, major ones in China and Uruguay, and net investment hedge accounting has been applied. The average weighted hedging rate of these hedges against EUR were China CNY 8.28 and Uruguay USD 1.23.

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	**2021**	**2020**	**2021**	**2020**
EUR strengthens by 10%				
USD	2	1	97	91
GBP	–	–	19	8
UYU	–	–	-12	-15
JPY	–	-1	9	9
EUR weakens by 10%				
USD	-2	-1	-97	-91
GBP	–	–	-19	-8
UYU	–	–	12	15
JPY	–	1	-9	-9

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 hedge commercial flows or investments and 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, investment funds, interest bearing assets and liabilities and 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. Table excludes leasing transactions.

Nominal values of the group's net debt by currency including derivatives

EURbn	2021	2020
USD	0.4	0.2
EUR	0.2	-0.3
GBP	-0.2	-0.1
Others	-0.3	-0.3
Total	0.1	-0.5

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 changes in interest expense on floating rate debt.

	Profit before tax	
EURm	**2021**	**2020**
Interest rate of net debt 100 basis points higher	-11	-12
Interest rate of net debt 100 basis points lower	11	12

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.
- Investment funds are excluded.
- Leasing transaction 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.
- 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 the price of electricity consumption and production. Electricity prices rely on fossil fuel and emissions allowance prices as well as the balance of supply and demand. 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 Nordic system and electricity price area differential (EPAD) for Finland 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 system 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 production and consumption forecasts. Hedging level is calculated based on the most recent available information about the electricity production and consumption forecast.

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	2021	2020
+/– EUR 5/MWh in electricity forward quotations			
Effect on profit before tax	+/-	0.1	0.7
Effect on equity	+/-	115.9	64.9

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. Ineffectiveness can also occur in a situation where the hedging instrument with an appropriate maturity is not available in the market for the whole duration of the hedged item. Then the terms of the hedging instrument and the hedged item don't fully match, which causes minor ineffectiveness. 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.

Effect of IBOR reform and significant assumptions

Group's risk exposure that is directly affected by the IBOR reform is fair value hedge accounting of long-term fixed-rate debt for changes in fair value attributable to USD LIBOR which is the current benchmark interest rate. USD LIBOR is currently expected to be published until June 2023. Group currently has only few contracts which reference USD LIBOR and extend beyond June 2023. Group oversees the IBOR transition and follows changes to ISDA and other market guidelines on effects of these changes to UPM's contracts. In fair value hedging relationships, fair value for both the hedged item and hedging instrument is calculated with identical rate. Therefore no ineffectiveness is expected.

Net fair values of derivatives

EURm	Positive fair values 2021	Negative fair values 2021	Net fair values 2021	Positive fair values 2020	Negative fair values 2020	Net fair values 2020
Foreign exchange risk						
Forward foreign exchange contracts						
Cash flow hedges	21	-53	-31	83	-26	57
Net investment hedge	2	-27	-25	12	-1	11
Non-qualifying hedges	11	-13	-2	29	-27	2
Cross currency swaps						
Non-qualifying hedges	–	-4	-4	1	–	1
Derivatives hedging foreign exchange risk	33	-97	-63	125	-54	71
Interest rate risk						
Interest rate swaps						
Fair value hedges	86	-23	63	113	–	113
Non-qualifying hedges	2	–	2	2	–	2
Cross currency swaps						
Fair value hedges	40	–	40	44	–	44
Non-qualifying hedges	–	–	–	–	–	–
Derivatives hedging interest risk	128	-23	105	159	–	159
Commodity risk						
Electricity sales						
Cash flow hedges	–	-6	-6	1	-1	–
Electricity purchase						
Cash flow hedges	1	–	–	1	-1	–
Other commodities						
Non-qualifying hedges	–	-3	-2	1	–	–
Derivatives hedging commodity risk	1	-9	-8	2	-2	–
Total	162	-128	34	286	-56	230

No derivatives are subject to offsetting in the group's financial statements. All derivatives are under ISDA or similar master netting agreement.

Nominal amounts of derivatives

EURm	2021	2020
Interest rate futures	2,280	2,391
Interest rate swaps	1,081	1,056
Forward foreign exchange contracts	3,550	3,992
Currency options	–	20
Cross currency swaps	161	166
Commodity contracts	1,508	791

Cash collaterals pledged for derivative contracts totalled EUR 292 million of which EUR 291 million relate to commodity contracts and EUR 1 million to interest rate futures.

Net fair values of derivatives calculated by counterparty

EURm	POSITIVE FAIR VALUES	NEGATIVE FAIR VALUES	NET FAIR VALUES
2021	124	-90	34
2020	241	-11	230

Timing of nominal amounts of derivatives 2021

EURm (2021)	Within 1 year	Between 1–5 years	Later than 5 years	Total
Foreign exchange risk				
Forward foreign exchange contracts				
Cash flow hedges	2,196	90	–	2,286
Net investment hedge	392	–	–	392
Non-qualifying hedges	864	8	–	872
Cross currency swaps				
Non-qualifying hedges	–	–	161	161
Interest rate risk				
Interest rate swaps				
Fair value hedges	–	–	1,081	1,081
Cross currency swaps				
Fair value hedges	–	–	161	161
Interest rate futures				
Non-qualifying hedges	2,190	89	–	2,280
Commodity risk				
Electricity sales				
Cash flow hedges	612	335	–	947
Non-qualifying hedges	–	2	–	2
Electricity purchase				
Cash flow hedges	397	108	–	505
Other commodities				
Non-qualifying hedges	54	–	–	54

Timing of nominal amounts of derivatives 2020

EURm (2020)	Within 1 year	Between 1–5 years	Later than 5 years	Total
Foreign exchange risk				
Forward foreign exchange contracts				
Cash flow hedges	2,004	441	–	2,445
Net investment hedge	228	–	–	228
Non-qualifying hedges	1,318	1	–	1,319
Currency options				
Non-qualifying hedges	20	–	–	20
Cross currency swaps				
Non-qualifying hedges	–	–	166	166
Interest rate risk				
Interest rate swaps				
Fair value hedges	–	–	1,056	1,056
Non-qualifying hedges	–	–	–	–
Cross currency swaps				
Fair value hedges	–	–	166	166
Interest rate futures				
Non-qualifying hedges	2,391	–	–	2,391
Commodity risk				
Electricity sales				
Cash flow hedges	274	204	–	478
Non-qualifying hedges	–	6	–	6
Electricity purchase				
Cash flow hedges	145	138	–	283
Other commodities				
Non-qualifying hedges	24	–	–	24

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 2021, tax on profit for the year amounted to EUR 240 million (169 million). The effective tax rate was 15.5% (22.9%). In 2021 and 2020, the effective tax rate was affected by the income not subject to tax from subsidiaries operating in tax free zone and German tax rate that is higher than in Finland. In addition, in 2021 effective tax rate was impacted by tax exempt capital gain on the sale of shares of Shotton Mill Ltd and in 2020 by the losses resulting from the closure of UPM Chapelle paper mill for which no deferred tax assets were recognised due to uncertainty of their utilisation.

Income tax

EURm	2021	2020
Current tax expense	273	141
Change in deferred taxes	-32	28
Total	240	169

Tax rate reconciliation

EURm	2021	2020
Profit before tax	1,548	737
Computed tax at Finnish statutory rate of 20%	310	147
Difference between Finnish and foreign rates	-16	1
Tax-exempt income	-90	-29
Non-deductible expenses	6	6
Withholding taxes	4	9
Tax loss with no tax benefit	18	29
Results of associates	0	-1
Change in tax legislation	2	4
Change in recoverability of deferred tax assets	13	3
Utilisation of previously unrecognised tax losses	-3	-3
Other items	-3	2
Total income taxes	240	169
Effective tax rate, %	15.5 %	22.9 %

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	2021	2020	2019
Deferred tax assets			
Intangible assets and property, plant and equipment	83	77	77
Inventories	53	38	45
Retirement benefit liabilities and provisions	127	156	148
Other temporary differences	269	163	103
Tax losses and tax credits carried forward	230	157	180
Offset against liabilities	-297	-170	-157
Total	466	421	395
Deferred tax liabilities			
Intangible assets and property, plant and equipment	-261	-245	-249
Forest assets	-398	-352	-364
Retirement benefit assets	-17	-5	-7
Other temporary differences	-217	-132	-86
Offset against assets	297	170	157
Total	-596	-564	-549
Net deferred tax assets (liabilities)	-130	-143	-153

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	2021	2020
Carrying value, at 1 January	-143	-153
Charged to income statement	32	-28
Charged to other comprehensive income	-15	29
Exchange rate adjustments	-4	9
Net deferred tax assets (liabilities)	-130	-143

Tax charge to other comprehensive income

	Before tax	Tax	After tax	Before tax	Tax	After tax
EURm	2021			2020		
Actuarial gains and losses on defined benefit plans	128	-32	96	-50	14	-36
Energy shareholdings	643	-11	632	-254	3	-251
Translation differences	337	–	337	-262	–	-262
Cash flow hedges	-149	22	-127	-37	13	-24
Net investment hedges	-27	5	-21	6	-1	5
Total	933	-15	918	-597	29	-569

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 2021, net operating loss carry-forwards for which the group has recognised a deferred tax asset amounted to EUR 802 million (536 million), of which EUR 717 million (475 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 843 million (849 million) in 2021. 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 relating to closed Miramichi paper mill due to only minor operations in Canada. These loss carry-forwards expire at different times by the 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 2021, UPM permanently closed paper production at its Shotton newsprint mill site in North Wales, United Kingdom. The site and all related assets were sold to Eren Paper Ltd, a subsidiary of Modern Karton Sanayi Ve Ticaret A.Ş., the containerboard and corrugated packaging business of the Turkish industrial conglomerate Eren Holding ("Eren"), thereby closing the transaction announced in May 2021. UPM also made several minor sales of equity investments accounted at fair value through OCI. In 2020, UPM sold its 50% share in the joint operation Kainuun Voima. UPM also made a minor sale of its 6.1% ownership BSW Timber Ltd, which was accounted for as a fair value through OCI investment.

In 2021, UPM purchased an additional 20.23% share in the joint operation Alholmens Kraft, increasing UPM's ownership from 29.77% to 50.00 %. UPM also made a minor investment in InfraLeuna GmbH which is an equity investments accounted at fair value through OCI. In 2020, UPM purchased an additional 1.89% share in the joint operation Alholmens Kraft, increasing UPM's ownership from 27.88% to 29.77 %

Reconciliation of gain on sale and net cash arising from the disposal of Shotton Mill Ltd

EURm	2021
Reconciliation of gain on sale	
Consideration paid in cash	160
Consideration to be received	3
Net assets sold	-25
Transaction and other costs, net	-3
Gain on disposal	133
Consideration paid in cash	160
Cash in company disposed	-2
Net cash arising from disposal	157

Transactions with non-controlling interests
In 2021, UPM made a minor acquisition of an additional 24% holding of its subsidiary Jyväs-Helmi Oy from a non-controlling shareholder. In 2020, there were no changes in the share of non-controlling interests.

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.

The assets, liabilities, income and expenses of subsidiaries with non-controlling interests are consolidated line by line into the UPM consolidated financial statements. The proportion of the profit for the period, as well as the accumulated share of total equity belonging to non-controlling interests are presented separately in the consolidated income statement and consolidated balance sheet.

8.2 Principal subsidiaries and joint operations

SUBSIDIARIES	COUNTRY OF INCORPORATION	HOLDING % 2021	HOLDING % 2020
Blandin Paper Company	US	100.00	100.00
Blanvira S.A.	UY	91.00	91.00
Cuecar S.A.	UY	91.00	91.00
Forestal Oriental S.A.	UY	100.00	100.00
Gebrüder Lang GmbH Papierfabrik	DE	100.00	100.00
LLC UPM Ukraine	UA	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
Tebetur S.A.	UY	91.00	91.00
Tile Forestal S.A.	UY	91.00	91.00
UPM (China) Co., Ltd	CN	100.00	100.00
UPM (Vietnam) Ltd	VN	100.00	100.00
UPM Asia Pacific Pte. Ltd	SG	100.00	100.00
UPM Biochemicals GmbH	DE	100.00	100.00
UPM Biofuels S.A.	UY	100.00	100.00
UPM Communication Papers Oy	FI	100.00	100.00
UPM Energy Oy	FI	100.00	100.00
UPM France S.A.S.	FR	100.00	100.00
UPM Fray Bentos S.A.	UY	100.00	100.00
UPM GmbH	DE	100.00	100.00
UPM OÜ	EE	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 Specialty Papers Oy	FI	100.00	100.00
UPM Sähkönsiirto Oy	FI	100.00	100.00
UPM-Kymmene (Korea) Ltd	KO	100.00	100.00
UPM-Kymmene (UK) Ltd	GB	100.00	100.00
UPM-Kymmene Austria GmbH	AT	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	100.00
UPM-Kymmene Otepää OÜ	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 Sp. z o.o.	PL	100.00	100.00
UPM-Kymmene S.r.l.	IT	100.00	100.00
Werla Insurance Company Ltd	MT	100.00	100.00

JOINT OPERATIONS	COUNTRY OF INCORPORATION	HOLDING % 2021	HOLDING % 2020
Oy Alholmens Kraft Ab (Pohjolan Voima Oyj, G series and direct ownership) [1]	FI	50.00	29.77
EEVG Entsorgungs- und Energieverwertungsgesellschaft m.b.H.	AT	50.00	50.00
Järvi-Suomen 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

[1] In 2021, UPM purchased an additional 20.23% share in the joint operation Alholmens Kraft. **» Refer Note 8.1** Business acquisitions and disposals.

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 2021 or 2020.

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 Ympäristöpalvelut 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 91% (95%) 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	2021	2020
Dividends received	2	3
Purchases of raw materials and services	69	60
Loan receivables	5	6
Trade and other receivables	2	1
Trade and other payables	9	7

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, which is a separate legal entity. Pensions for about 21% (19%) of the group's Finnish employees are arranged through the Foundation.

In 2021, the contributions paid by UPM to the Foundation amounted to EUR 18 million (18 million). The Foundation manages and invests the contributions paid to the plan. The fair value of the Foundation's assets at 31 December 2021 was EUR 597 million (563 million), of which 15% was in the form of equity instruments and 85% 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 6 million (6 million) to the defined benefit sections of the Scheme in 2021. The fair value of the UK defined benefit fund assets at 31 December 2021 was EUR 565 million (515 million), of which 10% was invested in equity instruments, 45% in debt instruments, 41% in property and money market and 4% in other investments.

8.4 Assets held for sale

No assets were classified as held for sale at the end of 2021 or 2020.

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	2021	2020
On behalf of others		
Guarantees	2	2
Other own commitments		
Leasing commitments for the next 12 months in accordance with IFRS 16 [1]	4	6
Other commitments	213	214
Total	220	223

The lease commitments for leases not commenced at the end of 2021 totals approximately EUR 409 million, which are mostly related to long-term charter agreements, railway service agreement in Uruguay and service agreements related to wood handling, waste water treatment and other utilities in Leuna, Germany. Such lease commitments at the end of 2020 amounted to EUR 412 million.

9.2 Litigation

Contingent liabilities
The group is defendant or plaintiff in a number of legal proceedings incidental to its operations. These lawsuits primarily involve claims arising from commercial law issues.

Group companies
The group's management is not aware of any significant litigation in the end of 2021.

In October, the European Commission conducted an unannounced inspection at UPM's premises. According to the Commission's press release on 12 October, the Commission has concerns that the inspected companies in the wood pulp sector may have violated EU antitrust rules that prohibit cartels and restrictive business practices. The Commission states that the unannounced inspections are a preliminary step in an investigation into suspected anticompetitive practices, and the fact that the Commission carries out such inspections does not mean that the companies are guilty of anti-competitive behaviour nor does it prejudge the outcome of the investigation itself. UPM takes any suspected violation of antitrust rules very seriously and has a compliance programme in place to mitigate the risk of such violations. For example, all employees and executives are required to take training on the UPM Code of Conduct, which includes a section regarding antitrust compliance. In addition, UPM has also in place a specific training programme regarding antitrust rules which covers approximately 3,000 employees and executives.

9.3 Events after the balance sheet date

On 1 January, UPM announced that members of the Paperworkers' Union, the Finnish Electrical Workers´ Union and the Trade Union Pro have started strikes at UPM mills in Jämsänkoski, Kouvola, Lappeenranta, Pietarsaari, Rauma, Tampere and Valkeakoski. UPM businesses falling under the strikes in Finland are UPM Pulp, UPM Biofuels, UPM Communication Papers, UPM Specialty Papers and UPM Raflatac. According to the unions, the strikes would continue until 22 January 2022 unless a new collective labour agreement is reached before that. The duration of the strike has since been extended twice (on 5 January and 20 January) by the Paperworker's union and at the time of signing the annual accounts, 27 January, the strike is due to last until 19 February 2022, unless new agreements are reached before that.

10. Other notes

10.1 Forthcoming new standards, amendments and accounting policy changes

Certain new accounting standard amendments and interpretations have been published that come into effect only after the reporting period started on 1 January 2021. These standards and amendments are not expected to have a material impact on the group in the current or future reporting periods and on foreseeable future transactions and have not been early adopted.

Change in the composition of reportable segments

The group will change its reportable segments composition by moving the UPM Biofuels business into Other Operations on 1 January 2022.

UPM is forming a new business unit by combining UPM Biofuels, UPM Biochemicals, UPM Biomedicals and UPM Biocomposites businesses. The aim is to speed up business growth and to leverage the capabilities and competences across projects efficiently. This unit will inherit the name UPM Biorefining and will be reported as part of Other operations. UPM Pulp and UPM Timber currently reported under UPM Biorefining will be reported as UPM Fibres business area from 1 January 2022.

Following the change, Other Operations will include UPM Forest, UPM Biofuels, UPM Biochemicals, UPM Biomedicals and UPM Biocomposites businesses as well as group services. The change will impact KPIs of UPM Biorefining (1.1.2022 UPM Fibres) reportable segment and Other Operations. The comparative periods will be restated according to the new reporting principles. The reporting change has no impact on group financial result or balance sheet.

UPM Biorefining (1.1.2022 UPM Fibres)

2021	UPM Biorefining as published	UPM Fibres restated
Sales EURm	2,945	2,794
Comparable EBITDA, EURm	1,016	961
% of sales	35	34
Change in fair value of forest assets and wood harvested, EURm	-9	-9
Share of results of associated companies and joint ventures, EURm	2	2
Depreciation, amortisation and impairment charges, EURm	-191	-173
Operating profit, EURm	817	781
% of sales	28	28
Comparable EBIT, EURm	817	781
% of sales	28	28
Capital employed (average), EURm	4,437	4,277
Comparable ROCE, %	18	18

Other operations

2021	As published	Restated
Sales EURm	280	483
Comparable EBITDA, EURm	-19	36
Change in fair value of forest assets and wood harvested, EURm	120	120
Depreciation, amortisation and impairment charges, EURm	-25	-44
Operating profit, EURm	75	112
Items affecting comparability in operating profit, EURm	-1	-1
Comparable EBIT, EURm	76	113
Capital employed (average), EURm	1,992	2,152
Comparable ROCE, %	4	5

Parent company accounts

(Finnish Accounting Standards, FAS)

Income statement

EURm	NOTE	2021	2020
Sales	1	2,554	1,816
Change in inventories of finished goods and work in progress		-2	-6
Production for own use		2	5
Other operating income	2	57	44
Materials and services			
Raw materials and consumables purchased		-1,767	-1,342
Change in inventories		16	-6
External charges		-6	-6
		-1,757	-1,353
Personnel expenses			
Salaries and fees		-211	-196
Indirect employee costs			
Pension costs		-31	-31
Other indirect employee costs		-7	-7
	3	-248	-234
Depreciation, amortisation and impairment charges			
Depreciation and amortisation		-123	-115
Impairment charges on non-current assets		-2	-1
	4	-124	-116
Other operating expenses	5	-180	-183
Operating profit		301	-27
Financial income and expenses			
Income from non-current assets			
Dividend income from group companies		288	348
Interest income from group companies		5	5
Other interest and financial income			
Other interest income from group companies		25	43
Other interest income from other companies		1	1
Other financial income from other companies		6	23
Impairment charges on investments		0	1
Interest and other financial expenses			
Interest expenses to group companies		-10	-8
Interest expenses to other companies		-10	-21
Other financial expenses to group companies		-20	-20
Other financial expenses to other companies		-5	-69
		281	302
Profit before closing entries and tax		581	275
Closing entries			
Depreciation difference		22	1
Group contributions granted		-19	-19
		3	-18
Income taxes	6	-115	-8
Profit for the period		469	249

Balance sheet

EURm	NOTE	2021	2020
ASSETS			
Non-current assets			
Intangible assets			
Intangible rights		5	5
Other intangible assets		46	59
Advance payments		11	3
	7	62	67
Tangible assets			
Land and water areas		718	719
Buildings		196	212
Machinery and equipment		514	579
Other tangible assets		21	24
Advance payments and construction in progress		13	7
	8	1,462	1,541
Investments			
Holdings in group companies		4,610	3,788
Holdings in participating interest companies		5	5
Other shares and holdings		3	3
Receivables from group companies		786	716
Receivables from participating interest companies		3	4
Other non-current receivables		0	0
	9	5,408	4,516
Total non-current assets		6,932	6,124
Current assets			
Inventories			
Raw materials and consumables		176	160
Finished products and goods		17	19
Advance payments		24	15
		217	193
Receivables			
Current receivables			
Trade receivables		32	31
Receivables from group companies		1,678	956
Receivables from participating interest companies		10	8
Other current receivables		271	125
Prepayments and accrued income		26	41
	10	2,017	1,162
Other current financial assets		100	0
Cash and cash equivalents		1,296	1,582
Total current assets		3,629	2,937
Assets		10,561	9,061

EURm	NOTE	2021	2020
EQUITY AND LIABILITIES			
Equity			
Share capital		890	890
Revaluation reserve		141	142
Reserve for invested non-restricted equity		1,273	1,273
Retained earnings		1,557	2,002
Profit for the period		469	249
Total equity	11	4,330	4,555
Accumulated depreciation difference		417	439
Provisions			
Termination provisions		3	5
Other provisions		149	183
	12	152	187
LIABILITIES			
Non-current liabilities			
Bonds		1,581	1,056
Loans from financial institutions		200	100
Payables to group companies		153	168
Other non-current liabilities		161	166
	13	2,095	1,490
Current liabilities			
Trade payables		335	247
Payables to group companies		2,873	2,021
Payables to participating interest companies		1	1
Other current liabilities		259	36
Accrued expenses and deferred income		98	83
	14	3,566	2,390
Total liabilities		5,661	3,880
Equity and liabilities		10,561	9,061

Cash flow statement

EURm	2021	2020
Cash flows from operating activities		
Profit before closing entries and tax	581	275
Financial income and expenses	-281	-302
Adjustments to operating profit [1]	64	175
Change in working capital [2]	-639	-131
Interest received	31	49
Interest paid	-22	-29
Dividends received	288	348
Other financial items	18	-22
Income taxes paid [3]	-109	-11
Operating cash flow	-68	352
Cash flows from investing activities		
Investments in tangible and intangible assets	-46	-84
Investments in shares and holdings	-829	-719
Proceeds from sale of intangible and tangible assets	11	15
Proceeds from disposal of shares and holdings	4	6
Change in other non-current receivables	-72	150
Investing cash flow	-932	-632
Cash flows from financing activities		
Proceeds from non-current liabilities	620	904
Payments of non-current liabilities	-35	0
Change in current liabilities	943	269
Dividends paid	-693	-693
Group contributions, net	-19	0
Other items	-101	0
Financing cash flow	715	480
Cash and cash equivalents at beginning of period	1,582	1,382
Change in cash and cash equivalents	-286	200
Cash and cash equivalents at end of period	1,296	1,582

Notes to cash flow statement

[1] Adjustments to operating profit

EURm	2021	2020
Depreciation, amortisation and impairment charges	124	116
Capital gains and losses on sale of non-current assets	-4	-12
Change in provisions	-56	71
Total	64	175

[2] Change in working capital

EURm	2021	2020
Inventories	-23	13
Current receivables	-857	-121
Current non-interest-bearing liabilities	241	-23
Total	-639	-131

[3] Income taxes related to sale of assets are presented in investing cash flow.

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 financial derivatives and forest assets and recognition of defined benefit obligations, share-based payments, lease agreements 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.

Foreign currency translation
Receivables and liabilities denominated in foreign currencies outstanding on the balance sheet date and other commitments are translated into euro currency using the balance sheet date exchange rate. Exchange rate differences arising from the valuation of trade receivables are recognised in sales and exchange rate differences on trade payables in purchases. Exchange differences arising from the measurement of other receivables and liabilities are recognised in financial items.

Tangible and intangible assets
Tangible and intangible assets are stated at cost less accumulated depreciation and amortisation according to plan and impairments. Emission rights are recognised using net approach. Depreciation and amortization according to plan is recorded on a straight-line basis over the expected useful lives of the assets as follows:

Land and water areas, no depreciation	
Intangible assets	5 – 10 years
Buildings	20 – 50 years
Light machinery and equipment	5 – 10 years
Heavy machinery	15 – 20 years
Power plants	20 – 30 years
Other tangible assets	5 – 20 years

Forest assets are recognised as tangible assets within land and water areas at historical cost and revaluation. No systematic depreciation or changes in value due to felling is recognised.

Investments
Investments are stated at cost less impairments.

Inventories
Inventories are stated at cost or the lower of replacement cost and probable selling price. Costs are measured using FIFO-method. In addition to variable costs, the cost of inventories includes a portion of the fixed costs of acquisition and manufacturing.

Revaluations
The balance sheet value of land includes revaluations. No new revaluations are made and the balance sheet value of land is considered to be below their fair value.

Leases
Lease payments of lease contracts are recognised in other operating expenses over the lease term. Lease payments due in future years under lease contracts are presented as off-balance sheet items.

Provisions
Provisions include foreseeable future expenses and losses to which the company is committed, the realization of which is probable and the amount can be reliably estimated, e.g. pension and environmental liabilities and termination and restructuring costs. Changes in provisions are recognised in income statement within particular cost items.

Sales
Sales include sales revenue from actual operations less indirect taxes, discounts, claims and exchange rate differences on net cash flow hedges and trade receivables.

Research and development costs
Research and development costs are expensed in the year in which they are incurred.

Pensions
In Finland employers are obliged to insure their employees for statutory benefits, as determined in Employee's Pension Act (TyEL). The mandatory pensions are arranged mainly through pension insurance companies. Contributions to pension insurance companies are charged to the income statement in the period to which the contributions relate. Pension obligations of own pension funds are fully funded.

Share-based payments
Share based compensation is recognized as an expense in the income statement over the earnings period and the related liability is booked to the balance sheet.

Closing entries
Parent company closing entries consists of the change in the depreciation difference and group contributions granted to group companies. The accumulated depreciation difference in the parent company has not been divided into equity and deferred tax liability.

Income taxes
Income taxes presented in the income statement consist of accrued taxes for the financial year and tax adjustments for prior years. The parent company has not recognised deferred tax assets and liabilities in the balance sheet, but presents the information in the notes.

Derivatives
Income and expenses of derivative contracts relating to net cash flow hedges are recognised in sales. Income and expenses related to commodity derivatives are recognised in purchases. Income and expenses of fair value hedges are recognised in financial items. Net cash flow hedging derivatives and commodity derivatives are recognised in the income statement when the cash flow occurs. Hedge accounting is not applied. The fair value losses of financial derivatives are recognised through the income statement and presented as a provision in the balance sheet.

All financial derivative contracts of the group are made by the parent company. All contracts are made with external counterparties except internal derivatives which are used to manage foreign currency and interest rate exposure. Internal derivatives are one cross currency swap with nominal value of EUR 57 million (66 million) maturing in 2027 and foreign currency forwards with nominal value of EUR 356 million (462) maturing between 2022 and 2024.

Financial risks, fair values and maturities of the group external derivatives are disclosed in » Note 6.1 Financial risk management and in » Note 6.2 Derivatives and hedge accounting.

1. Sales

Sales by business area

EURm	2021	2020
UPM Biorefining	2,120	1,448
Other operations	434	368
Total	2,554	1,816

Sales by destination

EURm	2021	2020
Finland	2,486	1,785
Other EU countries	38	16
Other countries	30	16
Total	2,554	1,816

2. Other operating income

EURm	2021	2020
Gains on sale of non-current assets	10	15
Rental income	10	10
Other	37	18
Total	57	44

3. Personnel expenses

EURm	2021	2020
Salaries and fees of the President and CEO, and members of the Board of Directors [1]	5	6
Other salaries and fees	206	190
Pension costs	31	31
Other indirect employee costs	7	7
Total	248	234

[1] *» Refer Note 3.2* Key management personnel

Personnel

	2021	2020
Total average	2,815	3,026

4. Depreciation, amortisation and impairment charges

EURm	2021	2020
Intangible rights	2	2
Other intangible assets	16	10
Buildings	18	19
Machinery and equipment	85	81
Other tangible assets	3	3
Total	124	116

5. Other operating expenses

EURm	2021	2020
Rents and lease expenses	13	13
Losses on sale of non-current assets	—	2
Maintenance expenses	86	100
Other operating expenses [1]	82	67
Total	180	183

[1] The research and development costs in operating expenses were EUR 9 million (9 million) and auditor's fee EUR 2.7 million (2.0 million). In personnel expenses the research and development costs were EUR 20 million (17 million).

6. Income taxes

EURm	2021	2020
Tax expense for the period	114	9
Tax expense for the previous periods	1	-1
Total	115	8

Deferred tax assets and liabilities [1]

EURm	2021	2020
Deferred tax assets		
Provisions	92	37
Share-based payments	2	1
Other temporary differences	1	0
Total	95	39
Deferred tax liabilities		
Accumulated depreciation difference	83	88
Revaluations of land areas	60	60
Total	143	148

[1] The parent company has not recognised deferred tax assets and liabilities in the balance sheet. Deferred tax assets and liabilities are calculated based on temporary differences between the carrying and taxable values of assets and liabilities.

7. Intangible assets

EURm	INTANGIBLE RIGHTS	OTHER INTANGIBLE ASSETS	ADVANCE PAYMENTS	TOTAL
2021				
Accumulated costs	21	293	11	325
Accumulated amortisation and impairments	-16	-247	—	-263
Carrying value, at 31 December	5	46	11	62
Carrying value, at 1 January	5	59	3	67
Additions	2	3	8	13
Disposals	—	—	—	—
Amortisation	-2	-16	—	-18
Carrying value, at 31 December	5	46	11	62
2020				
Accumulated costs	19	303	3	325
Accumulated amortisation and impairments	-14	-244	—	-259
Carrying value, at 31 December	5	59	3	67
Carrying value, at 1 January	5	13	27	45
Additions	2	29	3	34
Amortisation	-2	-10	—	-13
Reclassifications	—	27	-27	—
Carrying value, at 31 December	5	59	3	67

8. Tangible assets

EURm	LAND AND WATER AREAS	BUILDINGS	MACHINERY AND EQUIPMENT	OTHER TANGIBLE ASSETS	ADVANCE PAYMENTS AND CONSTRUCTION IN PROGRESS	TOTAL
2021						
Accumulated costs	419	599	2,251	145	13	3,426
Accumulated depreciation and impairments	—	-403	-1,737	-123	—	-2,263
Revaluations	299	—	—	—	—	299
Carrying value, at 31 December	718	196	514	21	13	1,462
Carrying value, at 1 January	719	212	579	24	7	1,541
Additions	1	3	11	—	19	33
Disposals	-1	-2	—	-2	—	-6
Depreciations	—	-18	-83	-3	—	-104
Impairment	—	—	-1	—	—	-2
Reclassifications	—	2	9	2	-12	—
Carrying value, at 31 December	718	196	514	21	13	1,462
2020						
Accumulated costs	420	613	2,257	145	7	3,441
Accumulated depreciation and impairments	—	-401	-1,677	-121	—	-2,199
Revaluations	300	—	—	—	—	300
Carrying value, at 31 December	719	212	579	24	7	1,541
Carrying value, at 1 January	721	230	601	25	22	1,599
Additions	1	1	43	2	3	50
Disposals	-2	—	-1	—	-2	-5
Depreciations	—	-19	-80	-3	—	-102
Reclassifications	—	—	16	—	-17	—
Carrying value, at 31 December	719	212	579	24	7	1,541

9. 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 RECEIVA-BLES	TOTAL
2021							
Accumulated costs	6,024	5	3	786	3	–	6,822
Accumulated value adjustments	-1,414	–	–	–	–	–	-1,414
Carrying value, at 31 December	4,610	5	3	786	3	–	5,408
Carrying value, at 1 January	3,788	5	3	716	4	–	4,516
Additions	829	–	–	104	2	–	935
Disposals	-8	–	–	-34	-2	–	-44
Value adjustments [1]	1	–	–	–	–	–	1
Carrying value, at 31 December	4,610	5	3	786	3	–	5,408
2020							
Accumulated costs	5,204	5	3	716	4	–	5,931
Accumulated value adjustments	-1,415	–	–	–	–	–	-1,415
Carrying value, at 31 December	3,788	5	3	716	4	–	4,516
Carrying value, at 1 January	3,077	5	3	864	4	7	3,960
Additions	719	–	–	37	–	–	756
Disposals	-7	–	–	-186	–	-7	-200
Carrying value, at 31 December	3,788	5	3	716	4	–	4,516

1) Value adjustments are shown in financial expenses

10. Current receivables

EURm	RECEIVABLES FROM GROUP COMPANIES	RECEIVABLES FROM PARTICIPATING INTEREST COMPANIES	RECEIVABLES FROM OTHERS	TOTAL
2021				
Trade receivables	559	9	32	601
Loan receivables [1]	1,114	–	–	1,114
Prepayments and accrued income [2]	4	–	26	30
Other current receivables	–	–	271	271
Carrying value, at 31 December	1,678	10	330	2,017
2020				
Trade receivables	280	8	31	319
Loan receivables [1]	675	–	–	675
Prepayments and accrued income [2]	1	–	41	42
Other current receivables	–	–	125	125
Carrying value, at 31 December	956	8	198	1,162

[1] There were no loans granted to the company's President and CEO and members of the Board of Directors at 31 December 2021 and 2020.

[2] Prepayments and accrued income

EURm	2021	2020
Energy taxes	–	7
Interest income	11	6
Exchange gains and losses	10	14
Income taxes	7	11
Other items	2	4
Carrying value, at 31 December	30	42

11. Equity

EURm	SHARE CAPITAL	REVALUATION RESERVE	RESERVE FOR INVESTED NON-RESTRICTED EQUITY	RETAINED EARNINGS	PROFIT/LOSS FOR THE PERIOD	TOTAL SHARE-HOLDER'S EQUITY
2021						
Carrying value, at 1 January	890	142	1,273	2,002	249	4,555
Transfer of profit from previous year	–		–	249	-249	–
Profit for period	–	–	–	–	469	469
Dividend distribution	–	–	–	-693	–	-693
Carrying value, at 31 December	890	142	1,273	1,557	469	4,330
2020						
Carrying value, at 1 January	890	142	1,273	1,940	756	5,000
Transfer of profit from previous year	–	–	–	756	-756	
Profit for period	–	–	–	–	249	249
Dividend distribution	–	–	–	-693	–	-693
Carrying value, at 31 December	890	142	1,273	2,002	249	4,555

EURm	2021	2020
Distributable funds		
Reserve for invested non-restricted equity	1,273	1,273
Retained earnings from previous years	1,557	2,002
Profit for the period	469	249
Total distributable funds at 31 December	3,299	3,524

12. Provisions

EURm	RESTRUCTURING	TERMINATION	ENVIRONMENTAL	OTHER 1)	TOTAL
2021					
Provisions at 1 January	3	5	8	172	187
Provisions made during the year	–	1	1	13	15
Provisions utilised during the year	–	-2	–	–	-2
Unused provisions reversed	–	-1	–	-47	-48
Carrying value, at 31 December	3	3	9	137	152
2020					
Provisions at 1 January	3	3	8	35	49
Provisions made during the year	–	4	–	141	145
Provisions utilised during the year	–	-1	–	-5	-7
Carrying value, at 31 December	3	5	8	172	187

1) Other provisions are attributable to onerous contracts and fair value losses of financial derivatives. At the end of 2021 the fair value loss in other provisions of EUR 3 million (5 million) is attributable to one group internal cross currency swap and EUR 13 million (47 million) to group internal foreign currency forwards.

13. Non-current liabilities

EURm	2021	2020
Bonds	1,581	1,056
Loans from financial institutions	200	100
Payables to group companies	153	168
Other non-current liabilities	161	166
Carrying value, at 31 December	2,095	1,490

Maturity in 2027 (in 2026) or later

EURm	2021	2020
Bonds	1,581	1,056
Loans from financial institutions	123	77
Other non-current liabilities	161	166
Total	1,865	1,299

Bonds

FIXED RATE PERIOD	INTEREST RATE, %	CURRENCY	NOMINAL VALUE ISSUED, MILLION	CARRYING VALUE 2021 EURm	CARRYING VALUE 2020 EURm
1997–2027	7.450	USD	375	331	306
2020–2028	0.125	EUR	750	750	750
2021-2031	0.500	EUR	500	500	–
Carrying value, at 31 December				1,581	1,056
Non-current portion				1,581	1,056

14. Current liabilities

EURm	PAYABLES TO GROUP COMPANIES	PAYABLES TO PARTICIPATING INTEREST COMPANIES	PAYABLES TO OTHERS	TOTAL
2021				
Trade payables	165	1	335	501
Accrued expenses and deferred income 1)	12	–	98	110
Other current liabilities	2,696	–	259	2,955
Carrying value, at 31 December	2,873	1	692	3,566
2020				
Trade payables	40	1	247	288
Accrued expenses and deferred income 1)	18	–	83	101
Other current liabilities	1,963	–	36	2,000
Carrying value, at 31 December	2,021	1	368	2,390

1) Accrued expenses and deferred income

EURm	2021	2020
Personnel expenses	80	65
Interest expenses	6	4
Exchange gains and losses	23	31
Other items	1	1
Carrying value, at 31 December	110	101

15. Commitments

EURm	2021	2020
Guarantees		
Guarantees for loans on behalf of group companies	1	–
Other guarantees on behalf of group companies	36	26
Other commitments		
Leasing commitments, due within 12 months	11	26
Leasing commitments, due after 12 months	39	45
Other commitments	53	49
Total	140	148

In addition, the parent company acts as a guarantor on behalf of other companies belonging to the group. Majority of such commitments relate to major investment projects and can end up payable by the parent company in case group companies are unable to manage their obligations. *» Refer Note 4.1 Property, plant and equipment for information about major investment projects.*

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.

16. Shares and holdings owned by parent company

SUBSIDIARIES	COUNTRY OF INCORPORATION	HOLDING %
Myllykoski Oyj	FI	100.00
Repola Investment Oy	FI	100.00
Suurijärven Huolto Oy	FI	65.44
Unicarta Oy	FI	100.00
UPM (Vietnam) Limited	VN	100.00
UPM AG	CH	100.00
UPM Asia Pacific Pte. Ltd.	SG	100.00
UPM B.V.	NL	100.00
UPM Biochemicals GmbH	DE	100.00
UPM Bulgaria EOOD	BG	100.00
UPM Communication Papers Oy	FI	100.00
UPM Energy Oy	FI	100.00

SUBSIDIARIES	COUNTRY OF INCORPORATION	HOLDING %
UPM India Private Limited	IN	100.00
UPM Kft.	HU	100.00
UPM Manufatura e Comércio de Produtos Florestais Ltda.	BR	100.00
UPM NV	BE	100.00
UPM OÜ	EE	100.00
UPM Plywood Oy	FI	100.00
UPM Pulp Oy	FI	100.00
UPM Pulp Sales Oy	FI	100.00
UPM Raflatac Canada Holdings Inc.	CA	100.00
UPM Raflatac NZ Limited	NZ	100.00
UPM Raflatac Oy	FI	100.00
UPM Raflatac S.r.l.	AR	27.80
UPM Romania S.R.L	RO	100.00
UPM Silvesta Oy	FI	100.00
UPM Specialty Papers Oy	FI	100.00
UPM Wood Materials (UK) Ltd	UK	100.00
UPM-Kymmene (HK) Ltd.	CN/HK	100.00
UPM-Kymmene (Korea) Ltd	KR	100.00
UPM-Kymmene (UK) Holdings Limited	UK	100.00
UPM-Kymmene A/S	DK	100.00
UPM-Kymmene AB	SE	100.00
UPM-Kymmene B.V.	NL	100.00
UPM-Kymmene Beteiligungs GmbH	DE	100.00
UPM-Kymmene Comercializacao de Papel Lda	PT	100.00
UPM-Kymmene d.o.o.	SI	100.00
UPM-Kymmene Groupe S.A.	FR	100.00
UPM-Kymmene Grundstücksverwaltung GmbH	DE	100.00
UPM-Kymmene Hellas Ltd	GR	100.00
UPM-Kymmene India Private Limited	IN	100.00
UPM-Kymmene Investment Inc.	US	100.00
UPM-Kymmene Japan K.K.	JP	100.00
UPM-Kymmene Pty Limited	AU	100.00
UPM-Kymmene RUS Holdings Oy	FI	99.62
UPM-Kymmene S.A.	ES	100.00
UPM-Kymmene S.r.l.	IT	100.00
UPM-Kymmene s.r.o.	CZ	100.00
UPM-Kymmene Seven Seas Oy	FI	100.00
UPM-Kymmene Slovakia s.r.o.	SK	100.00
Werla Insurance Company Ltd	MT	100.00

PARTICIPATING INTEREST COMPANIES	COUNTRY OF INCORPORATION	HOLDING %
Kiinteistö Oy Joutsan Rantatie 3	FI	25.43
Metsäteho Oy	FI	23.95
Oy Citotest Ab	FI	36.60
Oy Keskuslaboratorio - Centrallaboratorium Ab	FI	38.65
Perkaus Oy	FI	33.33
Rönnäsin Kiinteistöhuolto Oy	FI	28.41
Selluloosan ruokalaosuuskunta	FI	33.33
Steveco Oy	FI	34.32

Group subsidiaries and joint operations are disclosed in » Note 8.2.

Auditor's Report (Translation of 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 position and financial performance and cash flows 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 2021. The financial statements comprise:

- the consolidated balance sheet, income statement, statement of comprehensive income, statement of changes in equity, cash flow statement and notes, including a summary of significant accounting policies
- the parent company's balance sheet, income statement, cash flow statement 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 to the Financial Statements.

Our Audit Approach

Overview

- Overall group materiality: € 77 million, which represents approximately 5 % of the the profit before tax.

- 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.

- Valuation of forest assets
- Valuation of energy shareholdings

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.

Overall group materiality	€ 77 million (previous year € 60 million)
How we determined it	Approximately 5% of the profit before tax.
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 to note 4.2. in the consolidated financial statements for the related disclosures.* The group owns and leases total of a 1 057 thousand hectares of forests and plantations in Finland, the United States and Uruguay valued at € 2 328 million at 31 December 2021. 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. Young saplings and land 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 to note 4.3. in the consolidated financial statements for the related disclosures.* The energy shareholdings amounted to € 2 579 million at 31 December 2021. 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.

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.

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- 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 26 years. The Company arranged the latest audit tendering process in 2013. Authorised Public Accountant (KHT) Mikko Nieminen has acted as the responsible auditor since 4 April 2019, representing a total uninterrupted period of three 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. We have obtained the report of the Board of Directors prior to the date of this auditor's report and the Annual Report is expected to be made available to us after that date.
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 identified above 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 on the other information that we obtained prior to the date of this auditor's report, we conclude that there is a material misstatement of this 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 2022
PricewaterhouseCoopers Oy
Authorised Public Accountants

Mikko Nieminen
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 comparable EBITDA
Equity to assets ratio, %	Equity expressed as a percentage of total assets less advances received.

Reconciliation of key figures to IFRS (Quarterly key figures are unaudited)

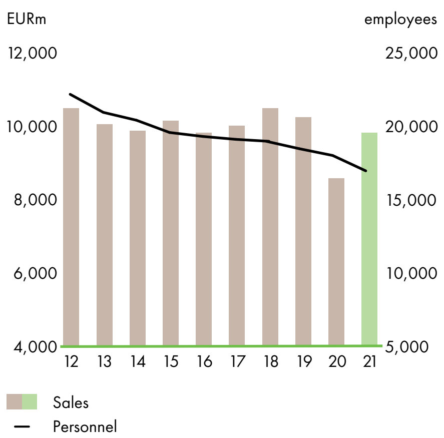
EURm, OR AS INDICATED	Q4/21	Q3/21	Q2/21	Q1/21	Q4/20	Q3/20	Q2/20	Q1/20	Q1–Q4/21	Q1–Q4/20
Items affecting comparability										
Impairment charges	-52	1	0	-1	2	-53	-19	0	-52	-70
Restructuring charges	0	5	2	4	3	-57	-34	-48	11	-137
Change in fair value of unrealised cash flow and commodity hedges	0	0	-5	-3	-3	-2	-9	12	-8	-3
Capital gains and losses on sale of non-current assets	7	134	0	0	0	14	8	0	140	23
Total items affecting comparability in operating profit	-46	140	-3	0	2	-98	-55	-36	91	-187
Changes in tax rates	0	0	0	0	0	0	-4	0	0	-3
Taxes relating to items affecting comparability	13	-1	1	0	-3	22	4	-2	12	21
Items affecting comparability in taxes	13	-1	1	0	-2	22	1	-2	12	18
Items affecting comparability, total	-33	139	-3	0	-1	-75	-54	-39	103	-169
Comparable EBITDA										
Operating profit	415	564	304	279	253	117	148	243	1,562	761
Depreciation, amortisation and impairment charges excluding items affecting comparability	113	116	118	116	116	117	119	120	463	471
Change in fair value of forest assets and wood harvested excluding items affecting comparability	-103	-5	2	-5	24	1	-1	1	-111	25
Share of result of associates and joint ventures	-1	-1	-1	0	0	-1	-1	-1	-2	-3
Items affecting comparability in operating profit	46	-140	3	0	-2	98	55	36	-91	187
Comparable EBITDA	470	535	426	389	392	331	320	398	1,821	1,442
% of sales	17.6	21.2	17.9	17.4	17.9	16.3	15.4	17.4	18.6	16.8
Comparable EBIT										
Operating profit	415	564	304	279	253	117	148	243	1,562	761
Items affecting comparability in operating profit	46	-140	3	—	-2	98	55	36	-91	187
Comparable EBIT	461	424	307	279	252	215	203	279	1,471	948
% of sales	17.2	16.8	12.9	12.5	11.5	10.6	9.8	12.2	15.0	11.1
Comparable profit before tax										
Profit before tax	420	558	298	272	250	109	138	240	1,548	737
Items affecting comparability in operating profit	46	-140	3	—	-2	98	55	36	-91	187
Comparable profit before tax	466	418	301	272	248	207	193	276	1,457	924
Comparable ROCE, %										
Comparable profit before tax	466	418	301	272	248	207	193	276	1,457	924
Interest expenses and other financial expenses	6	6	7	7	4	7	10	11	26	33
	471	424	308	280	253	213	203	288	1,483	957
Capital employed, average	13,399	12,633	12,080	11,744	11,138	10,744	10,888	11,241	12,657	11,514
Comparable ROCE, %	14.1	13.4	10.2	9.5	9.1	7.9	7.5	10.2	11.7	8.3
Comparable profit for the period										
Profit for the period	340	497	243	227	190	83	103	192	1,307	568
Items affecting comparability, total	33	-139	3	—	1	75	54	39	-103	169
Comparable profit for the period	373	359	246	228	191	158	157	231	1,204	737
Comparable EPS, EUR										
Comparable profit for the period	373	359	246	228	191	158	157	231	1,204	737
Profit attributable to non-controlling interest	-5	-9	-4	-3	-3	-1	-2	-2	-22	-8
	367	350	242	224	188	157	155	229	1,183	729
Average number of shares basic (1,000)	533,324	533,324	533,324	533,324	533,324	533,324	533,324	533,324	533,324	533,324
Comparable EPS, EUR	0.69	0.66	0.45	0.42	0.35	0.29	0.29	0.43	2.22	1.37
Comparable ROE, %										
Comparable profit for the period	373	359	246	228	191	158	157	231	1,204	737
Total equity, average	10,760	10,011	9,454	9,407	9,496	9,468	9,564	9,923	10,310	9,844
Comparable ROE, %	13.8	14.3	10.4	9.7	8.0	6.7	6.6	9.3	11.7	7.5

Financial information 2012–2021

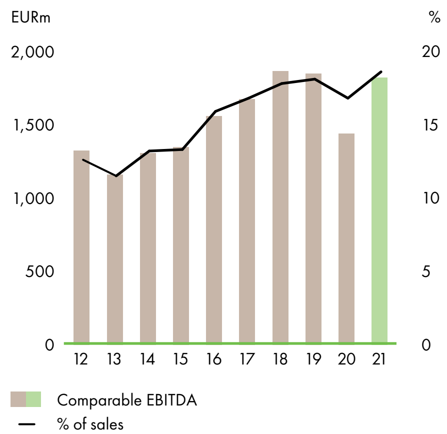
EURm, OR AS INDICATED	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Income statement										
Sales	9,814	8,580	10,238	10,483	10,010	9,812	10,138	9,868	10,054	10,492
Comparable EBITDA	1,821	1,442	1,851	1,868	1,677	1,560	1,350	1,306	1,161	1,325
% of sales	18.6	16.8	18.1	17.8	16.8	15.9	13.3	13.2	11.5	12.6
Operating profit	1,562	761	1,344	1,895	1,259	1,135	1,142	674	548	–1,318
% of sales	15.9	8.9	13.1	18.1	12.6	11.6	11.3	6.8	5.5	–12.6
Comparable EBIT	1,471	948	1,404	1,513	1,292	1,143	916	866	683	556
% of sales	15.0	11.1	13.7	14.4	12.9	11.6	9.0	8.8	6.8	5.3
Profit before tax	1,548	737	1,307	1,839	1,186	1,080	1,075	667	475	–1,271
% of sales	15.8	8.6	12.8	17.5	11.9	11.0	10.6	6.8	4.7	–12.1
Comparable profit before tax	1,457	924	1,367	1,457	1,218	1,089	849	793	610	471
% of sales	14.8	10.8	13.4	13.9	12.2	11.1	8.4	8.0	6.1	4.5
Profit for the period	1,307	568	1,073	1,496	974	880	916	512	335	–1,122
% of sales	13.3	6.6	10.5	14.3	9.7	9.0	9.0	5.2	3.3	–10.7
Comparable profit for the period	1,204	737	1,119	1,194	1,004	879	734	638	479	390
% of sales	12.3	8.6	10.9	11.4	10.0	9.0	7.2	6.5	4.8	3.7
Balance sheet										
Non-current assets	12,420	10,149	10,140	9,501	9,144	9,715	10,259	10,269	10,487	11,066
Inventories	1,594	1,285	1,367	1,642	1,311	1,346	1,376	1,356	1,327	1,388
Other current assets	3,662	3,424	3,215	2,853	2,612	2,850	2,558	2,570	2,785	2,489
Total assets	17,676	14,858	14,722	13,996	13,067	13,911	14,193	14,195	14,599	14,943
Total equity	11,106	9,513	10,175	9,797	8,663	8,237	7,944	7,480	7,455	7,461
Non-current liabilities	4,102	3,606	2,730	2,194	2,254	3,364	4,328	4,717	5,019	5,430
Current liabilities	2,468	1,740	1,818	2,005	2,150	2,309	1,921	1,998	2,125	2,052
Total equity and liabilities	17,676	14,858	14,722	13,996	13,067	13,911	14,193	14,195	14,599	14,943
Capital employed at year end	13,759	11,555	11,474	10,575	9,777	10,657	11,010	10,944	11,583	11,603
Capital expenditure	1,483	903	378	303	329	325	520	411	362	357
% of sales	15.1	10.5	3.7	2.9	3.3	3.3	5.1	4.2	3.6	3.4
Capital expenditure excluding acquisitions and shares	1,477	902	378	303	303	325	486	375	329	347
% of sales	15.1	10.5	3.7	2.9	3.0	3.3	4.8	3.8	3.3	3.3
Cash flow and net debt										
Operating cash flow	1,250	1,005	1,847	1,330	1,460	1,686	1,185	1,241	735	1,040
Free cash flow	-74	126	1,432	1,131	1,336	1,424	750	994	438	968
Net debt	647	56	-453	-311	174	1,131	2,100	2,401	3,040	3,210
Key figures										
Return on capital employed (ROCE), %	12.4	6.7	12.3	18.4	12.5	10.5	10.3	6.5	4.8	neg.
Comparable ROCE, %	11.7	8.3	12.8	14.6	12.8	10.6	8.3	7.6	6.0	4.2
Return on equity (ROE), %	12.7	5.8	10.7	16.2	11.5	10.9	11.9	6.9	4.5	neg.
Comparable ROE, %	11.7	7.5	11.2	12.9	11.9	10.9	9.5	8.5	6.4	4.2
Gearing ratio, %	6	1	-4	-3	2	14	26	32	41	43
Net debt to EBITDA	0.35	0.04	-0.24	-0.17	0.10	0.73	1.56	1.84	2.62	2.42
Equity to assets ratio, %	62.9	64.1	69.2	70.1	66.6	59.4	56.1	52.7	51.1	50.0
Personnel										
Personnel at year end	16,966	18,014	18,742	18,978	19,111	19,310	19,578	20,414	20,950	22,180
Deliveries										
Pulp (1,000 t)	3,724	3,664	3,715	3,468	3,595	3,419	3,224	3,287	3,163	3,128
Electricity (GWh)	9,300	9,168	8,619	8,608	8,127	8,782	8,966	8,721	8,925	9,486
Papers, total (1,000 t)	7,486	7,062	8,326	8,996	9,430	9,613	9,771	10,028	10,288	10,871
Plywood (1,000 m3)	738	683	739	791	811	764	740	731	737	679
Sawn timber (1,000 m3)	1,610	1,604	1,741	1,719	1,728	1,751	1,731	1,609	1,661	1,696

Financial information 2012–2021

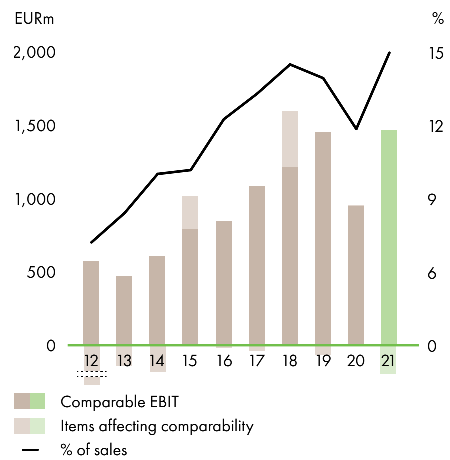
Sales and personnel



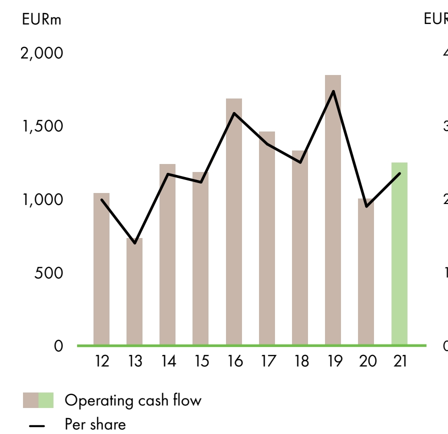
Comparable EBITDA



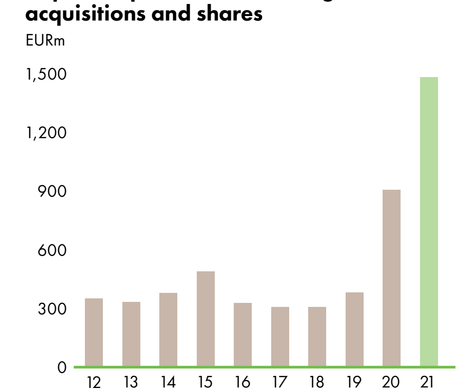
Comparable EBIT



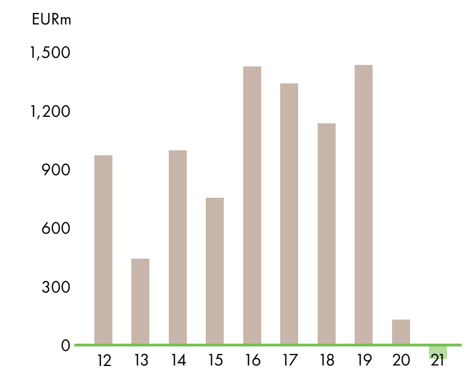
Operating cash flow



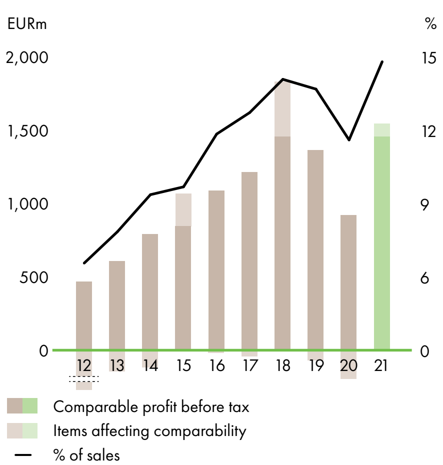
Capital expenditure excluding acquisitions and shares



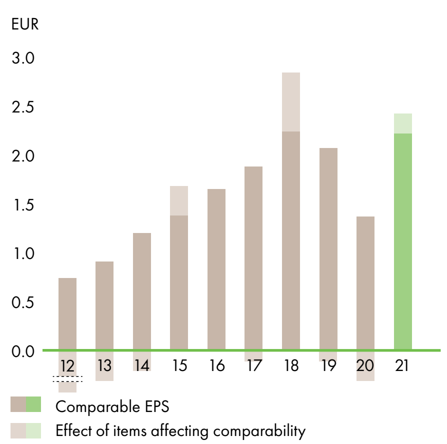
Free cash flow



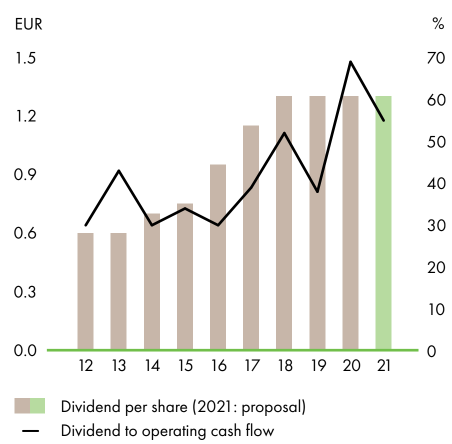
Comparable profit before tax



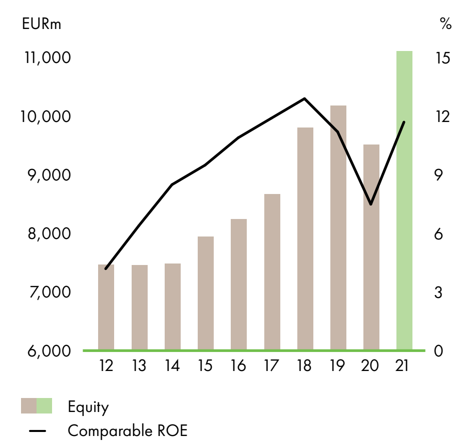
Comparable earnings per share



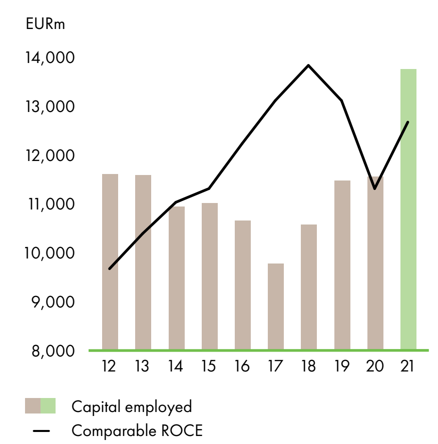
Dividend per share



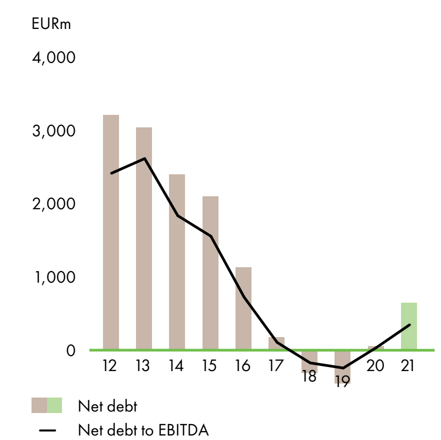
Equity and comparable ROE



Capital employed and comparable ROCE



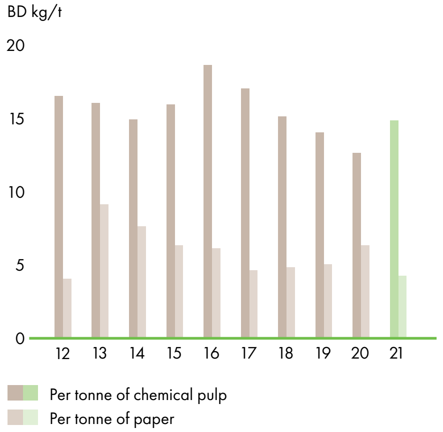
Net debt and net debt to EBITDA



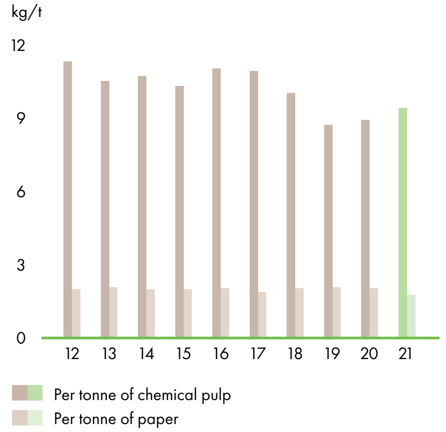
In 2016 UPM has relabelled the previously referenced "excluding special items" non-GAAP financial measures with "comparable" performance measures. Corresponding 2014 and 2015 group measures have been revised accordingly.

More on responsibility

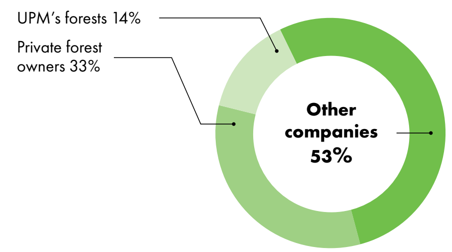
Solid waste to landfills and to incineration w/o energy recovery per tonne of product



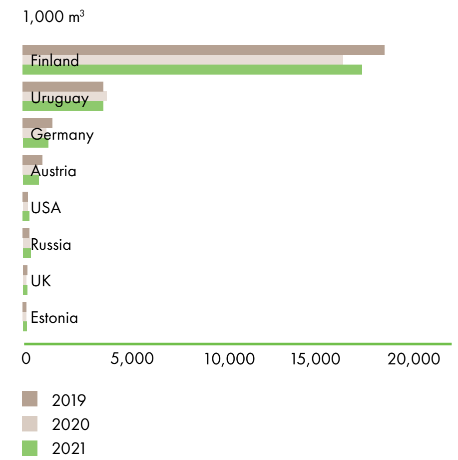
UPM's COD load per tonne of product



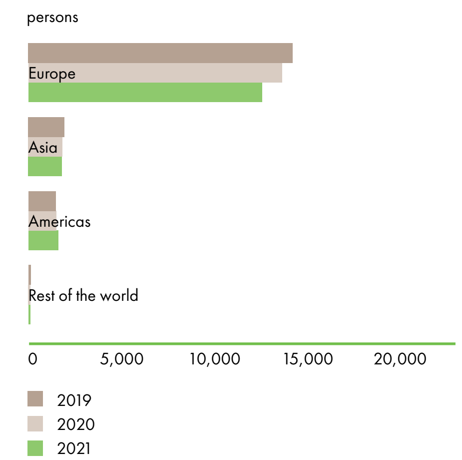
Sources of wood to UPM mills 2021



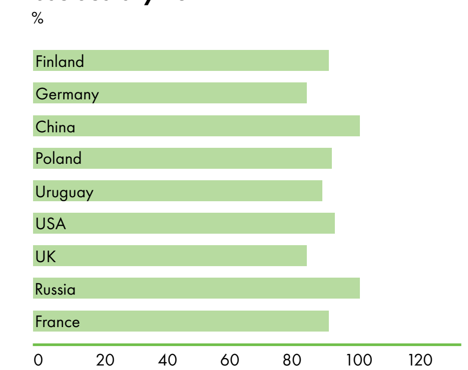
Wood deliveries to UPM mills



UPM employees by region

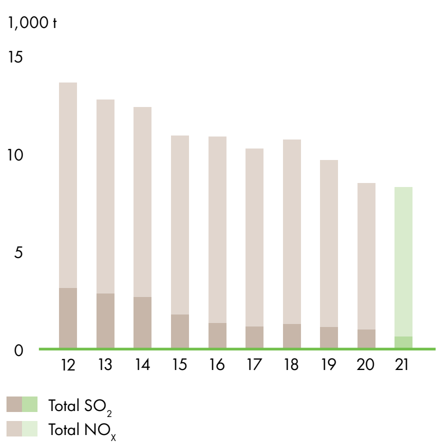


Ratio of female to male salaries weighted basic salary 2021

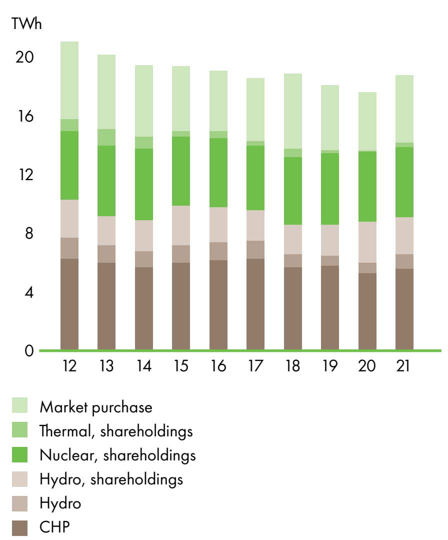


The ratio is calculated by comparing weighted average of basic salaries of women to men on the same job grade, for the nine biggest countries in terms of salaried employees. These countries cover 91% of UPM's total number of salaried employees.

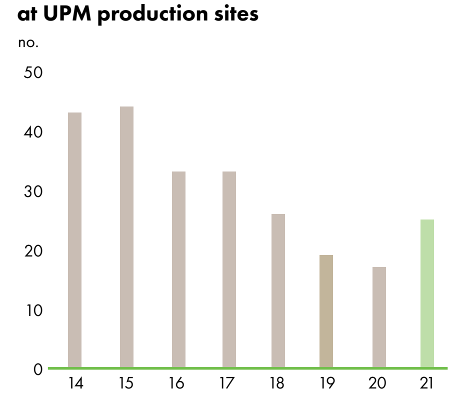
UPM's acidifying flue gases



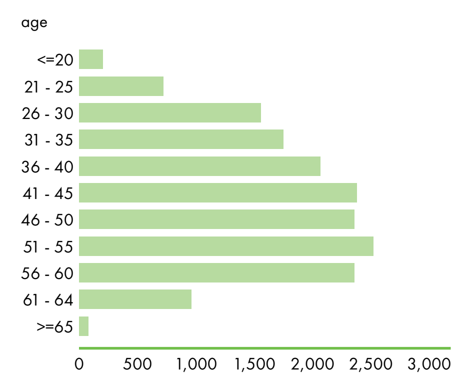
Electricity sourcing



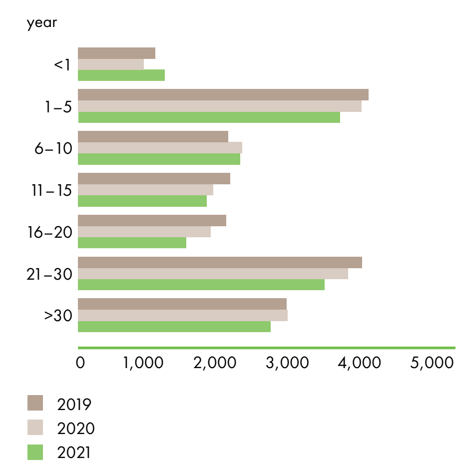
Environmental deviations at UPM production sites



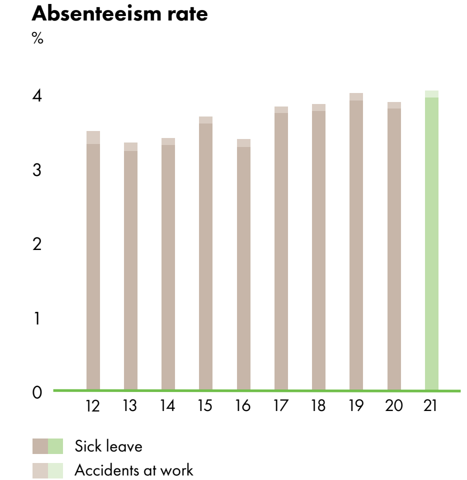
Age structure of UPM employees 2021



Employees' years of service with UPM



Absenteeism rate



Global operations, strong market positions

Our 17,000 people work in 46 countries across six continents. With our head office in Finland, our most important markets are in Europe, Asia and North America.

UPM FIBRES

- 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
- 466,000 ha of own and leased plantations in Uruguay
- Certified sawn timber with annual capacity of 1.4 million cubic metres, produced at four sawmills in Finland

Pulp mills
Finland: UPM Kaukas (Lappeenranta), UPM Kymi (Kouvola) and UPM Pietarsaari

Uruguay: UPM Fray Bentos, UPM Paso de los Toros (completed in Q1 2023) and certified eucalyptus plantations

Sawmills
Finland: UPM Alholma (Pietarsaari), UPM Kaukas (Lappeenranta), UPM Korkeakoski (Juupajoki) and UPM Seikku (Pori)

Market position

#8 Pulp globally

UPM ENERGY

- Cost competitive low-emission electricity generation in Finland consisting of hydro, nuclear and thermal power
- The total electricity generation capacity is 1,468 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

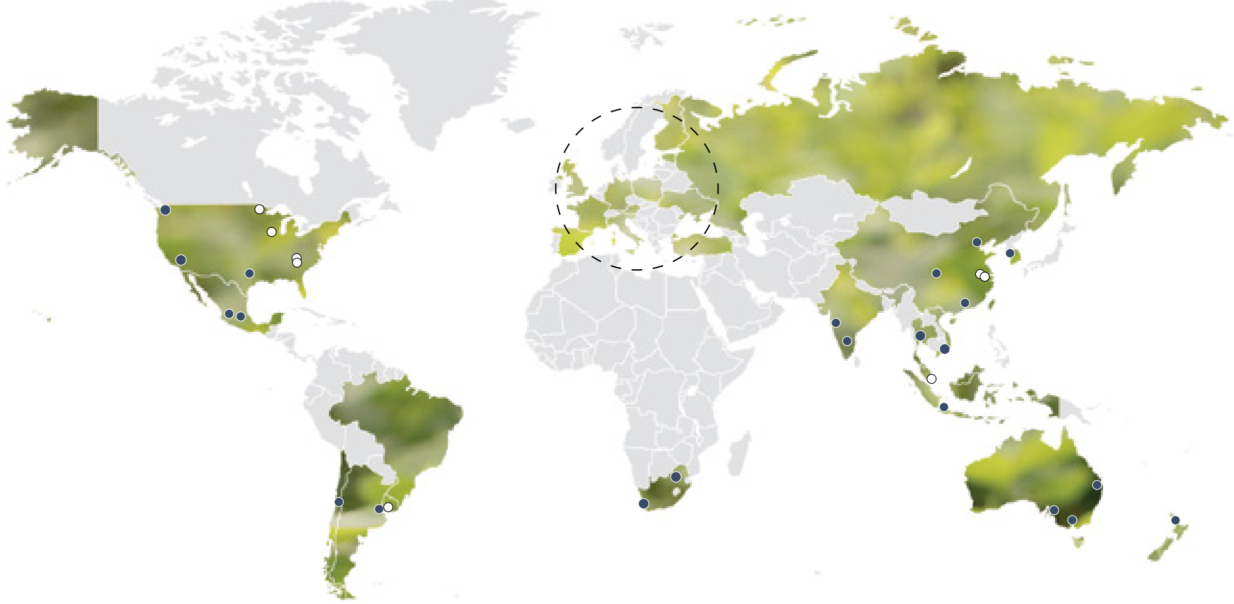
- Self-adhesive label materials for promotion, information and functional product and information labelling
- 10 factories and 28 slitting and distribution terminals in all continents

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
Chile: Santiago
China: Guangzhou and Tianjin
India: Bangalore and Navi Mumbai
Indonesia: Jakarta
Italy: Osnago
México: Ciudad de México and Guadalajara
New Zealand: Auckland
Russia: Moscow, St Petersburg and Chelyabinsk
South Africa: Cape Town and Johannesburg
South Korea: Suwon-Si
Spain: Barcelona
Thailand: Bangkok
Turkey: Istanbul
Ukraine: Kiev
USA: Dallas, TX, Ontario, CA and Seattle, WA
Vietnam: Bien Hoa City

Market position

#2 globally



UPM SPECIALTY PAPERS

- Labelling materials, release liner base papers, flexible packaging papers, office and graphic papers
- Total annual production capacity of 2.0 million tonnes

Paper mills
China: UPM Changshu
Germany: UPM Nordland Papier (Dörpen)
Finland: UPM Jämsänkoski (Jämsä) and UPM Tervasaari (Valkeakoski)

Market position

#1 Labelling materials and release liner base papers 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 6.0 million tonnes, manufactured in 13 paper mills
- Capacities: Annual production capacity of 3.2 million tonnes of magazine papers, 1.0 million tonnes of newsprint and 1.8 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 Jämsänkoski (Jämsä), UPM Kaukas (Lappeenranta), UPM Kymi (Kouvola) and UPM Rauma
Germany: UPM Augsburg, UPM Ettringen, UPM Hürth, UPM Nordland Papier (Dörpen), UPM Plattling and UPM Schongau
United Kingdom: UPM Caledonian Paper (Irvine)
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 industrial end uses
- Production capacity: 960,000 cubic metres
- Production in 8 mills in Finland, Estonia and Russia

Plywood mills
Estonia: UPM Otepää
Finland: UPM Joensuu, 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 business hubs**

OTHER OPERATIONS

- UPM Forest: Purchasing wood and biomass in 11 countries, 516,000 ha of own forest land in Finland and 76,000 ha in the USA, offering forestry services to private forest owners in Finland
- UPM Biofuels: Wood-based renewable diesel and naphtha with the annual capacity of 130,000 t produced
- UPM Biochemicals: glycols, lignin products, renewable functional fillers
- UPM Biomedicals: Wood-based biomedical products for medical and life science applications
- UPM Biocomposites: UPM ProFi decking materials made of recycled plastic waste and UPM Formi composite material to replace fossil-based plastics

Biofuels
Finland: UPM Lappeenranta Biorefinery

Biochemicals
Germany: Biochemicals biorefinery, Leuna (completed in 2023)

Biomedicals
Finland: Biomedicum research and educational centre, Helsinki

Biocomposites mills
Finland: UPM Lahti
Germany: UPM Bruchsal (Karlsruhe)

Contact us

GROUP HEAD OFFICE

UPM
Alvar Aallon katu 1
PO Box 380
FI-00101 Helsinki, Finland
Tel. +358 2041 5111
upm.com/contact-us

Investor relations
Tel. +358 2041 50033
ir@upm.com

Stakeholder relations
Tel. +358 2041 5111
upm.com/contact-us

Responsibility
Tel. +358 2041 5111
responsibility@upm.com

Media relations
Tel. +358 40 588 3284
media@upm.com

BUSINESSES

UPM Fibres
UPM Pulp
Alvar Aallon katu 1
PO Box 380
FI-00101 Helsinki, Finland
Tel. +358 2041 5111
pulp@upm.com
www.upmpulp.com

UPM Forest
Peltokatu 26 C
PO Box 85
FI-33100 Tampere, Finland
Tel. +358 2041 6121
metsaviestinta@upm.com
metsaymparisto@upm.com
www.upmmetsa.fi (fi)

UPM Timber
Peltokatu 26 C, 5th Floor
PO Box 203
FI-33101 Tampere, Finland
Tel. +358 2041 5113
timber@upm.com
www.upmtimber.com

UPM Energy
Alvar Aallon katu 1
PO Box 380
FI-00101 Helsinki, Finland
Tel. +358 2041 5111
upmenergy@upm.com
www.upmenergy.com

UPM Raflatac
Alvar Aallon katu 1
PO Box 380
FI-00101 Helsinki, Finland
Tel. +358 2041 5111
info@upmraflatac.com
www.upmraflatac.com

UPM Specialty Papers
Alvar Aallon katu 1
PO Box 380
FI-00101 Helsinki, Finland
Tel. +358 2041 5111
upm.specialtypapers@upm.com
www.upmspecialtypapers.com

UPM Communication Papers
Georg-Haindl-Strasse 5
D-86153 Augsburg, Germany
Tel. +49 821 31090
paperinfo@upm.com
www.upmpaper.com

UPM Plywood
Niemenkatu 16
PO Box 203
FI-15141 Lahti, Finland
Tel. +358 2041 5113
plywood@upm.com
www.wisaplywood.com

OTHER BUSINESSES

UPM Biofuels
Alvar Aallon katu 1
PO Box 380
FI-00101 Helsinki, Finland
Tel. +358 2041 5111
biofuels@upm.com
www.upmbiofuels.com

UPM Biochemicals
Am Haupttor, Bau 4614
D-06237 Leuna, Germany
Tel. +49 3461 5195000
biochemicals@upm.com
www.upmbiochemicals.com

UPM Biomedicals
Biomedicum 2U
Tukholmankatu 8
PO Box 380
FI-00101 Helsinki, Finland
Tel. +358 2041 5111
biomedicals@upm.com
www.upmbiomedicals.com

UPM Biocomposites
Niemenkatu 16
FI-15110 Lahti, Finland
Tel. +358 2041 5113
upmprofi@upm.com
upmformi@upm.com
www.upmprofi.com
www.upmformi.com

OTHER UPM BUSINESS HUBS

Tulli Business Park
Åkerlundinkatu 11
FI-33100 Tampere, Suomi
www.upm.com/contact-us

UPM Business Hub Tampere
Peltokatu 26
FI-33100 Tampere, Finland
www.upm.com/contact-us

UPM HR Service Center
Eximius Business Park
ul. Krakowska 280
32-080 Zabierzów (Krakow), Poland
contacthr@upm.com

UPM Business Hub Wroclaw
CU Office
Jaworska 11–13
54-204 Wroclaw, Poland
wro.bsh@upm.com

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Annual General Meeting

UPM-Kymmene Corporation's AGM will be held on Tuesday, 29 March 2022 at 14.00 EEST in Event Studio Eero (Töölönlahdenkatu 2, Helsinki, Finland). Due to the COVID-19 pandemic, it is not possible to attend the meeting in person. Detailed instructions for shareholders are available on the corporate website at

› www.upm.com/agm2022

DIVIDEND

The Board of Directors proposes to the Annual General Meeting that a dividend of EUR 1.30 per share be paid for the 2021 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 31 March 2022. The Board of Directors proposes that the dividend be paid on 7 April 2022.

FINANCIAL REPORTS IN 2022

UPM will publish the financial reports in 2022 as follows:

- UPM Interim Report for January–March (Q1) on 26 April 2022
- UPM Half Year Financial Report for January–June (Q1–Q2) on 21 July 2022
- UPM Interim Report for January–September (Q1–Q3) on 25 October 2022

upm.com

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