AIMING HIGHER

WITH BIOFORE

ANNUAL REPORT 2016
In brief

UPM integrates bio and forest industries and builds a sustainable future across six business areas. Our products are made of renewable raw materials and are recyclable.

Biofore
Company

UPM Biorefining consists of pulp, timber and biofuels businesses. UPM Pulp offers versatile range of sustainably produced pulp grades suitable for a wide range of end-uses such as tissue, specialty papers, graphic papers and board. UPM Timber offers certified sawn timber for construction and furniture, for example. UPM Biofuels produces wood-based renewable diesel that is suitable for all diesel engines.

UPM Energy creates value through cost competitive, low-emission electricity generation and through physical electricity and financial trading. UPM Energy is an active shareholder in major Finnish electricity companies. UPM’s power generation capacity consists of hydropower, nuclear power and condensing power.

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

UPM Specialty Papers serves growing global markets with label papers and release liners, office papers in Asia and flexible packaging in Europe. With extensive distribution network and strong brands, UPM Specialty Papers is the market leader in labelling materials globally and in office paper in Asia Pacific region.

UPM Paper ENA is the world’s leading producer of graphic papers, offering an extensive product range for advertising, magazine and newspaper publishing as well as home and office uses. UPM Paper ENA has 15 efficient paper mills in Europe and the United States, as well as a global sales network with excellent service.

UPM Plywood offers plywood and veneer products, mainly for construction, vehicle flooring and LNG shipbuilding as well as other manufacturing industries. With production facilities in Finland, Estonia and Russia, UPM Plywood is the leading supplier in demanding end-use segments.

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

Strategy

Businesses

Stakeholders

Governance

Accounts

2016

Financial performance

Top performance

Comparable EBIT
EUR 1,143m
+25%

Comparable ROE
10.9%
+1.4pp

Strong cash flow

Operating cash flow
EUR 1,686m
+42%

Attractive dividend

Dividend (proposed)
EUR 507m
+27%

Focused investments

Capital expenditure
EUR 325m

Attractive returns reached 80% of the EUR 200m EBITDA target set for the first wave of growth projects

Responsibility

Global businesses – local presence

UPM’s sales by market 2016
EUR 9,812 million

54 production plants in 12 countries

13% North America

63% Europe

18% Asia

19,300 employees in 45 countries

6% Rest of the world

12,000 customers in 120 countries

85,000 shareholders in 40 countries

55,000 suppliers in 70 countries

EVENTS IN 2016

2 FEBRUARY: UPM Board of Directors approved revised Code of Conduct
8 FEBRUARY: Winfried Schlar appointed Executive Vice President, UPM Paper ENA
22 JUNE: Antti Jääskeläinen appointed Executive Vice President, UPM Raflatac
18 APRIL: UPM Biofuels established an innovation unit at the Biomedicum research and educational centre in Helsinki, Finland
21 MAY: Paper production ceased at Madison Paper Industries in the US
13 JULY: Discussions with the Government of Uruguay on the development of logistics infrastructure
8 SEPTEMBER: UPM as industry leader in the Dow Jones Sustainability Europe Index
15 SEPTEMBER: UPM Paper ENA’s organisational structure renewed
1 OCTOBER: UPM Raflatac’s new global operating model
11 OCTOBER: UPM Raflatac to build a new coating line at the label stock factory in Wroclaw, Poland
3 NOVEMBER: UPM Paper ENA’s plan to reduce 305,000 tonnes of graphic paper capacity in Europe
15 NOVEMBER: UPM Kaukas pulp mill investment completed

Read more: www.upm.com/investors

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Shareholder value at the core

2016 was a record-strong year for UPM

2016 demonstrated the results of our transformation and set the stage for our future. It is fair to say that the foundations for our success were laid a decade ago when UPM stated that the graphic paper markets had permanently changed and that we needed to find a new focus and new ways of working to be competitive.

In 2008, we started to turn pulp and energy into market-driven businesses, and in 2009 we introduced UPM as the future-oriented Biofore Company with an increasing focus on innovation. In 2013, we changed our business structure to ensure agile and market-driven operations. At the same time, we further sharpened our capital allocation strategy. With this model we have been able to ensure top-performing businesses, strong cash flow, industry-leading balance sheet and good returns from our targeted growth investments.

Through these steps, we have achieved something that we set out to do - create a new kind of UPM. Today’s UPM is earnings- and growth-oriented, capable and financially strong, and now we have the opportunity to seek new horizons and aim higher.

2016 making way for future growth

During the year, our comparable EBIT increased by 25% and our operating cash flow was record strong at EUR 1,686 million. Our net debt was EUR 969 million lower than a year ago, a reduction of 46%, reaching an industry-leading level.

We grew with our customers in many markets and our growth projects contributed significantly to our earnings. The first wave of pulp investments was very successful and the UPM Lappeenranta Biofinery had a solid year. The ramp-up of the specialty paper machine at UPM Changshu proceeded as planned. The UPM Otepää plywood mill and UPM Kaukas pulp mill expansions started successfully towards the end of the year.

Further investments are ongoing ensuring future growth. Construction of the second UPM Kymi pulp mill expansion and investment in the UPM Rafiał factory in Poland are in full swing. Our negotiations with the Government of Uruguay on the prerequisites for long-term industrial development in the country have progressed in positive spirit and are continuing. We also continue to study new opportunities in biofuels and biochemicals.

At the same time, our continuous improvement programmes delivered results in terms of significant savings in variable and fixed costs. The restructuring of UPM’s graphic paper business continued in order to adjust capacity to profitable demand. This was particularly reflected in the form of a strong earnings development at UPM Paper ENA.

All this is a significant achievement in a complex and competitive environment and I want to take this opportunity to thank all our business partners, employees and stakeholders for their engagement and co-operation, which made 2016 a success.

Responsibility is good business

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

The revision and launch of our Code of Conduct was a group-wide effort during the year. The Code now better reflects our current operating environment. As many as 97% of UPMers completed the training for the new Code.

We were also able to make good progress in 25 of our 34 measurable responsibility targets for 2030: Supplier responsibility was one of the key focus areas in 2016.

The company received recognitions from several third parties. To name but a few, UPM was listed in the Dow Jones Sustainability Index Europe and participated in the United Nations Global Compact LEAD forum of the 50 most advanced companies in terms of sustainability across geographic regions and industry sectors.

Shareholder value at the core

Creating shareholder value is at the core of our strategy and we believe that this also benefits our other stakeholders in the long term.

Our transformation and the continued improvement in terms of financial and responsibility performance were reflected in positive share price performance. Our share price increased by 35% during the year.

UPM’s Board of Directors proposed a dividend of EUR 0.95 per share, which is 22% higher than in the previous year. The proposal reflects confidence in UPM’s future.

Looking forward

UPM has a versatile business portfolio, good geographic spread and fine growing business areas. The versatile use of forest biomasses and focus on competitiveness and innovation will continue to advance our Biofore strategy.

We will invest in projects with attractive and sustainable returns. We will also continue measures to manage our costs. Our new long-term financial targets reflect our increased ambition for business performance. They are credible and sustainable in the long term, over business and investment cycles.

We look confidently to the future. Our competitive position and market demand enable us to expand our growth businesses further and aim higher with our long-term earnings.

Jussi Pesonen
President and CEO
Over the past years, UPM has been transforming its business model, business portfolio and business performance. The change process started in 2008, and 2016 showed many of the benefits achieved. UPM’s transformation continues.

Business model

Six separate business areas

UPM has changed its business model from a vertically integrated forest industry model into a company with six separate business areas. The business areas are competitive, with strong market positions. Five of them are operating on healthily growing markets.

The business model change has yielded benefits:
1. Transparency and accountability – commercial strategies, benchmarking, target setting, incentives
2. Cost competitiveness – agility, improved efficiency, optimised sourcing
3. Growth – focused investments with attractive returns and clear competitive advantage

Capturing corporate benefits

UPM group aims to add value to its separate businesses and thereby to its stakeholders with:
- Competitive and responsible wood sourcing, forestry and plantation operations
- Value adding, efficient and responsible global functions, compliance
- Continuous improvement (Smarter) programmes
- Global platform to build on
- Disciplined capital allocation

Decision making on the right level

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 on the group level.

CLEAR ROLES AND RESPONSIBILITIES

Group

Portfolio strategy
Capital allocation
Business targets
Code of Conduct
Responsibility targets

Businesses

Business area strategies
Commercial excellence
Operational excellence
Cost efficiency measures
Focussed growth projects
Innovation

Outcomes

Top performance
Competitive advantage
Value creation
Stakeholder and societal value
License to operate

SUSTAINABLE EARNINGS GROWTH

- UPM Paper ENA
- UPM Raflatac
- UPM Specialty Papers
- UPM Plywood
- UPM Energy

Combined comparable EBIT

EURm 1,000

% of sales

5-year average delivery growth (CAGR)

3–4%

excluding UPM Energy

New business:

Biofuels

MAINTAIN STRONG CASH FLOW

- UPM Paper ENA

UPM Paper ENA operating cash flow

EURm 321m

UPM’s top-line has been nearly constant at EUR 10 billion over recent years. However, sales in the graphic paper business UPM Paper ENA have decreased, while the five other business areas have grown significantly through focused investments.

Transforming the business portfolio

UPM has achieved a clear improvement in its financial performance. Profitability has improved, shareholder returns have increased and the balance sheet has strengthened. At the same time, social and environmental performance has also improved. Read more on long-term financial and responsibility targets on pages 17-19.
In brief

Strategy

Businesses Stakeholders Governance Accounts


BIOFUELS

• Advanced renewable diesel suitable for all diesel engines and renewable naphtha that can be used as a gasoline component

BIOCOMPOSITES

• Renewable materials to replace oil-based materials e.g. in injection moulding

BIOCHEMICALS

• Sustainable and competitive wood-based biochemicals with the focus on chemical building blocks, lignin products, biofibrils and biomedical products

Product, service and business model development in the current businesses is also an important source of competitive advantage and growth. All UPM businesses aim to increase the value added for customers through product and service development.

Continuous improvement in performance

UPM is committed to continuous improvement in its financial, social and environmental performance. Each business area targets top relative performance in their respective markets.

• UPM has group-wide continuous improvement programmes for reducing variable costs, optimising maintenance and site operations as well as releasing working capital

• Similarly, UPM has continuous improvement programmes for the health and safety of employees and contractors and environmental performance

• The programmes continued to yield strong results in 2016: variable and fixed costs decreased significantly. Lost-time accident frequency continued to decrease, and resource efficiency continued to improve. The work will continue in 2017 and beyond

• UPM aims for efficient use of its assets. In UPM Paper ENA, this also means adjusting production capacity according to customer demand

• UPM sees good governance, industry-leading environmental performance, responsible sourcing, and a safe working environment as important sources of competitive advantage

UPM’s Biofore strategy includes continuous improvement programmes and short-term actions to drive performance, mid-term growth projects as well as mid- to long-term development work to create new, high value-added growth. UPM develops its business portfolio in order to increase the long-term shareholder value.

Sustainable returns with focused growth projects

UPM aims to capture growth opportunities in its business portfolios. The company invests in projects with attractive and sustainable returns, supported by clear competitive advantage.


• UPM Pietarsaari, UPM Fray Bentos and UPM Kymi pulp mill expansions

• UPM Lappeenranta renewable diesel biorefinery

• UPM Raflatac label stock factory expansions in Asia Pacific region and Poland

• UPM Changshu specialty paper machine

Projects under construction or at the beginning of ramp up:

• EUR 225 million investments

• UPM Otepää plywood mill expansion

• UPM Kaukas and UPM Kymi (second investment) pulp mill expansions

• UPM Raflatac label stock factory expansion in Poland (second investment)

In Uruguay, UPM started discussions with the Government of Uruguay regarding the development of logistics infrastructure in the country. Railroad and road connections are a critical challenge for establishing a large scale industrial operation in the inland and connecting it to a deep sea port.

Business portfolio development and value creation

UPM aims to increase long-term shareholder value by increasing the value of each business and by developing the business portfolio, organically or potentially through mergers and acquisitions. UPM’s responsible operations and value chain lay the foundation for identifying opportunities and avoiding and mitigating potential risks.

Developing each business

• Driving profitability, growth and cash flow

• Commercial strategies, focused growth investments, continuous improvement programmes

Developing the business portfolio

• Increasing the share of businesses with strong long-term fundamentals for profitability and growth

• Businesses with a sustainable competitive advantage

• Growth investments, synergistic M&A

Portfolio changes are possible if it would be the best way to increase long-term shareholder value

Ability to take action: strong balance sheet mitigates risks and presents strategic opportunities

New sources for sustainable growth and competitiveness

UPM is developing new businesses based on its extensive know-how and strong position in the forest biomass sourcing and processing value chain. Ecodesign represents business opportunities with large target markets and high added value.

BIODECUMES

• Advanced renewable diesel suitable for all diesel engines and renewable naphtha that can be used as a gasoline component

BIOCOMPOSITES

• Renewable materials to replace oil-based materials e.g. in injection moulding

BIOCHEMICALS

• Sustainable and competitive wood-based biochemicals with the focus on chemical building blocks, lignin products, biofibrils and biomedical products

Product, service and business model development in the current businesses is also an important source of competitive advantage and growth. All UPM businesses aim to increase the value added for customers through product and service development.
## Performance improvement and transformation continued in 2016

<table>
<thead>
<tr>
<th>BUSINESS AREA</th>
<th>STRATEGIC TARGETS</th>
<th>ACTIONS IN 2016</th>
<th>ACTIONS PLANNED FOR 2017 *)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UPM BIOREFINING</strong></td>
<td>Grow as a responsible and cost competitive pulp producer providing the most versatile pulp product offering</td>
<td>Investment completed at UPM Kuusankoski pulp mill</td>
<td>Capture benefits of pulp expansions</td>
</tr>
<tr>
<td></td>
<td>Provide unique wood-based advanced bioplastics, achieve top performance and evaluate opportunities for scaling up bioplastics business</td>
<td>UPM Kymi pulp mill investment decision, discussions with the Government of Uruguay started</td>
<td>Complete UPM Kymi pulp mill investment</td>
</tr>
<tr>
<td></td>
<td>Enhance profitability through efficient use of wood supply, integrated full production at sawmills and enhanced commercial strategy</td>
<td>Developed forest plantations in Uruguay</td>
<td>Continue discussions with the Government of Uruguay</td>
</tr>
<tr>
<td><strong>UPM ENERGY</strong></td>
<td>Create value in electricity generation and physical and financial trading</td>
<td>Start-up of new turbine and continued refurbishment of existing two turbines at Harjavalta hydropower plant</td>
<td>Complete refurbishment of Harjavalta hydropower plant</td>
</tr>
<tr>
<td></td>
<td>Profitable growth on the Nordic electricity market with CO2 emission-free generation</td>
<td>Continued OL3 construction</td>
<td>Continue OL3 construction</td>
</tr>
<tr>
<td><strong>UPM RAFLATAK</strong></td>
<td>Profitable organic growth, potentially complemented with acquisitions</td>
<td>Improved cost and capital efficiency</td>
<td>Construction of the factory expansion in Poland</td>
</tr>
<tr>
<td></td>
<td>Widely product offering especially in high value-added films and special label products</td>
<td>Strengthened product portfolio in films and special products</td>
<td>Capture growth opportunities and develop product portfolio</td>
</tr>
<tr>
<td></td>
<td>Expand customer reach through increased distribution and sales &amp; service coverage</td>
<td>Improved sales capabilities and logistics solutions</td>
<td>Expand distribution coverage in attractive markets</td>
</tr>
<tr>
<td><strong>UPM SPECIALTY PAPERS</strong></td>
<td>Profitable growth in labelling materials globally and in high quality office papers in Asia</td>
<td>Ramp-up of the new production line at UPM Changshu, China</td>
<td>Continuous optimisation of the third production line at UPM Changshu, China</td>
</tr>
<tr>
<td></td>
<td>Widely product offering in specialties and through new product development, seek opportunities in existing and new end uses</td>
<td>Reduction in variable costs</td>
<td>Develop more value-added specialty products segments</td>
</tr>
<tr>
<td><strong>UPM PAPER ENA</strong></td>
<td>Maximize cash flow through differentiated commercial strategies and a disciplined performance management</td>
<td>Continued systematic performance management</td>
<td>Continuous cost efficiency improvement</td>
</tr>
<tr>
<td></td>
<td>Make use of optimisation opportunities in the extensive low-cost operations</td>
<td>Closure of Madison Paper Industries and sale of Schwedt</td>
<td>Strengthen customer relationships</td>
</tr>
<tr>
<td><strong>UPM PLYWOOD</strong></td>
<td>Profitable growth through superior customer experience and operational excellence</td>
<td>Increased deliveries to demanding end-use segments</td>
<td>Taking opportunities in certain end uses and segments</td>
</tr>
<tr>
<td></td>
<td>Strengthen market position in selected businesses by increasing value and service offering</td>
<td>Investment completed at UPM Otepää mill in Estonia</td>
<td>Continuous process efficiency improvement programmes</td>
</tr>
<tr>
<td><strong>WOOD SOURCING AND FORESTRY</strong></td>
<td>Secure competitive wood</td>
<td>Competitiveness improvement programme at the Finnish birch plywood mills continued</td>
<td>Strengthening the supply chain service models</td>
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<tr>
<td></td>
<td>Sold 63,000 hectares of forest land in Finland</td>
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<tr>
<td><strong>BUSINESS PORTFOLIO DEVELOPMENT AND VALUE CREATION</strong></td>
<td>Grow with synergistic acquisitions</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Simplify with best value realisation for UPM</td>
<td></td>
<td></td>
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<tr>
<td><strong>NEW BUSINESS DEVELOPMENT</strong></td>
<td>UPM Biocomposites: business creation and continued growth</td>
<td>Industrial concept development proceeded in biochemicals</td>
<td>Continue to expand UPM ProFi product portfolio</td>
</tr>
<tr>
<td></td>
<td>UPM Biocatalysts: Further application development and piloting</td>
<td>An innovation unit was established at the Biomedicum research and educational centre</td>
<td>Continue to commercialise UPM Forimi</td>
</tr>
<tr>
<td></td>
<td>Commercialise technology and IPR innovations</td>
<td>Active management of patent portfolio, attractive partnerships with start-up companies enhanced</td>
<td>Continue to develop biochemicals towards commercial phase</td>
</tr>
<tr>
<td><strong>RESPONSIBILITY</strong></td>
<td>Legal compliance; responsible and ethical practices</td>
<td></td>
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<tr>
<td></td>
<td>Mitigate risks and capture opportunities</td>
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<td></td>
<td>Enhance competitiveness</td>
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<td></td>
<td>Continuous improvement</td>
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<td></td>
<td>UPM Code of Conduct renewed</td>
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<td></td>
<td>New 2030 responsibility targets established</td>
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<tr>
<td></td>
<td>Resource efficiency and work safety improved</td>
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<td></td>
<td>Responsible sourcing management strengthened</td>
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</table>

*) Not a complete list

In brief  Businesses  Stakeholders  Governance  Accounts

### Strategy

#### Performance

1. Continuous improvement
2. Enhance competitiveness
3. Mitigate risks and capture opportunities
4. Continuous improvement

#### Growth

1. Profitable growth through superior customer experience and operational excellence
2. Strengthen market position in selected businesses by increasing value and service offering
3. Improved sales capabilities and logistics solutions
4. Increase value in electricity generation and physical and financial trading

#### Portfolio

1. Widely product offering especially in high value-added films and special label products
2. Widely product offering in specialties and through new product development, seek opportunities in existing and new end uses

#### Innovation

1. Improved cost and capital efficiency
2. Improved sales capabilities and logistics solutions
3. Commericalise technology and IPR development and piloting
4. Strengthen the supply chain service models
Responsibility is good business

Corporate responsibility is an integral part of all our operations and seen as a source of competitive advantage. UPM is strongly committed to continuous improvement in economic, social and environmental performance.

Examples:
- Goal 3 (Good Health and Wellbeing): UPM’s management and safety practices
- Goal 13 (Climate Action): wood-based renewable diesel
- Goal 15 (Life on Land): wood-based products and the company’s global biodiversity programme, which has been part of its sustainable forest management for over 20 years

In addition to participating in global projects, UPM also works with several local expert organisations in order to promote the SDGs.

The materiality analysis (below) of the company’s responsibility issues covers topics that directly or indirectly influence the ability to create, maintain or acquire economic, environmental or social value for UPM, its stakeholders and society. Analysis is performed annually, based on follow-up of interests and concerns of different stakeholder groups, including customers, employees, NGOs, customers, suppliers, investors and media. For example, the customer questions and stakeholder concerns received during the year are taken into consideration. Specific external stakeholder interviews for materiality purposes are conducted every second year by independent third party. Most material economic, environmental and social responsibility topics identified in this process are presented on the right. UPM’s responsibility focus areas and targets (p. 18) reflect these material aspects. UPM does not distinguish topics within the section from each other but considers all equally material.

The company’s Biofore strategy and the revised UPM Code of Conduct, approved by the Board in February 2016, lay the foundation for responsible business operations and continuous improvement.

The UPM Code of Conduct covers good business conduct, human rights, occupational safety and environmental practices. During 2016, discussions concerning the UPM Code of Conduct took place throughout the organisation and almost all employees attended a mandatory UPM Code of Conduct training. An assessment of the detailed policies, rules and guidelines that complement the UPM Code of Conduct is currently under way.

The revision of the UPM Code of Conduct resulted, for example, in an update of UPM Supplier Code. The extended content of the UPM Supplier and Third Party Code complies with the UPM Code of Conduct and covers suppliers as well as agents and joint venture partners. The practical implementation of the Supplier and Third Party Code will begin in 2017.

Managing corporate responsibility

The Board of Directors, assisted by the Board’s Audit Committee, is responsible for monitoring compliance with the UPM Code of Conduct and other corporate policies (read more p. 73–74). The Group Executive Team, headed by the President and CEO, is in charge of the daily management of corporate responsibility, determining the course of action and guiding development work. In practice, corporate responsibility efforts take place in businesses and functions, and in the Group’s Environment & Responsibility team, which coordinates the projects carried out by businesses and functions. UPM continually strives to improve its performance by using various tools, such as certified management systems.

Several focus areas

The main focus in 2016 was on the internal UPM Code of Conduct trainings. In addition, the effects of UPM Code of Conduct was extended to cover UPM’s suppliers and third party intermediaries. The safety of employees and contractors remained an important focus area. In 2016, UPM introduced a global reporting tool, One Safety, for all UPMers and contractors. The tool covers environment, health and safety, product and process safety as well as security. In 2016, UPM’s pulp business developed a joint integrated management system for its four pulp mills. A similar project has started for UPM’s paper mills in Finland.

UPM conducted a high-level human rights assessment in 2013. An action plan for developing responsible sourcing was created after the assessment and it has been systematically applied throughout the supply chain. In addition, UPM has continuously focused on improving occupational health and safety, and has conducted programmes related to improving employees’ health, reducing environmental impact and enhancing product safety. UPM considers its salient human rights issues to include child labour, forced labour, environmental pollution, product safety, occupational health and safety, working conditions, discrimination and corruption. In assessing human rights, the rights of the following vulnerable groups are especially taken into account: children, women, indigenous people, migrant workers and indigenous people. In 2016, UPM initiated a global assessment of human rights focusing on activities at UPM sites, community relations and local sourcing. This assessment will be completed in 2017 and action plans determined for all sites where improvement is required.

Control of UPM code of conduct to be made visible in everyday operations

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Control of UPM code of conduct to be made visible in everyday operations

The company’s Biofore strategy and the revised UPM Code of Conduct, approved by the Board in February 2016, lay the foundation for responsible business operations and continuous improvement.

The UPM Code of Conduct covers good business conduct, human rights, occupational safety and environmental practices. During 2016, discussions concerning the UPM Code of Conduct took place throughout the organisation and almost all employees attended a mandatory UPM Code of Conduct training. An assessment of the detailed policies, rules and guidelines that complement the UPM Code of Conduct is currently under way.

Managing corporate responsibility

The Board of Directors, assisted by the Board’s Audit Committee, is responsible for monitoring compliance with the UPM Code of Conduct and other corporate policies (read more p. 73–74). The Group Executive Team, headed by the President and CEO, is in charge of the daily management of corporate responsibility, determining the course of action and guiding development work. In practice, corporate responsibility efforts take place in businesses and functions, and in the Group’s Environment & Responsibility team, which coordinates the projects carried out by businesses and functions. UPM continually strives to improve its performance by using various tools, such as certified management systems.

Several focus areas

The main focus in 2016 was on the internal UPM Code of Conduct trainings. In addition, the effects of UPM Code of Conduct was extended to cover UPM’s suppliers and third party intermediaries. The safety of employees and contractors remained an important focus area. In 2016, UPM introduced a global reporting tool, One Safety, for all UPMers and contractors. The tool covers environment, health and safety, product and process safety as well as security. In 2016, UPM’s pulp business developed a joint integrated management system for its four pulp mills. A similar project has started for UPM’s paper mills in Finland.

UPM conducted a high-level human rights assessment in 2013. An action plan for developing responsible sourcing was created after the assessment and it has been systematically applied throughout the supply chain. In addition, UPM has continuously focused on improving occupational health and safety, and has conducted programmes related to improving employees’ health, reducing environmental impact and enhancing product safety. UPM considers its salient human rights issues to include child labour, forced labour, environmental pollution, product safety, occupational health and safety, working conditions, discrimination and corruption. In assessing human rights, the rights of the following vulnerable groups are especially taken into account: children, women, indigenous people, migrant workers and indigenous people. In 2016, UPM initiated a global assessment of human rights focusing on activities at UPM sites, community relations and local sourcing. This assessment will be completed in 2017 and action plans determined for all sites where improvement is required.
UPM renewed its long-term financial targets

UPM has achieved a clear improvement in the financial performance since adopting the current business model of six separate businesses in 2013. With renewed long-term financial targets, UPM aims higher.

**IN THE NEW TARGETS:**
- the business area return targets and the comparable ROE target have been increased.
- comparable EBIT growth has been introduced as a new group-level target
- a new financial policy on leverage based on net debt/EBITDA has been introduced
- the cash flow-based dividend policy remains unchanged

**Business area long-term return targets increased**
At the business area level, UPM targets top relative performance in their respective markets compared with key peers. UPM has increased the long-term return targets (below) for five of the six business areas. The new return targets reflect UPM’s increased ambition for business performance over business and investment cycles.

**Group earnings growth**
On the group level, UPM introduced a new target. UPM aims to grow its comparable EBIT over the long term. In 2016, comparable EBIT increased by 20% to EUR 1,143 million (916 million). UPM aims to grow its businesses with strong long-term fundamentals. Earnings growth is prioritised over top-line growth. UPM will invest in projects with attractive and sustainable returns, supported by a clear competitive advantage. The company also aims to capture opportunities to develop its business and product mix and further improve its cost competitiveness.

**Efficient capital structure and return on equity**
UPM aims to maintain a strong balance sheet. Investment grade rating is an important element in UPM’s financing strategy. UPM’s new financial policy on leverage is based on net debt/EBITDA ratio of approximately 2 times or less. In 2016, net debt/EBITDA was 0.73 times.

The previous maximum gearing limit of 90% has been discontinued as redundant. At the end of 2016, gearing ratio was 14%.

UPM has increased its ROE target, now aiming for a 10% return on equity. ROE also takes into account the financing, taxation and capital structure of the group. In 2016, comparable ROE was 10.9%.

The previous target was variable: 5 percentage points over a ten-year risk-free investment such as the Finnish government’s euro-denominated bonds. At the end of 2016, the minimum target for return on equity, as defined above, was 5.3%.

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**UPM as an investment**

**UPM AIMS TO INCREASE LONG-TERM SHAREHOLDER VALUE**

**Performance**
- UPM is committed to continuous improvement in its financial, social and environmental performance. At the business area level, UPM aims for top performance in its respective markets compared with peers.

**Growth**
- UPM invests to expand its businesses with strong long-term fundamentals for growth and profitability. The company has clear long-term return targets for its businesses. Earnings growth is prioritized over top-line growth.

**Portfolio**
- Increasing the share of attractive growth businesses improves the company’s long-term profitability and boosts the value of the shares.

**Innovation**
- UPM’s expertise in renewable and recyclable materials, low-emission energy and resource efficiency is the key to developing new, sustainable businesses with high added value and unique competitive advantage.

**Strong cash flow** enables focused growth investments, focused M&A, new business development as well as attractive dividends to UPM shareholders.

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

**Responsibility is good business:** Good governance, industry-leading environmental performance, responsible sourcing and a safe working environment are important sources of competitive advantage.

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

**5-YEAR SHARE PERFORMANCE AND VALUATION MULTIPLES**

<table>
<thead>
<tr>
<th>Year</th>
<th>Share price at 31 Dec, EUR</th>
<th>Comparable EPS, EUR</th>
<th>Dividend per share, EUR</th>
<th>Operating cash flow per share, EUR</th>
<th>Effective dividend yield, %</th>
<th>P/E ratio</th>
<th>P/BV ratio</th>
<th>EV/EBITDA ratio</th>
<th>ROCE %</th>
<th>Net debt/EBITDA</th>
<th>Comparable ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>23.34</td>
<td>1.65</td>
<td>0.95</td>
<td>3.16</td>
<td>4.1</td>
<td>14.1</td>
<td>1.51</td>
<td>8.7</td>
<td>4.6</td>
<td>2.0</td>
<td>≤2x</td>
</tr>
<tr>
<td>2013</td>
<td>17.23</td>
<td>1.38</td>
<td>0.75</td>
<td>2.22</td>
<td>4.4</td>
<td>10.0</td>
<td>0.97</td>
<td>8.4</td>
<td>4.5</td>
<td>2.0</td>
<td>≤2x</td>
</tr>
<tr>
<td>2014</td>
<td>13.62</td>
<td>0.91</td>
<td>0.70</td>
<td>2.33</td>
<td>5.1</td>
<td>14.2</td>
<td>0.97</td>
<td>7.5</td>
<td>4.3</td>
<td>2.0</td>
<td>≤2x</td>
</tr>
<tr>
<td>2015</td>
<td>12.28</td>
<td>0.97</td>
<td>0.60</td>
<td>3.19</td>
<td>4.9</td>
<td>15.5</td>
<td>0.87</td>
<td>8.3</td>
<td>4.0</td>
<td>2.0</td>
<td>≤2x</td>
</tr>
<tr>
<td>2016</td>
<td>8.81</td>
<td>1.38</td>
<td>0.40</td>
<td>3.0</td>
<td>6.8</td>
<td>19.5</td>
<td>0.62</td>
<td>6.0</td>
<td>5.5</td>
<td>2.0</td>
<td>≤2x</td>
</tr>
</tbody>
</table>

**Business areas returns and long-term targets**

<table>
<thead>
<tr>
<th>Business Area</th>
<th>ROCE %</th>
<th>Comparable ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPM Energy***</td>
<td>10.9%</td>
<td>10.9%</td>
</tr>
<tr>
<td>UPM Biorefining</td>
<td>15.7%</td>
<td>15.0%</td>
</tr>
<tr>
<td>UPM Specialty Papers</td>
<td>13.0%</td>
<td>12.6%</td>
</tr>
<tr>
<td>UPM Paper ENA</td>
<td>31.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>UPM Plywood</td>
<td>22.4%</td>
<td>21.0%</td>
</tr>
<tr>
<td>UPM Raflatac</td>
<td>35.5%</td>
<td>35.0%</td>
</tr>
</tbody>
</table>

---

*ROCE % = Return on capital employed excluding items affecting comparability.
**Free cash flow after investing activities (investments and/or divestments) and/or restructuring costs
***UPM Energy assets valued at fair value.
In order to guide its responsibility activities, UPM has established a set of responsibility focus areas with key performance indicators. They are analysed every year based on a materiality analysis. The focus areas cover economic, social and environmental responsibility.

Having successfully transformed its business model and improved its business performance, UPM has renewed its long-term financial targets in January 2017. Targets related to diversity and inclusion as well as community engagement were changed from launching over 16 projects to 162 initiatives and more than 13,000 employees participating in activities. Climate-related focus area was strengthened with two new targets for energy efficiency and share of renewable fuels. The scope of ecolabelled products was widened to cover also UPM Raflatac's products.

In the area of economic responsibility, UPM's focus areas are economic performance, good governance and continuous learning. Economic performance is often measured in terms of economic benefits for the company or sustainability initiatives, such as continuous learning and development.

As a result of the significant local presence, UPM adds value to society. The company strives to increase this value through stakeholder engagement. Environmental responsibility covers sustainable products, the climate, the use of forests and water, and waste reduction. Some of the targets are continuous and some have been extended to 2030. Long-term targets are also monitored on an annual basis. For environmental targets, the reference year is 2008.

In brief

**Strategy**

**Businesses**

**Governance**

**Accounts**

UPM's Biofore strategy guides the company in achieving its responsibility targets for 2030 and in contributing to the UN's Sustainable Development Goals (SDGs).
Changing operating environment

The 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.

MEGATRENDS

POPULATION GROWTH, URBANISATION AND DEMOGRAPHIC CHANGE

- Global consumption growth
- Growing middle class in emerging markets
- Higher living standards
- Changing consumer behaviour and preferences
- Resource scarcity, competition for natural resources
- Deforestation

DIGITALISATION

- Changing consumer behaviour and preferences
- Growing e-commerce
- Changing work
- Disruptive business models and technologies

CLIMATE CHANGE

- Policies to mitigate climate change
- Replacing fossil energy and oil-based materials
- Direct and indirect impacts of climate change

RESPONSIBILITY AND COMPLIANCE

- Increasing regulation, subsidies
- Requirements for transparency
- Global trade and businesses - local impacts
- Focus on human rights, environment, biodiversity

EXPRESSIONS

- UPM Pulp
- UPM Biofuels
- UPM Specialty Papers
- UPM Raflatac
- UPM Plywood
- UPM Biocomposites
- UPM Energy

OPPORTUNITIES FOR UPM

- UPM Pulp
- UPM Biofuels
- UPM Specialty Papers
- UPM Raflatac
- UPM Plywood
- UPM Biocomposites
- UPM Energy
- UPM Biocomposites
- UPM Biochemicals
- UPM Energy

CHALLENGES FOR UPM

- Fit of UPM’s product mix and geographical presence to future growth outlook
- Unpredictable raw material costs and availability
- Competition for renewable raw materials
- Unpredictable regulation and subsidies may distort markets

UPM’s Biofore strategy fits well into the changing world

1 PERFORMANCE

- UPM's continuous improvement programmes for variable and fixed costs and working capital
- Efficient use of renewable materials and energy, recycling of production waste
- UPM Code of Conduct, compliance, transparency
- UPM Supplier and Third Party Code, responsible sourcing
- UPM One Safety, continuous improvement of health and safety
- Human capital development, employee engagement and capabilities
- More with Biofore, industry leading environmental performance, Best Available Techniques (BAT)

2 GROWTH

- Focused growth investments in UPM Pulp, UPM Biofuels, UPM Raflatac, UPM Specialty Papers, UPM Plywood, UPM Energy
- Commercialise new business in biofuels (outside food value chain), biocomposites and biochemicals
- Focus on cost competitive, low-emission energy sources
- Talent attraction

3 PORTFOLIO

- Business portfolio development organically and potentially through M&A
- Businesses with best development and/or value potential for UPM
- Businesses with sustainable competitive advantage
- Disciplined capital allocation

4 INNOVATION

- Product stewardship
- Develop new businesses in biofuels (outside food value chain), biocomposites and biochemicals
- Value added product and service development in current businesses
- Continuous improvement in cost competitiveness and efficiency
- Expertise in renewable materials and energy
- Recycling and reuse of production waste
- Collaboration and partnerships in R&D
- Intellectual property rights
Risks and opportunities

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

**Influencing Trends**

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Impact</th>
<th>Management</th>
<th>Opportunity</th>
<th>Strategic Focus Areas Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global economic cycles</td>
<td>Impacts the demand and sales prices of various UPM products and main input costs items, as well as currency exchange rates. UPM’s main earnings sensitivities are presented on page 115.</td>
<td>Industry-leading balance sheet. Continuous improvement in competitiveness, efficiency and customer offering. Business portfolio development.</td>
<td>UPM’s strong balance sheet and focus on competitiveness mitigate risks and may present strategic opportunities.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Foster Flynn’s expected decline in demand for graphic paper</td>
<td>Involved pressure on UPM’s graphic paper deliveries and sales prices.</td>
<td>Continuous improvement in competitiveness. Focus on more sustainable and customer-oriented solutions. Adjust production capacity to profitable customer demand. Business portfolio development.</td>
<td>UPM’s large paper production platform provides continuous operational opportunity. Reliable supply of high-quality products and customer service merits customer loyalty.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Overcapacity in some of UPM’s products due to changes in demand or supply</td>
<td>Temporarily impacts sales prices and deliveries of the product in question.</td>
<td>Continuous improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.</td>
<td>UPM’s diverse business portfolio, focus on competitiveness and strong balance sheet mitigate risks and may present strategic opportunities (incl. M&amp;A) in a cyclical downturn of a business.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Significant moves in currency exchange rates relevant for UPM</td>
<td>Impacts UPM’s earnings and cash flow directly and, indirectly, UPM’s main currency exposures are presented on page 138.</td>
<td>Continuous hedging of net currency exposure. Hedging the company’s business exposure and improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.</td>
<td>UPM’s diverse business portfolio and geographical presence focus on competitiveness and strong balance sheet mitigate risks and may present strategic opportunities in changing currency environment.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>International trade barriers, e.g. antidumping duties</td>
<td>Impacts trade flows and short-term market balances and may directly or indirectly impact sales prices and deliveries of UPM’s products.</td>
<td>Monitoring through international trade associations. Continuous improvement in competitiveness. Disciplined planning and selection of investments. Business portfolio development.</td>
<td>UPM’s diverse business portfolio and geographical presence mitigate risks and may present opportunities for optimization in case of trade barriers in some products and locations.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Changes in regulation, subsidies, taxation, e.g. related to climate policies</td>
<td>May distort markets, e.g. for energy or wood raw material. May change relative competitiveness of energy forms. May create additional competition for wood raw material. UPM’s sensitivity to carbon pricing is presented on page 102.</td>
<td>Monitoring for early signals for regulation changes. Communicate the impacts of such policies on employment and creation of value-added clearly. Continuous improvement in competitiveness, sustainability and carbon footprint. Leading environmental performance. Innovation and selected investments in value-added renewable products and energy. Business portfolio development. Sustainable forest management and UPM biodiversity programme.</td>
<td>May drive market growth for sustainable products and energy, e.g. renewable fuels. Resource efficiency, circular economy and sustainability are increasingly important sources of competitive advantage. In electricity markets, hydropower is an increasing, important and competitive form of power generation. Increased wood growth in northern hemispheres.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Availability and price of major production inputs like wood, fibre, chemicals and water</td>
<td>Increased cost of raw materials and potential production interruptions. UPM’s cost structure is presented on page 115 and sensitivity to water prices on page 102.</td>
<td>Continuously improving resource efficiency. Long-term supply contracts and relying on alternate suppliers. Selected ownership of forestland and long-term forest management contracts.</td>
<td>UPM’s continuous improvement in resource efficiency and circular economy mitigate risks and offer competitive advantage.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Continuous improvement in competitiveness</td>
<td>Weakening relative competitiveness impacts profitability and increases risks related to the external business environment (above).</td>
<td>Programmes for savings in variable and fixed costs. Culture and track record of continuous improvement in productivity and resource efficiency. Productivity and service development.</td>
<td>Increasing relative competitiveness improves profitability and mitigates risks related to the external business environment (above).</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Selection and execution of investment projects</td>
<td>Return on investment does not meet target. Material cost overrun. Inappropriate timing. Return on investment does not meet target.</td>
<td>Disciplined selection, planning, project management and follow-up processes. Investing in projects with attractive returns and sustainable competitive advantages.</td>
<td>Carefully selected and implemented growth projects improve UPM’s profitability and ROCE. UPM’s financial targets are presented on page 17.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>CEL3 nuclear plant project completion and start-up</td>
<td>Loss of profit and cost overruns. Inappropriate timing. Return on investment does not meet target.</td>
<td>Ensuring that contractual obligations are met by both parties. Arbitration proceedings have been initiated by both parties.</td>
<td>The investment provides a competitive, safe and CO2 emission-free electricity supply for the long term.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Selection and execution of M&amp;A</td>
<td>Cost of acquisition proves high and/or target for strategic fit and synergy realization are not met. Return on investment does not meet target. Damage to reputation.</td>
<td>Disciplined acquisition preparation to assure the strategic fit, value creation and sustainability. Environmental and social impact assessments. Stakeholder engagement.</td>
<td>UPM’s strong balance sheet and cash flow enable value-enhancing M&amp;A when timing and opportunity are right. Societal value creation.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Developing and commercializing innovations and new business initiatives</td>
<td>Return on investment does not meet target. Last opportunity.</td>
<td>Disciplined selection, development and commercialization of processes for innovations. Collaboration and partnerships in R&amp;D and commercialization. Business model development.</td>
<td>Existing products and services redesigned to bring new value. New value-added products to replace oil-based materials may be a significant source of value creation and growth for UPM.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Supply chain and third-party reputation risks</td>
<td>Damage to reputation. Loss of business. Loss of competitive position. May impact the value of the company.</td>
<td>UPM Code of Conduct, UPM Supplier and Third Party Code, supplier audits, certification.</td>
<td>Good governance and responsible sourcing practices mitigate risks and provide competitive advantage.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Environmental risks, a look at spill due to malfunctions or human error</td>
<td>Damage to reputation. Sanctions. Direct costs to clean up and repair potential damages to production plant. Loss of production.</td>
<td>Best available techniques (BAT). Maintenance, internal control and reports. Certified environmental management systems (ISO 14001, EMS).</td>
<td>Industry-leading environmental performance provides competitive advantage, including efficiency gains.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Physical damage to the employees or property</td>
<td>Harm to employees and damage to reputation.</td>
<td>One Safety system (p. 43). Loss prevention systems and schemes. Emergency and business continuity procedures.</td>
<td>Leading health and safety performance strengthens the brand as an employer, as well as improving engagement, efficiency and productivity.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Ability to retain and recruit skilled personnel</td>
<td>Business planning and execution impaired, affecting long-term profitability.</td>
<td>Competence development: Incentive schemes. Workplace safety. Acting on employee engagement and management effectiveness.</td>
<td>Engaged high performing people enable the implementation of the Biofore strategy, as well as commercial success.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Availability and security of information systems</td>
<td>Interruptions in critical information systems cause a major interruption to UPM’s business. Damage to reputation. Loss of business.</td>
<td>Technical, physical and process improvements to mitigate availability and security risks.</td>
<td>Sophisticated IT systems enable efficient operations, optimized performance as well as new customer services and data security.</td>
<td>1 2 3</td>
</tr>
</tbody>
</table>
UPM Biorefining

Benefiting from growth investments

OUR DIRECTION

• In Pulp: Provide customers with direct access to the most versatile pulp range and advanced technical service. Maintain cost competitiveness through continuous operational improvement. Grow as a responsible and cost-efficient pulp supplier.

• In Biofuels: Provide unique wood-based advanced biofuels in various markets and segments, achieve top performance at UPM Lappeenranta Biorefinery, evaluate opportunities for scaling up biofuels business.

• In Timber: Enhance profitability through efficient use of wood supply, integrated full-production and sharpened commercial strategy. New customer promise “Grown to Sustain” will strengthen the competitive advantages of UPM Timber on strategic markets.

OUR STRENGTHS

• Versatile range of sustainably produced pulp grades suitable for a wide range of end-uses

• Modern, efficient mills and business committed to growth

• Responsibility integrated in all operations from wood sourcing to logistics

• Established producer of advanced renewable diesel

• Competitive sawmills with skilled own global sales network

• Synergistic supply chain of wood for sawn timber, pulp and renewable diesel

GROWTH DRIVERS

Pulp and timber

• Private consumption in versatile end-uses

• Population growth, increasing income levels

• Urban lifestyle

• Demographic change

• Future constrains of white recycled fibre supply

Advanced biofuels

• Climate change

• Sustainability

• Low carbon mobility

• Pressure to reduce greenhouse gas emissions in transport

• Increasing the EU’s self-sufficiency in energy

Benefits from integrated production

In the Biorefining business area, UPM combines integrated production of pulp, timber and biofuels with a synergistic supply chain of wood raw materials. Timber by-products are used as pulp raw material. Pulp mills produce renewable energy in their recovery boilers and provide CO₂-neutral biomass-based electricity. Crude tall oil, a residue of pulp production, is the raw material in UPM’s renewable BioVerno diesel.

Benefiting from focused investments in pulp

Over recent years, UPM has made focused investments to expand production and improve efficiency at all four pulp mills. Debottlenecking investments continued in 2016. The UPM Kaukas pulp mill investment was completed in December. The investment strengthens the mill’s efficiency and competitiveness.

In July, UPM announced a EUR 98 million investment in its Kymi pulp mill in Finland, increasing the mill’s annual pulp production capacity by 370,000 tonnes to 870,000 tonnes by the end of 2017. This investment will further improve UPM Kymi’s cost competitiveness and environmental performance.

UPM’s total pulp production capacity has grown by more than 500,000 tonnes since 2013 with investments of approximately EUR 250 million. Simultaneously, production efficiency has improved at all mills thanks to those growth investments. UPM has also focused on strengthening employee competencies and mill maintenance as well as environmental performance.

Performance buoyed by growth and improved efficiency

Thanks to increased pulp capacity, UPM has been able to respond to growing demand from existing customers in tissue, specialty papers and packaging. UPM pulp deliveries increased by 7% in 2016 compared to the previous year. In combination with lower operating costs, the negative impact of UPM’s lower pulp sales prices was partly offset.

As an integral part of the value chain, efforts to enhance wood supply continued. Profitability in sawmill operations improved thanks to increased delivery volumes and improved production efficiency but remained modest due to still price competitions.

The quality of the wood fibre impacts sourcing costs, production efficiency and pulp quality. In 2016, benefits were gained in both fibre quality and optimisation of harvesting and logistics costs.

UPM Timber is a significant operator in the high-quality Nordic certified sawn timber segment and a reliable supplier for the growing construction, graphic paper producers and furniture, joinery industries.

KEY FIGURES

<table>
<thead>
<tr>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales, EURm</td>
<td>2,206</td>
</tr>
<tr>
<td>Comparable EBIT, EURm</td>
<td>406</td>
</tr>
<tr>
<td>Capital employed (average), EURm</td>
<td>2,331</td>
</tr>
<tr>
<td>Comparable ROCE, %</td>
<td>12.6</td>
</tr>
<tr>
<td>Personnel on 31 Dec.</td>
<td>2,630</td>
</tr>
</tbody>
</table>
furniture and joinery markets in Europe and Asia. Säten timber is a versatile and sustainable material, it is strong and can be reused and recycled.

Long-term demand prospects are promising for pulp

Demand for sustainably produced chemical pulp continues to increase globally. UPM’s four world-class pulp mills serve customers in the growing consumer and industrial end-uses such as tissue, board and specialty papers as well as graphic paper end-uses.

Longer term chemical pulp demand is expected to be further underpinned by a declining supply of white recycled fibre. Supply of white fibres will become restricted, in part due to lower graphic paper production and in part as mixed recovered paper crowds out white recycled fibre in the collection process.

UPM Pulp offers its customers a multi-fibre product range with direct sales to the global market. Through its own production or through the Fibre United co-operation, UPM supplies pulp customers with the most versatile range of northern softwood, birch, eucalyptus and semi-chemical pulp. UPM Pulp’s own sales and technical service experts are located close to customers in the main markets and in each mill working in close co-operation with UPM’s global research and development network.

In July, UPM started discussions with the Government of Uruguay regarding the development of logistics infrastructure in the country. Railroad and road connections are a critical challenge for establishing a large scale industrial operation in the Uruguayan inland and connecting it to a deep sea port. UPM has consistently increased its plantation base in Uruguay.

Significant improvement in biofuel production efficiency

UPM has been producing UPM BioVerno renewable drop-in diesel from wood-based residues since early 2015. UPM BioVerno is a unique, competitive and sustainable alternative to fossil fuels or first-generation biofuels, and is well positioned among the few existing biofuel alternatives available on the market. UPM BioVerno significantly reduces greenhouse gas and tail-pipe emissions. Demand is predicted to be strong for sustainable, high-quality advanced biofuels.

The UPM Lappeenranta Biorefinery is the first of its kind in the world. Production is based on a hydro-treatment process developed by UPM, and the capacity is approximately 120 million litres, which is 100,000 tonnes.

In terms of profitability, UPM Biofuels reached the break-even point already in the fourth quarter of 2015. In 2016, the production efficiency improved significantly and production reached a record level. Strong biofuels markets, in particular towards the end of 2016, also contributed positively to the sales and profitability of UPM BioVerno compared to 2015.

To expand target markets, field tests progressed with dedicated fleets, public transportation and shipping. The field tests focused on fuel functionality, emissions and fuel consumption compared to fossil diesel. UPM BioVerno diesel tests in both marine transportation and public transportation already provided good results — UPM’s renewable diesel is well-suited for both end uses even as 100% pure renewable diesel, and functions as well as the best quality fossil-based diesels.

CLEANER PUBLIC TRANSPORT

UPM’s wood-based UPM BioVerno biofuel has been proven to reduce carbon dioxide and particle emissions in both urban and maritime transport.

UPM has been testing UPM BioVerno diesel fuel in Helsinki region buses in collaboration with the Helsinki Region Transport (HSL) for a year. Traffic is the main source of emissions in cities affecting air quality.

According to the test results, using UPM BioVerno in the current bus fleet instead of fossil diesel would significantly reduce emissions resulting from public transport. By using wood-based fuel, air quality in the Helsinki region could be improved quickly. The top-emissions of UPM BioVerno, such as nitrogen oxides and particulate matter, were significantly lower than those of the commercial grade fossil diesel used in laboratory testing.

Maritime transport is looking for new ways to reduce carbon dioxide and sulphur emissions. In the beginning of 2017, the Marine Environment Protection Committee of the International Maritime Organization (IMO) agreed that the sulphur content limit of ships’ fuel will be lowered to 0.5% starting from 2020 in all maritime transport.

Increasing the use of biofuels in ships is a cost-effective alternative. In 2016, UPM BioVerno was tested for the first time in a marine vessel in the diesel engine of a dredger. Biofuels offer ship operators a way to reduce ships’ carbon dioxide emissions by 80-90% and eliminate sulphur emissions.

The UPM Lappeenranta Biorefinery is the first significant investment in a new and sustainable production facility. Having proven that the technology and business case work, UPM has started evaluating future growth opportunities. The planning includes new alternatives in sustainable liquid feedstocks, new markets and customer segments as well as applications and product development. UPM will continue developing new process technologies using solid wood biomass.

Efficient use of renewable materials and energy

UPM has leading competencies both in plantation and industrial operations as well as in environmental and social responsibility.

UPM’s modern pulp mills have certified environmental management systems in place and the production technology enables efficient use of raw materials, chemicals, energy and water. In wood sourcing, UPM meets the highest sustainability demands in the industry.

UPM BioVerno is a sustainable alternative that helps mitigate climate change. Demand for advanced biofuels is being driven by stricter environmental standards and sustainability.

UPM brings life to the whole community. It plays an active role in the local community as an employer fostering safety and healthy living, and as a business partner. Communities and businesses have grown around UPM pulp and timber operations over the years.

Responsibility offers both competitive advantages and growth opportunities for UPM BioVerno.
UPM Energy

Profitability maintained in difficult market conditions

OUR DIRECTION
- Create value in electricity generation as well as physical and financial trading
- Profitable growth on the Nordic electricity market with CO2 emission-free generation

OUR STRENGTHS
- Cost competitive, low-emission electricity generation portfolio
- Hydropower as flexible capacity to create value in markets impacted by increasing price volatility caused by renewable energy
- Reliable nuclear as base load generation
- Value creation track record in physical and financial electricity trading
- Lean, agile and competent organisation

MARKET TRENDS
- Cost of new technologies is declining fast
- Balancing of the grid is more challenging due to increasing share of wind and solar
- Decentralisation of electricity production
- Security of supply weakened due to capacity closures
- Growth outlook for electricity consumption is modest
- Changes in regulation and policies are impacting the willingness of the energy industry to make long-term investments
- Market integration increased through investments in grid interconnectors
- Digitalisation brings new opportunities to the industry

Business performance
Profitability remained good due to strong hydropower volumes, low-cost generation and spot-market operations. Compared to the previous year, profitability was lower due to decline in average sales prices.

The low electricity market price in the beginning of the year was impacted by mild temperature condition, good hydrological balance and very low commodity prices. Electricity market price increased during the course of the year driven by a deteriorating hydrological balance and increasing coal prices. For the full year, the average Finnish area spot price was EUR 32.5 MWh in 2016, 9% higher than in 2015 (EUR 29.7 MWh).

Challenging operating environment continued
The Nordic electricity market remained challenging mainly due to increased supply of subsidised renewable electricity. The low market price of electricity combined with the uncertain operating environment does not support new market-based investments and has also resulted in early decommissioning of condensing capacity.

The share of wind and solar power production is growing. This increases price volatility and the need for flexible balancing power generation. Hydropower is an efficient way to produce this balancing power. Through optimised use of hydropower assets, UPM Energy is well positioned in challenging markets and able to create value from the increased electricity price volatility.

Electricity generation portfolio developed further
Through its ownership of Länsi-Suomen Voima Oy, UPM Energy is participating in the expansion of the Harjavalta hydropower plant. A new machine unit was taken into use in September, and refurbishment of the existing two turbines is proceeding. When completed in 2017, the project will improve the efficiency, control and environmental safety of the plant, while also responding to the increasing demand for flexible capacity. The total power output of the Harjavalta plant will increase from 72 MW to 110 MW.

The largest ongoing project is taking place at Teollisuuden Voima Oyj (TVO), which involves building a new EPR-type (European Pressurized Water Reactor) nuclear power unit, known as OLS EPR, at Oskilto, Finland. Through Pohjolan Voima Oy (PVO), UPM is entitled to the share of output from the Harjavalta hydropower plant. A new condensing capacity with a power output of 30 MW is to be commissioned in 2018.

Well positioned for climate objectives
In November, the Finnish Government published its strategy of implementing EU’s 2030 energy and climate policy. As a consequence, it is anticipated that renewable energy, particularly biomass-based, production will increase and replace fossil-based production. The government is preparing regulation to abandon coal in energy production.

With assets mainly in hydropower and nuclear, UPM Energy is well positioned to support the Finnish Government’s 2030 energy and climate objectives.

UPM Energy produces low-emission electricity supporting climate change mitigation. Flexible hydropower is able to support the grid stability, which is challenged by increasing share of wind and solar.
Performance improved further
Global demand for self-adhesive label materials continued to grow in 2016. In Europe and North America, demand growth remained on good level. In Asia and Latin America, growth picked up.

UPM Raflatac was able to capture the benefits of favourable market development due to its commercial improvements, competitive production platform and efficient distribution. Sales and service capabilities were improved and distribution coverage was enhanced through improved logistics solutions and new terminals. Cost efficiency was improved by focused investments, better production efficiency and quality and as well as internal efficiency measures.

UPM Raflatac’s deliveries increased by 3% in 2016, and all regions contributed to this. Growth in sales of films and special label products was stronger. Profitability increased mainly due to the improved sales margins and higher delivery volumes. Higher sales margins were mainly driven by a more favourable product mix and improved operational efficiency.

Expansion to meet growing demand
In October, UPM Raflatac announced EUR 35 million investment in the label stock factory in Wroclaw, Poland. By introducing a new coating line together with related coil handling and slitting capacity additions, UPM Raflatac aims to meet the increasing demand for self-adhesive label stock in Europe.

The investment further leverages UPM Raflatac’s unique competencies, end-use-specific product offering and industry-leading, optimally located operating platform in Poland. Production of the new line is planned to commence in the first half of 2018.

Enhancing growth through product development
UPM Raflatac’s capability to deliver innovative solutions to special end-use needs drives growth in high added value segments. Close partnerships with label printers and brand owners are an elementary part in building their brand and product appeal. Developments in adhesive technologies and product constructions for challenging end-use applications enhance growth opportunities. Innovations also secure productivity gains and leaps forward in responsibility and product safety.

The importance of sustainability is growing
Sustainability and product safety issues are growing in all markets. Brand owners lead the way and the development creates new growth opportunities for value creating partnerships throughout the self-adhesive label stock value chain.

Being among the few operators with global scale and strong regional positions and high standards, UPM Raflatac is well positioned to take share and drive the key sustainability issues of recyclability and product safety together with brand owners, converters and raw material suppliers as well as environmental organisations.
UPM Specialty Papers

Growth focus on attractive segments

OUR DIRECTION
- In labelling materials, growth to maintain global leadership position through competitive production and strengthened partnerships with customers
- In office papers, growth as one of the largest office paper suppliers in Asia
- Widen product offering in specialties and through new product development, seek opportunities in existing and new end-uses

OUR STRENGTHS
- Strong market position, competitive products and world class assets
- Extensive experience in high quality release liners and face papers
- Office papers in Asia Pacific with extensive distribution network and strong brands in China
- Reliable supplier with exceptional customer service globally
- Recognised industry leader in sustainability and environmental excellence

GROWTH DRIVERS
- Labelling materials
  - Private consumption
  - Aging population
  - Urban lifestyle
  - Higher standard of living
  - Shift away from rigid packaging to flexible packaging
  - Growth in automated product and logistics labelling
  - Development of fastening systems
- Office papers
  - Economic growth
  - Increased business services
  - Urbanisation
  - Establishment of new enterprises

Strengthened positioning
UPM Specialty Papers has a solid foothold in Europe with its label and packaging materials. The new specialty paper machine at UPM Changshu, China has strengthened UPM’s labelling materials positioning in the Asia-Pacific region. In the Americas, UPM Specialty Papers is establishing a stronger local presence by reinforcing its sales force.

Fine papers are an integral part of the business in Asia. UPM Specialty Papers is one of the largest office paper suppliers in the Asia Pacific region. The new specialty paper machine in Changshu enables additional growth in high-quality office papers, a segment in which UPM has been, reserved by capacity. Regular commercial production started in 2016 at the new production line in Changshu. The investment further strengthens UPM Specialty Papers’ unique position on the Asian market.

Strong profitability improvement
UPM Specialty Papers’ profitability improved significantly, mainly due to lower costs and higher delivery volumes, more than offsetting a less favourable sales mix and lower paper prices. Compared to the previous year, net change in currencies, including hedges, had a positive impact on profitability. Production ramp-up of the new production line had yet a minor impact on profitability in 2016.

Accelerating growth in value-added products
The new production line in Changshu accelerates growth through shorter lead times, improved local cost efficiency and enhanced global market coverage of labelling materials.

The new line provides an excellent platform for strengthening partnerships with customers through improved capability to provide a full range of services and new products in Asia Pacific. The line will also improve the mill’s energy efficiency.

The new production line is capable of producing a wide range of products. In 2016, production of labelling materials increased gradually. The plan for the UPM Changshu mill site is to develop the more value-added specialty product segments, meanwhile allowing more selective approach in slow growth segments where competition is intense. Production and product portfolio optimisation is expected to support profitability over time.

The new production line will also improve production flexibility for the European and North American markets.

Product safety strengthened
Product safety is a key requirement for the customers. UPM is committed to only sourcing raw materials from suppliers who demonstrate high standards of responsibility. UPM has been using its own Restricted Chemical Substance List which our suppliers must adhere to and thereby guarantees that none of the substances specified are used in the production processes.

UPM paper is safe to use throughout its entire product lifecycle, allowing direct contact of dry and non-fatty food with papers granted a food contact certificate.

UPM papers are produced to high environmental standards from raw material, which is responsibly sourced using sustainable forest management practices. All products are recyclable.

In brief Strategy Stakeholders Governance Accounts

UpM paper Asia was renamed as UPM Specialty Papers as of 1 October 2016.

EXCELLENT SAFETY RESULTS
UPM Changshu’s last time accident frequency was 0.3 last year. The year was also exceptionally good for the Jämsä River and Tervasaari mill, which managed to halve all industrial accidents compared to the previous year.

Work safety culture has been continuously developed in Finland and China. All UPM China mills have a safety committee led by safety managers. Working groups have been established under the safety committee to think about how the safety actions are implemented in practice.

The managers share the best practices with the whole mill during safety talks. All meetings start with discussions about safety issues, and the mill’s comprehensive monthly newsletter covers safety and related issues.

UPM Tervasaari mill manufactures the same labelling materials as UPM Changshu, and the mills have carried out working police and management crossvalidating. The collaboration has been productive and fruitful and the personnel’s feedback excellent.

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### Business development

UPM Paper ENA's systematic performance management enabled a significant profitability improvement in 2016 despite the challenging market environment. Measures such as stringent capacity management, cost reduction and differentiated commercial strategies have been systematically developed and implemented.

In 2016, UPM Paper ENA was able to reduce its variable costs resulting in meaningful savings in energy, pulp and logistics costs. The savings were realised partly due to ongoing profit improvement measures. Realised currency hedges had a negative impact on profitability in the previous year.

The structural decline in demand of graphic papers in Europe continued. The average price for UPM's paper deliveries in euros decreased by 2% in 2016 compared to the previous year, partly impacted also by less favourable development in markets outside the euro area. UPM Paper ENA's deliveries decreased by 4% compared to the previous year. This was offset by operational efficiencies being on high levels and lower variable and fixed costs.

Cash flow was successfully released, primarily as a result of the improved profitability, but also due to asset sales and a reduction in working capital.

### Efficient use of production assets

UPM Paper ENA continued adapting its production to meet profitable customer demand. Timely closures in 2015 and before, combined with additional actions in 2016, improved the asset utilisation rates even further. To secure a leading position as a reliable supplier, machine closures were implemented without endangering UPM's customer deliveries.

In 2016, UPM Paper ENA took several actions to optimise its operations and keep the production efficient. Benefits may extend into 2017 and underpin a continued good performance.

In May, paper production was ceased at the Madison mill in the US. With the closure, UPM Paper ENA reduced 195,000 tonnes of magazine paper capacity and continued to supply profitable demand from the company’s European mills.

In July, UPM sold its Schwedt mill. As part of the transaction, the parties entered into a contract manufacturing agreement for newsprint for a transition period which will be ceased at the end of third quarter in 2017. The machine will be converted by the new owner into liner production. The mill's capacity is 280,000 tonnes of newsprint. UPM Paper ENA will continue newsprint production on its remaining newsprint paper machines.

In November, UPM announced plans to permanently close paper machine 2 at UPM Steyrermühl, Austria and paper machine 2 at UPM Augsburg, Germany. With the closures decided in February 2017, UPM will permanently reduce 305,000 tonnes of its magazine paper capacity. Paper production continues on the remaining cost competitive paper machines at the mill sites.

In 2016, demand for graphic papers decreased by 4% in Europe, a rate of decline that falls well in line with the level in recent years. However, despite the overall decline in demand, the market offers opportunities in certain end uses and segments.

UPM Paper ENA's differentiated commercial strategies paid off with solid growth in certain niches and new products sales in 2016. The business area strengthened its market position and improved customer loyalty. UPM Paper ENA is also an established supplier in the US and enhanced its customer relationships on the market.

### Responsible fibre

Paper is a true Biofore product. It is a completely renewable material and can be recycled efficiently. Products are sustainable over their entire lifecycle, from forest to recycling. UPM Paper ENA has the most comprehensive offering of papers carrying the EU EcoLabel in the industry. To further promote responsible practices, UPM launched its first Responsible Fibre™ product family in 2016, that ensures the products comply with industry’s most demanding responsibility criteria.

The wood fibre raw material is sourced from sustainably managed forests. UPM embeds biodiversity as part of modern forest management. Production process complies with the occupational and product safety requirements and minimises impacts, waste and consumption of water and energy.

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Top performance continued

Profitability increased due to lower costs, partly supported by favourable currency impact, and higher delivery volumes. The Finnish birch mill competitiveness improvement programme proceeded, enabling increased production and lower unit costs.

UPM Plywood completed the expansion of the UPM Otepää mill in Estonia in the fourth quarter. The expansion increases the mill’s production capacity to 90,000 cubic metres per year. The new biomass boiler enhances the mill’s material efficiency and reduces fossil carbon dioxide emissions by 85%. The investment enhances value as it responds to growing demand for high-quality birch plywood products in key customer markets.

The market environment improved gradually during the first half of 2016 in Europe, and demand is estimated to have increased since the previous year. The impact of low-priced imports in the beginning of the year eased in the second quarter. Demand picked up, particularly in birch plywood-related industrial applications, but also to some extent in construction-related end-use segments. Deliveries to demanding industrial end-use applications increased: vehicle floors to trailer manufacturers and insulation material for LNG carriers. Activity in the building and construction industry improved with good results. Market prices decreased at the beginning of the year, but increased slightly during the second half of the year.

Building and construction

In building and construction, UPM Plywood is the leading supplier in the high-end segments in Europe thanks to an established distribution network. After years of low construction activity in Europe a gradual recovery continued in 2016. UPM Plywood seeks further growth by strengthening distribution in selected emerging markets.

Vehicle flooring

In transportation equipment, UPM Plywood provides expertise for customers’ product and production development, introducing both economic and environmental benefits. Demand growth for trailers is driven by economic activity and a replacement need created after the financial crisis in 2008. Growing e-commerce volumes drives growth in light vehicles by transferring the delivery flows from terminals directly to consumers and thus increasing parcel deliveries. UPM Plywood seeks growth by expanding to new markets and end-use segments.

LNG carriers

UPM Plywood has seen solid growth in the LNG (liquefied natural gas) segment in past years. WISA birch plywood is ideal material in LNG vessels due to its strength and stability at extremely low temperatures. UPM Plywood provides on-time deliveries of certified quality through long-term contracts. UPM Plywood secures its leading position and seeks growth through extending its offering into related applications with same technology.

Plywood from sustainably managed forests

Forest certificates guarantee that the wood raw material is from sustainably managed forests with legal logging operations. All wood raw material is used either in plywood production, as raw material to other products or in energy generation. Plywood is increasingly used because it is a cost-effective material, a renewable resource and carbon-storing product.

Integrated plywood and renewable energy production enhances material efficiency and reduces fossil fuel emissions at mill sites. Biomass boilers produce most mills’ thermal energy using the production by-products as fuel. In addition, plywood manufacturing consumes less energy compared to e.g. aluminium, plastics or steel.
Focus on circular economy

In brief

Strategy

Businesses

In 2016, UPM spent EUR 46 million (63 million) on research and development work equating to 2.7% (3.3%) of UPM’s operating cash flow. The focus was on new technologies and developing businesses. On top of the direct R&D expenditure of approximately EUR 40 million (37 million), the figures include allocations to project work. The figures also include R&D programmes supported by Tekes (the Finnish Funding Agency for Innovation) for its research projects.

Innovation and R&D

The goal of UPM’s innovation programs and businesses development is to create new technologies and products, provide support to and ensure the competitiveness of its businesses.

By co-operating with selected value chain partners, UPM aims to increase its speed, agility and effectiveness.

UPM actively protects inventions and brands with intellectual property rights. UPM manages and uses its patents, trademarks and other intellectual property rights throughout the world. Protected innovations and high level risk management is an integral part of the business model of UPM.

In 2016, UPM received approximately EUR 1.0 million (1.4 million) from Tekes (the Finnish Funding Agency for Innovation) for its research projects. Other studies relate among others to ash product development for construction and other applications.

UPM actively promotes the circular economy at UPM and Zero Solid Waste programme on p. 68.

The goal of UPM’s fibre ecosystem project aims to study new fibre processes for the paper and bioproducts businesses. The project concentrates on the possibilities for the agricultural reuse of nutrients retrieved from the sludge originating from the pulp and paper mill’s effluent treatment plants and the ash from the incineration process.

The ultimate goal is that the water used by reducing carbon dioxide and particle emissions from the power boilers.

UPM’s fibre ecosystem project aims to study new fibre processes for enhanced product properties. The new product possibilities address global megatrends and sustainability demands. The research is done in co-operation with customers, partners and research organisations along various value chains.

OTHER DIRECTION

Focus on circular economy

Research projects

Circular economy is an integral part of UPM’s business. Resource efficiency is at the core of the Biofore strategy. Product stewardship and eco-design approach covers the entire value chain from the design stage to end products and their reuse.

UPM’s side stream efficiency research (SEFF) is looking for solutions to better utilise the side streams of integrated pulp and paper mills, sludge, ash, green liquor drugs, various rejects and waste heat.

Research projects

The goal is to reduce emissions in China, but at the same time UPM is looking for new solutions that can be applied at other mills around the world. The programme also complements the strict environmental policy implemented by the Chinese authorities.

There are two separate research projects going on at Changshu. The goal of the first project is to reduce the water consumption of the three paper machines. Another target for development is to improve the efficiency of energy usage by reducing carbon dioxide and particle emissions from the power boilers.

In the long term, the aim is to move towards a closed-cycle mill. Reducing freshwater usage also decreases emissions. UPM will optimise water use by increasing water recycling in internal mill processes and only using clean water if absolutely necessary. The ultimate goal is that the water circulating the mill is clean and has no environmental impact.

Sustainable innovations are at the forefront in the creation and development of new products that can be used to replace non-renewable materials with renewable, recyclable and low-impact alternatives and provide resource efficient alternatives for the future.

The aim of UPM’s R&D programmes and business development is to create new technologies and products, provide support to and ensure the competitiveness of its businesses.

UPM’s development expenditure

See a table showing a breakdown of UPM’s development expenditure.
In 2016, the main focus areas in UPM’s People Strategy were aiming higher in business performance and value-based and inspiring leadership, as well as continuously challenging the status quo to develop the company.

Developing a safe and inspiring working environment in which people can participate and grow is important for UPM. UPM aims to provide an environment in which employees are capable of achieving business success. UPM encourages its employees to pursue professional growth and supports them in learning and developing their skills further.

The company uses the 70/20/10 model based on the assumption that 70% of learning takes place on the job, 20% comes from learning from others and 10% comes from development programmes.

UPM systematically uses a performance management process (PPR) to set individual strategy-related targets and create development plans for all employees globally. The PPR provides an opportunity for both managers and employees to give and receive feedback on performance and behaviour based on UPM values.

Over the past few years, UPM has developed its performance appraisal process by emphasising managers’ roles in leading performance and giving feedback. Managers are expected to focus on performance management and guiding their team members to reach agreed targets. UPM’s target is that all employees have a target setting and development plan by 2030.

In 2016, UPM started to train its key employees on human rights and continued its human rights assessment by initiating a global evaluation focusing on activities at UPM sites, community relations and local sourcing.

Engaging employees to develop the workplace

The UPM Employee Engagement Survey (EES) invites all employees across the company to evaluate different aspects of the working environment every year. The survey measures development using three main indices: Employee Engagement, Manager Effectiveness and Occupational Health and Safety (OHS).

In 2016, 83% (79%) of UPM employees responded to the survey, which illustrates a high level of willingness to participate in the development of UPM as a place to work.

All UPM-level indices improved. The Engagement Index has increased three percentage points for three consecutive years. The Engagement Index increased to 69% (66%), but is still behind our 2030 target to be in the top quarter of companies. Favourable scores in the OHS Index increased to 85% (80%). Favourable scores in the Manager Effectiveness Index have steadily improved over the years (from 76% in 2015 to 79% in 2016), and remain at a high level.

All EES items are showing a positive trend and the scores for questions regarding our future and vision in particular have increased significantly. The EES provides an opportunity for annual monitoring of long-term trends and the progress of agreed development activities. The progress is followed up and evaluated in order to define further improvements both at organisational and team level.

UPM-level focus areas for development are diversity and inclusion as well as the growth and development of UPM employees.

Apprenticeship combines learning and working

UPM’s apprenticeship programmes in Finland and Germany 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. UPM conducts the programmes together with regional vocational schools. In Finland, some 100 people have been included in the apprenticeship programmes annually. Most of the graduated apprentices have continued to work at UPM.

UPM has also launched a UPM Biofore Graduate Programme for young professionals. The programme will begin in the autumn of 2017.

UPM’s personnel by business area 2016

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<tr>
<td>Malaysia</td>
<td>140</td>
<td>122</td>
<td>175</td>
</tr>
<tr>
<td>South Africa</td>
<td>94</td>
<td>78</td>
<td>67</td>
</tr>
<tr>
<td>Mexico</td>
<td>92</td>
<td>81</td>
<td>50</td>
</tr>
<tr>
<td>Brazil</td>
<td>56</td>
<td>58</td>
<td>89</td>
</tr>
<tr>
<td>Australia</td>
<td>50</td>
<td>50</td>
<td>61</td>
</tr>
<tr>
<td>India</td>
<td>40</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td>Rest of the world</td>
<td>134</td>
<td>120</td>
<td>118</td>
</tr>
<tr>
<td>Total</td>
<td>19,310</td>
<td>19,578</td>
<td>20,414</td>
</tr>
</tbody>
</table>

1) Incl. Hong Kong
2) Incl. Madison 50%
Developing empowering and engaging leaders

UPM aims to have inspiring leaders who empower and engage employees at all levels. We strive to lead by our own example, in accordance with UPM values and with integrity. Our values guide and support us in our daily actions — Trust and be trusted. Achieve together. Renew with courage.

UPM continuously develops leadership capabilities and management teams. The development programme is created to support aspects of leading self, people and the business. Topics such as self-leadership, coaching capabilities, innovation and leading in complexity are integrated into various development activities.

In 2016, the theme of aiming higher in business performance and leadership was integrated into strategy communication and leadership programmes. UPM continued to support a coaching leadership style and the use of various tools for feedback on behaviours and performance. The aim is to improve dialogues and the feedback culture throughout the company.

UPM also continued its mentoring programmes as a valuable tool for developing leaders. Investments in training and the renewal of front-line leadership development capabilities continued globally. In Finland, the Future Supervisor Programme, which brings new supervisors to the company, was ongoing.

UPM wants to develop its working environment so that it is diverse and inclusive. It is important to employ people with different competences, backgrounds and experiences and of different genders, ages and nationalities to bring multiple views and improve decision-making and business success. In 2016, UPM publicly committed to strengthening its commitment to a diverse and inclusive workplace by signing the Finnish Diversity Charter. It describes how a company can promote equal opportunities in the workplace.

UPM focused strongly on training on the renewed Code of Conduct, including discussions on inclusive behaviour in the working environment. UPM continued to review the status of diversity in businesses and functions and integrated inclusion into key leadership development programmes to improve performance and innovation. The implementation of the diversity initiative will continue in 2017.

UPM promotes active participation

At the end of 2016, UPM had 19,310 employees working in 45 countries. UPM promotes local leadership at the main production sites, where 96% of management team positions are held by locals. Overall at UPM, approximately 0.2% of employees were on international assignments at various levels of the organisation in foreign countries.

As a multinational company, UPM complies with international, national and local laws and regulations and respects international agreements concerning human and labour rights and freedom of association.

UPM abides by legally binding collective agreements. UPM does not collect information on or report on its employees’ union membership at a global level due to differences in national legislation in the various countries. The estimated percentage of employees covered by collective agreement mechanisms was 71% in 2016.

UPM promotes active employee participation and consultation, organised in accordance with international and national rules and regulations. UPM respects the privacy of employees and promotes equal opportunities and objectivity in employment and career development.

To encourage an open, international dialogue, UPM has a co-operative body, the UPM European Forum, which focuses on issues related to changes within the company and the business environment in general. The forum organises regular meetings for employee representatives from business units operating in Europe.

Rewarding and recognising good performance

UPM offers rewards and recognition with an emphasis on high performance. UPM has a total compensation approach consisting of a base salary, benefits and incentives, which are determined by UPM's global rules, local legislation, general agreements, local market practices, the level of the position and individual performance. Gender, race, age and nationality have no role in the definition of salaries and wages. The differences between male and female average salaries do not differ a lot and vary to both directions, assessed for salaried employees in UPM's main countries of operations.

Intangible recognition is included in the total reward portfolio, which means that UPM provides, for instance, a safe and healthy working environment, interesting and meaningful work and excellent leadership and career opportunities. Individual, team and business performance are criteria for compensation planning and decisions.

All UPM's employees belong to a unified annual Short Term Incentive (STI) scheme. The plan includes group- and business-level targets and personal and/or team performance targets.

EBITDA is one of the key financial indicators for the group and business-level targets. The EBITDA target set in 2016 for the 2015 STI plan were EUR 52.9 million and the estimated amount of annual incentives for the 2016 STI plan was EUR 39.1 million. For significant individual or team successes, there is a separate Achievement Award system in place.

UPM has two long-term incentive plans: a Performance Share Plan (PSP) for senior executives and a Deferred Bonus Plan (DBP) for other key employees. Since 2011, when the plans have been launched annually and approximately 670 employees have been covered by the plans. In both plans, the earning of shares is subject to the achievement of predetermined criteria. Under the plans, UPM shares are awarded based either on group/business area-level performance or total shareholder return. More information about long-term incentives can be found on www.upm.com in the Investors section, under Governance, in the Remuneration Statement.
In 2016, UPM’s lost-time accident frequency (LTAF, the number of lost-time work accidents per one million hours of work) was 3.7. The TRIF (total recordable injury frequency) improved, standing at 9.5 (10.6). The TRIF includes LTA cases as well as modified duty cases and accidents requiring medical treatment. The safety of the external workforce improved as well. UPM’s contractors had 76 lost-time accidents (92 in 2015). The TRIF includes LTA cases as well as modified duty cases and accidents requiring medical treatment. Proactive observation is the best way to prevent and reduce accidents. With the new global way of working, UPM wants to encourage employees to pay attention to their working environment, record potential deficiencies and report incidents through the system.

Quarterly health themes

To support the wellbeing of its personnel, UPM is working in close cooperation with employees and external occupational health organisations. All UPM employees in Finland and Germany are represented by joint employee–worker health and safety committees as defined in local legislation. The aim of these location-based committees is to monitor and advise on occupational health and safety issues and programmes. In 2016, UPM continued with its quarterly health themes. The aim is to support the continuous improvement of employees’ health, quality of life and ability to perform. In 2016, themes related to good sleep, weight and nutrition, and intoxicants (e.g. alcohol and tobacco). Additionally, free-time accidents prevention, such as safe work practices at home and safe water or summer sports were covered. Several health and wellbeing initiatives were launched at various UPM sites and businesses globally with positive results. Thanks to a campaign at the plywood mills in Finland, free-time accidents were halved.

Health and wellbeing coaching, which started in 2014, continued at different businesses and sites in Finland. To improve wellbeing at work, UPM is monitoring employees using several metrics on a yearly basis. These indicators include the annual employee engagement survey (EES), safety and absentee indicators and occupational health checks aligned with national legal requirements. There is no high incidence or high risk of disease among UPM employees related to their occupation. UPM analyses and manages the opportunities and threats related to healthy working environments. In almost all of the production sites, there can be a risk of disease related to employees’ occupation, even when adequate protection is in use. Employees can be exposed to noise causing auditory trauma or short or long chemicals causing occupational dermatitis or asthma. To minimise health hazards UPM has standardised processes, for example for risk assessment, personal protective equipment and chemical management. In addition, occupational health workplace surveys are conducted to assess the working environment. The majority of UPM’s employees work in areas with no or only minimal risk of HIV/AIDS, malaria or tuberculosis. Instructions and support are available for employees travelling to critical areas.

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.
To ensure long-term engagement, UPM continuously works with its diverse range of stakeholders to understand their specific expectations. It is equally important to communicate and discuss the company’s targets, operating principles, values and the challenges it faces within the business environment. Well-functioning stakeholder engagement is bringing stability, predictability and competitive advantage to the company.

Our stakeholders

Stakeholder engagement brings stability to operations

As stakeholders view UPM primarily as an economic operator, financial success, stability, future outlook and growth are fundamental themes for most stakeholders. In addition, UPM’s environmental performance and social responsibility play a significant role in UPM’s licence to operate and affect the long-term success of its businesses.

UPM aims to provide a balanced view of the economic, environmental and social aspects of its business activities, recognising, however, the varying focus of expectations of different stakeholders.

Stakeholder engagement is part of the strategy process

For all businesses, stakeholder mapping is an essential part of stakeholder relations, along with the systematic gathering of feedback and views from different sources. This way, UPM aims to ensure that sufficient consideration is given to stakeholder feedback and the company’s risk mapping.

The Stakeholder Relations function, which is represented in all businesses, is responsible for the global leadership and co-ordination of activities, while UPM’s businesses are responsible for local activity (read more on the business activities on p. 50). Best practices are regularly shared.

UPM’s most important stakeholders are customers, investors and financiers, employees, suppliers, local communities, authorities and key decision makers, the media and non-governmental organisations. The approach to each varies based on business focus, region and individual stakeholder groups.

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

Dialogue with stakeholders helps identify risks and improves understanding of key challenges and opportunities in the company’s operating environment. All businesses carry out customer surveys. The level of stakeholder engagement is also measured by several indicators and enquiries such as the number of customer enquiries, contact with the mills, forest department or investor relations, number of job applications and share price development.

UPM SUPPORTS REGIONAL TECHNICAL EDUCATION IN URUGUAY

A brand new regional technological university, the first of its kind in Uruguay, has been established in Fray Bentos. The technological institute will have the capacity to accommodate 2,000 students from the south-western coastal region of Uruguay.

UPM signed an important co-operation agreement with the Technological University of Uruguay (UTEC) in February 2015. The aim is to advance technical skills and engineering, particularly in mechatronics, renewable energy, transport and logistics. By 2017, UTEC plans to expand its educational courses in biomedical engineering and IT. With the co-operation, UPM will significantly increase the competence pool of qualified workforce and provide training opportunities for UPM professionals to expand their experience as well as improve the recognition of mechatronics.

Uruguay’s education system is concentrated in the capital. Montevideo offers three times more educational opportunities than other areas. Investment in regional education creates further development opportunities, enhancing the overall competitiveness and pool of skilled people within Uruguay’s forest industry in the future.

Students will be able to participate in internships and hands-on training in the agro-industrial sector. Both parties encourage UPM technicians and professionals to participate in the courses. Research projects and product development in co-operation with companies is a key area for this university and for UPM. This co-operation also includes student lectures led by UPM experts.

The founding of the Technological University of Uruguay is part of UPM’s Biofore Share and Care programme. The programme focuses on projects that are relevant to both UPM’s business and responsibility goals. The focus areas are Reading and learning, Engaging with communities, Responsible water use and Releasing bioinnovations.

Read more:

www.upm.com/responsibility
www.upmbiofore.com
Co-operation on responsibility issues improves prerequisites for operations

For environmental and responsibility issues, UPM’s stakeholder engagement activity was aimed at maintaining consistent quality in operations and products, along with securing the prerequisites for future activities. Globally, UPM continued its active co-operation with local partners and authorities.

UPM participated in the UN Global Compact LEAD group, which represents the world’s leading companies to promote sustainability and responsible business practices.

Co-operation also continued on a voluntary basis with a wide range of stakeholders relating to ecolabels, standards and standardisation frameworks, as well as nature conservation.

With regard to ecolabels and standardisation issues, UPM collaborated with FSC®, PEFC™, the German Blue Angel, the Swan label, The Finnish Key Flag symbol, BCC and the EU Ecolabel. Co-operation was particularly active with FSC® and UPMin significantly increased the number of FSC® certified wood.

The company also engaged in several joint initiatives with different parties. On environmental issues, co-operation continued with BirdLife Finland and Vida Silvestre in Uruguay. In China, UPM participated in the China Sustainable Paper Alliance (CSPA). The purpose of the alliance is to promote responsible sourcing and sustainable forestry in the Chinese forest industry.

Activity in 2016

The 2016 materiality analysis highlighted issues such as compliance and ethics, competitiveness, occupational health and safety, employee engagement, sustainable forest management, product stewardship, and governance.

The Code of Conduct was revised during the year and the Board of Directors approved the new Code of Conduct in February 2016. The revised Code of Conduct includes new sections on trade sanctions, data privacy, responsible sourcing and interaction with stakeholders. The Code was discussed in management teams on all levels. Targeted training was organised for special groups. By the end of the year, 97% of active UPM employees had completed a Code training.

Sustainable forestry issues were highlighted during the year and intense discussions were held with environmental organisations, certification bodies and authorities. Customer enquiries focused on topics such as product safety, ecolabels and ecolabels of origin. The majority of direct feedback from stakeholders focused on the local effects of UPM’s operations, such as noise or odour. UPM provided further information in each situation and the potential disturbances connected to mill stand-plays were communicated to the communities in advance.

Competition at the forefront of public affairs

Through public affairs work, the company aimed to foster the necessary prerequisites for operations, particularly in Finland, Uruguay and China. UPM co-operated with a number of trade associations on these topics, the most important being the Finnish Forest Industries Federation (FFIF) and the Confederation of European Paper Industries (CEPI). During the year, FFIF resigned from the Confederation of Finnish Industries.

Within the EU, UPM promoted competitive and consistent environmental and economic regulation. Influencing the future prerequisites and markets within the advanced renewable fuels sector was one of the key themes of the year. In November, the European Commission submitted a proposal for the renewable energy directive for 2022–2030. The proposal favours biofuels, such as UPM Bioverno, which significantly reduce CO2 emissions and are based on non-food raw materials as well as waste and residues.

In Finland, UPM continued to discuss forest-related issues within the Finnish operating environment that impact the competitiveness of the forest industry in Finland. The same consistent messages were also delivered to local decision makers. The topics are transparently presented on UPM’s web page www. kilpailukyky. ump. fi (in Finnish).

UPM was actively involved in the stakeholder processes related to sustainable forestry. The round table forum initiated by the Ministry of Agriculture and Environment and FFIF’s Forest Environment programme focuses on maintaining the biodiversity of forests as part of sustainable forestry practices.

For its part, UPM promoted means to increase the amount of wood on the Finnish markets. The forest gift deduction on the wood income tax will be implemented in 2017 and will make the transition of forest properties to the younger generation smoother, prevent fragmentation of forest estates and activate the wood market.

In Uruguay, UPM started discussions with the Government of Uruguay regarding the development of logistics infrastructure in the country. Railways and road connections are a critical challenge for establishing a large scale industrial operation in the Uruguayan inland and connecting it to a deep sea port.

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In brief Strategy Businesses Governance Accounts

Stakeholders

INNOVATION EVENTS RESULTED IN NEW CONNECTIONS AND SOLUTIONS

Innovation is a major part of UPM’s Biofore strategy. New products and processes are developed both in house and in collaboration with research institutes, universities and partner companies, and increasingly often with start-ups and growth companies.

Collaborating brings new ideas and makes the innovation process agile and flexible. It helps bring new innovations to the market more cost effectively and at a quicker pace. The collaboration benefits both parties and UPM is pleased to be a part of companies’ growth and supporting students.

In the autumn of 2016, UPM took part in three major innovation events in Finland: Junction hackathon, Accenture Digital Innovation Challenge (ADIC) and Slush. The target was to find new collaborative partners and solutions to some concrete challenges.

Read more: www.upm.com/innovations

UPM actively engages with stakeholders

In addition to the group-wide UPM Code of Conduct revision and related trainings, UPM’s businesses had their additional focus areas in stakeholder dialogue in 2016. Customer collaboration is presented on pages 52-53, employee activities on pages 40-45.

BUSINESS COMMUNITIES GOVERNMENT AND REGULATIONS SUPPLIERS NGOs MEDIA

UPM PULP Finland: Inauguration of the UPM-Kymmenen paper mill expansion. Logistika in Pataretra, Tammisaari; Tree planting events; Local water’s project; and the Civic & City project cooperation. Recruitments for students, UPM Global, Regional University. UPM Foundation activities. CSR report on UPM’s socio-economic impact. Safety trainings with contractors. Finland: Sustainable plantations seminars in Helsinki: Uruguay: Avíes Uruguay: OECD, EESD, Vida São Paulo

UPM BIOFUELS Co-operation with universities and research institutes (VTI, UPM, WWF, Neste, Wallenberg, Tampere University) and certification bodies. Finnish guidance on biofuel policies. Discussions with Finnish and EU politicians and authorities on future biofuel policies. Safety trainings with contractors. Co-operation with the local City council and WWF Finland. Discussions on carbon and forest carbon management with NGOs. Visit to biofuel refinery.

UPM TIMBER Active participation in local events e.g. Suomen Valistaja evening event. Forest owner visits at the /kivik. Active co-operation with local authorities on logistics, traffic and permits. Silverline visits. Induction and trainings for maintenance and logistic companies. Visit to sawmill event. Louhi sawmill line and wood trade situation.

UPM ENERGY Inauguration of a new hydropower unit in Harjavalta. Participation in Energia 2016 congress to re-emphasize UPM energy’s profile in the Finnish energy industry. Discussions with Finnish politicians and authorities on energy policy development. Collaboration with local authorities on new hydropower facility for regrown wood in Harjavalta, Finland. Discussions on fish migration with NGOs. Inauguration of the new hydropower unit in Harjavalta, Finland

UPM RAFLATAK Local sponsorships e.g. Isohavainn in Finland and river clean-up in North Carolina, USA. Active co-operation with local authorities regarding environmental investments in Changshu, China. Label Life Awards for suppliers, supplier audits, joint projects and workshops. Sustainability partnerships with WWF Finland and WWF South Africa. Discussions on future biofuel policies. Visits to biofuel refinery.

UPM SPECIALITY PAPERS Local community and responsibility programmes. Green Futures in China and environmental investments in Russia. The Legislativa programme in Finland. Tree planting days in Finland and in China. Web Summit Project continued and My Heaven My Water Article Competition in China. Local sponsorships. Inauguration of the first paper machine at UPM Changshu, China. High-level status of the Changshu mill My Heaven My Water article competition in co-operation with Justice Water Resources Bureau. Discussions on forest operating environment and competitiveness of the forest industry, discussions with local authorities in the US on the Madison mill closure and energy-related topics in Germany. Read more: Sustainable Partnerships with WWF Finland and WWF South Africa. Discussions on future biofuel policies. Visits to biofuel refinery.

UPM PAPER ENA Participation in the Junction hackathon in Finland and Rurals in Germany: Living together project in Germany. Recruitment events in small communities for students. Search for new industrial use for empty-nest premises. Zero Waste programming in Finland. Local sponsorships. Discussions on Finnish operating environment and competitiveness of the forest industry, discussions with local authorities in the US on the Madison mill closure and energy-related topics in Germany. Read more: Sustainable Partnerships with WWF Finland and WWF South Africa. Discussions on future biofuel policies. Visits to biofuel refinery.

UPM PLYWOOD Inauguration of Otepää mill expansion in Estonia, open doors at several mills, international student conference on sustainability in Hesseloeren, co-participation programme at the mills. Active participation in the industry associations’ work. Hosting policy maker visits to the various mills. Discussions on forest operating environment and competitiveness of the forest industry, discussions with local authorities in the US on the Madison mill closure and energy-related topics in Germany. Read more: Sustainable Partnerships with WWF Finland and WWF South Africa. Discussions on future biofuel policies. Visits to biofuel refinery.

UPM WOOD SOURCING AND FORESTRY Local events to demonstrate modern forest management methods and to discuss sustainable forestry topics (Arcoenius p. 46). Discussions on forestry on logging plans. Co-operation with the Governments of Finland and Sweden. The new pulp expansion. Forest Fair in Finland. Discussions with EU and Finnish politicians and authorities on sustainable forestry, voluntary forest certification and forest ownership protection. Discussions with UPM and Finnish politicians and authorities on sustainable forestry, voluntary forest certification and forest ownership protection. Discussions with UPM and Finnish politicians and authorities on sustainable forestry, voluntary forest certification and forest ownership protection. Development of mobile solutions to forest owners. Supplier audits. Sustainable forest management certification. Discussions on forest operating environment and competitiveness of the forest industry, discussions with local authorities in the US on the Madison mill closure and energy-related topics in Germany. Read more: Sustainable Partnerships with WWF Finland and WWF South Africa. Discussions on future biofuel policies. Visits to biofuel refinery.

Read more: www.upm.com/innovations

THE FOCUS OF UPM’S STAKEHOLDER ENGAGEMENT WORK

UPM’s Biofore strategy forms the foundation of UPM’s stakeholder dialogue. The key focus areas and activities vary locally and according to stakeholder needs. Read more about our activities in 2016 in this picture. The table on the right describes the activities in UPM’s businesses in more detail.

Customers

1 Reliable partner, service offering, product safety and product profile and analysing, environmental and supply chain performance
2 Mutual business access and Biofore opportunities
3 Collaboration, strengthened customer focus, regular customer satisfaction surveys, best practice sharing
4 UPM’s Biofore strategy forms the foundation of UPM’s stakeholder dialogue. The key focus areas and activities vary locally and according to stakeholder needs. Read more about our activities in 2016 in this picture. The table on the right describes the activities in UPM’s businesses in more detail.

Employees

1 Responsible, safe workplace, employment opportunities, dialogues on local topics
2 Legitimacy and good collaboration
3 Open door events, stakeholder contacts, sponsorship and local community projects
4 Continuous development of safety culture and leadership capabilities

Government and regulators

1 Safety and working environment
2 Employee engagement
3 Continuous development of safety culture and leadership capabilities

NGOs

1 Total shareholder value
2 Increasing long-term partnerships
3 Clear and reliable disclosure and communication, investor meetings and events
4 Future-oriented, trusted partner with clear requirements and expectations
5 Competitive advantage through cost leadership, intrawettability with continuous development and compliance with supplier requirements
6 Environmental, social and transparency collaboration projects and responsible sourcing practices

Supply chain

1 High-level environmental and social responsibility performance
2 Understanding expectations to development of performance, partnerships
3 Dialogue, transparency and co-operation in human rights and climate relevant topics in particular
4 Full regulatory requirements, employment and competitiveness
5 Ensures competitiveness and a low-operating environment
6 Network to ensure UPM’s view is heard

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Read more: www.upm.com/innovations

EXTENSIVE AND ASSURED INFORMATION

UPM uses the G4 reporting guidelines published by the Global Reporting Initiative to measure and report on corporate social responsibility at Group level. The core corporate responsibility reporting for the year 2016 has been compiled in compliance with the “In accordance” – Core options of the GRI G4 Guidelines. The core responsibility information for 2016 in English, which has been marked as assured in the G4 index, has been approved by an independent third party, PricewaterhouseCoopers Oy (see the Independent Assurance Report on page 88) and congruence between the English and Finnish versions has been checked. A shortened version of the G4 index can be found on pages 86–87. The entire G4 index, including detailed descriptions of the scope of the reporting and data collection techniques, is available in English at www.upm.com/responsibility.

Stakeholder engagement and sustainability are important to UPM. The company is committed to the principles of inclusivity, materiality and responsiveness as defined in the AASCO Accountability Principles Standard (2008).

UPM provides comprehensive environmental information, verified by third parties, from corporate level to the mills and individual products. Labelled products, product declarations and certified operations showcase the stakeholders about company’s sustainability, transparency and risk management (read more about UPM’s product stewardship on page 56).

Read more: www.upm.com/innovations

The company is committed to the principles of inclusivity, materiality and responsiveness as defined in the AASCO Accountability Principles Standard (2008). 

UPM provides comprehensive environmental information, verified by third parties, from corporate level to the mills and individual products. Labelled products, product declarations and certified operations showcase the stakeholders about company’s sustainability, transparency and risk management (read more about UPM’s product stewardship on page 56).
Continuous dialogue and collaboration with customers

UPM offers a wide range of renewable and recyclable products to be further processed into a variety of useful everyday products, and also provides services that meet the needs of a versatile range of customers.

UPM’s businesses vary in the products and services they offer. Each business has its own customer management process and way of interacting with customers. A comprehensive understanding of the markets, knowledge of end uses and an appreciation of customers’ needs form the basis of UPM’s customer relationship management. UPM’s target is to provide customers with solutions that improve customers’ business processes, with a special focus on creating mutual benefits with increased efficiency.

Product stewardship, sustainable raw materials and industry-leading environmental performance are all at the centre of UPM’s customer offering. UPM’s interaction with customers is based on continuous dialogue and regular customer satisfaction surveys.

In addition to a continuous working dialogue, UPM is engaged in various development projects with customers. Many of the projects are related to product development, supply chain efficiency and optimisation, as well as the co-planning of activities. Customer satisfaction is measured regularly in most businesses through customer satisfaction surveys. Based on various business customer satisfaction surveys, the overall total satisfaction with UPM as a supplier is 86% (75%).

Interest in responsibility

Based on the dialogue and surveys, UPM’s customers take an interest in the company’s responsibility performance and the sustainability of its operations. Customers value UPM’s comprehensive product range, reliability and excellent environmental performance. Product safety, forest certification and chains of custody, resource efficiency, safety performance and the supply chain are among the most important topics.

Customers are increasingly interested in compliance with regulations, the UPM Code of Conduct and social responsibility topics such as working conditions. The significance of long term financial performance and profitability of the supplier have also increased.

UPM offers product declarations and environmental data for most products as a tool to provide customers with information on the sustainability of products and the supply chain.

<table>
<thead>
<tr>
<th>BUSINESS AREA</th>
<th>PRODUCT RANGE</th>
<th>CUSTOMER INDUSTRIES</th>
<th>COLLABORATION ACTIONS IN 2016</th>
<th>IMPORTANT CORPORATE RESPONSIBILITY TOPICS</th>
<th>MAJOR CHANGES IN CUSTOMER INDUSTRIES</th>
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<tbody>
<tr>
<td>UPM PULP</td>
<td>Softwood, birch and eucalyptus pulp</td>
<td>Tissue, specialty, graphic papers and packaging</td>
<td>• Joint development projects with customers in technical, sustainable forestry, environmental performance of mills, water use and resource efficiency</td>
<td>Safety, forest certification, sustainable forestry, environmental performance of mills, water use and resource efficiency</td>
<td>• Growth of tissue and packaging board production</td>
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<td>• Capacity boost of printing and writing paper industry in mature markets</td>
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<td>UPM BIOFUELS</td>
<td>Wood-based renewable diesel and naphtha for transport</td>
<td>Fuel distributors, transportation, oil and petrochemical industry</td>
<td>• Delivery volumes increased year-on-year</td>
<td>• Reduction of greenhouse gas emissions and biodegradable emissions, biofuel-specific sustainability certification, social and environmental criteria in tender set for the EU Renewable Energy Directive</td>
<td>• Global increase of advanced biofuel volumes and demand</td>
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<td>• Waste- and residue-based biofuels are favoured by both customers and legislation</td>
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<td>UPM TIMBER</td>
<td>Standard and special sawn timber</td>
<td>Joinery, packaging, distribution and construction industries</td>
<td>• Further focus on strategic markets and market-specific weighting</td>
<td>Chain of custody, origin of wood and forest certification</td>
<td>• Growing importance of East Europe as a production area</td>
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<td>• Instability and financial challenges in Egyptian market</td>
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<td>UPM ENERGY</td>
<td>Electricity and related services</td>
<td>Nordic market, mainly industrial consumers</td>
<td>• Internal service portfolio enhanced</td>
<td>Low-emission electricity production, active grid balance management through load management and balancing power, grid migration</td>
<td>• Structural changes in the Nordic electricity market</td>
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<td>• Increased volatility of electricity market through subsidised weather-dependent production capacity</td>
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<td>UPM RAFLAICA</td>
<td>Self-adhesive paper and film label stock</td>
<td>Label printers, package, brand owners in durable, tyres, Tex, food, beverages, personal care, pharmaceuticals, retail and logistics segments</td>
<td>• New scalable global operating model enabling further growth</td>
<td>• Product safety, forest certification, chain of custody and resource efficiency, supplier audits at mills</td>
<td>• E-commerce increasing label use for packaging &amp; logistics</td>
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<td>• Increase in automated product labelling &amp; identification</td>
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<td>• Retailer &amp; distributor network development</td>
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<td>• Adhesive technologies for demanding applications</td>
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<td>• Legislation increasing in mandatory product information</td>
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<td>• Labelling materials:</td>
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<td>• Growth in consumer use products</td>
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<td>• Increased share of e-commerce</td>
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<td>• Increased in automated product labelling and identification</td>
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<td>• Retailer &amp; distributor network development</td>
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<td>• Office paper:</td>
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<td>• Quality upgrade and lower price in on-size business</td>
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<tr>
<td>UPM SPECIALTY PAPERS</td>
<td>Labelling and packaging materials, office papers, fine papers</td>
<td>Converters, distributors, retailers, OEMs (original equipment manufacturer), printers, publishers</td>
<td>• Launch of UPM Champy PKD labelling materials and raw value-added product and services</td>
<td>Product safety, forest certification, chain of custody and resource efficiency, supplier audits at mills</td>
<td>• Launch of UPM Changshu PM3 labelling materials and new high-speed process with a high-quality product and services</td>
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<td>• Investment in significant capacity increase in Poland operating platform</td>
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<td>• Joint projects with customers and brand owners</td>
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<td>• Sustainability and product safety solutions</td>
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<td>UPM PAPER DNA</td>
<td>Magazine papers, newspaper and fine papers for various uses</td>
<td>Newspaper and magazine publishers, printers, catalogue retailers, merchants and converters</td>
<td>• Launch of New Future product family and Responsible Fibre trademark (p. 30)</td>
<td>Safety, forest certification, environmental performance, supplier audits at mills, eco-certification, resource efficiency and financial stability as a supplier</td>
<td>• Product safety, forest certification, chain of custody, product safety and resource efficiency</td>
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<td>• Development of service offering</td>
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<td>• Improved business interaction with customers</td>
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<td>• Forest certification, chain of custody, product safety and resource efficiency</td>
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<td>• Increased volatility of electricity market through subsidised weather-dependent production capacity</td>
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<td>• Instability and financial challenges in Egyptian market</td>
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<td>UPM PLYWOOD</td>
<td>Plywood and veneer products, thermoformable wood material</td>
<td>Construction, whole flooring, ENQ shipbuilding and paper industries as well as furniture and other manufacturing industries</td>
<td>• Continuous monitoring of our supply chain</td>
<td>Forest certification, chain of custody, product safety and resource efficiency</td>
<td>• Increased need for services, stocks and short lead times</td>
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<td>• Requirement for forest certifications has increased</td>
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<td>• More customer-driven specifications among industrial and uses limiting supplier’s possibility to differentiate with a product</td>
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UPM’s value creation also generates tax revenues

In accordance with UPM’s tax policy, UPM pays corporate income taxes in the countries where added value is created and profit is generated. Taxes are paid in accordance with the local tax legislation and regulations of the country in question.

UPM’s corporate and operational structures mean that UPM reports and pays its corporate income taxes mainly in the production countries and in the countries where innovations are being developed. In the countries where UPM’s business areas have significant value-adding operations in particular, UPM is also a major taxpayer of both income taxes and taxes applied to various production inputs and outputs. In addition to these taxes, the local impact is augmented by the taxes paid to the local municipalities by UPM’s employees as well as by those indirectly employed by UPM to perform various services at the production sites.

About UPM’s tax policy
UPM’s tax policy is supported by internal instructions, benchmark analysis of best practices as well as by related internal controls. Tax matters at UPM are managed by UPM’s own tax function, which is supplemented by third-party tax services in order to comply with local tax reporting and filings among others. The Audit Committee is responsible for the supervision of tax risk management as part of UPM’s risk management processes. UPM’s internal control and risk management functions review the tax risks regularly and update the control framework together with the tax function.

UPM aims to co-operate transparently and proactively with tax authorities and other important interest groups regarding taxation. UPM’s tax policy is available on the corporate website under www.upm.com/governance.

Corporate income taxes and property taxes paid by country
According to UPM’s tax policy, the location of UPM group entities in different countries is driven by business reasons, such as the location of customers, suppliers, raw materials, know-how and other similar considerations.

Corporate income taxes and property taxes paid by UPM are reported by country (see table). The tax figures shown in the country analysis include corporate tax payments and property taxes.

UPM creates significant added value in the Finnish economy
According to a study made by the Research Institute of the Finnish Economy (EFI), UPM is the company producing the most added value in Finland when taking into account the added value produced by companies themselves and the indirect added value resulting from purchases. UPM’s share of the GDP was 2.0% in 2015. The added value produced by UPM in Finland totalled EUR 1.5 billion and the added value generated by the multiplier effects resulting from purchases as much as EUR 2.6 billion. UPM’s supply chain in Finland includes 10,000 companies and service providers, and, for example, the company’s annual wood sourcing spend is approximately EUR 650 million.

“Forest industry companies mainly purchase their wood raw material from Finland, which means that the added value from wood trade, felling and transport is created in Finland,” says Jyrki Ali-Yrkkö, Deputy CEO at Etlatieto Oy.

Added value is the difference between the product’s final selling price and the purchase price paid for raw materials, energy, services and other intermediate products to manufacture the product.

“The share of domestic added value is the largest in forest and paper industry as well as in the food industry because they use more domestic raw materials and intermediate products from other industries.”

UPM aims to develop tax reporting that meets the expectations of various stakeholders and fulfils the various statutory reporting requirements. During 2016, UPM has prepared for the country reporting on taxes to tax authorities in accordance with the OECD Guidelines.

During 2016, UPM changed its corporate structure in Finland to better match its current business structure. Three new subsidiaries were established in Finland: UPM Energy Oy, UPM Specialty Papers Oy and UPM Paper Eka Oy. The personnel and assets of UPM Energy, UPM Specialty Papers and UPM Paper Eka in Finland were transferred to the new companies on 1 July 2016. UPM Raflatac and UPM Plywood were already operating as subsidiaries in Finland while UPM Biorefining remained part of the UPM-KymiMene Corporation.

In 2016, UPM’s corporate income taxes in Finland are estimated to be approximately EUR 138 million in total (EUR 83 million), of which subsidiaries repaid and pay approximately EUR 56 million (EUR 22 million) and the remaining approximately EUR 82 million (EUR 61 million) is reported and paid by UPM-KymiMene Corporation.

Taxation at various levels of the value chain
Taxation of end products varies by business area
In addition to the taxes on income, UPM’s various production inputs and outputs are also subject to taxation. These are typically local taxes in the production countries (for example energy taxes, real estate and land property taxes), the location of consumption or a final consumption (for example value added taxes, customs and duties or various excise taxes). These taxes may either be paid by UPM or collected by UPM from the customers and remitted to the local authorities.

Due to significant production and consumption of mainly renewable energy, energy taxation is especially relevant for UPM in various countries. The energy taxation refers to excise taxes of liquid fuels as well as electricity and certain other fuels. Energy taxation is subject to detailed regulation not only at country level but also at EU level.

The majority of UPM’s own electricity production is hydropower or combined heat and power production at mill sites, where the majority of the fuels used in energy production are from renewable sources. The electricity produced by UPM is subject to the electricity taxation regardless of which sources are used.

The renewable diesel, UPM BioVerno which is produced from crude tall oil, a residue of the pulp production, is also subject to energy taxation. The taxes are charged by fuel distributors to their customers at service stations. The environmental goals of taxation of transport fuels directly impact the business. One of the main goals of the energy taxation is to globally limit and mitigate climate change and therefore the regulation has developed in favour of advanced biofuels.

Consequently, the energy taxes of transport fuels from renewable sources like UPM BioVerno are lower than those of fossil fuels due to their lower carbon dioxide emissions. Therefore the fuel tax of renewable diesel UPM BioVerno is 30–50% lower than that of fossil diesel in the main market in Finland.

Taxation of raw materials and other inputs
UPM is also a significant electricity consumer, especially for pulp and paper production. All of the electricity consumed by UPM, including the electricity that has been self-produced from renewable sources, is subject to electricity taxes. Most of the fuels used in the production processes are also subject to energy taxes, though there are different tax rates or even exemptions depending on the type of use.

Additionally, taxation of transport fuels is also a significant form of energy taxation for UPM in businesses other than UPM Biofuels. UPM pays significant amounts of energy taxes on fuels as part of logistics costs, especially on road transportation.

Compensation of paid energy taxes for global cost-competitiveness
Within the EU, the energy taxation legislation allows member states to compensate paid taxes or apply lower tax rates for industrial production or activities which are considered energy intensive. Many of the main UPM production countries, e.g. Finland and Germany, apply such tax reliefs because the level of energy taxation has increased significantly in recent years.

For example, in Finland, electricity is taxed at a lower tax rate when used in industrial production. Energy-intensive industries get a retroactive refund of paid energy taxes based on a separate application, if the amount of energy taxes paid exceeds a certain threshold dependent on the company’s added value. A similar retroactive energy tax refund can be applied for in Austria while in the UK and France, relief is granted upfront in a form of lower tax rates for energy intensive industrial users that fulfil the requirements. In Germany, there are certain energy tax reliefs that companies may apply for in advance and some that are applied for retroactively if the company fulfills various criteria to be eligible for the relief. Like the entire field of energy taxation, energy tax reliefs are subject to detailed regulation not only at country level but also at EU level.

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

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.

<table>
<thead>
<tr>
<th>OPERATING COSTS OF ELG 2016 (EUR MILLION)</th>
<th>Sales</th>
<th>Income from sale of assets</th>
<th>Income from financial investments</th>
<th>Other income</th>
<th>Donations</th>
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<tr>
<td>Operating costs</td>
<td>7,115</td>
<td>98,912</td>
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<td>Employee wages and benefits</td>
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<td>Payments to providers of loans</td>
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<td>Dividend distribution</td>
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<td>Corporate income taxes paid</td>
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<td>and property taxes</td>
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<td>Total</td>
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<tr>
<th>ECONOMIC VALUE RETAINED 2016 (EUR MILLION)</th>
<th>Total</th>
<th>Operating costs</th>
<th>Employee wages and benefits</th>
<th>Payments to providers of loans</th>
<th>Dividend distribution</th>
<th>Corporate income taxes paid</th>
<th>and property taxes</th>
<th>Donations</th>
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<tr>
<td>Finland</td>
<td>138</td>
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Product stewardship is a key element in UPM’s responsibility practices. Our products are made of renewable, recyclable and biodegradable materials, and our raw-material base creates a strong foundation for product stewardship and circular economy.

The actual value of products is based on their purpose of use, such as reading in the case of paper or construction in the case of timber products. The fact that UPM’s products replace products made of non-renewable raw materials adds to their value. We also constantly strive to make products that are as efficient as possible from environment point of view. UPM’s product stewardship covers the entire lifecycle of all products from the design phase and raw material sourcing to the end-use and even beyond.

Eco-design and product safety mean that all the impacts the raw-materials and manufacturing processes have on the products and the environment are considered and minimised early on in the design stage. Raw materials, water and energy are used in a resource-efficient way. UPM provides its customers with products that are safe to use. Open and transparent product communication is part of UPM’s product stewardship thinking.

In 2016, UPM Specialty Papers introduced several lighter products. UPM Raflatac launched label products that improve the recyclability of its customers’ end products and carried out several lifecycle assessment (LCA) projects with customers (read more on the right). The comprehensive new Responsible Films™ concept introduced by UPM Paper ENA makes UPM’s environmental and social responsibility an integral part of products.

UPM Biochemicals and the University of Helsinki institute for Molecular Medicine Finland (FIMM) started a joint research project with the purpose of investigating the applicability of UPM’s new cellulose-based gel material for cancer research. UPM Raflatac launched new labels for authenticating products and preventing counterfeit products from entering the market in order to improve consumer safety. Both cases are good examples of new products or projects that create larger social and societal value and promote the Sustainable Development Goals (SDG) of the UN. During the year, the UN Global Compact named renewable diesel UPM BioVerno as an example of a product innovation promoting the SDG 13 (Climate Action).

Ecolabels and product declarations as a sign of transparency
UPM provides product declarations to grant customers easy access to information concerning the responsibility of products and the supply chain. They are developed for various customer needs, for instance to verify that products do not contain hazardous chemicals. 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.

UPM is globally the largest producer of EU ecot-labelled newsprint, office papers and graphic papers. The company also provides its customers with the opportunity to choose papers that have been granted a well-known local ecolabel, such as the German Blue Angel label or the Nordic Ecolabel. All UPM businesses have FSC® and PEFC™ chain of custody certification, which means that customers can use these certifications in their marketing if they wish to do so. In 2016, UPM's bioeconomy extended sustainability certification to cover all of its output streams from the Lappeenranta Biorefinery in Finland under the ISCC PLUS (International Sustainability and Carbon Certification Scheme).

UPM’s aim is that all applicable products will be ecotlabelled by 2030.
Sustainable forestry

Renewable wood is UPM’s most important raw material. UPM is committed to sustainable forestry, and the company uses third-party-verified chains of custody to ensure that the wood it receives is legally sourced from sustainably managed forests.

At the end of 2016, UPM owned 660,000 hectares of forest in Finland and 75,000 hectares of forest in the United States. Additionally, the company has 254,000 hectares of forest plantations in Uruguay. Forests owned by UPM house around 48,000 protected sites with a total area of 147,000 hectares. The company is also responsible for managing almost 900,000 hectares of forests and forest plantations owned by private forest owners.

Forest certification is an excellent tool for promoting sustainable forestry. Certification is based on standards that have been defined in an open stakeholder process, and compliance with these standards is monitored by an independent third party. All UPM owned forests are certified. To promote the certification of privately owned forests in Finland, UPM has established FSC® and PEFC™ group certification schemes. In 2016, UPM’s Finnish FSC group certification scheme grew to cover nearly 250,000 hectares of forest. UPM worked together with FSC Finland to promote certification of small privately owned forests.

UPM also expanded its electronic services for forest owners during the year. The digital applications provided by the company facilitate the systematic management of forest property.

The target is to increase the use of certified wood so that all wood used by the company will be certified by 2020.

UPM is a responsible forest owner and wood user.

The growing need for food production and wood, particularly in the tropics, causes deforestation, which is an important concern for the entire forest industry. UPM recognises this challenge and has reacted by taking action in its own operations and by actively participating in international co-operation networks.

UPM does not use wood from tropical rainforests as raw material, nor accept wood from forest plantations that have been established by destroying rainforests. UPM does not operate in areas where the rights of indigenous peoples are threatened or endangered.

In 2016, the CDP Forest Program listed UPM as one of the global leaders on the 2016 Forest A List for timber and timber-based products. Companies on the A List are responding to market demand for environmental accountability and taking action to prevent deforestation.

Active forestry-related research and development in UPM forests

Forest biodiversity has been one of the key factors in UPM’s operations for over 20 years. The aim of UPM’s global biodiversity programme is to maintain biodiversity in forests, to promote best practices in sustainable forestry and to emphasise the role of ecosystem services. The company is involved in several biodiversity projects in collaboration with various stakeholders.

The UPM biodiversity programme received an honourable mention in the 2016 corporate biodiversity awards by Finland’s leading corporate responsibility network FIBS. FIBS also gave UPM an award for its biodiversity reporting.

The Finnish government’s bioeconomy strategy, the increasing demand for raw materials resulting from the strategy and the impacts that will have on biodiversity raise conflicting opinions. This year, UPM actively participated in a roundtable process coordinated by two Finnish ministries: the Ministry of the Environment and the Ministry of Agriculture and Forestry. The process involves forest owners, forest and environmental organisations and representatives from industry, research and public administration. The common goal is to find ways to safeguard forest biodiversity.

One example of a concrete action carried out to safeguard forest biodiversity is controlled burning. In 2016, UPM performed controlled burning of felling sites located in company forests around Finland. Fire is an essential part of the natural life cycle in boreal forests. After a fire, deadwood and a new generation of trees develop in a couple of years. Controlled burning helps to maintain the habitats of rare and endangered fire-dependent species.

UPM and the Finnish Ministry of the Environment have agreed on the establishment of several private conservation areas on UPM land in 2016. The areas are located in different parts of Finland.
SUPPLY CHAIN RISK MANAGEMENT ENHANCED

The purpose of supplier selection process and the audit is to ensure compliance with UPM’s requirements. Using external expert auditors has improved the quality of the audits, especially in environments where accurate knowledge of local language and legislation is important.

UPM’s audit partner in China is SGS, the world’s leading third-party verification company. “Typically, the focus has been on occupational health and safety and environmental issues”, says Tony Yang, the expert in charge of UPM audits at SGS.

“During the audits, we assess, for example, the measures UPM’s subcontracts take to maintain their facilities, the firefighting equipment available or how first aid training is carried out. Meanwhile, we also make sure that the subcontractors comply with the local and international regulations and UPM’s requirements”.

Based on risk assessment, UPM defines the areas for the audit. The auditor is then responsible for conducting the audit and reporting the results. UPM’s responsibility is to ensure the suppliers address any found issues as required.

Wood is the primary raw material

UPM is a large forest owner and a supplier of wood. UPM sources all wood assortments to ensure the optimal utilisation of this valuable raw material.

In 2016, UPM sourced 27.8 (26.1) million cubic metres of wood globally. The majority of wood is purchased from private forest owners who numbered over 25,000.

A network of local entrepreneurs is responsible for UPM’s harvesting, logistics and forestry operations. Wood Sourcing and Forestry in Finland indirectly employs approximately 2,000 persons via contractors.

In 2016, Wood Sourcing and Forestry trained its 45 key contractors in Finland in business management. The trainings will continue in 2017.

Tracing the origin of wood is a prerequisite for UPM

All wood UPM uses in its products is legal and comes from sustainably managed forests. UPM does not accept mixed tropical hardwood from rainforests, nor does it accept wood from plantations that have been established by destroying rainforests. UPM does not source wood in areas where indigenous peoples’ rights are not respected.

UPM Responsible Sourcing fundamentals

All wood is covered by a third-party verified chain of custody certification under the FSC® and PEFC™. In 2016, 84% (84%) of the wood used in the UPM mills is certified.

UPM verifies that the wood raw material supplied to its mills is procured according to the requirements of EU Timber Regulation, the US Lacey Act and other regional jurisdictions. The Finnish authorities audit UPM’s compliance with the EUTR regarding the deliveries of chips from Russia and the same was done for the pulp from Brazil by the German authorities.

Aiming at continuous improvement together with pulp and other paper raw material suppliers

UPM buys approximately 1.8 million tonnes of chemical pulp from external suppliers. Specific requirements are set for pulp suppliers with regard to environmental performance, social responsibility, forestry, wood sourcing and performance reporting.

Collecting and analysing the environmental and social performance-related data of UPM’s pulp and chemical suppliers is an integral part of the company’s supplier risk and performance management. Based on the results of these analyses, the development plans are made together with the suppliers.

In 2016, UPM Raf Rafat’s invited the best performing suppliers to participate in the Label Life Award competition on corporate responsibility. The award recognises UPM Raf Rafat’s suppliers’ efforts in achieving good environmental and social performance and generates further co-operation among the participating companies.

Since 2012, UPM Paper Eina and UPM Specialty Papers have conducted a Supplier Performance and Responsibility Survey to follow responsibility of their key suppliers. In 2016, 42 key suppliers were evaluated and some 170 improvement proposals were identified. To motivate its suppliers to further improve their performance, UPM awards the most responsibly performing suppliers annually. The packaging supplier Paul & Co. received the UPM Best in category supplier award for the second time in a row.

Energy from renewable sources

UPM is both a significant purchaser and producer of energy. The majority of electrical and thermal energy is used for pulp and paper production. UPM favours a wide range of low-emission energy sources and focuses on energy efficiency and energy savings in its businesses.

In 2016, 69% (67%) of the fuels used by UPM came from renewable sources. In addition to UPM’s own electricity generation, electricity is also purchased from the energy markets.

Logistics form the foundation for on-time deliveries

UPM delivers approximately 1.3 million truckloads (t. 20 tonne each) of products and raw materials around the world every year; that is one load every 25 seconds. Of all UPM deliveries, 66% are transported by rail and road and 34% by sea. The majority of UPM’s haulage is handled by contract partners. UPM aims to create strategic long-term alliances to create benefits for the company and its customers.

UPM considers cost efficiency and environmental aspects in its transport operations. For example, the transport services are purchased from environmentally advanced contractors using low-emission vehicles and transport payloads are optimised.

Wood sourcing and logistics services have a significant socio-economic impact on the rural areas where UPM mills are located. In total, 5,500 harvester drivers, 5,500 truck drivers and 820 rail-road workers work indirectly or directly for UPM. The number of entrepreneurs and companies involved is 960. Those numbers combined with purchases from private forest owners significantly support local livelihoods in rural Europe, the US and Uruguay.

Out of a total spend of EUR 1.3 billion for UPM primary raw materials — wood, pulp and recovered paper — 68% was purchased from local suppliers.

UPM uses significant amounts of recovered paper

UPM is the world’s largest user of recovered paper for the production of its graphic papers, consuming 2.8 (3.1) million tonnes of recovered paper in 2016. The share of recycled fibre represents one third of all fibre raw materials used in UPM’s paper production.

The efficiency of paper recycling depends on how the local infrastructure for national collection schemes works. UPM purchases its recovered paper from local authorities, waste management companies and printing houses, all of which are located close to the mills in Europe. This is how UPM maximises cost efficiency and minimises environmental impact.

IN BRIEF

Strategy

Businesses

Governance

Accounts

UPM’s supplier risk assessment covers financial, quality, environ­mental, social, economic and delivery-related risks.

Based on the risk assessments, UPM selects the suppliers whose performance is assessed in more detail. UPM uses tools such as annual questionnaires, audits and joint development plans. In 2016, UPM Sourcing function provided comprehensive risk assessment training to key personnel as well as training on operational health and safety issues to personnel visiting suppliers’ production units regularly.

The human rights-related risk assessment of the supplier base has been enhanced since 2013. Consequently, the number of risk assess­ment-based supplier audits has increased with a comprehensive geo­graphical coverage. Some of the audits covered the entire upstream supply chain.

In case of any non-conformance, the supplier is required to take corrective actions. UPM follows the progress and supports the supplier to develop its performance, when needed. However, no significant negative impacts have been identified.

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Resource-efficient production

Certified management systems help UPM to control and improve the performance of the company’s production facilities in matters related to the environment, quality and health and safety. The company uses raw materials, water, energy and other resources in a responsible manner and continuously improves its energy, production and cost efficiency. Cost and material efficiency and good environmental performance help UPM to contribute towards achievement of several UN’s Sustainable Development Goals (SDGs).

Almost all of UPM’s production plants, as well as its wood sourcing operations, are covered by environmental, quality and occupational health and safety systems, which are certified in accordance with the ISO 9001, ISO 14001 and OHSAS 18001 standards. Additionally, several production plants have an ISO 22000 food safety management system.

In order to improve energy efficiency, UPM has introduced the ISO 50001 certification system in Central Europe and a national energy efficiency system (ETJ+) in Finland. In 2016, UPM’s pulp business area developed a joint integrated management system for its four pulp mills. A similar project has started for UPM’s paper mills in Finland.

UPM has certified all its European pulp and paper mills, the UPM Fray Bentos pulp mill in Uruguay, and the UPM Changshu paper mill in China in accordance with the EU Eco­Management and Audit Scheme (EMAS). EMAS requires participants to have an Environmental Management System and to publish a third-party verified Environmental Statement, which increases the credibility and reliability of local environmental data.

Investments in environmental performance

UPM’s investments in environmental performance are part of the Group’s investment programme. In 2016, the company’s environmental investments totalled EUR 22 (28) million. The single largest investment was UPM Schongau power plant retrofit to achieve lower air emissions. UPM’s environmental protection costs totalled EUR 120 (129) million, including depreciation. The main cost items were effluent treatment, waste management, and air pollution control. Effluent treatment amounted to EUR 84 (94) million, waste management to EUR 28 (34) million, and air pollution control to EUR 5 (5) million.

Steady decline in number of environmental non-conformances

There has been a significant decrease in the number of environmental non-conformances since UPM’s internal Clean Run programme was launched in 2012. Over 2,300 preventive environmental observations were reported in 2016. The goal is to improve UPM’s environmental performance, share best practices and promote environmental awareness.

In 2016, UPM introduced a global reporting tool, One Safety, for all UPMers and contractors. The aim is to have a common, UPM way of managing and reporting safety and environment-related operations. One Safety tool covers environment, health and safety, product and process safety as well as security. The tool was successfully implemented at most UPM sites during the year.

No major environmental incidents occurred at UPM production plants in 2016, and UPM was not required to pay any significant fines due to non-conformances. A total of 22 (28) temporary deviations from permit limits or major deviations from the environmental limits set by UPM occurred at the company’s pulp and paper mills over the course of the year. The most significant single deviations were related to biological sludge losses from effluent treatment plants or occasional odours from pulp mills. UPM immediately reported deviations to local stakeholders and authorities, and undertook corrective measures to normalise the situation and prevent similar situations from occurring in the future.
Responsible water use

Water resources and the natural water cycle have a significant impact on UPM’s operations in forests, plantations and the production of energy, pulp and paper.

The company’s target 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.

All UPM’s largest production plants are located in areas where there is sufficient water available. The water used by UPM plants comes from rivers, lakes or groundwater resources. UPM uses water responsibly in terms of the company’s water consumption and effluent quality. This has also been acknowledged by the CDP Water Program which has rated UPM with a score of “A-“. This is a leadership position in CDP’s ranking.

The purpose of the project is to encourage public interest in natural sciences through hands-on research carried out at waterways. In addition to UPM, the Finnish Environment Institute (SYKE), the organisation publismeri.fi, and local Rotary Clubs are involved in the project.

Hydropower plays an important role in UPM’s versatile energy production portfolio. In many areas, constructing hydropower facilities has affected the reproduction opportunities of migratory fish species. This has traditionally been compensated by fish planting obligations and fish management fees set by authorities. UPM is currently participating in a two-year project aiming to determine suitable means for restoring migratory fish stocks and supporting their natural reproduction. The project began in 2015 and is administered by the National Resources Institute Finland. The ecological state of the effluent discharge areas at UPM pulp and paper mill sites has been studied using a number of bio-indicators.

Responsibility targets for 2030 encourage forward

The company’s target 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.

All of UPM’s pulp and paper mills are required to have both a mechanical and a biological effluent treatment. In order to ensure the best possible treatment result and share best practice, UPM’s wastewater treatment facility team continued its work in 2016. The results have been good and the number of incidents has decreased steadily.

The company’s pulp- and paper-mills began their planning work for achieving the 2030 targets last year (learn more about the UPM Changsha paper mill research programme on page 38). In order to achieve its nutrient recycling target, UPM has launched nutrient tests at Finnish mills in collaboration with partners found through the Baltic Sea Action Group (p. 69). The Finnish Ministry of the Environment has granted funding for a joint project established by UPM together with Yara to develop nutrient recycling. Funding has been granted for 2017–2018.

The school project called Local waters, originally launched in Rauma, was expanded to other UPM pulp and paper mill locations in Finland. The purpose of the project is to encourage public interest in natural sciences through hands-on research carried out at waterways. In addition to UPM, the Finnish Environment Institute (SYKE), the organisation publismeri.fi, and local Rotary Clubs are involved in the project.

UPM is pleased that the results are finally published by CARU. For UPM, it is important that the performance of the mill has been ratified. The performance is in line with the environmental results of all of the monitoring processes conducted by government and independent sources and which have been publicly available on the company’s website since the start-up of the mill in November 2007.

At the same time, UPM further reinforces its commitment to comply with Uruguayan law and international standards, sharing mill-related information transparently.

CARU is a permanent joint organisation between Uruguay and Argentina that directs and regulates the objectives and interests of both countries in the shared segment of the Uruguay river.

In addition, a report on a 10-year study of the water quality and biology of the Uruguay river was published in 2016. The results show that there have been no differences in fish number, abundance or biomass between the reference areas and the receiving area adjacent to the pulp mill effluents. The study was conducted by the Faculty of Sciences of Uruguay and international experts and reviewed by the National Environment Directorate of Uruguay (DINAMA).
Climate actions and energy efficiency

The goal of international climate policy is to keep the global average temperature rise at a level that does not threaten nature and society. Achieving the goal requires significant reductions in emissions across the globe. Developing means for adapting, and preparing for climate change is also necessary.

UPM's strategy is to

- Innovate new business and products for future needs
- Replace non-renewable materials with renewable materials,
- Continuously increase the share of renewable and low-emission energy in our operations
- Promote biodiverse ecosystems that are less vulnerable to the impacts of climate change

Renewable and recyclable products
- Replace non-renewable materials with renewable materials, and our products store carbon
- Innovate new business and products for future needs

UPM's energy production is based on versatile energy sources

UPM is a significant energy producer. The company favours the use of renewable and other carbon-neutral energy sources and the use of natural gas. Biomass-based fuels account for 89% (67%) of the fuels used. UPM is the second-largest generator of biomass-based electricity in Europe.

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

As the use of weather-dependent energy sources increases, the need for balancing power in energy systems will also grow. UPM is investing in hydropower, the most effective and sustainable method of producing balancing power. The new unit of the Harjavuori hydropower plant was completed in September.

Responsible production
- Promote resource efficiency by making more with less
- Utilise the best available techniques (BAT) in our production
- Continuously increase the share of renewable and low-emission energy in our operations

Renewable and recyclable products
- Replace non-renewable materials with renewable materials, and our products store carbon
- Innovate new business and products for future needs

Climate actions and energy efficiency

The construction of the UK’s largest solar park at Shotwick, Cheshire, adjacent to the UPM Shotton paper mill, has brought yet another opportunity for UPM to deliver on its 2030 renewable energy target to reduce fossil CO2 emissions by 30%.

Solar power is a highly efficient method of energy production with zero moving parts, meaning maintenance is kept to a minimum. Using the latest in both photo-voltaic panels and cutting edge conversion technology, the plant can produce on average 65 MWh/year.

A direct link to UPM Shotton’s own infrastructure means that the paper mill can operate on 100% renewable energy during daylight hours.

The start-up of its second steam turbine, utilising excess steam from its biomass combined heat power plant (CHP), in December 2016, means the mill will be on track to meet its own energy efficiency targets and significantly contribute to UPM Group’s 2030 responsibility targets.

UPM Shotton’s transition to 100% renewable energy started in 2006 with the start-up of its CHP. With a focus on energy efficiency, the mill has continued to reduce its use of fossil fuels from the national grid. The solar park development means it will reduce its purchase of power to almost half.

Read more: www.upm.com/responsibility
Circular economy at UPM

At UPM circular economy, in short, means reusing materials and products several times and creating added value through smart solutions. In circular economy, we also avoid generating waste, and strive to increase the use of renewable energy and materials.

UPM has followed the principles of circular economy in its operations for a long time. Today, megatrends like population growth and urbanisation, digitalisation, climate change and sustainability highlight the importance of circular economy and generate new opportunities.

New technologies give UPM the opportunity to create innovative solutions. These technologies include the likes of industrial biotechnology, new uses of fibre, 3D printing, and energy technologies.

UPM utilises wood by-products, such as bark, sawdust and woodchips, for pulp and energy generation. Many of UPM’s new products are made of by-products and waste from traditional production processes.

UPM aims to use every single wood fibre innovatively and efficiently and to offer high-quality alternatives to non-renewable materials.

Recycling waste is part of circular economy

Reducing the amount of solid waste and increasing recycling and recovery are important targets at all UPM mills. To use yesterday’s waste is the valuable raw material of tomorrow.

Nearly all organic production residues, including bark and wood residues, as well as fibre-containing solids from drinking and effluent treatment, are used in energy generation at mill sites.

Ash originating from bioenergy production forms the most valuable raw material of tomorrow. Ash from UPM’s bioenergy plants is sold to third parties for use as a building material. At UPM, ash is used in a large scale in applications ranging from landscaping to road building.

UPM has developed innovative ways to reduce its own waste and residues and recycles waste in new products.

Other good examples of the company’s efforts in promoting circular economy:

- UPM is the world’s largest user of recovered paper for the production of its graphic papers, consuming 2.8 (3.0) million tonnes of recovered paper in 2016.
- The share of recycled fibre represents one third of all fibre raw materials used in UPM’s paper production.
- UPM’s renewable diesel, UPM BioVerno, is produced from crude tall oil, a residue of pulp production.
- UPM ProFiTixlows the cellulose fibres and plastic polymers that are surplus by-products from self-adhesive label manufacturer and gives them a new life.

UPM’s aim is that the company’s mills will not send any waste to landfill by 2030. This target has already been achieved at most of the paper mills located in Central Europe. In Finland, the UPM has a Zero Solid Waste project which aims to find and use new markets for reusing nutrients in agriculture. These nutrients are retrieved from the sludge generated by the pulp and paper mill’s effluent treatment plants, as well as ash from the incineration process.

In autumn 2016, Raki2, a nutrient recycling programme run by the Ministry of the Environment of Finland, provided the funding for a joint project established by UPM together with the fertiliser and crop nutrition expert Yara. The project focuses on the possibilities for reusing nutrients in agriculture. These nutrients are retrieved from the sludge generated by the pulp and paper mill’s effluent treatment plants. In addition, UPM has set a target to use 100% of ash produced in its thermal power plants to generate electricity.

Read more: www.upmbiofore.com

EFFICIENT RECYCLING OF WASTE STRENGTHENS UPM’S POSITION AS FORERUNNER IN CIRCULAR ECONOMY

- Zero solid waste to landfill is one of UPM’s 2030 responsibility targets. Most of UPM’s mills in Central Europe have already reached this goal.
- UPM’s mills in Finland are involved in a Zero Solid Waste project which aims to find solutions for recycling and create value from ash, sludge, dregs, wood-based waste and landfill waste.
- UPM Jämsä River Mills is one of the forerunners in the project. In 2016, no waste from the mills was sent to landfill. All waste is recycled in its current form or after further treatment. Forms of waste that cannot be used at the mill or by any other party are incinerated for energy.
- Oil, metal, plastic, paper and cardboard waste are collected for recycling and hazardous waste is forwarded for further treatment. Non-recyclable wood, plastic, paper and cardboard waste are sent to be used as raw material for recovered fuel and, for example, to the UPM Rauma power plant for incineration. Ash from power plants and, for example, soil are sent to be used in soil enrichment or in excavation work.
- The efficient recycling of different forms of waste reduces landfill costs and creates revenue.
Value creation

**UPM**

**Capital employed**

EUR 10,657 million

**Net debt**

EUR 1,131 million

**Market cap**

EUR 12,452 million

**Approx. shareholders**

85,000

**Employees**

19,310

**Economical / Governance**

- Number of suppliers: 55,000
- Supplier Code qualified supplier spend 80%
- Ecosystem services over EUR 400 million

**Social**

- Skilled employees
  - New hires: 1,900
- Number of restricted chemical substances in UPM screening: 5,600
- UPM forests available for free recreation use: 715,000 ha

**Environmental**

- Certified wood: 84%
- Percentage of wood origin known: 100%
- Seedlings planted: 50 million
- Water intensive production sites located in water abundant areas: 100%
- CO₂ emissions scope 2 & 3 upstream: 6.9 million t

**Indirect Upstream**

- Wood: 27,800,000 m³
- Market pulp: 1,900,000 t
- Recovered paper: 2,800,000 t
- Commingled domestic waste: 180,000 t
- Minerals: 2,300,000 t
- Plastics, adhesives, resins, films: 200,000 t

**Direct Upstream**

- CO₂ emissions scope 1, 2 and 3: 3.9 million t
- Virgin materials replaced: 3.9 million t
- CO₂ emissions scope 3 downstream: 3.5 million t
- Externality value of scope 1, 2 and 3: EUR 73 million

**Direct Downstream**

- Sales, unconsolidated: EUR 10,821 million
- Comparable EBIT: EUR 1,143 million
- Comparable ROE: 10.9%
- Corporate income taxes and property taxes paid: EUR 181 million
- Payments to providers of loans: EUR 22 million
- Value of ecolabelled products: EUR 6.7 billion

**Indirect Downstream**

- Number of customers: 12,000
- Number of countries where UPM products are sold: 120
- Multiplicative effects of value added: EUR 2.7 billion
- Prosperity for sphere of influence
- Improved employee wellbeing
- Worker value enhanced
- Increasing quality of life through product use and Biofore Share and Care programme

**Stakeholders**

- **Value creation**
  - Employee wages and benefits: EUR 1,246 million
  - Training hours/employee: 13
  - Contractors: 6.2
  - Lost-time accident frequency: 0.7
  - Benefits: EUR 1,246 million
- **EMISSIONS TO AIR**
  - Nitrogen oxides: 9,600 t
  - Sulphur dioxide: 1,400 t
  - Particulates: 840 t
  - Carbon dioxide (fossil) scope 1: 3.7 million t
- **EMISSIONS TO WATER**
  - Process waste water: 210 million m³
  - Biological oxygen demand: 7,580 t
  - Chemical oxygen demand: 69,400 t
  - Adsortible organic halogens: 340 t
- **SOLID WASTE**
  - Landfills: 125,000 dry t
  - Temporary storage: 18,000 dry t
  - Hazardous waste: 6,000 t
- **Impact of the Chain**
  - Prosperity for sphere of influence
  - Improved employee wellbeing
  - Worker value enhanced
  - Increasing quality of life through product use and Biofore Share and Care programme
  - Vitality for sphere of influence

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UPM-Kymmene Corporation (UPM or the company) follows the Finnish Corporate Governance Code (Code) issued by the Securities Market Association. The Code is available on the Securities Market Association’s website at www.cgfinland.fi. UPM complies with all recommendations of the Code.

The primary source for UPM’s governance practices and policies is UPM’s corporate website, and especially the governance section, which can be found under www.upm.com/governance. This section is updated continuously during the year. The below description of the corporate governance focuses on the year 2016 and contains references to the governance section on the corporate website for additional information. UPM’s Corporate Governance Statement 2016 and the Remuneration Statement dated 28 February 2017 and corresponding statements for the previous years are also available in the governance section on the corporate website.

UPM’s governance structure
UPM-Kymmene Corporation is a Finnish limited liability company with headquarters in Helsinki, Finland. The parent company UPM and its subsidiaries form the UPM Group having approximately 19,300 employees in 45 countries. The group’s business operations are divided into six business areas supported by the global functions. UPM shares are listed on the Nasdaq Helsinki exchange.

UPM uses a one-tier governance model, which, in addition to the general meeting of shareholders, comprises the Board of Directors and the President and CEO as presented in the illustration below. In the operative management of the company, the President and CEO is assisted by the Group Executive Team, the Business Area Boards and the Strategy Team.

The general meeting elects the members of the Board of Directors annually, and the Board of Directors appoints the President and CEO, and the members of the Group Executive Team. The members of the Group Executive Team report directly to the President and CEO.

Governance guidelines and compliance programmes
UPM’s decision making, management and operations are guided by UPM values and the UPM Code of Conduct. Legal compliance and responsible and ethical practices are the foundation of all of UPM’s businesses. The UPM Code of Conduct is available in 18 languages on the UPM intranet and on the corporate website.

The UPM Code of Conduct has been revised to respond to the ever-faster-evolving business environment and regulatory framework. The Board of Directors approved the revised Code of Conduct in February 2016 and its implementation started immediately thereafter. By the end of 2016, 97% of active UPM employees had completed the Code of Conduct training.

The UPM Code of Conduct is complemented by more detailed rules and guidelines approved by the Group Executive Team, business areas and global functions. These rules and guidelines cover, among others, such topics as anti-bribery, competition law, confidentiality, contract management, taxation, human resources, environment, information security, safety, and equality. UPM strives to ensure compliance with the UPM Code of Conduct and related rules and guidelines by training employees and by developing the company’s risk management, monitoring and reporting processes. In 2016,
In brief
In 2016, the Annual General Meeting (AGM) of shareholders was held on 7 April in Helsinki. All decisions at the meeting were taken without voting. These decisions are summarised in the following:

Financial statements and dividend
The AGM adopted the company’s financial statements for the period 1 January–31 December 2015, decided to distribute dividends amounting to EUR 0.75 (EUR 0.70) per share, and discharged the President and CEO, and the members of the Board of Directors from liability for the financial year 2015. The dividends, totalling EUR 400 million, were paid on 21 April 2016.

Board composition
The AGM elected ten members to Board of Directors for a term that will end upon closing of the AGM 2017. All incumbent directors, i.e. Berndt Brunow, Henrik Rennroth, Pia-Noora Kauppi, Wendy E. Lane, Josi Pasosen, Ari Puholainen, Veeti-Matti Rinikulainen, Susanne Thoma, Kim Wahl and Björn Wahlroos, were re-elected to the Board. All directors, except President and CEO Josi Pasosen, are non-executive. The directors’ personal details, career histories and other significant positions are presented on pages 82–85 of this report and on the corporate website.

Board remuneration
With regard to Board remuneration, the AGM resolved that the Chairman of the Board be paid an annual fee of EUR 175,000, the Board Deputy Chairman and Chairman of the Audit Committee EUR 120,000, and other members of the Board EUR 95,000. In accordance with the AGM resolution, the annual fees were paid in the company shares and cash so that 40% of the fees were paid in shares and the rest in cash to cover withholding tax. The company paid the costs and transfer tax related to the acquisition of the company shares. No annual fee was paid to the President and CEO for his role as a member of the Board.

The Board members’ annual fees, the number of acquired shares and the number of UPM shares held by members at the end of 2016 are presented in the table below. In addition to the annual fees, the Board members did not receive any other financial benefits for their Board or committee membership. The annual fees have remained the same since 2007. According to the Board charter, Board members are encouraged to own company shares on a long-term basis.

Auditor and auditor remuneration
The AGM re-elected PricewaterhouseCoopers Oy, a firm of Authorised Public Accountants, as the company’s statutory auditor for a one-year term, with Authorised Public Accountant Merja Lindh as the lead audit partner. Ms Lindh has held this position since 8 April 2014. The AGM further resolved that the audit fee would be paid against invoices approved by the Board of Directors’ Audit Committee. The fees paid to the auditor, as approved by the Audit Committee, are shown in the following table.

Board authorisations
The AGM granted four authorisations to the Board of Directors. These authorisations are listed in the table below.

Board authorisations
The AGM adopted the company’s financial statements and dividend resolution, the annual fees were paid in the company shares and cash so that 40% of the fees were paid in shares and the rest in cash to cover withholding tax. The company paid the costs and transfer tax related to the acquisition of the company shares. No annual fee was paid to the President and CEO for his role as a member of the Board.

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In line with its main duties and responsibilities, the Board focused on strategic considerations and closely monitored the implementation of the group’s business area strategies. The Board reviewed and approved updated strategic plans in its strategy session in May. The main elements of the corporate strategy are performance improvement, focused growth projects, business portfolio development and innovation. A comprehensive description of the corporate strategy, its focus areas and implementation is available on pages 10-23 of this report. An essential part of the Board’s annual strategy work is the review and consideration of strategic and operational risks and opportunities. The company’s annual risk management process ends with the reporting of strategic risks and opportunities to the Board. Those risks and opportunities and their impact on operations and strategy are described on pages 22-23 of this report. The risk management process is described in the corporate strategy on page 9 of the Corporate Governance Statement 2016.

All strategy work is based on the principles of increasing shareholder value and prioritizing shareholder views. UPM has increased dividends paid to shareholders year on year, and in 2017, the Board proposes a dividend of EUR 0.75 per share to the company’s ADR (in 2016 EUR 0.75 and in 2015 EUR 0.70). The proposed dividend is in line with the company’s dividend policy and represents 30% of the operating cash flow per share in 2016.

Director independence

The Board of Directors evaluates the independence of its members annually against the independence criteria of the Finnish Corporate Governance Code and additional director independence criteria adopted by the Board’s Nomination and Governance Committee. In addition to this, the Board monitors compliance with the independence criteria on an ongoing basis with the assistance of the Nomination and Governance Committee. The directors will provide the Board and the committee with adequate information to facilitate the assessment of their independence, and notify the Board and the committee of any changes in such information. The directors will also express their own opinion of their independence. The Nomination and Governance Committee evaluates the independence of any new director candidates in a similar manner.

Directors’ independence is assessed in relation to UPM and its group companies and the company’s significant shareholders. A shareholder is significant with a shareholding of at least 10% of the company’s shares or votes attached to them or with the right or obligation to acquire the corresponding number of already-issued shares. The majority of directors shall be independent of the company, and at least two thirds of this majority shall be independent of significant shareholders. In order to be considered independent of the company, a director shall not have any material relationship with the company other than his/her service as a director. In the overall assessment of a director’s independence, any material relationships with a director’s family members or closely related persons or entities are also taken into account in addition to other factors that may compromise the director’s independence or ability to represent all shareholders.

According to the evaluation carried out by the Board, all board members are independent of the company’s significant shareholders. The Board has also assessed that all non-executive directors are independent of the company, including Berndt Brunow and Wendy E. Lane, who have been the company’s non-executive directors for more than ten consecutive years. Based on the Board’s overall evaluation of Mr Brunow’s and Ms Lane’s independence, their independence is not compromised due to their long service history, and no such other factors or circumstances have been identified that could impair their independence. Instead, all directors have shown constant capacity for independent and objective opinions, challenging and decision making. As the President and CEO of the company, Jouni Poutinen is not independent of the company’s management.

Board diversity

The Board’s diversity principles are included in the Board’s Diversity Policy, which was approved by the Board in December. The policy is available on the corporate website.

The Board considers it important that all directors be individuals of high integrity with the ability to exercise sound judgment on a broad range of issues. For the Board to comprise an appropriate mix of relevant knowledge and experience as well as independence of judgment and diversity of perspective, the Board has set as an objective to have certain key qualifications to be sufficiently represented in the Board. A sufficient number of directors is expected to have relevant professional experience and education to provide them with sound appreciation of issues pertinent to publicly listed companies of a size and scope corresponding to that of UPM, including:

- Financial expertise
- Relevant industry knowledge
- International experience
- Risk management experience
- Experience in the planning and implementation of the business strategy
- Governance and leadership experience

With regard to other factors relevant to Board diversity, the objective is that the Board include an appropriate number of directors of different nationalities, ages, and lengths of tenure. Information on UPM Board diversity in respect to these principles is enclosed.

As to the representation of both genders on the Board, the Board has set the following measurable objective: Both genders shall always be represented in the Board, and high priority shall be given to maintaining at least 1/3 representation of the under-represented gender among the non-executive directors in the Board. Where two candidates are equally qualified, priority will be given to the candidate of the under-represented gender. Currently, female directors count for 33.3% of UPM’s non-executive directors and 30% of all directors.

Board evaluation

The Board of Directors and its committees evaluate their performance and working methods annually. The Board has used the same evaluation questionnaire with some additions for several years, to maintain comparability of the results. As a result of the evaluation, new improvement or focus areas to enhance the Board work even further are identified each year. The Nomination and Governance Committee takes the survey results into consideration when preparing the Board’s proposal for the composition of the Board to the Annual General Meeting. In 2016, the evaluation was conducted as a self-assessment and its results were reviewed and discussed at the Board meeting in December. Directors evaluated the Board’s performance of its duties and responsibilities, Board composition and structure, Board culture, effectiveness of Board meetings, individual director contribution, and performance of the Chairman of the Board. The overview of the 2016 self-evaluation survey indicated that the directors are highly satisfied with the Board’s operations and working methods and that the Board is functioning very effectively. In 2017, the Board will continue to focus on UPM’s strategic research topics and more time will be allocated to the company’s talent review processes and management succession planning.
Board committees

The committee held their meetings prior to Board meetings in order to prepare matters for the Board’s decision making. In the Board meeting following the committee meetings, the Committee Chairmen report to the Board on matters discussed and actions taken by the committee. In addition, minutes are kept for the committee meetings and submitted to the Board members for their information.

Audit Committee

Duties and responsibilities of the Audit Committee are related to the oversight of the company’s financial reporting processes and financial reporting, internal control, internal audit and risk management, and to monitoring the audit and compliance procedures of the company.

To perform its duties, the Audit Committee monitored the company’s financial performance and reviewed the key financial figures and quarterly financial reports and recommended the approval of the reports to the board. The committee’s notes reviews also included reviews of potential significant and unusual transactions, and accounting estimates and policies for the period in question. On a quarterly basis, the committee also reviewed reports on assurance and legal matters, including status reports on compliance, internal control, internal audit, litigations, and other legal proceedings. Other quarterly reports presented for the committee’s review included treasury rates and energy risk management report.

The lead audit partner attended all committee meetings and provided the committee with reports on the interim procedures and findings as well as accounts of the audit and non-audit fees incurred during the quarter in question. The committee had quarterly non-executive sessions with the internal and statutory auditors and held sessions with executive management, and among the committee members at the end of each meeting.

With regard to monitoring the effectiveness of the company’s risk management systems, the committee reviewed the company’s risk management process and was informed of the top 20 risks as well as group-level strategic risks identified in this process including macroeconomic, political, environmental, compliance and business-specific risks. In 2016, the committee also reviewed and acknowledged the company’s adoption of ESMA (European Securities and Markets Authority) guidelines on alternative performance measures and considered implications resulting from the Market Abuse Regulation for the directors and senior executives and for corporate procedures and policies. In addition, the committee reviewed and approved amendments to its charter due to the changes in the regulatory framework.

The Audit Committee also prepared the Board’s proposal to the AGM for the election and remuneration of the auditor. In this respect, and together with corporate management, the committee evaluated the qualifications and independence of the auditor, and the auditor’s provision of audit-related and non-audit services. The evaluation included the assessment of the effectiveness of the audit process, quality of audit, performance of the lead auditor and the audit team, and co-operation with the auditor’s international audit network.

As a result of the evaluation, the committee recommended the re-election of PricewaterhouseCoopers Oy as the company’s auditor.

Remuneration Committee

Duties and responsibilities of the Remuneration Committee are related to the remuneration of the President and CEO and senior executives reporting directly to the President and CEO, and to the review of the company’s talent and succession planning procedures for senior management.

To perform its duties, the committee reviews the senior executives’ total remuneration annually. The executive remuneration consists of the base salary and fringe benefits, performance-based short- and long-term incentives, and pension benefits.

The committee’s review of the executive’s salaries and benefits included benchmarking the salaries and benefits to market practices in corresponding positions in peer companies. Based on this review, the committee made recommendations to the Board for the salaries and benefits of the President and CEO and other executive senior executives.

Related to the company’s short- and long-term incentive schemes, the committee reviewed and approved the annually-recurring plans and made recommendations to the Board for the structure, earning criteria, targets and allocation of these plans. The committee also evaluated the achievement of the set targets and the overall performance of the President and CEO and other senior executives, and made recommendations to the Board for the approval of short- and long-term incentive pay-outs. These pay-outs are summarised in the tables on page 81 of this report.

As to the succession plans for senior management, the committee reviewed the company’s talent and succession planning procedures and reported to the Board on such matters. The committee was also informed of the results of the employee engagement survey, which was conducted in August—September.

In addition, the committee reviewed and approved amendments to its charter.

The Remuneration Committee follows remuneration market trends at regular intervals. In 2016, the committee was provided with a comprehensive review of executive remuneration, including comparison of the company’s executive remuneration with that of peers, regulatory framework of remuneration, and remuneration market trends in Europe, the US and APAC. According to that review, the applied remuneration instruments and metrics at UPM widely reflect the common market practices.

Nomination and Governance Committee

Duties and responsibilities of the Nomination and Governance Committee are related to the composition and remuneration of the Board of Directors and to corporate governance. When needed, the committee also identifies individuals qualified to serve as the President and CEO.

Following the committee’s review of the Board composition and assessment of the Board competences, diversity and qualifications in relation to UPM strategy, operations, and governance needs, no major development needs were identified and therefore, no changes in the Board composition were proposed to the AGM in 2016. With regard to Board remuneration, the committee emphasised the importance of aligning the interests of directors with those of shareholders and concluded that shares continued to be the preferred form of remuneration, but did not propose any changes in the level of remuneration.

In 2016, the committee was especially occupied with governance and compliance-related matters and assisted the Board in the revision of the UPM Code of Conduct, amendment of the board and committee charters and establishment of the Board diversity principles. Those principles and the Board Diversity Policy are discussed earlier on page 77 of this report.

Director evaluation and nomination process

The Board Diversity Policy also includes a description of the various phases of the Nomination and Governance Committee’s well-established director nomination and evaluation process. This process is presented in the previous section. When preparing the Board’s proposal to the AGM regarding the composition of the Board, the committee follows this process.

Director independence criteria

The committee also assisted the Board in the annual assessment of director independence. To facilitate this assessment, the committee adopted director independence criteria in February, which complements the Finnish Corporate Governance Code’s independence criteria. The criteria adopted by the committee are available on the corporate website. The incumbent directors’ independence evaluation is discussed earlier on page 76–77 of this report.

The committee also assessed directors’ independence on a continuous basis, and in every meeting reviewed a report on any changes in directors’ professional engagements and positions of trust and assessed the potential effects of such changes on directors’ independence and availability for Board work, and reported to the Board on the outcome of such assessments. According to the committee’s assessment, the change that took place in 2016 had no effect on the directors’ independence or availability.

Furthermore, the committee reviewed the composition, qualification criteria and duties of the Board committees, and made a proposal to the Board of Directors for the appointment of committee members and chairs. In addition, the committee assisted the Board in the annual evaluation of the Board performance and working methods and in the review of the survey results.
Executive management

Jussi Pesonen has been the President and Chief Executive Officer of UPM-Kymmene Corporation since January 2004. He has also been a member of the company’s Board of Directors since March 2007. The President and CEO leads the company’s day-to-day operations in accordance with the instructions and orders given by the Board of Directors. The duties and responsibilities of the President and CEO are presented on the corporate website.

In the operative management of the company, the President and CEO is assisted by the Group Executive Team, the Business Area Boards and the Strategy Team as presented in the illustration on page 73 of this report.

The Group Executive Team consists of the executives heading the business areas and the global functions, and it assists the President and CEO in respect of approving and executing group-level guidelines and procedures. The President and CEO chair the Group Executive Team. Members of the Group Executive Team carry the main responsibility for the business areas and global functions they are heading. Those responsibility areas are presented in the illustration below.

The Business Area Boards comprise, in addition to the President and CEO chairing the boards, the CFO, the EVPs of the global functions, and the EVP of the business area in question. The Business Area Boards assist the President and CEO as regards business-area-level decision making in matters pertaining to each business area’s strategy, budget, business performance, operative investments, commercial strategies, business development plans, business and strategic risks, strategic and organisational changes as well as HR matters.

The Strategy Team is chaired by the President and CEO and its other members are the CFO and the heads of the strategy, technology and legal functions. The team assists the President and CEO in matters pertaining to the preparation of group strategies, strategic projects, capital expenditure, M&A and other strategic development initiatives for approval by the Board of Directors.

Members of the Group Executive Team and their position and shareholdings in the company are presented in the table below.

Responsibility areas of the members of the Group Executive Team

<table>
<thead>
<tr>
<th>RESPONSIBLE FOR</th>
<th>POSITION OF MEMBER OF THE BOARD</th>
<th>SHAREHOLDINGS ON 31 DEC. 2016</th>
<th>SHAREHOLDINGS ON 31 DEC. 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFO 1)</td>
<td>Tapio Korppinen</td>
<td>220,275</td>
<td>304,064</td>
</tr>
<tr>
<td>General Counsel</td>
<td>Juha Mäkelä</td>
<td>13,747</td>
<td>26,686</td>
</tr>
<tr>
<td>Strategy</td>
<td>Kari Ståhlberg</td>
<td>40,870</td>
<td>58,087</td>
</tr>
<tr>
<td>Technology 2)</td>
<td>Jyrki Orava</td>
<td>56,747</td>
<td>85,355</td>
</tr>
<tr>
<td>Human Resources</td>
<td>Riitta Savonlahti</td>
<td>37,500</td>
<td>39,717</td>
</tr>
<tr>
<td>Stakeholder Relations 3)</td>
<td>Pirkko Harrela</td>
<td>74,269</td>
<td>64,877</td>
</tr>
<tr>
<td></td>
<td>Mike Silfverström</td>
<td>17,803</td>
<td>15,420</td>
</tr>
<tr>
<td></td>
<td>Heikki Vappula</td>
<td>11,188</td>
<td>12,845</td>
</tr>
<tr>
<td></td>
<td>Heikki Vappula</td>
<td>7,229</td>
<td>14,794</td>
</tr>
<tr>
<td></td>
<td>Heikki Vappula</td>
<td>17,111</td>
<td>40,067</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHAREHOLDINGS</th>
<th>SHAREHOLDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>495,434</td>
</tr>
</tbody>
</table>

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

Management remuneration

The Board of Directors resolves annually on the remuneration of the President and CEO and other members of the Group Executive Team based on the proposals by the Remuneration Committee. The aim of the company’s management remuneration is to promote the company’s long-term financial success, competitiveness and favourable development of shareholder value.

The management remuneration comprises non-variable and variable components. The variable components are linked to predetermined and measurable performance and results criteria, and maximum levels have been set for the variable components of the remuneration.

The base salary is paid monthly in cash. The base salary includes the fringe benefits, e.g. company car and phone. 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.

Long-term incentives are based on the Performance Share Plan targeted at the President and CEO and other Group Executive Team members, as well as other selected members of management. The Performance Share Plan consists of annually commencing three-year plans, and the incentives are payable in company shares following a three-year earning period. The number of payable shares is linked to the executive’s position and achievement of annually set targets. Long-term incentives are also paid to other key employees of the group based on the Deferred Bonus Plan.

The company’s short- and long-term incentive plans, and the termination payments and pension benefits of the President and CEO and other members of the Group Executive Team, are presented on pages 107-109 of this report and in the Remuneration Statement, which is available on the corporate website.

Remuneration of the President and CEO in 2016

The President and CEO’s annual salary and other financial benefits are shown in the table below.

<table>
<thead>
<tr>
<th>SALARIES AND BENEFITS (EUR 1,000)</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>1,049</td>
<td>1,052</td>
</tr>
<tr>
<td>Short-term incentives</td>
<td>888</td>
<td>856</td>
</tr>
<tr>
<td>Share rewards</td>
<td>3,098</td>
<td>824</td>
</tr>
<tr>
<td>Benefits</td>
<td>221</td>
<td>218</td>
</tr>
<tr>
<td>Total</td>
<td>7,046</td>
<td>6,759</td>
</tr>
<tr>
<td>Income tax withholding 1)</td>
<td>2,592</td>
<td>3,181</td>
</tr>
</tbody>
</table>

1) Income tax withheld from salaries and benefits and remitted to tax authorities by UPM.

Read more: www.upm.com/remuneration

Remuneration of the Group Executive Team in 2016

The annual salaries and other financial benefits of the members of the Group Executive Team (excluding the President and CEO) are shown in the table below.
Board of Directors

Björn Wahlroos
Chairman
Chairman and member since 2008
Chairman of the Nomination and Governance Committee
Independent of the company and significant shareholders
Born 1952, Finnish citizen
Ph.D. (Econ.)
Member of the Executive Committee and Executive Vice-President of the Union Bank of Finland 1985–1992.
Chairman of the Board of Sampo plc, Nordax Bank AB (publ) and Hanken School of Economics.

Berndt Brunow
Deputy Chairman
Member since 2002
Deputy Chairman since 2005
Member of the Nomination and Governance Committee
Independent of the company and significant shareholders
Born 1950, Finnish citizen
Independent of the company
Member of the Nomination and Governance Committee
Member since 2005
Chairman of the Board of Livinsäilö Corporation and Oy Karl Fazer Ab. Board member of Hartwall Capital Oy Ab.
Chairman of the Board of Mutual Pension Insurance Company Varma until 31 December 2016.

Piia-Noora Kauppi
Member since 2013
Chairman of the Audit Committee
Independent of the company and significant shareholders
Born 1975, Finnish citizen
LL.M.
Managing Director of the Federation of Finnish Financial Services since 2009.
Board member of Safira Oy and the Finnish Financial Ombudsman Bureau. Member of the Supervisory Board of Helsinki University Central Hospital and HSK Foundation. Member of the Executive Committee of European Banking Federation.

Wendy E. Lane
Member since 2015
Member of the Remuneration Committee
Independent of the company and significant shareholders
Born 1956, Finnish citizen L.L.M.
Chairman of the Board of Lane Holdings, Inc. since 1992.
Board member of Willis Towers Watson PLC (former Willis Group Holdings PLC), MCI Inc. and the Shubhank Group Holding Company Limited.

Jussi Pesonen
Member since 2014
Member of the Nomination and Governance Committee
Independent of the company and significant shareholders
Born 1957, Finnish citizen
Independent of significant shareholders, non-independent
Board member of Schaffner Holding AG and Beckers Group.

Suzanne Thoma
Member since 2012
Member of the Audit Committee
Independent of the company and significant shareholders
Born 1966, Norwegian citizen
MBA (Harvard)
BA (Business Admin.)
Chairman of the Board of UPM-Kymmene Corporation since 2004.
Chairman of the Board of the Finnish Forest Industries Federation (FTIF). Chairman of the Board of the Finnish Chamber of Commerce and ICC Finland (as of 1 January 2017). Board member of the Confederation of European Paper Industries (CEPI) and East Office of Finnish Industries Oy.

Veli-Matti Reinikkola
Member since 2015
Member of the Remuneration Committee
Independent of the company and significant shareholders
Born 1957, Finnish citizen
eMBA
Board member of Fortum Corporation.

Ari Puheloinen
Member since 2013
Member of the Audit Committee
Independent of the company and significant shareholders
Born 1975, Finnish citizen
International B.Com.
Board member of Schaffner Holding AG and Beckers Group.

Kim Wahl
Member since 2007
Member of the Remuneration Committee
Independent of the company and significant shareholders
Born 1964, Finnish citizen
M.Sc. (Eng.)
Chairman of the Board of UPM-Kymmene Corporation since 2004.
Chairman of the Board of the Finnish Forest Industries Federation (FTIF). Chairman of the Board of the Finland Chamber of Commerce and ICC Finland (as of 1 January 2017). Board member of the Confederation of European Paper Industries (CEPI) and East Office of Finnish Industries Oy.
Group Executive Team

President and CEO
M.Sc. (Eng.)
Born 1960, Finnish citizen
Member of the Group Executive Team since 2001.
Employed by UPM-Kymmene Corporation since 1997.

CSO of the Paper Division and Deputy to the President and CEO 2001–2004. President and CEO since 2004.

Chairman of the Board of the Finnish Forest Industries Federation (FTIF). Chairman of the Board of the Finland Chamber of Commerce and ECC Finland (as of 1 January 2017). Board member of the Confederation of European Paper Industries (CEPI) and East Office of Finnish Industry.

Jussi Pesonen

Chief Financial Officer, and Executive Vice President, UPM Energy
M.Sc. (Tech.), MBA
Born 1963, Finnish citizen
Member of the Group Executive Team since 2004.
Employed by UPM-Kymmene Corporation since 2005.


Chairman of the Board of Polyply Oy. Vice Chairman of the Board of Kemijoki Oy. Board member of TeliaSonera Oy. Supervisory Board member of Verner Mutual Pension Insurance Company.

Tapio Korpeinen

Executive Vice President, UPM Specialty Papers
Ph.D. (Eng.)
Born 1961, German citizen
Member of the Group Executive Team since 2013.
Employed by UPM-Kymmene Corporation since 1998.


Supervisory Board member of Johani Boute Bauarmeiung GmbH & Co. KG.

Bernd Eikens

Executive Vice President, Stakeholder Relations
M.A.
Born 1960, Finnish citizen
Member of the Group Executive Team since 2004.
Employed by UPM-Kymmene Corporation since 1985.


Member of S-Group’s CSR Advisory Group. Supervisory Board member of WWF Finland. Board member of Scandinavian Finns.

Pirkko Harrela

Executive Vice President, UPM Raflatac
M.Sc. (Eng.)
Born 1972, Finnish citizen
Member of the Group Executive Team since 2014.
Employed by UPM-Kymmene Corporation since 2014.


Member of S-Group’s CSR Advisory Group. Supervisory Board member of WWF Finland. Board member of Scandinavian Finns.

Anti Jääskeläinen

General Counsel
LL.M.
Born 1962, Finnish citizen
Member of the Group Executive Team since 2004.
Employed by UPM-Kymmene Corporation since 2005.


Supervisory Board member of Kemijoki Oy.

Juha Mäkelä

Executive Vice President, Technology
M.Sc. (Eng.)
Born 1954, Finnish citizen
Member of the Group Executive Team since 2002.
Employed by UPM-Kymmene Corporation since 1994.


Chairman of the Board of CLIC Innovation Oy. Member of the Finnish Research and Innovation Council. Vice Chairman of ActiChem Finland (The American Chamber of Commerce in Finland).

Jyrki Ovaska

Executive Vice President, Human Resources
M.Sc. (Econ.)
Born 1964, Finnish citizen
Member of the Group Executive Team since 2004.
Employed by UPM-Kymmene Corporation since 2001.


Supervisory Board member of Säännöt Mutual Pension Insurance Company. Member of Labour Markets Committee of the Finnish Forest Industries Federation (FTIF).

Kari Säälahti

Executive Vice President, Paper Business
Dipl. Ing. (PID)
Born 1965, German citizen
Member of the Group Executive Team since 2013.
Employed by UPM since 2001


Board member of EURO-GRAFI and the European Association of Graphic Paper Producers. Board member of the German Pulp and Paper Association VDF.

Winfried Schaur

Executive Vice President, UPM Plywood
M.Sc. (Eng.)
Born 1971, Finnish citizen
Member of the Group Executive Team since 2013.
Employed by UPM-Kymmene Corporation since 1995.


Board member of Federation of the Finnish Woodworking Industries.

Mika Sillanpää

Executive Vice President, Strategy
M.Sc. (Eng.)
Born 1967, Finnish citizen
Member of the Group Executive Team since 2013.
Employed by UPM-Kymmene Corporation since 1995.


Board member of Federation of the Finnish Woodworking Industries.

Kari Säälahti

Executive Vice President, Investments
M.Sc. (Eng.)
Born 1963, Finnish citizen
Member of the Group Executive Team since 2010.
Employed by UPM-Kymmene Corporation since 2006.


Board member of the Finnish Forest Industries Federation (FTIF).

Heikki Vappula
GRI content index  
— short version

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<tr>
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<th>INDICATORS</th>
<th>LOCATION</th>
<th>ASSURANCE</th>
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<td>AR</td>
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<td>Organizational Profile</td>
<td>G4 – 3 to 16</td>
<td>AR, GRI index</td>
<td>G4 – 10 to 11</td>
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<td>Identified Material Aspects and Boundaries</td>
<td>G4 – 17 to 23</td>
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<td>G4 – 24 to 30</td>
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<td></td>
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<td>G4 – 34 to 41, 44-47, 49</td>
<td>AR, GRI index</td>
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<tr>
<td>Ethics and Integrity</td>
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<td>AR</td>
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Specific standard disclosures

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<th>GRI CONTENT</th>
<th>LOCATION</th>
<th>OMISSION</th>
<th>ASSURANCE</th>
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</thead>
<tbody>
<tr>
<td>G4 – DMA</td>
<td>Disclosures on management approach (DMA)</td>
<td>GRI index</td>
<td>x</td>
<td></td>
</tr>
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</table>

Category: economic

| E4 – EC1 | Direct economic risks generated and distributed | AR 55 | x | |
| E4 – EC2 | Financial implications and other risks and opportunities due to climate change | AR 20-23, 66 | x | x |
| E4 – EC3 | Coverage of the organization’s defined benefit plan obligations | AR 119, 122 | |
| E4 – EC4 | Financial assistance received from government | AR 38, 116 | |

Category: environment

| E4 – EC6 | Proportion of senior management hired from the local community | AR 42 | |
| E4 – RO8 | Significant indirect economic impacts | AR 64 | x |
| E4 – EC9 | Proportion of spending on locally-based suppliers | AR 61 | x |

Category: materials

| G4 – EN1 | Materials used by weight or volume | AR 70, web | x |
| G4 – EN2 | Percentage of materials used that are recycled input materials | AR 61, web | x |
| E4 – EN4 | Energy consumption within the organization | AR 60, 67, 70-71, web | |
| E4 – EN5 | Energy intensity | AR 169 | |
| E4 – EN6 | Reduction of energy consumption | AR 66 | |

Category: water

| E4 – EN8 | Total water withdrawn by source | AR 70 | x |
| E4 – EN9 | Water sources significantly affected by withdrawal of water | AR 65, web | x |

Category: biodiversity

| E4 – EN11 | Location and size of land holdings in biodiversity-rich habitats | AR 58, web | x |
| E4 – EN12 | Significant impacts in protected or other biodiversity-rich areas | AR 58, web | x |
| E4 – EN13 | Habitats protected or managed | AR 58, web | x |
| E4 – EN14 | Species with extinction risks in areas affected by operations | AR 69 | x |

Category: emissions

| E4 – EN15 | Direct greenhouse gas emissions (Scope 1) | AR 71, 149, web | |
| E4 – EN16 | Indirect greenhouse gas emissions (Scope 2) | AR 149, web | |
| E4 – EN17 | Other indirect greenhouse gas emissions (Scope 3) | AR 149, web | |
| E4 – EN18 | Greenhouse gas emissions intensity | AR 149 | |
| E4 – EN19 | Reduction of greenhouse gas emissions | AR 66 | |
| G4 – EN20 | NGVs, LPG, and other significant emissions | AR 71 | |

Category: effluents and waste

| G4 – EN22 | Total water discharge by quality and destination | AR 64, 71 | x |
| G4 – EN23 | Total amount of waste by type and disposal method | AR 71, web | |
| G4 – EN24 | Total number and volume of significant spills | AR 63 | |
| G4 – EN26 | Identity, size, protection area, and biodiversity value of water bodies and related habitats | GRI index | x |

Category: products and services

| G4 – EN27 | Weighting environmental impacts of products and services | AR 19, 25, 27, 31, 37, 39, 64-69 | x |

Category: compliance

| G4 – EN28 | Significant fines and non-monetary sanctions for non-compliance | AR 63 | x |
| G4 – EN30 | Significant environmental impacts of transporting | AR 61, 169, web | x |
| G4 – EN31 | Total environmental protection expenditures and investments | AR 63, web | |
| G4 – EN32 | New suppliers screened against environmental criteria | AR 39 | |
| G4 – EN33 | Significant negative impacts on the supply chain | GRI index | x |
| G4 – EN34 | Unremediated environmental impacts | AR 49 | x |

GRI follows the Global Reporting Initiative’s (GRI) sustainability reporting guidelines (version G4) in its corporate responsibility reporting. This reporting follows the core option of the GRI G4 guidelines. This shortened version of the GRI index shows where the specific G4 indicators are addressed in the annual report and UPM’s internet pages. More information on the general standard disclosures as well as on omissions, further explanation and disclosures on the omission/approach can be found in the actual GRI content index which is available at www.upm.com/responsibility.

GRI index x x


In brief Strategy Businesses Stakeholders Accounts
Independent Practitioner’s Assurance Report

To the Management of UPM-Kymmene Corporation

We have been engaged by the Management of UPM-Kymmene Corporation (Business identity code 0149000) hereinafter also “the Company”) to perform a limited assurance engagement on selected corporate responsibility information for the reporting period 1 January 2016 to 31 December 2016, disclosed in UPM-Kymmene Corporation’s Annual Report 2016 on its website in section “Responsibility” (hereinafter “the CR Reporting”). The assured information is indicated in the Company’s GRI Content Index 2016 on the Company’s website.

Furthermore, the assurance engagement has covered UPM-Kymmene Corporation’s adherence to the AA1000 Accountability Principles with moderate (limited) level of assurance.

Management’s responsibility

The Management of UPM-Kymmene Corporation is responsible for preparing the CR Reporting in accordance with the Reporting criteria as set out in the Company’s reporting instructions and the G4 Sustainability Reporting Guidelines of the Global Reporting Initiative. The Management of UPM-Kymmene Corporation is also responsible for such internal control as the management determines is necessary to enable the preparation of CR Reporting that is free from material misstatement, whether due to fraud or error.

The Management of UPM-Kymmene Corporation is also responsible for the Company’s adherence to the AA1000 Accountability Principles and that the assurance engagement involves performing procedures to obtain evidence about the amounts and other disclosures in the CR Reporting and about the Company’s adherence to the AA1000 Accountability Principles. The procedures selected depend on the practitioner’s 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 senior management of the Company.
• Interviewing employees from various organisational levels of the Company with regards to materiality, stakeholder expectations, meeting of those expectations, as well as stakeholder engagement.
• Assessing stakeholder materiality and responsiveness based on the Company’s documentation and internal communication.
• Assessing the Company’s defined material corporate responsibility topics as well as assessing the CR Reporting based on those topics.
• Visiting the Company’s Head Office and conducting web conferences with two sites in Finland and one site in the United States.
• Interviewing employees responsible for collecting and reporting the information presented in the CR Reporting at the group level as well as at the site level.
• Assessing how group employees apply the reporting instructions and procedures of the Company.
• Testing the accuracy and completeness of the information from original documents and systems on a sample basis.
• Testing the consolidation of information and performing recalculations on a sample basis.

Limited assurance conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that UPM-Kymmene Corporation does not adhere, in all material respects, to the AA1000 Accountability Principles.

Furthermore nothing has come to our attention that causes us to believe that UPM-Kymmene Corporation’s CR Reporting for the reporting period ended 31 December 2016 is not properly prepared, in all material respects, in accordance with the Reporting criteria, or that the CR Reporting is not reliable, in all material respects, based on the Reporting criteria.

When reading our assurance report, the inherent limitations to the assurance and completeness of material assurance 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 for, anyone else, except UPM-Kymmene Corporation for our work, for this report, or for the conclusions that we have reached.

Observations and recommendations

Based on our work, we have performed and the evidence we have obtained, we provide the following observations and recommendations related to UPM-Kymmene Corporation’s adherence to the AA1000 Accountability Principles. These observations and recommendations do not affect the conclusions presented earlier.

Regarding Inclusivity: UPM-Kymmene Corporation has processes in place for stakeholder inclusivity and engagement. Stakeholder Relations coordinates stakeholder engagement at the group level, while businesses are responsible for local activity. We recommend that the Company continues to enhance internal collaboration and knowledge sharing within the group in the stakeholder engagement.

Regarding Materiality: UPM-Kymmene Corporation has a systematic process in place to evaluate and determine the materiality of corporate responsibility topics. Materiality analysis is updated annually. We recommend that the Company considers using stakeholder panels to also obtain feedback on the materiality analysis as well as on the responsibility focus areas, performance and reporting.

Regarding Responsiveness: UPM-Kymmene Corporation has processes in place for responding to stakeholder needs and concerns. We recommend that the Company continues to enhance the use of social media in its stakeholder engagement.

Practitioner’s independence, qualifications and independence control

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our multi-disciplinary team of corporate responsibility and assurance specialists possesses the requisite skills and experience within financial and non-financial assurance, corporate responsibility strategy and management, social and environmental issues, as well as the relevant industry knowledge, to undertake this assurance engagement.

PricewaterhouseCoopers Oy applies International Standard on Quality Control to and accordingly maintains a comprehensive system of quality control including documented poli-
cy and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Helsinki 17 February 2017

Maj-Lis Steiner
Authorised Public Accountant (KHT)

Merry Lindf
Authorised Public Accountant (KHT)
In brief

Strategy

Businesses

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Report of the Board of Directors

Market environment in 2016

Global economic growth in 2016 slowed slightly compared with the previous year. Uncertainty about future economic prospects in Europe increased mainly due to the United Kingdom vote in favour of leaving the European Union, while growth momentum in the US slowed somewhat due to weaker growth in the fourth quarter.

Growth in emerging markets and developing economies strengthened slightly. However, the development of these economies was uneven and remained weaker than in the past. Low prices for oil and other commodities affected economic growth in several raw material-dependent countries. Energy and other commodity prices increased during the course of the year from the low levels in the beginning of the year.

In China, growth continued to slow although not as much as feared at the start of the year following policy to support growth. Growth in China remained higher than the average for emerging markets and developing economies. However, in emerging Asia and India solid growth continued, while the economies of Brazil and Russia remained weak.

As a result of continued loose monetary policy in the euro area, interest rate hikes in the US and prospects of fiscal stimulus following the US presidential election, the euro weakened against the US dollar in the second half of the year and levelled off in the second half of the year. A moderate price slide in softwood pulp in the first half of the year was reversed in the second half of the year. In 2016, the average market price decreased compared to the previous year.

For UPM’s businesses and products, the market demand was mostly favourable in 2016. Chemical pulp demand increased strongly. As a result of increased supply, hardwood pulp prices decreased during the first half of the year and levelled off in the second half of the year. A moderate price slide in softwood pulp in the first half of the year was reversed in the second half of the year.

Growth in China remained higher than the average for emerging markets and developing economies, however. In emerging Asia and India solid growth continued, while the economies of Brazil and Russia remained weak.

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and UPM Paper ENA (Europe & North America) in Finland were transferred to the new companies on 1 July 2016. UPM Raflatac and UPM Plywood already operated in their own subsidiaries in Finland. UPM Biorefining remains part of UPM-Kymmene Corporation.

On 4 July UPM announced it will invest EUR 98 million in UPM Kymi pulp mill in Finland to further strengthen its position as a supplier of bleached chemical pulp for growing consumption and industrial end-use segments like tissue and specialty paper, as well as packaging papers and board. Kymi’s annual pulp production capacity is expected to increase to 870,000 tonnes of bleached northern softwood and birch pulp by the end of 2017. The investment will further improve UPM Kymi’s cost-competitiveness and environmental performance.

On 11 October, UPM announced it will build a new coating line at its label stock factory in Wrocław, Poland. By introducing a new coating line together with related reel handling and slitting capacity additions, UPM Raflatac aims to meet the increasing demand for self-adhesive label stock in Europe. Production of the new line is planned to commence in the first half of 2018. The investment will total approximately EUR 35 million.

On 3 November, UPM announced plans to permanently reduce its graphic paper capacity in Europe by 305,000 tonnes. The capacity reductions are planned to include 3C paper machine 3 at UPM Steyermühl, Austria and 3C paper machine 2 at UPM Augsburg, Germany. The number of persons affected by the plan is estimated to be 150 for UPM Augsburg and 125 for UPM Steyermühl. The plan would result in annual cost savings of approximately EUR 30 million. UPM booked charges of EUR 64 million as an item affecting comparability in Q4 2016.

2016 compared with 2015

Comparable EBIT for UPM Biorefining decreased. Higher pulp delivery volumes and lower variable costs partly offset the negative impact of lower pulp sales prices. The average price for UPM’s pulp deliveries decreased by 10%. Production efficiency improved significantly at the Lappeenranta biorefinery and profitability was supported by the strong biofuel market. In sawmill operations profitability improved thanks to increased delivery volumes and improved production efficiency.

Market environment

Chemical pulp demand continued to be strong. Demand growth was primarily recorded in Asia, particularly in China. In Europe in 2016, the average market price in euros of NBSK was 6% lower and the market price of BHP was 11% lower than in 2015. In China, the average market price in USD of NSBK was 8% lower and BHP was 19% lower than in 2015. Demand for advanced renewable diesel continued to be strong. Sawn timber demand was good, while market prices remained stable at low levels.

Deployment of the additional amplitude controller to improve the electrical output of the biorefinery (Lappeenranta) and UPM Energy's pulp plants (e.g. UPM Kymi, Finland) increased their production at lower cost compared to traditional methods.

2016 compared with 2015

Comparable EBIT for UPM Energy decreased mainly due to the lower average electricity sales price, lower hydropower generation volumes and higher costs in partly owned energy companies. UPM’s average electricity sales price decreased by 12% to EUR 33.9/MWh (38.7/MWh).

Market environment

The Nordic hydrological balance deteriorated during the first nine months of 2016 from a large surplus at the beginning of the year to a deficit by October. During the fourth quarter the balance improved and was close to the long-term average level at year end.

Electricity prices increased during the course of the year, mainly due to output cuts. The CO₂ emission allowance price of EUR 51/tonne at the end of the period was lower than at the end of the comparison period (EUR 80/tonne).

In the first half of 2016, electricity prices were impacted by good hydrological balance and low coal prices. The electricity market price increased during the course of the year, driven by the deteriorating hydrological balance and increasing coal prices. For the full year the average Finnish spot price was EUR 32.5/MWh in 2016, 9% higher than in 2015 (EUR 29.7/MWh).
In brief

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UPM Raflatac

UPM Raflatac manufactures self-adhesive label materials for product and information labelling for label printers and brand owners in the food, personal care, pharmaceutical and retail segments, for example. UPM Raflatac is the second-largest producer of self-adhesive label materials worldwide.

UPM Specialty Papers

UPM Specialty Papers serves growing global markets with label papers and release liners, fine papers in Asia and flexible packaging in Europe. The operations consist of the UPM Changshu and UPM Tervasaari mills in China and Finland, as well as label and packaging papers production lines at the UPM Jämsänkoski mill in Finland. The main customers are retailers, printers, publishers, distributors and paper converters.

UPM Paper ENA

UPM Paper ENA offers graphic papers for advertising, magazines, newspapers and home and office. The business has extensive low-cost operations consisting of 15 efficient paper mills in Europe and the United States, a global sales network and an efficient logistic system. The main customers are publishers, cataloguers, retailers, printers and merchants.

2016 compared with 2015

Comparable EBIT for UPM Raflatac increased, mainly due to the improved sales margins and higher delivery volumes. Improved operational efficiency and a more favourable product mix enabled improved sales margins and higher delivery volumes. Improved operational efficiency and a more favourable product mix enabled.

Market environment

Global demand for self-adhesive label materials grew in 2016. In Europe, demand growth continued, albeit at a lower level than in the previous year. Growth remained stable in North America. In Asia, growth picked up, while in Latin America, demand growth started to recover from a lower level.

2016 compared with 2015

Comparable EBIT for UPM Specialty Papers increased due to lower variable costs and higher delivery volumes, more than offsetting a less favourable sales mix and lower paper prices. Net change in currencies, including hedges, had a positive impact.

Market environment

Fine paper demand remained stable in the Asia-Pacific region. The development varied by product and market segment. Growth continued in office paper demand. In 2016, the average price was lower compared with 2015.

Label and release paper demand increased globally. Price development varied between the regions and was on average stable.

Comparables and reconciliation

2016 compared with 2015

Comparable EBIT for UPM Specialty Papers increased due to lower variable costs and higher delivery volumes, more than offsetting a less favourable sales mix and lower paper prices. Net change in currencies, including hedges, had a positive impact. The average price for UPM’s paper deliveries in euros decreased by 2% due to an unfavourable development outside the euro area. In the euro area, the average price of UPM’s paper deliveries increased by 1%.

Comparable ROCE, %

1 In 2015, items affecting comparability relate to restructurings.

11 In 2016, items affecting comparability include restructurings, EUR 2 million related to increase of pension obligation due to Finnish employee pension reform.

12 In 2016, items affecting comparability include restructurings, EUR 2 million relating to sale of other assets. In 2015, items affecting comparability comprise of a gain of EUR 47 million relating to sale of Schwedt mill and EUR 2 million relating to sale of other assets. In 2015, items affecting comparability include net income of EUR 10 million related to restructuring and a charge of EUR 2 million related to increase of pension obligation due to Finnish employee pension reform.

2016 compared with 2015

Comparable EBIT increased significantly for UPM Paper ENA, mainly due to lower variable and fixed costs, more than offsetting the negative impacts of lower sales prices and delivery volumes. The decrease in variable and fixed costs was partly due to ongoing profit improvement measures. In the comparison period, realised currency hedges had a negative impact.

The average price for UPM’s paper deliveries in euros decreased by 2% due to an unfavourable development outside the euro area. In the euro area, the average price of UPM’s paper deliveries increased by 1%.

Market environment

In 2016, demand for graphic papers in Europe was 4% lower than the previous year. Newsprint demand decreased by 3%, magazine paper by 4% and fine paper by 6% compared with the previous year.

In 2016, publication paper prices were on average 4% lower than in 2015.

In 2016, fine paper prices were on average 2% lower than in 2015.

In 2016, demand for magazine papers in North America decreased by 5% compared with the previous year. The average US dollar price for magazine papers was 5% lower than in 2015.
UPM Plywood

UPM Plywood offers plywood and veneer products, mainly for construction, vehicle flooring and LNG shipbuilding, as well as other manufacturing industries. Production facilities are located in Finland, Estonia and Russia.

Other operations
Other operations include wood sourcing and forestry, UPM Biochemicals business units and group services.

Comparable EBIT
EURm % of sales

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales, EURm</td>
<td>444</td>
<td>439</td>
</tr>
<tr>
<td>Depreciation, amortisation and impairment charges, EURm</td>
<td>18.1</td>
<td>17.8</td>
</tr>
<tr>
<td>Operating profit, EURm</td>
<td>50.35</td>
<td>58.5</td>
</tr>
<tr>
<td>% of sales</td>
<td>13.2</td>
<td>12.1</td>
</tr>
<tr>
<td>Items affecting comparability in operating profit, EURm</td>
<td>-13</td>
<td>-13</td>
</tr>
<tr>
<td>Comparable EBIT, EURm</td>
<td>58</td>
<td>55</td>
</tr>
<tr>
<td>% of sales</td>
<td>13.2</td>
<td>12.5</td>
</tr>
<tr>
<td>Capital employed (average), EURm</td>
<td>259</td>
<td>263</td>
</tr>
<tr>
<td>Comparable ROCE, %</td>
<td>22.6</td>
<td>20.9</td>
</tr>
<tr>
<td>Plywood deliveries, 1,000 m³</td>
<td>764</td>
<td>760</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales, EURm</td>
<td>285</td>
<td>456</td>
</tr>
<tr>
<td>Depreciation, amortisation and impairment charges, EURm</td>
<td>-13</td>
<td>-13</td>
</tr>
<tr>
<td>Operating profit, EURm</td>
<td>1</td>
<td>268</td>
</tr>
<tr>
<td>Items affecting comparability in operating profit, EURm</td>
<td>1</td>
<td>38</td>
</tr>
<tr>
<td>Comparable EBIT, EURm</td>
<td>1</td>
<td>38</td>
</tr>
<tr>
<td>Comparable ROCE, %</td>
<td>0.9</td>
<td>2.6</td>
</tr>
</tbody>
</table>

In 2015, items affecting comparability of EUR 2 million relate to subsidiary restructuring charges.

2016 compared with 2015
Comparable EBIT for UPM Plywood increased due to higher delivery related costs and lower costs, partly offset by a favorable currency impact, more than offsetting the negative impact of slightly lower sales prices.

Market environment
Market environment improved gradually during 2016 in Europe, and demand is estimated to have increased from last year. Impact of low-priced imports in the beginning of the year eased in Q2, and since then, demand has picked up particularly in birch plywood-related industrial applications.

Activity in the building and construction industry improved somewhat. Market prices decreased at the beginning of the year, but experienced slight increases during the second half of the year.

2016 compared with 2015
Comparable EBIT for Other operations decreased. The increase in the fair value of biological assets net of wood harvested, excluding items affecting comparability, was EUR 59 million (66 million). The increase in the fair value of biological assets (growing trees), excluding items affecting comparability, was EUR 113 million (112 million), including gains on forest sales. The cost of wood harvested from UPM forests was EUR 54 million (46 million).

In 2016, UPM sold a total of 63,113 (63,669) hectares of forests.

 Shares
UPM has one class of shares. Each share entitles the holder to one vote at the Annual General Meeting of UPM.

On December 31, 2016 the total number of UPM shares was 533,735,699. Through the issuance authorization described below, the number of shares may increase to a maximum of 558,735,699. On December 31, 2016, UPM held 230,737 of its own shares, representing approximately 0.04% of the total number of UPM shares and voting rights. There are no specific terms related to the shares except for the redemption clause described below.

In 2016, UPM shares worth EUR 6,749 million (EUR 7,469 million) in total were traded on the NASDAQ Helsinki. This is estimated to represent about two thirds of all trading volumes in UPM shares.

The highest listing was EUR 23.41 in December and the lowest EUR 13.71 in February.

The company’s ADSs are traded on the US over-the-counter (OTC) market under a Level 1-sponsored American Depositary Receipt programme.

Information on the major shareholders, breakdown by shareholders category and size as well as share related indicators are available in section Information on shares in UPM Annual report 2016.

Redemption clause
Under § 12 of UPM-Kymmene Corporation’s Articles of Association, a shareholder who, alone or jointly with another shareholder owns 33 1/3 percent or 50 percent or more of all the company’s shares or their associated voting rights shall, at the request of other shareholders, be liable to redeem their shares and any securities that, under the Companies Act, carry the right to such shares, in the manner prescribed in § 12.

A resolution of a general meeting of shareholders to amend or delete this redemption clause must be carried by shareholders representing not less than three-quarters of the votes cast and shares represented at the meeting.

Authorisations held by the Board of Directors
The Annual General Meeting held on 7 April 2016 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 Board of Directors was authorised to decide on the issuance of new shares, transfer of treasury shares and issuance of special rights entitling to shares in proportion to the shareholders’ existing holdings in the Company, or in a directed share issue, deviating from the shareholders’ pre-emptive subscription rights. The Board of Directors may also decide on a share issue without payment to the Company itself. The aggregate maximum number of new shares that may be issued and treasury shares that may be transferred is 25,000,000, including also the number of shares that can be received on the basis of the special rights. The authorisation will be valid for three years from the date of the AGM resolution.

At the meeting of the Board of Directors held following the AGM, Björn Wahlroos was re-elected as Chairman, and Berndt Brunow as Deputy Chairman of the Board of Directors. In addition, the Board of Directors elected the chairman and other members to the Board committees from among its members. No changes took place in the committee compositions.

Shares held by the Board of Directors
At the end of the year, the members of the Board of Directors including the President and CEO owned a total of 987,427 (882,101) UPM-Kymmene Corporation shares. These represent 0.19% (0.16%) of the shares and 0.19% (0.16%) of the voting rights. At the end of the year, President and CEO Jussi Pesonen owned 304,064 shares.

At the end of the year, the other members of the Group Executive Team owned a total of 360,170 shares.

Litigation
• Refer Note 3.2 Key management personnel, of consolidated financial statements 2016 for further information on remuneration and shares held by the members of the Board, the President and CEO and the members of Group Executive Team.

• Refer Note 9.2 Litigation, of consolidated financial statements 2016 for information on legal proceedings.
## Risks

### Risk management

UPM regards risk management as a systematic and proactive means to analyse and manage the opportunities and threats related to its business operations. This includes also risks avoided by careful planning and evaluation of future projects and business environments.

### Strategic risks

**TYPE OF RISK** | **RISK DESCRIPTION**
---|---
Competition, markets and customers | The energy policy, timber, paper, label, plywood and biofuels markets are cyclical and highly competitive. In all of these markets the price level is determined as a combination of demand and supply, and shocks in either demand (increase in end-use demand, change in customer preferences etc.) or supply (e.g. new production capacity entering the market or old capacity being closed) may impact both the volume and the price level for UPM. Also competitor behaviour influences the market price development.

Regulation | UPM’s performance is also impacted by the performance of substitute or alternative products. Most notably, the demand in graphical papers in the mature markets is forecasted to continue to decline, due to the shift away from print media to electronic media. Similarly, several raw materials used by UPM have competing uses or substitutes.

M&A and changes in the business portfolio | UPM’s strategic direction is to increase the share of growing businesses with positive long-term fundamentals. This may require acquisitions of new businesses or divestments of existing businesses. Participation in M&A involves risks such as successful implementation of a divestment and the ability to integrate and manage acquired operations and personnel successfully, as well as to achieve the economic targets set for an acquisition/divestment.

Political and economical risks | UPM has major manufacturing locations in Finland, Germany, the UK, France and the US. In these countries, the slow development of the individual economies and/or of Europe as a whole influences adversely UPM’s performance. Furthermore, policies (on European and/or national level) that hamper economic growth or lower the competitiveness of UPM (for example through adverse regulation or increases in direct or indirect taxation) may have a direct impact on UPM’s performance. In addition, regulation may structurally restrict or exacerbate UPM’s ability to compete for raw materials.

### Operational risks

| TYPE OF RISK | RISK DESCRIPTION |
---|---
Earnings uncertainty | The main short-term uncertainties in UPM’s earnings relate to sales prices and delivery volumes of the group’s products, as well as to changes in the main input cost items and exchange rates. Most of these items are dependent on general economic developments.

### Financial risks

- Credit risk
- Liquidity and refinancing risk
- Interest rate risk
- Foreign exchange risk
- Electricity price risk

| TYPE OF RISK | CONSOLIDATED FINANCIAL STATEMENT NOTE |
---|---
Credit risk | 6.6 Working capital |
Liquidity and refinancing risk | 5.1 Capital management |
Interest rate risk | 6.1 Financial risk management |
Foreign exchange risk | 6.1 Financial risk management |
Electricity price risk | 6.1 Financial risk management |

### Hazard risks

UPM operates a significant number of manufacturing facilities globally, mostly UPM-owned, and is also the largest private owner of forestland in Finland. UPM is exposed to risks in areas such as occupational health and safety, environment, fire, natural events and site security. These risks are managed through established management procedures and loss prevention programmes. UPM’s insurance programme also provides coverage for insurable hazard risks, subject to terms and conditions.

### Accounts

| TYPE OF RISK | RISK DESCRIPTION |
---|---
Availability and price of major inputs | In 2016, third-party suppliers accounted for approximately 83% of UPM’s wood requirements. Other production inputs, such as chemicals, fillers and recovered paper, are obtained from third-party suppliers. Disruptions in the supply of key inputs would impact upon manufacturing operations, for example, by interrupting or resulting in the downsizing of production or a change in the product mix. They could also cause price increases for critical inputs or shifts in the availability and price of wood. It is also uncertain how the EU energy policies may impact upon the availability and costs of bioenergy and bioenergy.

Project execution | Investment projects in UPM businesses such as energy, pulp, paper or biofuels are often large and take one or more years to complete. UPM has experience in such projects in various businesses and locations around the world, and applies vigorous planning, project management and follow-up processes. Participation in large projects involves risks such as cost overruns or delays, as well as achievement of the economic targets set for the investment.

Partnerships | UPM currently works together with many partners without control over strategic direction and operational output. The highly competitive market situation and, for example, new developments in biofuels or biorefinery are likely to increase the importance of partnerships in the search for higher efficiency or new products and business models. Partnerships, however, may create risks to the profitability, for example, through changes occurring within the partner entity or changes in how the partnership operates.

Ability to recruit and retain skilled employees | To meet the challenges of sustaining growth and improving the effectiveness of operations, a skilled workforce is necessary. UPM is continuously evaluating its recruitment, compensation and career development policies and taking measures to attract and retain skilled personnel, thereby seeking to avoid shortages of appropriately-skilled personnel in the future.

Availability and security of information systems | UPM business operations depend on the availability of supporting information system and network services. Unplanned interruptions in critical information services can potentially cause a major interruption of UPM’s business areas. UPM has implemented numerous technical, physical and process improvements to mitigate the availability and security risks and to reduce the service interruption related recovery time to acceptable level.

Risks related to non-compliance | The UPM Code of Conduct sets the standards of responsible behaviour towards UPM stakeholders. They apply to every employee. The code covers topics relating to legal compliance and disclosure, conflicts of interest, gifts and bribes, HR practices, human rights questions 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. Negligence or breach of Code of Conduct may lead to legal processes or serious reputational damages impacting the value of the company. UPM ensures that employees are aware of the Code by regular trainings, the company maintains a report misconduct channel and carries out regular audits in its supply chain.
Research and development

Focus on circular economy
Innovations and R&D are at the forefront of creating and developing new products that can be used to replace non-renewable materials with sustainable, recyclable and resource-efficient low-carbon alternatives.

The aim of UPM’s R&D programmes is to create new technologies and products, provide support to and ensure the competitiveness of its businesses.

By co-operating with selected value chain partners, UPM aims to increase its speed, agility and effectiveness.

In 2016, UPM spent EUR 46 million (63 million) on research and development work equating to 2.7% (3.3%) of UPM’s operating cash flow. The focus was on new technologies and developing businesses. On top of the direct R&D expenditure of approximately EUR 40 million (37 million), the figures include negative operating cash flow and capital expenditure in developing businesses.

UPM has a global network of research centres to support both new and existing businesses and their development goals.

Research projects
Circlar economy is an integral part of UPM’s business. Resource efficiency is at the core of our Biofore strategy. Our product stewardship and eco-design approach covers the entire value chain from the design stage to end products and their reuse.

UPM’s side stream efficiency research (SIEF) is looking for solutions to better utilise the side streams of integrated pulp and paper mills, sludge, ash, green liquor dregs, various rejects and waste heat. The aim is to reduce costs and increase the value of side streams by finding new business opportunities with partners.

Fertiliser development and nutrient recycling is one of the possible circular economy solutions. UPM established a joint project with Kemin Europe A/S and crop consultant company Salkosy Oy to develop nutrient recycling. The project concentrates on the possibilities for the agricultural reuse of nutrients retrieved from the sludge originating from the paper and pulp mills’ effluent treatment plants and the ash from the incineration process.

Other studies relate among others to ash product development for construction applications and new ways to reuse green liquor dregs. The results are also used in UPM’s Zero solid waste programme. The initiative develops smart and sustainable solutions, in which excess materials circulate and generate value.

UPM’s fibre ecosystem project aims to study new fibre processes for enhanced product properties. The new product possibilities address global megatrends and sustainability demands. The research is done in co-operation with customers, partners and research organisations along various value chains.

Wide-scale collaboration
UPM is one of the founding members of the industrial consortium, part of the European Joint Undertaking on Bio-based Industries (BBI). This Public Private Partnership (PPP) aims to trigger investments and create a competitive market for bio-based products and materials. For UPM, the PPP is an important funding element for speeding up the implementation of future investments.

UPM is a shareholder in the Finnish CVC Innovation Oy, which focuses on bioeconomy and cleantech research. The cluster’s research programmes focus on bioeconomy as well as energy and environmental research, thus supporting UPM’s internal R&D activities.

In 2016, UPM received approximately EUR 1.0 million (1.4 million) from the Finnish Funding Agency for Innovation (TEKES) for its research projects. These projects were carried out in co-operation with research institutes, universities and other companies.

UPM works together with a wide network of universities, research institutes, technology suppliers and start-ups to develop new solutions and get to the market faster, especially in new businesses.

UPM actively protects inventions and brands with intellectual property rights. UPM manages and uses its patents, trademarks and other intellectual property rights throughout the world. Protected innovations and high level risk management is an integral part of the business model throughout UPM. UPM is also actively seeking partners and licensing opportunities to develop new technologies and solutions for its customers.

Biochemicals create sustainable value through the fusion of fibres and polymers
UPM Biochemicals develops, manufactures and sells high quality composite products for a wide range of consumer and industrial applications.

UPM ProFi Deck range is one of the leading composite decking brands in Europe. Through patented recycling technology, UPM Biochemicals recovers the cellulose fibres and polymers found in label material waste and gives them a second life. Each square metre of UPM ProFi Deck contains 10 kg of label waste.

UPM Formi is the engineered range of pure cellulose and virgin polymer compounds suitable for various applications from furniture to consumer electronics. Its carbon footprint is up to 50% lower compared to traditional plastics.

Biochemicals offer a sustainable alternative to fossil-based solutions
UPM Biochemicals offers and develops innovative, sustainable and competitive wood-based biochemicals. It is currently focusing on four product categories: chemical building blocks, lignin products, biofuels and nutraceutical products.

For example, bio-based chemical building blocks can be used to replace fossil-based chemicals in plastic production. Wood-based lignin can for instance be used to manufacture bio-based resins to replace fossil-based resins.

Biofuels include biomass-based micro and nanofibril products that can be used for shaping and reinforcing different materials. They can also be used in new biomedical applications. GrowDavit is a proprietary technology for human cell culture in medical research and other applications.

UPM Biochemicals has already commercialised the first lignin applications and biomedical products. It is actively developing and testing industrial applications with its partners in order to create large scale industrial concepts.

In 2016, the focus was on improving the efficiency and cost competitiveness of hydro, nuclear and biomass based energy production assets. To reach its target, Energy R&D participated in several research programs. These programs improve the design and operations of UPM’s energy production systems in the transforming electricity, heating and raw material production sectors.

R&D programme was started at the end of the year to further improve top-notch energy efficiency and the environmental performance of Changshu operations.

Research and development

BUSINESS AREA

DESCRIPTION

UPM BioVerno

UPM pulp

In brief

Strategy

Businesses

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R&D’s role in different businesses

BUSINESS AREA

DESCRIPTION

UPM BioVerno

UPM pulp

In 2016, the focus was on improving the environmental performance and operational efficiency of the mills as well as achieve moderate reduction through several internal and external joint research projects.

In France, Brittany, the emphasis was in achieving a significant reduction in phosphorous emissions through a new treatment system. In eucalyptus plantation operations, development work concentrated on the tree breeding program and development of new eucalyptus clones.

In Finland, the focus was on developing wood sourcing and wood handling activities to reduce wood consumption at the mills. UPM Pulp’s Technical Customer Service Support continued joint development activities and enhanced cooperation with customers, mainly in Europe and China.

UPM BioVerno, the renewable diesel, was successfully distributed to the Finnish market throughout the year.


Several new engine and fleet tests in off-road, heavy duty and marine use were conducted:

• Marine use: UPM BioVerno performed well in marine fleet engine tests and was found to represent a high-quality fossil diesel substitute fuel. The non-existing sulfur and ash content had a positive influence on SOx and PM emissions. CO2 emissions were reduced up to 80 %. The tests were conducted by Dutch GoodFuels Marine and Biofuels during the nature protection project Marker Wadden.

• Urban buses: The laboratory tests and yearlong field tests were completed. UPM BioVerno produced clearly lower emissions than fossil diesel in Euro III Class buses. The field tests were conducted in the Helsinki region bus traffic with four identical Volvo Euro VI Class buses with efficient engines and low emissions.

• Urban buses: The laboratory tests and yearlong field tests were completed. UPM BioVerno produced clearly lower emissions than fossil diesel in Euro III Class buses. The field tests were conducted in the Helsinki region bus traffic with four identical Volvo Euro VI Class buses with efficient engines and low emissions.

UPM BioVerno functioned like the best diesel fuels in all blending ratios of 20, 50 and 100 %, and the fuel consumption was identical. No fuel related incidents occurred during the 400,000 kilometres travelled.

The International Sustainability and Carbon Certification Scheme certification (ISCC PLUS) was extended to cover all UPM BioVerno’s output streams from the Lappeenranta bioeconomy. Now the wood-based fuels and side products can be utilised as certified feedstock e.g. in biofuel production.

In August 2016, a separate Biofuels Development Team was established to support UPM’s biofuel production to new feedstock, processes, and business models.

UPM Energy

The focus was on improving the efficiency and cost competitiveness of hydro, nuclear and biomass based energy production assets. To reach its target, Energy R&D participated in several research programs. These programs improve the design and operations of UPM’s energy production systems in the transforming electricity, heating and raw material production sectors.

The focus areas were in product development and operational efficiency. The “More with Biofore 2.0” R&D programme was started at the end of the year to further improve top-notch energy efficiency and the environmental performance of Changshu operations.

In standard paper products, the focus was on the re-engineering efforts for greater cost efficiency and product quality.

Stanford development focused on thinner materials, improved production processes for upgraded quality and a new range of conformable products.

In the special business area, the main emphasis was on developing high added value products for selected end use segments and tailored solutions for specific customer needs.

UPM Specialty Papers

R&D supports businesses globally and backs up operators in China and Finland through development activities in Changshu and Lappeenranta research centres.

The focus was on product development and operational efficiency. The “More with Biofore 2.0” R&D programme was started at the end of the year to further improve top-notch energy efficiency and the environmental performance of Changshu operations.

R&D also supported the development of novel solutions for paper mills’ waste and side streams management.

UPM Paper ENA

Key focus areas were:

• developing competitive products and product portfolios,

• providing top expertise in customer support,

• developing and implementing novel technologies and best practices for variable cost savings and operational efficiency improvements.

R&D also supported the development of novel solutions for paper mills’ waste and side streams management.

UPM Plywood

Key focus areas were:

• providing superior technical expertise and support for customers,

• creating competitive products within selected and new areas,

• supporting the commercialisation of previously developed products and applications.

WSSA® Bonded Floor Solution was showcased in SIAA exhibition as a central element of German trailer manufacturer Krone’s solution. The full weight of the vehicle reduces fuel consumption + CO2 emissions and enables higher payed in transportation.

New products were developed for various construction applications to complement the current portfolio.
Responsibility

Responsibility is good business

Corporate responsibility is an integral part of all our operations and is seen as a source of competitive advantage. UPM is strongly committed to continuous improvement in economic, 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.

In 2016, the main focus of UPM’s responsibility activities was on the internal Code of Conduct training and on extending its effects to UPM’s suppliers and third party intermediaries. The safety of employees and contractors remained an important focus area. UPM took part in the UN Global Compact LEAD forum as the first representative of the forest industry and also as the first Finnish participant.

Environmental performance

In 2016, UPM’s environmental investments totalled EUR 22 million (28 million). The largest being the investment to Schwangau power plant retrofit to achieve lower air emissions. UPM’s environmental costs, which were mainly attributable to effluent treatment and waste management, totalled EUR 120 million (129 million), including depreciation.

Reducing waste is part of circular economy

Today, approximately 89% of all UPM’s production waste is recovered and recycled. UPM has developed innovative ways to reduce its own waste and to recycle waste or residuals in new products such as UPM BioVero, UPM’s renewable diesel and UPM Profi composite which utilizes partly waste from the production of self-adhesive labels.

UPM is also the world’s largest user of recovered paper for the production of graphic papers, consuming 2.8 million tonnes of paper for recycling in 2016. The total amount of solid waste sent to landfill has slightly increased with 3% compared to the previous year.

Sustainable forestry

All of UPM’s own forests and eucalyptus plantations are certified according to the FSC and/or PEFC certification schemes. All of UPM’s wood supplies are covered by third-party-verified chains of custody. 84% (84%) of all wood used by UPM is sourced from certified forests. The aim of UPM’s global certification schemes is to maintain biodiversity in forests, to promote best practices in sustainable forestry and to emphasize the role of ecosystem services.

In 2016, the CDP Forest Program listed UPM as one of the global leaders on the 2016 Forest A List for timber and timber-based products.

Climate actions and energy efficiency

Since 1990, specific direct CO2 (fossil carbon dioxide) emissions per tonne of paper have been reduced by approximately 33%. UPM has a wide range of energy sources and it maximizes the use of carbon-neutral energy. Biomass-based fuels make up 85% of the fuels used by UPM in Finland and 69% of those used worldwide. UPM is the second largest generator of biomass-based electricity in Europe. If UPM would need to buy certificates to cover its whole fossil CO2 emissions, and the price of CO2 certificates would rise by EUR 5 per tonne, it would amount additional costs of approximately EUR 20 million annually.

As the use of weather-dependent energy sources increases, the need for balancing power in energy systems will also grow. UPM is investing in hydropower, the most effective and sustainable method of producing balancing power. In 2016, the new unit of the Harjavalta hydropower plant was completed.

UPM strives to continuously improve its energy efficiency across all its operations. During the last 20 years, the energy efficiency of production has significantly improved due to energy audits, innovations and internal campaigns.

Water plays an increasingly important role

All of UPM’s pulp and paper mills are required to have both a mechanical and a biological wastewater treatment. In order to ensure the best possible treatment result and share best practices, UPM’s wastewater treatment facility team has continued its work. The results have been good and the number of incidents has decreased further in 2016.

UPM has reduced wastewater volumes per tonne of paper by 11% and per tonne of chemical pulp by 22% over the last ten years. The COD load has decreased by 23% per tonne of paper, and by 40% per tonne of pulp, over the last ten years. If the price for raw water would increase by 0.01 Euro per m³, it would mean additional water costs of approximately EUR 5 million annually.

UPM’s efforts for responsible water use were acknowledged by the CDP Water Program which has rated UPM with A-, a leadership position in the ranking.

Corporate Governance Statement

UPM presents the Corporate Governance Statement as a separate report which is available on the UPM website www.upm.com.

Board of Director’s proposal for the distribution of profits

The Board of Directors proposes to the Annual General Meeting of UPM-Kymmene Corporation to be held on 29 March 2017 that a dividend of EUR 0.95 per share be paid based on the balance sheet to be adopted for the financial year ending 31 December 2016 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 2017. The Board of Directors proposes that the dividend be paid on 12 April 2017.

On the date of the dividend proposal, 31 January 2017, the Company’s registered number of shares is 532,735,699. The aforementioned number of shares includes 230,737 treasury shares which are not entitled to dividend.

On 31 December 2016, the distributable funds of the parent company were EUR 3,387,589,976.70 including EUR 254,983,094.81 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.

Helsinki, 31 January 2017

Björn Wahloos
Chairman

Henni Ekroos

Pia-Noora Kauppi

Wendy E. Lane

Jussi Pesonen

President and CEO

Helsinki, 31 January 2017

Kim Wahl

Ari Pulholmen

Vali-Matti Renikkiä

Suzanne Thoma

Signatures of the annual accounts and the report of the Board of Directors for the year 2016

*In the opinion of the Board of Directors, the proposed distribution of profits does not risk the solvency of the Company.
Consolidated financial statements, IFRS

Consolidated income statement

<table>
<thead>
<tr>
<th>EURm</th>
<th>NOTE</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>2.1, 2.2</td>
<td>9,812</td>
<td>10,138</td>
</tr>
<tr>
<td>Other operating income</td>
<td>2.3</td>
<td>140</td>
<td>13</td>
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<tr>
<td>Costs and expenses</td>
<td>2.3</td>
<td>-8,365</td>
<td>-8,840</td>
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<tr>
<td>Changes in fair value of forest assets and wood harvested</td>
<td>4.2</td>
<td>88</td>
<td>352</td>
</tr>
<tr>
<td>Share of results of associates and joint ventures</td>
<td>5.4</td>
<td>5</td>
<td>3</td>
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<tr>
<td>Depreciation, amortisation and impairment charges</td>
<td>2.3, 4.1, 4.4</td>
<td>-545</td>
<td>-524</td>
</tr>
<tr>
<td>Operating profit</td>
<td></td>
<td>1,135</td>
<td>1,142</td>
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<tr>
<td>Gains on sale of energy shareholdings, net</td>
<td>4.3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Exchange rate and fair value gains and losses</td>
<td>5.4</td>
<td>-7</td>
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<tr>
<td>Interest and other finance costs</td>
<td>5.4</td>
<td>40</td>
<td>60</td>
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<tr>
<td>Profit before tax</td>
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<td>1,080</td>
<td>1,079</td>
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<tr>
<td>Income taxes</td>
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<td>200</td>
<td>159</td>
</tr>
<tr>
<td>Profit for the period</td>
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<td>880</td>
<td>916</td>
</tr>
<tr>
<td>Attributable to:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owners of the parent company</td>
<td>879</td>
<td>916</td>
<td></td>
</tr>
<tr>
<td>Non-controlling interests</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total earnings per share for profit attributable to owners of the parent company</td>
<td></td>
<td>880</td>
<td>916</td>
</tr>
<tr>
<td>Basic earnings per share, EUR</td>
<td>2.4</td>
<td>1.65</td>
<td>1.72</td>
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<tr>
<td>Diluted earnings per share, EUR</td>
<td>2.4</td>
<td>1.65</td>
<td>1.72</td>
</tr>
</tbody>
</table>

Consolidated statement of comprehensive income

<table>
<thead>
<tr>
<th>EURm</th>
<th>NOTE</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit for the period</td>
<td>880</td>
<td>916</td>
<td></td>
</tr>
<tr>
<td>Other comprehensive income for the period, net of tax:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Items that will not be reclassified to the income statement:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actuarial gains and losses on defined-benefit plans</td>
<td>-97</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Items that may be reclassified to the income statement:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translation differences</td>
<td>-14</td>
<td>221</td>
<td></td>
</tr>
<tr>
<td>Net investment hedge</td>
<td>-1</td>
<td>-28</td>
<td></td>
</tr>
<tr>
<td>Cash flow hedges</td>
<td>73</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Gains and losses on energy shareholdings</td>
<td>-144</td>
<td>-603</td>
<td></td>
</tr>
<tr>
<td>Other comprehensive income for the period, net of tax</td>
<td>72</td>
<td>-184</td>
<td>-72</td>
</tr>
<tr>
<td>Total comprehensive income for the period</td>
<td>696</td>
<td>841</td>
<td></td>
</tr>
<tr>
<td>Attributable to:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owners of the parent company</td>
<td>695</td>
<td>841</td>
<td></td>
</tr>
<tr>
<td>Non-controlling interests</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total earnings per share for profit attributable to owners of the parent company</td>
<td></td>
<td>696</td>
<td>841</td>
</tr>
</tbody>
</table>

The notes are integral part of these consolidated financial statements.

Consolidated balance sheet

<table>
<thead>
<tr>
<th>EURm</th>
<th>NOTE</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSETS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goodwill</td>
<td>4.4</td>
<td>265</td>
<td>241</td>
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<tr>
<td>Other intangible assets</td>
<td>4.4</td>
<td>301</td>
<td>329</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>4.1</td>
<td>4,657</td>
<td>4,895</td>
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<tr>
<td>Forest assets</td>
<td></td>
<td>1,734</td>
<td>1,738</td>
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<tr>
<td>Energy shareholdings</td>
<td>4.3</td>
<td>1,932</td>
<td>2,085</td>
</tr>
<tr>
<td>Other non-current financial assets</td>
<td>5.3</td>
<td>255</td>
<td>332</td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td>7.4</td>
<td>446</td>
<td>466</td>
</tr>
<tr>
<td>Net retirement benefit assets</td>
<td>3.4</td>
<td>71</td>
<td>93</td>
</tr>
<tr>
<td>Investments in associates and joint ventures</td>
<td></td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>Other non-current assets</td>
<td></td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Total non-current assets</td>
<td>9,715</td>
<td>10,259</td>
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</tr>
<tr>
<td>Inventories</td>
<td>4.6</td>
<td>1,346</td>
<td>1,376</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>4.6, 5.3</td>
<td>1,726</td>
<td>1,743</td>
</tr>
<tr>
<td>Other current financial assets</td>
<td>5.3</td>
<td>109</td>
<td>133</td>
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<tr>
<td>Income tax receivables</td>
<td>16</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>5.1</td>
<td>992</td>
<td>624</td>
</tr>
<tr>
<td>Current assets</td>
<td>4,187</td>
<td>3,934</td>
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</tr>
<tr>
<td>Assets classified as held for sale</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Assets</td>
<td>13,911</td>
<td>14,193</td>
<td></td>
</tr>
<tr>
<td>EQUITY AND LIABILITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share capital</td>
<td>5.5</td>
<td>890</td>
<td>890</td>
</tr>
<tr>
<td>Treasury shares</td>
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<td>-2</td>
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<tr>
<td>Translation reserve</td>
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<td>433</td>
<td>449</td>
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<tr>
<td>Other reserves</td>
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<td>1,486</td>
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<tr>
<td>Reserve for invested non-restricted equity</td>
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<td>1,273</td>
<td>1,273</td>
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<tr>
<td>Retained earnings</td>
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<td>4,225</td>
<td>3,846</td>
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<tr>
<td>Equity attributable to owners of the parent company</td>
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<td>7,942</td>
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<tr>
<td>Non-controlling interests</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td>8,237</td>
<td>7,944</td>
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<tr>
<td>Deferred tax liabilities</td>
<td>7.2</td>
<td>457</td>
<td>456</td>
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<tr>
<td>Net retirement benefit liabilities</td>
<td>3.4</td>
<td>817</td>
<td>747</td>
</tr>
<tr>
<td>Provisions</td>
<td>4.5</td>
<td>145</td>
<td>154</td>
</tr>
<tr>
<td>Non-current debt</td>
<td>3.2, 5.3</td>
<td>1,835</td>
<td>2,797</td>
</tr>
<tr>
<td>Other non-current financial liabilities</td>
<td>5.3</td>
<td>110</td>
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<tr>
<td>Non-current liabilities</td>
<td>3,364</td>
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<td>Current debt</td>
<td>3.2, 5.3</td>
<td>584</td>
<td>269</td>
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<tr>
<td>Trade and other payables</td>
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<td>1,643</td>
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<tr>
<td>Other current financial liabilities</td>
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<td>116</td>
<td>156</td>
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<tr>
<td>Income tax payables</td>
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<tr>
<td>Current liabilities</td>
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<td>1,921</td>
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<tr>
<td>Liabilities</td>
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<tr>
<td>Equity and liabilities</td>
<td>13,911</td>
<td>14,193</td>
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</table>

The notes are integral part of these consolidated financial statements.
## Consolidated statement of changes in equity

<table>
<thead>
<tr>
<th>EURm</th>
<th>SHARE CAPITAL</th>
<th>TREASURY SHARES</th>
<th>SHARE RESERVE</th>
<th>OTHER RESERVES</th>
<th>RESTRICTED EQUITY</th>
<th>RETAINED EARNINGS</th>
<th>EQUITY ATTRIBUTABLE TO OWNERS OF THE PARENT COMPANY</th>
<th>NON-CONTROLLING INTERESTS</th>
<th>TOTAL EQUITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value, at 1 January 2016</strong></td>
<td>890</td>
<td>-2</td>
<td>449</td>
<td>1,486</td>
<td>1,273</td>
<td>3,846</td>
<td>7,942</td>
<td>2</td>
<td>7,964</td>
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<tr>
<td><strong>Profit for the period</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Translation differences</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cash flow hedges — reclassified to income statement, net of tax</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cash flow hedges — changes in fair value, net of tax</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Net investment hedge, net of tax</strong></td>
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</tr>
<tr>
<td><strong>Energy shareholdings — changes in fair value, net of tax</strong></td>
<td></td>
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<tr>
<td><strong>Actuarial gains and losses on defined benefit plans, net of tax</strong></td>
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<tr>
<td><strong>Total comprehensive income for the period</strong></td>
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<tr>
<td><strong>Share-based payments, net of tax</strong></td>
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<tr>
<td><strong>Dividend distribution</strong></td>
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</tr>
<tr>
<td><strong>Total transactions with owners for the period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total equity at 31 December 2016</strong></td>
<td>890</td>
<td>-2</td>
<td>433</td>
<td>1,416</td>
<td>1,273</td>
<td>4,225</td>
<td>8,234</td>
<td>3</td>
<td>8,237</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EURm</th>
<th>SHARE CAPITAL</th>
<th>TREASURY SHARES</th>
<th>SHARE RESERVE</th>
<th>OTHER RESERVES</th>
<th>RESTRICTED EQUITY</th>
<th>RETAINED EARNINGS</th>
<th>EQUITY ATTRIBUTABLE TO OWNERS OF THE PARENT COMPANY</th>
<th>NON-CONTROLLING INTERESTS</th>
<th>TOTAL EQUITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value, at 1 January 2015</strong></td>
<td>890</td>
<td>-2</td>
<td>256</td>
<td>1,867</td>
<td>1,273</td>
<td>3,194</td>
<td>7,487</td>
<td>2</td>
<td>7,480</td>
</tr>
<tr>
<td><strong>Profit for the period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Translation differences</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cash flow hedges — reclassified to income statement, net of tax</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>Cash flow hedges — changes in fair value, net of tax</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net investment hedge, net of tax</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Energy shareholdings — changes in fair value, net of tax</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Actuarial gains and losses on defined benefit plans, net of tax</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total comprehensive income for the period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Share-based payments, net of tax</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dividend distribution</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total transactions with owners for the period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total equity at 31 December 2015</strong></td>
<td>890</td>
<td>-2</td>
<td>449</td>
<td>1,486</td>
<td>1,273</td>
<td>3,846</td>
<td>7,942</td>
<td>2</td>
<td>7,964</td>
</tr>
</tbody>
</table>

» Refer Note 5.5 Share capital and reserves, for further information.

## Consolidated cash flow statement

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cash flows from operating activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit for the period</td>
<td>880</td>
<td>916</td>
</tr>
<tr>
<td>Adjustments 1)</td>
<td>778</td>
<td>449</td>
</tr>
<tr>
<td>Interest received</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Interest paid</td>
<td>-40</td>
<td>-22</td>
</tr>
<tr>
<td>Dividends received</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Other financial items, net</td>
<td>8</td>
<td>-17</td>
</tr>
<tr>
<td>Income taxes paid</td>
<td>-145</td>
<td>-140</td>
</tr>
<tr>
<td>Change in working capital 1)</td>
<td>195</td>
<td>-9</td>
</tr>
<tr>
<td><strong>Operating cash flow</strong></td>
<td>1,686</td>
<td>1,183</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cash flows from investing activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>-351</td>
<td>-432</td>
</tr>
<tr>
<td>Acquisition of shares in associates and joint ventures</td>
<td>-</td>
<td>-1</td>
</tr>
<tr>
<td>Acquisition of energy shareholdings</td>
<td>-</td>
<td>-33</td>
</tr>
<tr>
<td>Proceeds from sale of property, plant and equipment and intangible assets</td>
<td>93</td>
<td>26</td>
</tr>
<tr>
<td>Proceeds from disposal of subsidiaries</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>Proceeds from disposal of energy shareholdings</td>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td>Net cash flows from net investment hedges</td>
<td>-8</td>
<td>-43</td>
</tr>
<tr>
<td>Change in other non-current assets</td>
<td>-3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Investing cash flow</strong></td>
<td>-262</td>
<td>-433</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cash flows from financing activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proceeds from non-current debt</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>Payments of non-current debt</td>
<td>-540</td>
<td>-519</td>
</tr>
<tr>
<td>Change in current liabilities</td>
<td>-77</td>
<td>22</td>
</tr>
<tr>
<td>Net cash flows from derivatives</td>
<td>-22</td>
<td>43</td>
</tr>
<tr>
<td>Dividends paid</td>
<td>-400</td>
<td>-373</td>
</tr>
<tr>
<td>Other financing cash flow</td>
<td>-19</td>
<td>-20</td>
</tr>
<tr>
<td><strong>Financing cash flow</strong></td>
<td>-1,057</td>
<td>-823</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in cash and cash equivalents</td>
<td>367</td>
<td>-75</td>
</tr>
<tr>
<td>Cash and cash equivalents at beginning of period</td>
<td>626</td>
<td>700</td>
</tr>
<tr>
<td>Exchange rate effect on cash and cash equivalents</td>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>Change in cash and cash equivalents</td>
<td>367</td>
<td>-75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents at end of period</td>
<td>992</td>
<td>626</td>
</tr>
</tbody>
</table>

1) Adjustments

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in fair value of forest assets and wood harvested</td>
<td>-88</td>
<td>-352</td>
</tr>
<tr>
<td>Share of results of associates and joint ventures</td>
<td>-5</td>
<td>-3</td>
</tr>
<tr>
<td>Depreciation, amortisation and impairment charges</td>
<td>545</td>
<td>524</td>
</tr>
<tr>
<td>Capital gains and losses on sale of non-current assets</td>
<td>-55</td>
<td>-18</td>
</tr>
<tr>
<td>Financial income and expenses</td>
<td>56</td>
<td>67</td>
</tr>
<tr>
<td>Income taxes</td>
<td>200</td>
<td>159</td>
</tr>
<tr>
<td>Utilised provisions</td>
<td>-47</td>
<td>-68</td>
</tr>
<tr>
<td>Non-cash changes in provisions</td>
<td>-44</td>
<td>4</td>
</tr>
<tr>
<td>Other adjustments</td>
<td>128</td>
<td>134</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>778</td>
<td>449</td>
</tr>
</tbody>
</table>

2) Change in working capital

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investments</td>
<td>41</td>
<td>15</td>
</tr>
<tr>
<td>Current receivables</td>
<td>22</td>
<td>-30</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>132</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>195</td>
<td>-8</td>
</tr>
</tbody>
</table>
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.

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. Figures presented in these financial statements are rounded and therefore the sum of individual figures might deviate from the presented total figure.

The 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 and timber products.

1. Basis for reporting

1.1 Corporate information

1.2 Basis of preparation

1.3 Consolidation principles

1.4 Foreign currency translation

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:

<table>
<thead>
<tr>
<th>KEY ESTIMATES AND JUDGEMENTS</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuation of forest assets</td>
<td>4.2</td>
</tr>
<tr>
<td>Fair value determination of energy shareholdings</td>
<td>4.3</td>
</tr>
<tr>
<td>Impairment of property, plant and equipment</td>
<td>4.4</td>
</tr>
<tr>
<td>Impairment of goodwill and other intangible assets</td>
<td>4.5</td>
</tr>
<tr>
<td>Pension and other post-employment benefits</td>
<td>4.6</td>
</tr>
<tr>
<td>Income taxes</td>
<td>4.7</td>
</tr>
<tr>
<td>Environmental provisions</td>
<td>4.8</td>
</tr>
<tr>
<td>Legal contingencies</td>
<td>4.9</td>
</tr>
</tbody>
</table>

[continues with detailed notes and judgements...]

1.4 Foreign currency translation

Foreign currency transactions are translated into the functional currency using the exchange rate prevailing at the date of transaction. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the income statement, except when recognised in other comprehensive income as qualifying cash flow hedges and qualifying net investment hedges.

UPM records foreign exchange differences relating to ordinary business operations within the appropriate line items above operating profit and those relating to financial items are presented separately as a net amount in finance costs.

Income and expenses of subsidiaries that have a functional currency different from euro are translated into euros at quarterly average exchange rates. Assets and liabilities of subsidiaries are translated at the closing rate at the balance sheet date. All resulting translation differences are recognised as a separate component in other comprehensive income. On consolidation, exchange differences arising from the translation of net investment in foreign operations and other currency instruments designated as hedges of such investments, are recognised in other comprehensive income. When a foreign entity is partially disposed of, sold or liquidated, translation differences accrued in equity are recognised in the income statement as part of the gain or loss on sale/liquidation.

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.

<table>
<thead>
<tr>
<th>FINANCIAL RISK</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Risk</td>
<td>6.6</td>
</tr>
<tr>
<td>Liquidity and refinancing risk</td>
<td>5.1</td>
</tr>
<tr>
<td>Interest rate risk</td>
<td>6.1</td>
</tr>
<tr>
<td>Foreign exchange risk</td>
<td>6.1</td>
</tr>
<tr>
<td>Electricity price risk</td>
<td>6.1</td>
</tr>
<tr>
<td>Financial counterparty risk</td>
<td>6.2</td>
</tr>
</tbody>
</table>
1.5 New standards and amendments adopted

The following amendments to existing standards that are relevant to group have been adopted on January 2016:

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>NATURE OF CHANGE</th>
<th>IMPACT</th>
<th>DATE OF ADOPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amendment to IAS 7 Statement of Cash Flows</td>
<td>The amendment requires to explain changes in liabilities arising from financing activities.</td>
<td>The group has early adopted the amendments made to IAS 7 and revised its net debt disclosures to comply with new requirements.</td>
<td>1 January 2016</td>
</tr>
<tr>
<td>Amendment to IAS 1 Presentation of financial statements</td>
<td>Part of IASB “Disclosure initiative” to improve presentation and disclosures in financial reports. The amendment provides new and more flexibility in presenting the information in financial reports.</td>
<td>The group has reviewed the content and structure of the financial statements in order to provide users with a clearer understanding of what drives financial performance. Immaterial disclosures that may undermine the usefulness of the financial reports have been removed and the notes to the financial statements have been reorganised into sections to assist users in understanding the group performance.</td>
<td>1 January 2016</td>
</tr>
</tbody>
</table>

Annual improvements to IFRS 2012–2014 cycle

The amendments primarily remove inconsistencies, provide additional guidance and clarify wording of standards. The adoption of improvements did not have any impact on the group’s financial statements. | 1 January 2016 |

2. Business performance

Sales

<table>
<thead>
<tr>
<th></th>
<th>EUR (EUR 10,138m)</th>
<th>EUR (EUR 10,138m)</th>
<th>EUR 1,143m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparable EBIT</td>
<td>9,812m</td>
<td>1,143m</td>
<td>10.9% (9.5%)</td>
</tr>
<tr>
<td>Comparable ROE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparability is presented below.

Business area information including description of items affecting comparability is presented below.

2.1 Business areas

UPM business areas are reported consistently with the internal reporting provided to UPM’s President and CEO who is responsible for allocating resources and assessing performance of the business areas. Internal reporting is prepared under the same basis as the consolidated accounts, except for a joint operation, Madison Paper Industries (MPI) which is consolidated as a subsidiary in the UPM Paper ENA reporting. Costs, revenues, assets and liabilities are allocated to business areas on a consistent basis. The sales transactions between business areas are based on market prices, and they are eliminated on consolidation.

Comparability is presented below.

Key performance indicators and financial targets

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 2016

<table>
<thead>
<tr>
<th>Business Area</th>
<th>UPM BIOSURF</th>
<th>UPM ENERGY</th>
<th>UPM RAFLAEC</th>
<th>UPM SPECIALTY PAPERS</th>
<th>UPM PAPER</th>
<th>UPM PLYWOOD</th>
<th>OTHER OPERATIONS</th>
<th>ELIMINATIONS AND RECONCILIATIONS</th>
<th>GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel, 31 December</td>
<td>2,630</td>
<td>71</td>
<td>3,062</td>
<td>1,984</td>
<td>8,664</td>
<td>2,469</td>
<td>442</td>
<td>-12</td>
<td>19,310</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>161</td>
<td>35</td>
<td>22</td>
<td>21</td>
<td>226</td>
<td>38</td>
<td>12</td>
<td>19,310</td>
<td></td>
</tr>
<tr>
<td>Depreciation and amortisation</td>
<td>-169</td>
<td>-11</td>
<td>-35</td>
<td>-86</td>
<td>-190</td>
<td>-23</td>
<td>-13</td>
<td>3</td>
<td>-86</td>
</tr>
<tr>
<td>Impairment charges</td>
<td>1</td>
<td>10</td>
<td>-14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital employed</td>
<td>3,341</td>
<td>2,249</td>
<td>507</td>
<td>984</td>
<td>1,782</td>
<td>241</td>
<td>1,512</td>
<td>27</td>
<td>10,637</td>
</tr>
<tr>
<td>Average capital employed</td>
<td>2,321</td>
<td>2,340</td>
<td>524</td>
<td>1,012</td>
<td>1,964</td>
<td>259</td>
<td>1,541</td>
<td>-36</td>
<td>10,833</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>188</td>
<td>1</td>
<td>19</td>
<td>15</td>
<td>45</td>
<td>9</td>
<td>-1</td>
<td>326</td>
<td></td>
</tr>
<tr>
<td>Share of results of associates and joint ventures</td>
<td>29</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>59</td>
<td>-</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Depreciation and amortisation</td>
<td>-171</td>
<td>-9</td>
<td>-33</td>
<td>-91</td>
<td>-164</td>
<td>-22</td>
<td>-13</td>
<td>1</td>
<td>-503</td>
</tr>
<tr>
<td>Impairment charges</td>
<td>1</td>
<td>49</td>
<td>-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital employed, 31 December</td>
<td>3,341</td>
<td>2,249</td>
<td>507</td>
<td>984</td>
<td>1,782</td>
<td>241</td>
<td>1,512</td>
<td>27</td>
<td>10,637</td>
</tr>
<tr>
<td>Average capital employed</td>
<td>2,321</td>
<td>2,340</td>
<td>524</td>
<td>1,012</td>
<td>1,964</td>
<td>259</td>
<td>1,541</td>
<td>-36</td>
<td>10,833</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>188</td>
<td>1</td>
<td>19</td>
<td>15</td>
<td>45</td>
<td>9</td>
<td>-1</td>
<td>326</td>
<td></td>
</tr>
<tr>
<td>Capital expenditure, excluding acquisitions and shares</td>
<td>188</td>
<td>1</td>
<td>19</td>
<td>15</td>
<td>45</td>
<td>9</td>
<td>-1</td>
<td>326</td>
<td></td>
</tr>
<tr>
<td>Comparable ROCE, %</td>
<td>12.6</td>
<td>5.0</td>
<td>25.5</td>
<td>12.1</td>
<td>14.3</td>
<td>22.6</td>
<td>9</td>
<td>-10.6</td>
<td></td>
</tr>
<tr>
<td>Personnel, 31 December</td>
<td>2,630</td>
<td>71</td>
<td>3,062</td>
<td>1,984</td>
<td>8,664</td>
<td>2,469</td>
<td>442</td>
<td>-12</td>
<td>19,310</td>
</tr>
</tbody>
</table>

In 2016, UPM has relabeled the previously referenced “excluding special items” non-GAAP financial measures with “comparable” performance measures as published in UPM’s stock exchange release on 14 April 2016.

» Refer Note 10.2, 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 2015

<table>
<thead>
<tr>
<th>Business Area</th>
<th>UPM BIOSURF</th>
<th>UPM ENERGY</th>
<th>UPM RAFLAEC</th>
<th>UPM SPECIALTY PAPERS</th>
<th>UPM PAPER</th>
<th>UPM PLYWOOD</th>
<th>OTHER OPERATIONS</th>
<th>ELIMINATIONS AND RECONCILIATIONS</th>
<th>GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel, 31 December</td>
<td>2,630</td>
<td>71</td>
<td>3,062</td>
<td>1,984</td>
<td>8,664</td>
<td>2,469</td>
<td>442</td>
<td>-12</td>
<td>19,310</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>161</td>
<td>35</td>
<td>22</td>
<td>21</td>
<td>226</td>
<td>38</td>
<td>12</td>
<td>19,310</td>
<td></td>
</tr>
<tr>
<td>Depreciation and amortisation</td>
<td>-169</td>
<td>-11</td>
<td>-35</td>
<td>-86</td>
<td>-190</td>
<td>-23</td>
<td>-13</td>
<td>3</td>
<td>-524</td>
</tr>
<tr>
<td>Impairment charges</td>
<td>1</td>
<td>10</td>
<td>-14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</tr>
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</table>

In 2016, UPM has relabeled the previously referenced “excluding special items” non-GAAP financial measures with “comparable” performance measures as published in UPM’s stock exchange release on 14 April 2016.

» Refer Note 10.2, 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.
2.2 Sales

UPM generates revenue mainly from the sale of several types of products. UPM sells a proportion of its products to several major customers. The largest customer in terms of sales represented approximately 3% of UPM’s sales in 2016 and 2015, and the ten largest customers represented approximately 16% (15%) of such sales. Refer Note 2.1 Business areas for information on UPM products.

Sales by business area

<table>
<thead>
<tr>
<th>Business Area</th>
<th>2016 EURm</th>
<th>2015 EURm</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papers in UPM Paper ENA</td>
<td>471</td>
<td>501</td>
<td>-5%</td>
</tr>
<tr>
<td>Fine and specialty papers in UPM Specialty</td>
<td>106</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Label materials in UPM Raflatac</td>
<td>144</td>
<td>141</td>
<td></td>
</tr>
<tr>
<td>Plywood</td>
<td>41</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Sawn timber</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Chemical pulp (not effect)</td>
<td>33</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

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 sales prices.

Effect of a 10% change in prices on operating profit for the year

<table>
<thead>
<tr>
<th>Effect of a 10% change in price</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPM Paper ENA</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>Fine and specialty papers in UPM Specialty</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Label materials in UPM Raflatac</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Plywood</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sawn timber</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chemical pulp (not effect)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Total | 41 | 42 |

Costs and expenses

<table>
<thead>
<tr>
<th>Costs and expenses</th>
<th>2016 EURm</th>
<th>2015 EURm</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials, consumables and goods</td>
<td>5,376</td>
<td>5,784</td>
<td>-7%</td>
</tr>
<tr>
<td>Employee costs</td>
<td>1,246</td>
<td>1,257</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Other operating costs and expenses</td>
<td>884</td>
<td>943</td>
<td>-6.4%</td>
</tr>
<tr>
<td>Delivery costs and other external charges</td>
<td>859</td>
<td>856</td>
<td></td>
</tr>
<tr>
<td>Total operating expenses</td>
<td>6,345</td>
<td>6,840</td>
<td>-7.3%</td>
</tr>
</tbody>
</table>

2.3 Operating expenses and other operating income

Cost structure

- Employee costs 10%
- Wood and fibre 30%
- Filers, coating and chemicals 11%
- Energy 8%
- Other variable costs 17%
- Other fixed costs 10% (CIP)
- Carriage and Insurance Paid to “CIP”
- Carriage and Insurance Paid to “CIF”
- Revenue is recorded at the time of delivery.

Auditor’s fees

<table>
<thead>
<tr>
<th>Auditor’s fees</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax consulting</td>
<td>0.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Other services</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>3.6</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Research and development costs

The research and development costs included in operating expenses were EUR 40 million (37 million) in 2016. The focus was on new technologies and developing businesses.

Government grants

In 2016, government grants recognised as deduction of operating expenses totalled to EUR 8 million (6 million) of which EUR 6 million (6 million) relates to Finland, EUR 2 million (10 million) to UK and China. In addition, the group received emission rights from governments amounting to EUR 16 million (22 million) of which EUR 8 million (9 million) relates to Germany, EUR 1 million (1 million) to Austria, EUR 1 million (2 million) to UK and EUR 0 million (1 million) to France.

Other operating income

In 2016, gains on sale of non-current assets include EUR 47 million related to sale of Schwedt mill assets.

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 or 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 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, systematically, over the compliance period to which the corresponding emission rights relate.

The liability is set off against the emission rights at hand, measured at the carrying amount of those emission rights. Emission rights and associated provisions are derecognised when destroyed. 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 approved by the Board of Directors in 2015, the company pays a tax-free dividend amounting to 30-40% of the group annual operating cash flow per share.

The dividend paid in 2016 were EUR 405 million (EUR 0.75 per share) which is 34% of the group annual operating cash flow per share and EUR 373 million (EUR 0.70 per share). The Board of Directors proposes to the Annual General Meeting that a dividend of EUR 0.65 per share, EUR 0.95 per share, will be paid, in respect of 2016. The proposed dividend represents 30% of UPM’s operating cash flow per share for the year 2016.

3. Key management personnel

Remuneration policy

The Annual General Meeting 2016 decided to leave the Board remuneration unchanged. The Chairman of the Board receives an annual fee of EUR 175,000, Deputy Chairman of the Board and Chairman of the Audit Committee EUR 120,000 and other members of the Board EUR 95,000. No annual fee is paid to the President and CEO for his role as a member of the Board. The annual fee is settled partly in company’s shares and partly in cash so that 40% of the fee is paid in the company shares to be acquired on the Board members’ behalf, and the rest in cash. The company pays the costs and transfer tax payable related to the acquisition of the company shares.

In 2016, 4,235 (4,193) company shares were paid to the Chairman, 2,904 (2,875) shares to the Deputy Chairman and the Chairman of the Audit Committee respectively and 2,299 (2,276) shares to each of the other members of the Board.

Shareholdings (no. of shares) and fees of the Board of Directors

<table>
<thead>
<tr>
<th>Shareholdings 31 December</th>
<th>Fees (EUR 1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board members</td>
<td></td>
</tr>
<tr>
<td>Eriks Wahlroos, Chairman</td>
<td>256,677</td>
</tr>
<tr>
<td>Benedict Browne, Deputy Chairman</td>
<td>306,482</td>
</tr>
<tr>
<td>Hannes Eihmroth</td>
<td>4,575</td>
</tr>
<tr>
<td>Per-Hein Knopp</td>
<td>14,460</td>
</tr>
<tr>
<td>Wendy E. Lane</td>
<td>35,224</td>
</tr>
<tr>
<td>Jussi Pearlman, President and CEO</td>
<td>304,064</td>
</tr>
<tr>
<td>Ari Puhalsen</td>
<td>6,600</td>
</tr>
<tr>
<td>Vil-Matti Rannikko</td>
<td>38,196</td>
</tr>
<tr>
<td>Susanne Thoms</td>
<td>4,575</td>
</tr>
<tr>
<td>Kim Wahl</td>
<td>16,374</td>
</tr>
</tbody>
</table>

Total

987,427 882,101 985 985

3.2 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 options schemes at the end of 2016 and 2015.

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.
In brief
Strategy Businesses Stakeholders Governance

Accounts

3.2 Share-based payments

UPM offers reward and recognition with an emphasis of high performance. All UPM’s employees belong to a unified annual Short Term Incentive (STI) scheme. In addition, UPM has two long-term incentive plans: the Performance Share Plan (PSP) for senior executives and the Deferred Bonus Plan (DBP) for other key employees.

**Performance Share Plan**

The Performance Share Plan (PSP) is targeted at Group Executive Team members and other selected members of the management. Under the ongoing plans the UPM shares are awarded based on the total shareholder return during a three-year earning period. The shares are delivered after the earning period has ended. Total shareholder return takes into account share price appreciation and paid dividends.

**Deferred Bonus Plan**

The Deferred Bonus Plan (DBP) is targeted at other selected key employees of the group and it consists of annually-cumulating plans. Deferred Bonus Plan share incentives are based on achievement of group and/or business area EBITDA targets. Each plan consists of a one-year earning period and a two-year restriction period. Prior to share delivery, the shares rewards are adjusted to dividend payments and other capital distributions, if any, paid to all shareholders during the restriction period.

**Deferred Bonus Plans**

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 deductible before the shares are delivered to the participants. The amount of estimated payroll tax accounts for as share-based payments liabilities at 31 December 2016 were EUR 22.7 million (14.7 million).

**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. 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.

Deferred benefit assets and liabilities recognised in the balance sheet are presented below:

<table>
<thead>
<tr>
<th>COUNTRIES</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINLAND</td>
<td>UK</td>
</tr>
<tr>
<td>2016</td>
<td>2015</td>
</tr>
<tr>
<td>Present value of funded obligations</td>
<td>327</td>
</tr>
<tr>
<td>Fair value of plan assets</td>
<td>-396</td>
</tr>
<tr>
<td>Net present value of unfunded obligations</td>
<td>-70</td>
</tr>
</tbody>
</table>

**3.6 Defined benefit assets and liabilities**

<table>
<thead>
<tr>
<th>COUNTRIES</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINLAND</td>
<td>UK</td>
</tr>
<tr>
<td>2016</td>
<td>2015</td>
</tr>
<tr>
<td>Present value of funded obligations</td>
<td>502</td>
</tr>
<tr>
<td>Total defined benefit liability (at asset</td>
<td>-70</td>
</tr>
<tr>
<td>Net retirement benefit in the balance sheet</td>
<td>-70</td>
</tr>
</tbody>
</table>

About 90% 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 take care of its regular operations. The plan is supervised by Financial Foundations and classified as defined benefit plan. The foundation 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 last ten years of employment calculated according to the Finnish pension scheme. The costs of lowing the retirement age to 60 is covered by supplementing the statutory pension with a voluntary defined benefit pension plan. Should the President and CEO leave the company before reaching the age of 60, an immediate vesting right corresponding to 100% of earned pension (pro rata) will be applied. The retirement age of the other members of the Group Executive Team is 63. The expenses of the President and CEO’s defined benefit pension plan in 2016 were EUR 0.5 million (0.6 million), and the plan assets amounted to EUR 2.6 million (1.6 million) and obligation to EUR 1.8 million (0.7 million). Other Group Executive Team members are under defined contribution plans.

In case the notice of termination is given to the President and CEO, a severance pay of 24 months’ base salary will be paid in addition to the salary for six months’ notice period. Should the President and CEO give a notice of termination to the company, no severance pay will be paid in addition to the salary for the notice period. For other members of the Group Executive Team, the period for additional severance pay is 12 months, in addition to the six months’ salary for the notice period, unless notice is a condition of their employment contract. If there is a change in the control over the company, the President and CEO may terminate his/her service contract within three months and each member of the Group Executive Team may terminate his/her service contract within three months from the date of the event that triggered the change of control and shall receive compensation equivalent to 24 months’ base salary.

In 2016, costs under the Finnish statutory pension scheme for the President and CEO amounted to EUR 370,000 (351,000) and payments under the voluntary pension plan were EUR 1,000,000 (1,000,000).

In 2016, costs under the Finnish and German statutory pension schemes for Group Executive Team (GET) members (excluding the President and CEO) amounted to EUR 881,000 (900,000) and costs under the voluntary pension plan were EUR 818,000 (651,000).

The total remuneration of the President and CEO and the members of the Group Executive Team consists of base salary and benefits, short-term incentives and long-term share-based incentives.

The total remuneration of the President and CEO Jussi Pesonen, is 60. For the President and CEO, the maximum annual incentive amounts to 150% of the total maximum of 100% of annual base salary to the business area and individual targets. The incentives amount to a share of the total remuneration.

The expenses recognised in income statement in respect of share-based payments for the Group Executive Team were EUR 9.2 million (15.4 million).

In accordance with his service contract, the retirement age of the President and CEO Jussi Pesonen, is 60. For the President and CEO, the target pension is 60% of the average indexed earnings from the last ten years of employment calculated according to the Finnish pension scheme. The costs of lowering the retirement age to 60 is covered by supplementing the statutory pension with a voluntary defined benefit pension plan. Should the President and CEO leave the company before reaching the age of 60, an immediate vesting right corresponding to 100% of earned pension (pro rata) will be applied. The retirement age of the other members of the Group Executive Team is 63. The expenses of the President and CEO’s defined benefit pension plan in 2016 were EUR 0.5 million (0.6 million), and the plan assets amounted to EUR 2.6 million (1.6 million) and obligation to EUR 1.8 million (0.7 million). Other Group Executive Team members are under defined contribution plans.

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most significant defined benefit pension plan in Finland for UPM.

In Finland, the reform of TyEL will come into effect as of beginning of 2017. The effect of the reform to the defined benefit obligation of the TyEL scheme was recognised in 2015 as a past service cost amounting to EUR 4 million.

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.

### Key estimates and judgements

Several actuarial assumptions are used in calculating the expense and liability related to the 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:

**EURm**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Discount rate %</td>
<td>1.60</td>
<td>1.59</td>
<td>3.35</td>
<td>3.25</td>
<td>1.77</td>
<td>1.70</td>
<td>1.88</td>
<td>2.05</td>
</tr>
<tr>
<td>Inflation rate %</td>
<td>1.64</td>
<td>1.59</td>
<td>n/a</td>
<td>n/a</td>
<td>2.50</td>
<td>2.50</td>
<td>2.55</td>
<td>2.42</td>
</tr>
<tr>
<td>Rate of salary increase %</td>
<td>1.64</td>
<td>1.59</td>
<td>n/a</td>
<td>n/a</td>
<td>2.50</td>
<td>2.50</td>
<td>2.55</td>
<td>2.42</td>
</tr>
<tr>
<td>Rate of pension increase %</td>
<td>0.88</td>
<td>0.88</td>
<td>3.20</td>
<td>3.10</td>
<td>1.70</td>
<td>1.70</td>
<td>0.98</td>
<td>1.01</td>
</tr>
<tr>
<td>Expected average remaining working years of participants</td>
<td>11.8</td>
<td>13.7</td>
<td>13.6</td>
<td>13.0</td>
<td>10.6</td>
<td>11.0</td>
<td>10.5</td>
<td>10.5</td>
</tr>
</tbody>
</table>

#### Sensitivity analysis of defined benefit obligations

The sensitivity analysis shows the effect of the change in assumption. The analysis assumes 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**

<table>
<thead>
<tr>
<th>Category</th>
<th>Quoted</th>
<th>Unquoted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Debt instruments</td>
<td>267</td>
<td>267</td>
</tr>
<tr>
<td>Equity instruments</td>
<td>411</td>
<td>436</td>
</tr>
<tr>
<td>Property</td>
<td>36</td>
<td>42</td>
</tr>
<tr>
<td>Other</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>752</td>
<td>752</td>
</tr>
</tbody>
</table>

Plan assets include the company’s shares with a fair value of EUR 1 million (1 million).

In 2017 contributions of EUR 47 million are expected to be paid to group’s defined benefit plans. In 2016 contributions of EUR 33 million were paid to group’s defined benefit plans.

## 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.

### 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 UK, where the changes in salary levels have no impact on the funding position as all defined benefit arrangements in UK are closed to future accrual. In Germany, an increase of 0.5% in expected future salaries would increase the obligation by EUR 16 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 13 million, in the UK by EUR 17 million and in Germany by EUR 21 million.

---

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**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 13 million, in the UK by EUR 17 million and in Germany by EUR 21 million.
**Contributed significantly to UPM's earnings.**

In 2016, the borrowing costs capitalised as part of non-current assets amounted to EUR 1 million (4 million). Amortisation of capitalised borrowing costs was EUR 4 million (4 million) and the average interest rate used was 1.36% (4.99%), which represents the average costs to finance projects.

**Capital expenditure**

Capital expenditure, excluding acquisitions and shares, amounted to EUR 325 million (486 million) in 2016. Most of the major capital expenditures related to growth investments. The expansion of the Otepää plywood mill in Estonia and modernising UPM Kaukas pulp mill in Finland were finalised in 2016. In July 2016, UPM announced it will invest EUR 98 million in UPM Kymijoki pulp mill in Finland to further strengthen its position as a supplier of bleached chemical pulp for growing consumer and industrial end-use segments. Completion of the investment is scheduled for the end of 2017. In October 2016, UPM announced a EUR 35 million investment in UPM Raffatac factory in Poland to meet the increasing label stock demand in Europe. Completion of the investment is scheduled for late 2018.

In 2015 UPM’s capital expenditures related to Otepää plywood mill in Estonia, Kaukas and Kymi pulp mills in Finland, share issue from Pohjolan Voima Oy to finance the OKIloots 3 nuclear power plant project, increasing of labelling coating capacity in the Asia-Pacific region, production capacity for film labelling business in Poland and new paper machine at Changshu mill in China.

**Major capital commitments at 31 December 2016**

<table>
<thead>
<tr>
<th>EUR million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity increase / Kymi pulp mill</td>
</tr>
<tr>
<td>Capacity increase / Raffatac Poland</td>
</tr>
<tr>
<td>Debottlenecking / Kaukas pulp mill</td>
</tr>
<tr>
<td>Mill expansion / Otepää</td>
</tr>
</tbody>
</table>

**Impairment losses**

In March 2016, UPM announced the closure of Madison Paper Industries paper mill in the US. Madison Paper Industries is a joint operation between UPM-Kymmene and Northern SC Paper Corp., a subsidiary of the New York Times Company. With the closure of the mill, UPM recognised impairment charges of EUR 9 million (EUR 20 million in UPM Paper ENA business area and the corresponding adjustment of EUR 11 million in eliminations and reconciliations) on property, plant and equipment. Hydropower assets located at the mill site have been classified as assets held for sale in Note 8.4 Assets held for sale, for further information.

In November 2016, UPM announced the plan to close of SC paper mill machine 2 and UPM Stenhammil mill in Austria and SC paper machine 2 at UPM Auggsburg mill in Germany. The impairment charges recognised amounted to EUR 23 million and EUR 1 million, respectively, and affected UPM Paper ENA business area. The demand for SC papers, in line with other graphic papers, has been declining during the last years and the decline is expected to continue.

In 2015, there were no impairment charges for property, plant and equipment assets.
4.2 Forest assets

UPM is both a major forest owner and a purchaser of wood. Wood is a renewable material and the most important raw material for UPM’s businesses. At the end of 2016, UPM owned 640,000 hectares of forest in Finland and 75,000 hectares of forest in the United States. The company additionally has 253,000 hectares of forest plantations in Uruguay. The value of forest assets amounted to EUR 1,734 million (1,738 million) at the end of 2016. In 2016, UPM sourced 278 (261) million cubic meters of wood from around the world.

Forest assets

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying value, at 1 January</td>
<td>1,734</td>
<td>1,738</td>
</tr>
<tr>
<td>Additions</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>Disposals</td>
<td>-72</td>
<td>-72</td>
</tr>
<tr>
<td>Wood harvested</td>
<td>-104</td>
<td>-91</td>
</tr>
<tr>
<td>Net change in fair value</td>
<td>133</td>
<td>377</td>
</tr>
<tr>
<td>Revaluations</td>
<td>-1</td>
<td>-</td>
</tr>
<tr>
<td>Translation differences</td>
<td>18</td>
<td>39</td>
</tr>
<tr>
<td>Carrying value, at 31 December</td>
<td>1,734</td>
<td>1,738</td>
</tr>
</tbody>
</table>

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 totalling to EUR 88 million (352 million) in 2016.

In 2015, the fair value of forest assets in Finland was increased by EUR 265 million due to adjustment of long-term wood price estimates and change in discount rate. UPM continues to estimate a declining trend of real wood prices in Finland, although with a slightly slower and change in discount rate. UPM continues to estimate a declining net amount totalling to EUR 88 million (352 million) in 2016.

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 significant influence in the said energy companies.

The value of energy shareholdings amounted to EUR 1,932 million (2,085 million) at the end of 2016. These energy companies supply energy at 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.

The group divides all its forest assets for accounting purposes into growing forests, which are recognised as forest assets at fair value less costs to sell, and land, which is stated at cost. Any changes in the fair value of the growing forests are recognised in the operating profit in the income statement. The fair value is calculated on the basis of discounted future expected cash flows as there is a lack of a liquid market. Young saplings are valued at cost. The fair value of forest assets is a level 3 measure in terms of the fair value measurement hierarchy.

Key estimates and judgements

Fair valuation

The valuation process of forest assets is complex and requires management estimates and judgment on assumptions that have a significant impact on the valuation of the group’s forest assets.

- Market prices and discount rates. The fair value of energy shareholdings is a level 3 measure in terms of the fair value measurement hierarchy.

PVO’s share capital is divided into different series of shares. The B and S2 series relate to PVO’s shareholdings in Toril整oven Voima Oyj (TVO). UPM has no direct shareholdings in TVO. TVO operates two nuclear power plants (Olkiluoto 1 and Olkiluoto 2) and constructs 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 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 related energy shareholdings.

Energy shareholdings

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying value, at 1 January</td>
<td>2,085</td>
<td>2,510</td>
</tr>
<tr>
<td>Additions</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Impairment charges</td>
<td>-6</td>
<td>-35</td>
</tr>
<tr>
<td>Revaluations</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Changes in fair value recognised in other comprehensive income</td>
<td>-148</td>
<td>-424</td>
</tr>
<tr>
<td>Carrying value, at 31 December</td>
<td>1,932</td>
<td>2,085</td>
</tr>
</tbody>
</table>

Fair valuation

The electricity price estimate is based on a simulation of the Finnish electricity market. A change of 5% in the electricity price used in the estimates carries a significant impact on the valuation of the group’s forest assets. The pre-tax discount rate used to determine the fair value of the Finnish forests in 2016 was 7.0% (7.0%) and for Uruguayan plantations 10.0% (10.0%). A decrease (increase) of one percentage point in discount rate would increase (decrease) the fair value of forest assets by approximately EUR 240 million (260 million).
Other intangible assets

<table>
<thead>
<tr>
<th>EURm</th>
<th>INTANGIBLE RIGHTS</th>
<th>SOFTWARE AND OTHER INTANGIBLE ASSETS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Accumulated costs</td>
<td>523</td>
<td>665</td>
</tr>
<tr>
<td></td>
<td>Accumulated amortisation and impairments</td>
<td>-306</td>
<td>-628</td>
</tr>
<tr>
<td></td>
<td>Carrying value, at 31 December</td>
<td>218</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Carrying value, at 1 January</td>
<td>224</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Additions</td>
<td>-5</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Disposals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amortisation</td>
<td>-6</td>
<td>-19</td>
</tr>
<tr>
<td></td>
<td>Impairment</td>
<td>-2</td>
<td>-2</td>
</tr>
<tr>
<td></td>
<td>Reclassifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Translation differences</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carrying value, at 31 December</td>
<td>218</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Emission rights, not carrying value</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carrying value including emission rights, at 31 December</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EURm</th>
<th>INTANGIBLE RIGHTS</th>
<th>SOFTWARE AND OTHER INTANGIBLE ASSETS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Accumulated costs</td>
<td>534</td>
<td>669</td>
</tr>
<tr>
<td></td>
<td>Accumulated amortisation and impairments</td>
<td>-312</td>
<td>-616</td>
</tr>
<tr>
<td></td>
<td>Carrying value, at 31 December</td>
<td>224</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Carrying value, at 1 January</td>
<td>226</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Additions</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Disposals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amortisation</td>
<td>-6</td>
<td>-25</td>
</tr>
<tr>
<td></td>
<td>Translation differences</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carrying value, at 31 December</td>
<td>224</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Emission rights, not carrying value</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carrying value including emission rights, at 31 December</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 assumptions 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 of future cash flows. The most important assumptions 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 of future cash flows. The most important assumptions 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 of future cash flows. The most important assumptions 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 of future cash flows. The most important assumptions 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 of future cash flows. The most important assumptions 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 of future cash flows. The most important assumptions 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 of future cash flows. The most important assumptions 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 of future cash flows. The most important assumptions 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.
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 2016, restructuring provisions and termination provisions mainly relate to capacity closures in UPM Paper Energy business area. In 2016, UPM has closed Madison paper mill in the US. Paper machine 3 at UPM Steyrvälimäki mill in Austria and paper machine 2 at UPM Hyytinki mill in Germany are planned to take place in 2017. Total provisions made related to these closures amounted to EUR 53 million in 2016. At 31 December 2015, restructuring provisions and termination provisions mainly related to mill closures of prior years and operational restructuring in Finland and France.

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 facilities where a legal or constructive obligation exists. Other provisions are mainly attributable to onerous contracts and will be incurred over a period longer than one year. Provisions for emissions include liability to cover the obligation to return emission rights. The group possesses emission rights amounting to EUR 45 million (32 million) as intangible assets. Refer Note 2.3

4.6 Working capital

The group defines operating working capital as inventories, trade receivables and trade payables which are presented separately below. UPM is focusing on working capital efficiency and targeting a sustainable and permanent reduction in operating working capital.

<table>
<thead>
<tr>
<th>Operating working capital</th>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td>1,346</td>
<td>1,376</td>
<td></td>
</tr>
<tr>
<td>Trade receivables</td>
<td>1,360</td>
<td>1,436</td>
<td></td>
</tr>
<tr>
<td>Trade payables</td>
<td>-994</td>
<td>-917</td>
<td></td>
</tr>
<tr>
<td>Advances received</td>
<td>-19</td>
<td>-20</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,694</td>
<td>1,675</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inventories</th>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials and consumables</td>
<td>625</td>
<td>646</td>
<td></td>
</tr>
<tr>
<td>Work in progress</td>
<td>54</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Finished products and goods</td>
<td>645</td>
<td>642</td>
<td></td>
</tr>
<tr>
<td>Advance payments</td>
<td>23</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,346</td>
<td>1,370</td>
<td></td>
</tr>
</tbody>
</table>

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. Most of the receivables are covered by trade credit insurance. In certain market areas, including Asia and Northern Africa, measures to reduce credit risks include letters of credit, prepayments and bank guarantees. Maximum exposure to credit risk, without taking into account any credit enhancements, is the carrying amount of trade and other receivables.

UPM does not have significant concentration of customer credit risk. The ten largest customers accounted for approximately 18% (20%) of the trade receivables as at 31 December 2016 – i.e., approximately EUR 239 million (285 million).

In 2016, trade receivables amounting to EUR 10 million (18 million) were impaired and the loss was recorded under other costs and expenses. Impairment is recognised when there is objective evidence that the group is not able to collect the amounts due. There are no indications that the debtors will not meet their payment obligations with regard to trade receivables that are not overdue or impaired at 31 December 2016.

4.7 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 direct 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 completing 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 fair value and subsequently measured at amortised cost, less a provision for impairment. Provision for impairment is charged to the income statement when there is objective evidence that the group will not be able to collect all amounts due according to the original terms of receivables. In determining the recoverability of trade receivables the group considers any change to the credit quality of trade receivables. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy, or default or delinquency in payments more than 90 days overdue are considered indicators that the trade receivable may be irrecoverable. 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 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.

<table>
<thead>
<tr>
<th>Trade and other receivables</th>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade receivables</td>
<td>Undue</td>
<td>1,211</td>
<td>1,193</td>
</tr>
<tr>
<td>Past due up to 30 days</td>
<td>114</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Past due 31-90 days</td>
<td>17</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Past due over 90 days</td>
<td>18</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Total trade receivables</td>
<td>1,360</td>
<td>1,439</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trade and other payables</th>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accrued expenses and deferred income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel expenses</td>
<td>212</td>
<td>203</td>
<td></td>
</tr>
<tr>
<td>Interest expenses</td>
<td>300</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Indirect taxes</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Customer rebates and other items</td>
<td>205</td>
<td>188</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>451</td>
<td>437</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accounts</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>

| Key estimates and judgements | | | |
| Environmental provisions | The estimated costs used in determining the provisions are based on the actual outflows of resources required to settle the obligation and the amount can be reliably estimated. Provisions are split between expected and unexpected events expected to be incurred within 12 months of the balance sheet date (current) and amounts expected to be settled later (non-current). |

| Restructuring and termination provisions | A restructuring provision 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 expenditures 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. |

| Emission provisions | Emission obligations are recognised in provisions based on realised and subsequently depreciated as part of the asset. Emission rights held, which are recognised as intangible assets. In case of deficit in emission rights, the shortage is recognised as loss in the income statement. |

| Emission obligations are recognised in provisions based on realised and subsequently depreciated as part of the asset. Emission rights held, which are recognised as intangible assets. In case of deficit in emission rights, the shortage is recognised as loss in the income statement. |

| Strategic initiatives | Strategic initiatives are primarily related to operational restructuring, 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. |

| 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 expenditures 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 as intangible assets. In case of deficit in emission rights, the shortage is valued at the market value at the balance sheet date. |
5. Capital structure

UPM has a strong cash flow and industry-leading balance sheet that mitigates risks and enables value-enhancing strategic actions.

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.

Liquidity and refinancing risk

UPM seeks to maintain adequate liquidity under all circumstances by means of efficient cash management and restricting financial investments to investment types that can readily be converted into cash. Adequate liquidity is maintained by keeping sufficient amount of unused committed credit lines as a reserve. Refinancing risks are minimised by ensuring a balanced loan portfolio maturing schedule and sufficiently long maturities. The average loan maturity at 31 December 2016 was 5.3 years (5.5 years).

UPM has some financial agreements which have gearing as current debt in the balance sheet.

Cash and cash equivalents comprise cash in hand, deposits held at call with banks and other short-term highly liquid investments to investment types that can readily be converted into cash. Adequate liquidity is maintained by keeping sufficient amount of unused committed credit lines as a reserve.

UPM targets a net debt to EBITDA ratio of approximately 2 times or less.

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 22 million and other non-cash adjustments decreasing carrying value by EUR 18 million.

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 256 million and other non-cash adjustments decreasing carrying value by EUR 22 million.

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 256 million and other non-cash adjustments decreasing carrying value by EUR 22 million.

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 256 million and other non-cash adjustments decreasing carrying value by EUR 22 million.

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 256 million and other non-cash adjustments decreasing carrying value by EUR 22 million.

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 256 million and other non-cash adjustments decreasing carrying value by EUR 22 million.

The difference between the above nominal values and carrying value of total debt arise from fair value adjustments increasing carrying value by EUR 256 million and other non-cash adjustments decreasing carrying value by EUR 22 million.
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 assets. Net debt totalled EUR 1,131 million at the end of 2016 (2,100 million). Following the strong cash flow during 2016, the group was able to reduce net debt by EUR 909 million.

### Net debt

<table>
<thead>
<tr>
<th>Account</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds</td>
<td>717</td>
<td>1,065</td>
</tr>
<tr>
<td>Loans from financial institutions</td>
<td>664</td>
<td>1,013</td>
</tr>
<tr>
<td>Pension loans</td>
<td>77</td>
<td>158</td>
</tr>
<tr>
<td>Finance leases</td>
<td>106</td>
<td>167</td>
</tr>
<tr>
<td>Derivatives</td>
<td>34</td>
<td>71</td>
</tr>
<tr>
<td>Other loans</td>
<td>236</td>
<td>223</td>
</tr>
<tr>
<td>Non-current debt</td>
<td>1,835</td>
<td>2,797</td>
</tr>
<tr>
<td>Repayments of non-current debt</td>
<td>477</td>
<td>144</td>
</tr>
<tr>
<td>Derivatives</td>
<td>82</td>
<td>21</td>
</tr>
<tr>
<td>Other receivables</td>
<td>26</td>
<td>104</td>
</tr>
<tr>
<td>Current debt</td>
<td>585</td>
<td>267</td>
</tr>
<tr>
<td>Total debt</td>
<td>2,419</td>
<td>3,066</td>
</tr>
<tr>
<td>Loan receivables</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Derivatives</td>
<td>216</td>
<td>278</td>
</tr>
<tr>
<td>Other receivables</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Non-current interest-bearing assets</td>
<td>259</td>
<td>218</td>
</tr>
<tr>
<td>Loan receivables</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Derivatives</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Other receivables</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>992</td>
<td>626</td>
</tr>
<tr>
<td>Current interest-bearing assets</td>
<td>1,030</td>
<td>648</td>
</tr>
<tr>
<td>Total interest-bearing assets</td>
<td>1,289</td>
<td>956</td>
</tr>
<tr>
<td>Net debt</td>
<td>1,131</td>
<td>2,100</td>
</tr>
</tbody>
</table>

### Change in net debt 2016

#### Reported in financing activities in cash flow statement

<table>
<thead>
<tr>
<th>EURm</th>
<th>NON-CURRENT LOANS INCL. REPAYMENTS</th>
<th>FINANCE LEASES</th>
<th>CURRENT LOANS</th>
<th>NET DERIVATIVES</th>
<th>OTHER FINANCIAL ASSETS</th>
<th>CASH AND CASH EQUIVALENTS</th>
<th>NET DEBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying value, at 1 January</td>
<td>-2,672</td>
<td>-198</td>
<td>-104</td>
<td>195</td>
<td>33</td>
<td>426</td>
<td>-2,100</td>
</tr>
<tr>
<td>Change in net debt, cash</td>
<td>-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-1</td>
</tr>
<tr>
<td>Proceeds from non-current debt</td>
<td>-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-1</td>
</tr>
<tr>
<td>Payments of non-current debt</td>
<td>533</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>540</td>
</tr>
<tr>
<td>Change in current liabilities</td>
<td>-</td>
<td>-</td>
<td>77</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>77</td>
</tr>
<tr>
<td>Net debt flows from derivatives</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>22</td>
<td>-</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Change in other financial assets in operating cash flow</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>-</td>
<td>13</td>
</tr>
<tr>
<td>Change in other financial assets in investing cash flow</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Change in cash and cash equivalents</td>
<td>532</td>
<td>7</td>
<td>77</td>
<td>22</td>
<td>15</td>
<td>247</td>
<td>367</td>
</tr>
<tr>
<td>Carrying value, at 31 December</td>
<td>-2,082</td>
<td>-195</td>
<td>-26</td>
<td>112</td>
<td>68</td>
<td>992</td>
<td>-1,131</td>
</tr>
</tbody>
</table>

### Change in net debt 2015

#### Reported in financing activities in cash flow statement

<table>
<thead>
<tr>
<th>EURm</th>
<th>NON-CURRENT LOANS INCL. REPAYMENTS</th>
<th>FINANCE LEASES</th>
<th>CURRENT LOANS</th>
<th>NET DERIVATIVES</th>
<th>OTHER FINANCIAL ASSETS</th>
<th>CASH AND CASH EQUIVALENTS</th>
<th>NET DEBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying value, at 1 January</td>
<td>-2,978</td>
<td>-272</td>
<td>-76</td>
<td>166</td>
<td>57</td>
<td>700</td>
<td>-2,401</td>
</tr>
<tr>
<td>Change in net debt, cash</td>
<td>-2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-2</td>
</tr>
<tr>
<td>Proceeds from non-current debt</td>
<td>-22</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-22</td>
</tr>
<tr>
<td>Payments of non-current debt</td>
<td>-89</td>
<td>80</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>519</td>
</tr>
<tr>
<td>Change in current liabilities</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-22</td>
<td>-</td>
<td>-</td>
<td>-22</td>
</tr>
<tr>
<td>Net debt flows from derivatives</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-43</td>
<td>-</td>
<td>-</td>
<td>-43</td>
</tr>
<tr>
<td>Change in other financial assets in operating cash flow</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-3</td>
<td>-</td>
<td>-</td>
<td>-3</td>
</tr>
<tr>
<td>Change in cash and cash equivalents</td>
<td>-417</td>
<td>80</td>
<td>-22</td>
<td>-43</td>
<td>-</td>
<td>-</td>
<td>-3</td>
</tr>
<tr>
<td>Change in net debt, non-cash</td>
<td>-2</td>
<td>-</td>
<td>-</td>
<td>-75</td>
<td>-</td>
<td>-</td>
<td>-75</td>
</tr>
<tr>
<td>Fair value gains and losses</td>
<td>-262</td>
<td>-105</td>
<td>-1</td>
<td>-72</td>
<td>-</td>
<td>-</td>
<td>-77</td>
</tr>
<tr>
<td>Exchange gains and losses</td>
<td>5</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-7</td>
</tr>
<tr>
<td>Effective interest rate adjustment</td>
<td>-11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-11</td>
</tr>
<tr>
<td>Other non-cash changes</td>
<td>-111</td>
<td>-7</td>
<td>-8</td>
<td>-72</td>
<td>-</td>
<td>-</td>
<td>-5</td>
</tr>
<tr>
<td>Carrying value, at 31 December</td>
<td>-2,872</td>
<td>-199</td>
<td>-104</td>
<td>195</td>
<td>53</td>
<td>626</td>
<td>-2,100</td>
</tr>
</tbody>
</table>

### Accounting policies

#### Debt

Debt comprising of bonds, bank and pension loans and other loans is recognised initially at fair value, net of transaction costs and subsequently measured at amortised cost using the effective interest method. Any difference between proceeds (net of transaction costs) and the redemption value is recognised in the income statement over the estimated life of the borrowing. UPM classes 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.

### Free cash flow

Free cash flow is primarily a liquidity measure. It is an important indicator of UPM's overall operational performance as it reflects the cash generated from operations after investing activities. UPM’s free cash flow has enabled payment of dividends as well as repayments of debt reducing net debt significantly.

<table>
<thead>
<tr>
<th>EURm</th>
<th>NON-CURRENT LOANS INCL. REPAYMENTS</th>
<th>FINANCE LEASES</th>
<th>CURRENT LOANS</th>
<th>NET DERIVATIVES</th>
<th>OTHER FINANCIAL ASSETS</th>
<th>CASH AND CASH EQUIVALENTS</th>
<th>NET DEBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying value, at 1 January</td>
<td>1,686</td>
<td>1,185</td>
<td>762</td>
<td>1,735</td>
<td>869</td>
<td>707</td>
<td>1,201</td>
</tr>
<tr>
<td>Change in net debt, cash</td>
<td>1,624</td>
<td>750</td>
<td>582</td>
<td>707</td>
<td>869</td>
<td>707</td>
<td>1,201</td>
</tr>
<tr>
<td>Dividend paid</td>
<td>-2,100</td>
<td>-2,100</td>
<td>-2,100</td>
<td>-2,100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in cash and cash equivalents</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carrying value, at 31 December</td>
<td>-1,131</td>
<td>-2,100</td>
<td>-2,100</td>
<td>-2,100</td>
<td>-2,100</td>
<td>-2,100</td>
<td>-2,100</td>
</tr>
</tbody>
</table>

### Bonds

<table>
<thead>
<tr>
<th>RISK RATE PERIOD</th>
<th>INTEREST RATE</th>
<th>CURRENCY</th>
<th>NOMINAL VALUE ISSUED, MILLION</th>
<th>CARrying VALUE 2016 EURm</th>
<th>CARrying VALUE 2015 EURm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed rate</td>
<td>1997–2027</td>
<td>7.450</td>
<td>USD</td>
<td>375</td>
<td>475</td>
</tr>
<tr>
<td></td>
<td>2000–2016</td>
<td>3.550</td>
<td>JPY</td>
<td>10,000</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2002–2017</td>
<td>6.625</td>
<td>EUR</td>
<td>250</td>
<td>293</td>
</tr>
<tr>
<td></td>
<td>2003–2018</td>
<td>7.450</td>
<td>USD</td>
<td>250</td>
<td>246</td>
</tr>
<tr>
<td>Value, at 31 December</td>
<td>1,010</td>
<td>1,163</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Current portion</td>
<td>292</td>
<td>292</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Non-current portion</td>
<td>718</td>
<td>1,163</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Leased assets included in property, plant and equipment

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accumulated costs</td>
<td>154</td>
<td>153</td>
</tr>
<tr>
<td>Accumulated depreciation and impairments</td>
<td>59</td>
<td>66</td>
</tr>
</tbody>
</table>

Carrying value of 31 December | 95 | 107 |

The group also leases office, manufacturing and warehouse space through various non-cancellable operating leases. Certain contracts contain renewal options for various periods of time.

Future minimum lease payments

<table>
<thead>
<tr>
<th>EURm</th>
<th>Finance leases</th>
<th>Operating leases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 1 year</td>
<td>94</td>
<td>27</td>
</tr>
<tr>
<td>Between 1 and 5 years</td>
<td>152</td>
<td>189</td>
</tr>
<tr>
<td>More than 5 years</td>
<td>24</td>
<td>185</td>
</tr>
<tr>
<td>Total</td>
<td>207</td>
<td>213</td>
</tr>
<tr>
<td>Of which interest</td>
<td>-12</td>
<td>-15</td>
</tr>
<tr>
<td>Present value of future minimum lease payments</td>
<td>185</td>
<td>198</td>
</tr>
</tbody>
</table>

Accounting policies

Leases

Leases of property, plant and equipment where the group, as a lessee, has substantially all the risks and rewards of ownership are classified as finance leases. Finance leases are recognised as assets and liabilities in the balance sheet at the commencement of lease term at the lower of the fair value of the leased property and the present value of the minimum lease payments.

Each lease payment is allocated between the liability and finance charge. The corresponding rental obligations, net of finance charges, are included in other non-current debt. The interest element of the finance cost is charged to the income statement over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. Property, plant and equipment acquired under finance leases are depreciated over the shorter of the asset’s useful life and the lease term.

Leases where the lessor retains substantially all the risks and rewards of ownership are classified as operating leases. Payments made as a lease under operating leases are charged to the income statement on a straight-line basis over the period 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 and derivatives.

Classification of financial assets into different measurement categories depends on the purpose for which the financial assets were initially acquired and is determined at the acquisition date. Financial assets and liabilities are offset and the net amount reported in the balance sheet when there is a legally enforceable right 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.

<table>
<thead>
<tr>
<th>EURm</th>
<th>Fair value through profit and loss</th>
<th>Available for sale financial assets</th>
<th>Loans and receivables</th>
<th>Derivatives used for hedging</th>
<th>Financial liabilities at amortised cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Energy shareholdings</td>
<td>1,932</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Other non-current financial assets:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,932</td>
</tr>
<tr>
<td></td>
<td>Loans and receivables</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>292</td>
<td>312</td>
</tr>
<tr>
<td></td>
<td>Trade and other receivables</td>
<td>-</td>
<td>1,763</td>
<td>-</td>
<td>-</td>
<td>1,763</td>
</tr>
<tr>
<td></td>
<td>Other current financial assets:</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Loans and receivables</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>49</td>
<td>-</td>
<td>-</td>
<td>79</td>
<td>128</td>
</tr>
<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>111</td>
<td>136</td>
<td>2,990</td>
<td>4,238</td>
<td>4,391</td>
</tr>
<tr>
<td></td>
<td>Non-current debt:</td>
<td>112</td>
<td>136</td>
<td>2,990</td>
<td>4,238</td>
<td>4,391</td>
</tr>
<tr>
<td></td>
<td>Loans</td>
<td>-</td>
<td>-</td>
<td>2,726</td>
<td>2,726</td>
<td>2,726</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>41</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>142</td>
<td>177</td>
<td>3,297</td>
<td>4,297</td>
<td>4,444</td>
</tr>
<tr>
<td></td>
<td>Other liabilities:</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>41</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>134</td>
<td>177</td>
<td>3,397</td>
<td>4,397</td>
<td>4,568</td>
</tr>
</tbody>
</table>

Financial assets and liabilities by category at the end of 2015

<table>
<thead>
<tr>
<th>EURm</th>
<th>Fair value through profit and loss</th>
<th>Available for sale financial assets</th>
<th>Loans and receivables</th>
<th>Derivatives used for hedging</th>
<th>Financial liabilities at amortised cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Energy shareholdings</td>
<td>1,932</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Other non-current financial assets:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,932</td>
</tr>
<tr>
<td></td>
<td>Loans and receivables</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Trade and other receivables</td>
<td>-</td>
<td>1,726</td>
<td>-</td>
<td>-</td>
<td>1,726</td>
</tr>
<tr>
<td></td>
<td>Other current financial assets:</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>6</td>
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<tr>
<td></td>
<td>Loans and receivables</td>
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<td>-</td>
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<tr>
<td></td>
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<td>-</td>
<td>-</td>
<td>56</td>
</tr>
<tr>
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<td>Total financial liabilities:</td>
<td>109</td>
<td>109</td>
<td>2,132</td>
<td>4,238</td>
<td>4,347</td>
</tr>
<tr>
<td></td>
<td>Non-current debt:</td>
<td>110</td>
<td>110</td>
<td>1,932</td>
<td>4,238</td>
<td>4,348</td>
</tr>
<tr>
<td></td>
<td>Loans</td>
<td>-</td>
<td>-</td>
<td>1,800</td>
<td>1,800</td>
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</tr>
<tr>
<td></td>
<td>- Derivatives</td>
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<td>-</td>
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<tr>
<td></td>
<td>Trade and other payables</td>
<td>-</td>
<td>1,594</td>
<td>-</td>
<td>-</td>
<td>1,594</td>
</tr>
<tr>
<td></td>
<td>Other current financial liabilities:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Derivatives</td>
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<td>-</td>
<td>-</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>110</td>
<td>110</td>
<td>3,584</td>
<td>4,238</td>
<td>4,348</td>
</tr>
<tr>
<td></td>
<td>Other liabilities:</td>
<td>142</td>
<td>142</td>
<td>3,584</td>
<td>4,238</td>
<td>4,380</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>82</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>82</td>
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<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>134</td>
<td>134</td>
<td>4,068</td>
<td>4,238</td>
<td>4,372</td>
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<td>1,033</td>
<td>4,238</td>
<td>4,341</td>
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<tr>
<td></td>
<td>Loans</td>
<td>-</td>
<td>-</td>
<td>502</td>
<td>502</td>
<td>502</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>92</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Trade and other payables</td>
<td>-</td>
<td>1,800</td>
<td>-</td>
<td>-</td>
<td>1,800</td>
</tr>
<tr>
<td></td>
<td>Other current financial liabilities:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>21</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Loans and receivables</td>
<td>-</td>
<td>-</td>
<td>2,726</td>
<td>2,726</td>
<td>2,726</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>292</td>
<td>312</td>
</tr>
<tr>
<td></td>
<td>Derivatives</td>
<td>110</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>134</td>
<td>134</td>
<td>4,068</td>
<td>4,238</td>
<td>4,372</td>
</tr>
<tr>
<td></td>
<td>Other liabilities:</td>
<td>134</td>
<td>134</td>
<td>3,584</td>
<td>4,238</td>
<td>4,380</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Loans and receivables</td>
<td>-</td>
<td>-</td>
<td>502</td>
<td>502</td>
<td>502</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>21</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Derivatives</td>
<td>21</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>134</td>
<td>134</td>
<td>4,068</td>
<td>4,238</td>
<td>4,372</td>
</tr>
<tr>
<td></td>
<td>Other liabilities:</td>
<td>134</td>
<td>134</td>
<td>3,584</td>
<td>4,238</td>
<td>4,380</td>
</tr>
<tr>
<td></td>
<td>- Derivatives</td>
<td>20</td>
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<td></td>
<td>Loans and receivables</td>
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<tr>
<td></td>
<td>- Derivatives</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>292</td>
<td>312</td>
</tr>
<tr>
<td></td>
<td>Total financial liabilities:</td>
<td>134</td>
<td>134</td>
<td>4,068</td>
<td>4,238</td>
<td>4,372</td>
</tr>
</tbody>
</table>

Financial assets and liabilities by category at the end of 2015

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 1,804 million (2,755 million) at the end of 2016. For quoted bonds, the fair values are based on the quoted market value as of 31 December. At the end of 2016, 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

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Level 2</td>
<td>Total</td>
</tr>
<tr>
<td>Financial assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derivatives, non-qualifying hedges</td>
<td>2</td>
<td>63</td>
</tr>
<tr>
<td>Derivatives used for hedging</td>
<td>32</td>
<td>241</td>
</tr>
<tr>
<td>Energy shareholdings</td>
<td>1,932</td>
<td>1,932</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>304</td>
</tr>
<tr>
<td>Financial liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derivatives, non-qualifying hedges</td>
<td>19</td>
<td>93</td>
</tr>
<tr>
<td>Derivatives used for hedging</td>
<td>42</td>
<td>94</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>187</td>
</tr>
</tbody>
</table>

There have been no transfers between levels in 2016 and 2015.

**Accounting policies**

**Fair value through profit or loss**

This category includes derivatives that don’t qualify hedge accounting. They are measured at fair value and any gains or losses from subsequent measurement are recognised in the income statement.

**Available-for-sale financial assets**

This category includes mainly UPM’s energy shareholdings. These assets are measured at fair value through other comprehensive income.

**Loans and receivables**

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. They are included in non-current assets unless they mature within 12 months of the balance sheet date. 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. Loan receivables are impaired if the carrying amount is greater than the estimated recoverable amount.

**Derivatives used for hedging**

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 4.2 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). All significant inputs required to value an instrument are observable, the instrument is included in level 2. Derivatives, level 2 include OTC derivatives like forward foreign exchange contracts, foreign currency options, interest and currency swaps and commodity swaps. Specific valuation techniques used to value financial instruments at level 2 include the following methods:
  - Interest forward rate agreements (FRA) are fair valued based on quoted market rates on the balance sheet date. Forward foreign exchange contracts are fair valued based on the contract forward rates at the balance sheet date. Foreign currency options are fair valued based on quoted market rates and market volatility rates on the balance sheet date by using the Black&Scholes option valuation model. Interest and currency swap instruments are fair valued at present value of the estimated future cash flows based on observable yield curves. Commodity swaps are fairly valued based on forward curve quotations received from service providers.

An embedded derivative that is by nature a foreign currency forward contract is valued 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 includes 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 Notes 4.3 Forest assets.

**5.4 Financial income and expenses**

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange rate and fair value gains and losses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derivatives, non-qualifying hedges</td>
<td>-67</td>
<td>85</td>
</tr>
<tr>
<td>Fair-value gains and losses on derivatives designated as fair value hedges</td>
<td>-64</td>
<td>-13</td>
</tr>
<tr>
<td>Fair value adjustment of debt attributable to interest rate risk</td>
<td>-55</td>
<td>5</td>
</tr>
<tr>
<td>Fair value adjustment of firm commitments attributable to foreign exchange rate risk</td>
<td>-3</td>
<td></td>
</tr>
<tr>
<td>Exchange gains and losses on financial liabilities measured at amortised cost</td>
<td>13</td>
<td>-105</td>
</tr>
<tr>
<td>Exchange gains and losses on loans and receivables</td>
<td>36</td>
<td>13</td>
</tr>
<tr>
<td>Other exchange rate and fair value gains and losses</td>
<td>-7</td>
<td>13</td>
</tr>
<tr>
<td>Interest and other finance costs, net</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest expense on financial liabilities measured at amortised cost</td>
<td>-111</td>
<td>-122</td>
</tr>
<tr>
<td>Interest income on derivatives</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>Interest income on loans and receivables</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Dividend income from energy shareholdings</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Losses on sale of associates and joint ventures</td>
<td>-4</td>
<td>-</td>
</tr>
<tr>
<td>Other financial expenses, net</td>
<td>-49</td>
<td>-68</td>
</tr>
<tr>
<td>Total</td>
<td>-58</td>
<td>-67</td>
</tr>
</tbody>
</table>

**Net gains and losses on derivatives included in the operating profit**

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow hedges reclassified from hedging reserve</td>
<td>-38</td>
<td>-107</td>
</tr>
<tr>
<td>Cash flow hedges reclassified directly in operating profit</td>
<td>-4</td>
<td>6</td>
</tr>
<tr>
<td>Non-qualifying hedges</td>
<td>-28</td>
<td>-78</td>
</tr>
<tr>
<td>Total</td>
<td>-14</td>
<td>-79</td>
</tr>
</tbody>
</table>

**Foreign exchange gains and losses in the income statement excluding non-qualifying hedges**

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>17</td>
<td>-8</td>
</tr>
<tr>
<td>Other operating income</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Financial income and expenses</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>-26</td>
</tr>
</tbody>
</table>

**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 except for the redemption clause as discussed under > Shareholders in the Report of the Board of Directors. At 31 December 2016, 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.

**Accounting policies**

Transaction costs directly relating to the issue of new shares are recognised, net of tax, as an expense in the year of issue. 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 unreasonable changes in financial markets and thus 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 whose 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. The centralisation of treasury functions enables efficient financial risk management, cost-efficiency and efficient cash management.

Foreign exchange risk

The group is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to USD, GBP and JPY. Foreign exchange risk arises from contracted and expected commercial future payment flows (transaction exposure), from changes in value of recognised assets and liabilities denominated in foreign currency and from changes in the value of assets and liabilities in foreign subsidiaries (translation exposure). The objective of foreign exchange risk management is to limit the uncertainty created by changes in foreign exchange rates on the future value of cash flows and earnings as well as in the group’s balance sheet by hedging foreign exchange risk in foreign currency flows and balance sheet exposures. 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. The position policy is to hedge an average of 50% of its estimated net currency cash flow. Some highly probable cash flows have been hedged for longer than 12 months while deviating from the risk neutral hedging level at the same time. At 31 December 2016, 50% (49%) of the forecast 12-month currency flow was hedged.

Translation exposure

The group has several currency denominated assets and liabilities on its balance sheet such as foreign currency bonds, loans and deposits, group internal loans and cash in other currencies than functional currencies. The aim is to hedge this balance sheet exposure fully. The group might, however, within the limits set in the group Treasury Policy have unhedged balance sheet exposures. At 31 December 2016 unhedged balance sheet exposures in net of interest-bearing assets and liabilities amounted to EUR 15 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. The aim is to hedge the exposure in main currencies. The nominal values of the hedging instruments in net of accounts payable and receivable hedging were EUR 555 million (770 million) Hedge accounting is not applied and all fair value changes of hedging instruments are recognised through profit and loss immediately.

The group has investments in foreign subsidiaries that are subject to foreign currency translation differences. The exchange rate differences arising from translation of foreign subsidiaries and 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 2016, part of the foreign exchange risk associated with the net investment in Uruguay was hedged and net investment hedge accounting has been applied.

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 cash flows.

<table>
<thead>
<tr>
<th>Currency</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>1,060</td>
<td>1,010</td>
</tr>
<tr>
<td>GBP</td>
<td>370</td>
<td>600</td>
</tr>
<tr>
<td>JPY</td>
<td>210</td>
<td>230</td>
</tr>
<tr>
<td>Others</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

12 months net risk currency flow

The following assumptions were made when calculating the sensitivity to changes in the foreign exchange risk:

- Major part of non-derivative financial instruments (such as cash and cash equivalents, trade receivables, debt and trade payables) are either directly denominated in the functional currency or are transferred to the functional currency through the use of derivatives i.e. the balance sheet position is close to zero. Exchange rate fluctuations have therefore minor or no effects on profit or loss.
- The position includes foreign currency forward contracts that are not part of the effective cash flow hedge having an effect on equity.
- 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. 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 target net debt duration levels within an allowed limit. The group uses interest rate derivatives to change the duration of the net debt. At 31 December 2016 the average duration was 3.1 years (2.2 years).

The table below shows the nominal value of interest rate position exposed to interest rate risk in each significant currency. The position includes all cash balances, interest bearing liabilities and assets and currency derivatives used to hedge these items. The positive/negative position indicates a net liability/asset position by currency and that the group is exposed to repricing and/or fair value interest rate risk by interest rate movements in that currency.

<table>
<thead>
<tr>
<th>Currency</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>GBP</td>
<td>-0.1</td>
<td>-0.2</td>
</tr>
<tr>
<td>JPY</td>
<td>-0.3</td>
<td>-0.4</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>21</td>
</tr>
</tbody>
</table>

12 months net risk currency flow

- The position excludes foreign currency denominated future cash-flows and effects of translation exposure and related hedges.

Translation exposure

The group has several currency denominated assets and liabilities on its balance sheet such as foreign currency bonds, loans and deposits, group internal loans and cash in other currencies than functional currencies. The aim is to hedge this balance sheet exposure fully. The group might, however, within the limits set in the group Treasury Policy have unhedged balance sheet exposures. At 31 December 2016 unhedged balance sheet exposures in net of interest-bearing assets and liabilities amounted to EUR 15 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. The aim is to hedge the exposure in main currencies. The nominal values of the hedging instruments in net of accounts payable and receivable hedging were EUR 555 million (770 million) Hedge accounting is not applied and all fair value changes of hedging instruments are recognised through profit and loss immediately.

The group has investments in foreign subsidiaries that are subject to foreign currency translation differences. The exchange rate differences arising from translation of foreign subsidiaries and 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 2016, part of the foreign exchange risk associated with the net investment in Uruguay was hedged and net investment hedge accounting has been applied.

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 cash flows.

<table>
<thead>
<tr>
<th>Currency</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>1,060</td>
<td>1,010</td>
</tr>
<tr>
<td>GBP</td>
<td>370</td>
<td>600</td>
</tr>
<tr>
<td>JPY</td>
<td>210</td>
<td>230</td>
</tr>
<tr>
<td>Others</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

12 months net risk currency flow

The following assumptions were made when calculating the sensitivity to changes in the foreign exchange risk:

- Major part of non-derivative financial instruments (such as cash and cash equivalents, trade receivables, debt and trade payables) are either directly denominated in the functional currency or are transferred to the functional currency through the use of derivatives i.e. the balance sheet position is close to zero. Exchange rate fluctuations have therefore minor or no effects on profit or loss.
- The position includes foreign currency forward contracts that are not part of the effective cash flow hedge having an effect on equity.
- 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. 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 target net debt duration levels within an allowed limit. The group uses interest rate derivatives to change the duration of the net debt. At 31 December 2016 the average duration was 3.1 years (2.2 years).

The table below shows the nominal value of interest rate position exposed to interest rate risk in each significant currency. The position includes all cash balances, interest bearing liabilities and assets and currency derivatives used to hedge these items. The positive/negative position indicates a net liability/asset position by currency and that the group is exposed to repricing and/or fair value interest rate risk by interest rate movements in that currency.

<table>
<thead>
<tr>
<th>Currency</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>GBP</td>
<td>-0.1</td>
<td>-0.2</td>
</tr>
<tr>
<td>JPY</td>
<td>-0.3</td>
<td>-0.4</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>21</td>
</tr>
</tbody>
</table>
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 reserves. 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.

Fair value hedges

The group applies fair value hedge accounting for hedging fixed interest rate risk on debt. Changes in the fair value of derivatives that are designated and qualify as fair value hedges and that are highly effective both prospectively and retrospectively 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.

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 minimizes counterparty risk also by using a number of major banks and financial institutions. Creditworthiness of counterparties is constantly monitored by Treasury and Risk Management.

No derivatives are subject to offsetting in the group’s financial statements. All derivatives are under ISDA or similar master netting agreement.

Net fair values of derivatives calculated by counterparty

Cash collateral pledged for derivative contracts totalled EUR 19 million of which EUR 17 million relate to commodity contracts and EUR 2 million to interest rate forward contracts.
7. Income tax

7.1 Tax on profit for the year

In 2016, tax on profit for the year amounted to EUR 200 million (159 million). The effective tax rate was 18.5% (14.8%). In 2016 and 2015, the effective tax rate was affected by the income not subject to tax from subsidiaries operating in tax-free zones.

In 2015, other items include tax benefit of EUR 9 million related to capital gain from sale of forestland in UK. In 2014 where tax authorities accepted treatment of gain as tax-exempt in 2015.

### Income tax

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current tax expense</td>
<td>172</td>
<td>95</td>
</tr>
<tr>
<td>Change in deferred taxes</td>
<td>28</td>
<td>64</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>159</strong></td>
</tr>
</tbody>
</table>

### Tax rate reconciliation

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computed tax at Finnish statutory rate 20%</td>
<td>216</td>
<td>215</td>
</tr>
<tr>
<td>Difference between Finnish and foreign rates</td>
<td>27</td>
<td>16</td>
</tr>
<tr>
<td>Non-deductible expenses and tax-exempt income</td>
<td>-23</td>
<td>-6</td>
</tr>
<tr>
<td>Tax loss with no tax benefit</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Results of associates</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>Change in tax legislation</td>
<td>-4</td>
<td>-4</td>
</tr>
<tr>
<td>Change in recoverability of deferred tax assets</td>
<td>-1</td>
<td>-1</td>
</tr>
<tr>
<td>Utilisation of previously unrecognised tax losses</td>
<td>-10</td>
<td>-6</td>
</tr>
<tr>
<td>Other items</td>
<td>-5</td>
<td>-12</td>
</tr>
<tr>
<td><strong>Total income taxes</strong></td>
<td><strong>200</strong></td>
<td><strong>159</strong></td>
</tr>
<tr>
<td><strong>Effective tax rate, %</strong></td>
<td>18.5%</td>
<td>14.8%</td>
</tr>
</tbody>
</table>

### Deferred tax

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred tax assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intangible assets and property, plant and equipment</td>
<td>107</td>
<td>132</td>
</tr>
<tr>
<td>Inventories</td>
<td>42</td>
<td>37</td>
</tr>
<tr>
<td>Retirement benefit liabilities and provisions</td>
<td>145</td>
<td>129</td>
</tr>
<tr>
<td>Other temporary differences</td>
<td>23</td>
<td>50</td>
</tr>
<tr>
<td>Tax losses and tax credits carried forward</td>
<td>226</td>
<td>241</td>
</tr>
<tr>
<td><strong>Offset against liabilities</strong></td>
<td><strong>-97</strong></td>
<td><strong>-123</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>446</strong></td>
<td><strong>446</strong></td>
</tr>
</tbody>
</table>

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.

### 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.

### Movements in deferred tax assets and liabilities

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying value, at 1 January</td>
<td>10</td>
<td>104</td>
</tr>
<tr>
<td>Charged to income statement</td>
<td>-28</td>
<td>-64</td>
</tr>
<tr>
<td>Charged to other comprehensive income</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Exchange rate adjustments</td>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td><strong>Net deferred tax assets (liabilities)</strong></td>
<td><strong>-11</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

8. Group structure

8.1 Business acquisitions and disposals

In 2016 and 2015, no business acquisitions were made. In 2016, UPM had no business disposals. In 2015, UPM sold 100% of its shares of Torni Forestry Ltd to BW Timber Ltd in the UK.

The following table summarises the amount of assets and liabilities related to disposed.

<table>
<thead>
<tr>
<th>EURm</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories</td>
<td>5</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>24</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>3</td>
</tr>
<tr>
<td>Provisions</td>
<td>2</td>
</tr>
<tr>
<td>Trade and other payables</td>
<td>22</td>
</tr>
<tr>
<td>Net assets</td>
<td>8</td>
</tr>
<tr>
<td>Gross on disposals</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total consideration</strong></td>
<td><strong>11</strong></td>
</tr>
<tr>
<td>Settled in cash and cash equivalents</td>
<td>11</td>
</tr>
<tr>
<td>Cash in subsidiaries disposed</td>
<td>-3</td>
</tr>
<tr>
<td><strong>Net cash arising from disposals</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

### Accounting policies

UPM consolidates acquired entities at the acquisition date which is when it gains control using the acquisition method. Consideration transferred is determined and the fair value of any 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 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.

### 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 2016, net operating loss carry-forwards for which the group has not recorded a tax loss carry-forward amounted to EUR 744 million (797 million), of which EUR 622 million (665 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 has been recognised due to uncertainty of their utilisation amounted to EUR 842 million (648 million) in 2016. These net operating loss carry-forwards are mainly attributable to certain German and French subsidiaries. In addition, the group has not recognised deferred tax assets on loss carry-forwards amounting to EUR 450 (423) million which relate to closed Miramichi paper mill in Canada.

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.

### Key estimates and judgements

#### Recognition of deferred tax assets

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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.
### 8.2 Principal subsidiaries and joint operations

#### JOINT OPERATIONS

<table>
<thead>
<tr>
<th>SUBSIDIARY</th>
<th>COUNTRY OF INCORPORATION</th>
<th>HOLDING % 2016</th>
<th>HOLDING % 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oy Ahlholm (Pohjolan Voima Oy, G series)</td>
<td>FI</td>
<td>27.88</td>
<td>27.88</td>
</tr>
<tr>
<td>EVRO Entsorgungs- und Energieverwertungs- gesellschaft mbH</td>
<td>AT</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Jari-Soome Vorma Oy</td>
<td>FI</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Kaisuon Vorma Oy</td>
<td>FI</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Kaskean Vorma Oy (Pohjolan Vorma Oy, OP series)</td>
<td>FI</td>
<td>54.00</td>
<td>54.00</td>
</tr>
<tr>
<td>Kymos Vorma Oy (Pohjolan Vorma Oy, O2 series)</td>
<td>FI</td>
<td>76.00</td>
<td>76.00</td>
</tr>
<tr>
<td>Madison Paper Industries</td>
<td>US</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Raynac Browncoats Oy (Pohjolan Vorma Oy, Os series)</td>
<td>FI</td>
<td>71.95</td>
<td>71.95</td>
</tr>
</tbody>
</table>

In 2016, UPM changed its corporate structure in Finland to better match its current business structure. Three new subsidiaries were established in Finland: UPM Energy Oy, UPM Paper Asia Oy and UPM Paper ENA Oy. The personnel and assets of UPM Energy, UPM Specialty Papers and UPM Paper ENA (Europe & North America) in Finland were transferred to the new companies on 1 July 2016. UPM Raflatac and UPM Plywood already operated in their own subsidiaries in Finland. Assets and personnel of UPM Biorefining continued to remain part of UPM-Kymmene Corporation.

#### Subsidiaries and joint operations

- Refer Note 8.2 Principal subsidiaries and joint operations.

### 8.3 Related party transactions

#### The Board of Directors and the Group Executive Team

There have been no 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 2016 and 2015.

For information concerning shares held by members of the Board of Directors and members of the Group Executive Team, 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 Paperikeräys Oy. Austrian Paper Recycling GmbH purchases recovered paper in Austria and L C s r l in Italy. A.S.D. Altipaper Sortierung Dachau GmbH is a German recovered paper sorting company. The purchases from those four companies represent approximately 79% (81%) of total recovered paper purchases. The transactions with associates and joint ventures are presented in the table below. The group has no individual material associates or joint ventures.

#### 8.4 Assets held for sale

Assets classified as held for sale at the end of 2016 relate to hydro power assets located at the mill site in Madison Paper Industries in the US amounting to EUR 8 million. At the end of 2015, there were no assets classified as held for sale.

### 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.

The table includes subsidiaries with sales exceeding EUR 2 million in 2016.
In June 2013, UPM announced that it was participating in the share issue from Pohjolan Voima Oy to finance the OL3 nuclearelectric power plant project. UPM’s commitment of the issue is EUR 119 million, of which EUR 93 million has been paid during the previous years. The remaining part of the share issue will be implemented in the coming years based on the financing needs of the project.

9.2 Litigation
Group companies
In 2011, Metahallitus (a Finnish state enterprise, which administers state-owned land) filed a claim for damages against UPM and two other Finnish forest companies. The claim was based on a judgment in the Helsinki District Court of 3 December 2009 whereby the defendants were deemed to have breached competition rules in the Finnish roundwood market. In addition to Metahallitus, individuals and companies, as well as municipalities and parishes, have filed claims relating to the Market Court decision. The capital amount of all of the claims after the District Court’s rejected some claims and after certain claimants waived their claims totals currently EUR 183.5 million in the aggregate jointly and severally against UPM and two other companies; alternatively and severally against UPM, this represents EUR 22 million in the aggregate. In addition to the claims on capital amounts, the claimants are also requesting compensation relating to value added tax and interest. All the claims are covered in their entirety. No provision has been made in UPM’s accounts for any of these claims. On 22 June 2016 the District Court rendered a judgment whereby it rejected the damages claim of Metahallitus against UPM, and the other two Finnish forest companies. The District Court ordered Metahallitus to pay UPM compensation for legal expenses. The capital amount of Metahallitus’s claim was in total EUR 159.5 million, of which EUR 23 million was based on agreements entered into before the Helsinki District Court’s judgment to the Court of Appeal.

In December 2008 the Supplier initiated the International Chamber of Commerce (ICC) arbitration proceedings in which the Supplier was seeking compensation for the damages it suffered from the interruptions of the Supplier’s electricity production of the OL3 plant unit during the early part of the project (time schedule, licensing and licensability, and system design). This comprises many of the facts and matters that TVO’s court-ordered claims against the Supplier, as well as certain key matters that the Supplier relies upon in its claims against TVO. In doing so, the partial award has finally resolved the majority of these facts and matters in favor of TVO, and conversely has rejected the great majority of the Supplier’s contentions in this regard. The partial award does not take a position on the claimed monetary amounts. The arbitration proceeding is still going on with further partial awards to come before the final award where the tribunal will decide on the liabilities of the parties to pay compensation.

As of December 2016, the partial award has been rendered. The only exceptions are short-term and low-value cases.

The group is currently assessing whether more hedge relationships might be eligible for hedge accounting.

9.3 Events after the balance sheet date
The Group’s management is not aware of any significant events occurring after 31 December 2016.

10. Other notes
10.1 New standards and amendments – forthcoming requirements
As at 31 December 2016, the following standards and amendments relevant to group had been issued but were not mandatory for annual reporting periods ending 31 December 2016.

1 January 2018

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>NATURE OF CHANGE AND IMPACT</th>
<th>GROUP ADOPTION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRS 9 Financial Instruments</td>
<td>IFRS 9 includes requirements for classification, measurement and recognition of financial assets and financial liabilities. IFRS 9 establishes three primary measurement categories for financial assets: amortised cost, fair value through other comprehensive income and fair value through profit or loss. The basis of classification depends on the entity's business model and the contractual cash flow characteristics of the financial asset. The group does not expect material impact from the new classification and measurement rules on the group's financial statements. For equity investments currently classified as available for sale presentation of changes in fair value in other comprehensive income is available also in new standard. However, change in fair value is required to remain in other comprehensive income. IFRS 9 recalibrates requirements for hedge effectiveness by removing the bright-line test of the 80-125% and retrospective tests for assessing hedge effectiveness. It requires an economic relationship between the hedged item and hedging instrument and for the hedged ratio to be the same as the one management actually uses for risk management purposes. The group is currently assessing whether more hedge relationships might be eligible for hedge accounting.</td>
<td>1 January 2018</td>
</tr>
<tr>
<td>FRS 16 Leases</td>
<td>IFRS 16 sets out the principles for the recognition, measurement, presentation and disclosure of leases. It will result in almost all leases being recognised on the balance sheet, as the distinction between operating and finance leases is removed. Under the new standard, an asset (the right to use the leased item) and a financial liability to pay rentals are recognised. The only exceptions are short-term and low-value leases.</td>
<td>1 January 2019</td>
</tr>
<tr>
<td>Amendment to IFRS 2 Share-based Payment</td>
<td>Amendment to IFRS 2 clarifies the classification and measurement of share-based payment transactions. The group will make an assessment of possible impact during 2017. The amendments to be applied prospectively.</td>
<td>1 January 2018</td>
</tr>
</tbody>
</table>

According to TVO, Areva Group announced in 2016 a restructuring of its business. The restructuring plan involves a transfer of the activities of the OLE project and resources necessary for its completion, to a new company which is to be sold to a consortium led by EDF. According to Areva’s announcement the OLE project is expected to take place during the second half of 2017. The implementation of the restructuring plan is subject to decisions and clearances. TVO requires that the restructuring process will be completed within the current schedule and that all obligations under the plant contract are fulfilled. TVO has sought to obtain more detailed information from Areva Group on its announced restructuring and its impacts on the OLE project with a view to securing the assurances that all the necessary financial and other resources, particularly in relation to the EDF technology capabilities, will be allocated for the completion and long-term operation of OLE and that the Supplier Areva-Siemens will meet all their contractual obligations.
10.2 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 gain on sale of energy shareholdings as presented on the face of the IFRS income statement.
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 | 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 Biofuelling, UPM Specialty Papers and UPM Paper ENKa is determined as one cost (EUR 0.75) 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 excluding goodwill arising from business combinations, energy shareholdings and other shares, associates and joint ventures.
Capital expenditure excluding acquisitions and shares | Capital expenditure excluding investments in shares and participations.
Operating cash flow per share, EUR | Operating cash flow divided by adjusted average number of shares during the period excluding treasury shares.
Gearing ratio, % | Net debt as a percentage of total equity.
Net debt to EBITDA | Net debt divided by EBITDA.
Equity to assets ratio, % | Equity expressed as a percentage of total assets less advances received.

**Reconciliation of key figures to IFRS**

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Quarterly key figures are unaudited.
Parent company accounts
(Finnish Accounting Standards, FAS)

Income statement

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Balance sheet

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Cash flow statement

**EURm**  
**2016**  
**2015**  
---  
**Cash flow from operating activities**  
Profit before closing entries and tax 379 652  
Financial income and expenses  -6 -168  
Adjustments to operating profit  42 66  
Change in working capital  -219 108  
Interest received  24 12  
Interest paid -52 -60  
Dividends received  81 182  
Other financial items  9 -23  
Income taxes paid -17 -90  
**Operating cash flow** 241 677  
---  
**Cash flow from investing activities**  
Investments in tangible and intangible assets  -137 -180  
Acquisition of shareholdings  - -69  
Proceeds from sale of intangible and tangible assets  130 135  
Proceeds from disposal of shareholdings  4 818  
Change in other non-current receivables  408 -56  
**Investing cash flow** 405 648  
---  
**Cash flow from financing activities**  
Payments of non-current liabilities  -505 -386  
Change in current liabilities  693 -614  
Dividends paid -400 -373  
Group contributions, net -2 61  
**Financing cash flow** -214 -1,312  
---  
**Change in cash and cash equivalents** 431 13  
**Cash and cash equivalents at the beginning of period** 477 464  
**Cash and cash equivalents at the end of period** 908 477  
---  
1) Adjustments to operating profit

**EURm**  
**2016**  
**2015**  
---  
**Depreciation, amortisation and impairment charges** 172 220  
Capital gains on sale of non-current assets, net -124 -146  
Change in provisions -7 -8  
**Total** 42 44  
---  
**Change in working capital**

**EURm**  
**2016**  
**2015**  
---  
**Inventories** 21 30  
Current receivables -361 27  
Current non-interest-bearing liabilities 121 51  
**Total** -219 108  
---

Notes to the parent company financial statements

**Accounting policies**

The financial statements of the parent company are prepared in accordance with Finnish Accounting Standards, FAS. The main differences in accounting policies of the group and the parent company relate to the measurement of forest assets and financial derivatives and recognition of defined benefit obligations and deferred income taxes.

---

**1. Sales**

**Sales by business area**

**EURm**  
**2016**  
**2015**  
---  
UPM BioRefining 1,560 1,555  
UPM Energy 135 376  
UPM Specialty Papers 240 488  
UPM Paper ENA 668 1,490  
Other operations and eliminations 208 -611  
**Total** 2,811 3,298  
---

**2. Other operating income**

**EURm**  
**2016**  
**2015**  
---  
Gains on sale of non-current assets 133 168  
Rental income 15 16  
Other 4 5  
**Total** 153 189  
---

**3. Materials and services**

**EURm**  
**2016**  
**2015**  
---  
Raw materials and consumables 1,888 1,992  
Change in inventories 9 26  
Delivery costs and other external charges 4 38  
**Total** 1,901 2,056  
---

**4. Personnel expenses**

**Salaries, fees and other personnel expenses**

**EURm**  
**2016**  
**2015**  
---  
Salaries and fees to the President and CEO, and members of the Board of Directors 1) 6 4  
Other salaries and fees 273 359  
Pension costs 47 64  
Other indirect employee costs 17 18  
**Total** 343 445  
1) Refer Note 3.2 Key management personnel.

**Personnel**

**EURm**  
**2016**  
**2015**  
---  
Total on average 4,277 5,747  
---

**5. Depreciation, amortisation and impairment charges**

**EURm**  
**2016**  
**2015**  
---  
Intangible rights 3 2  
Other intangible assets 19 24  
Buildings 26 33  
Machinery and equipment 119 155  
Other tangible assets 6 4  
**Total** 172 220  
---

**6. Other operating expenses**

**EURm**  
**2016**  
**2015**  
---  
Rents and lease expenses 17 24  
Losses on sale of non-current assets 4 1  
Maintenance expenses 99 135  
Other operating expenses 1) 58 108  
**Total** 178 248  
1) The research and development costs in operating expenses were EUR 24 million (27 million) and auditor’s fee EUR 0.8 million (0.8 million).
7. Financial income and expenses

EUhm 2016 2015
Income on non-current assets 80 182
Dividend income from group companies 1 –
Interest income from group companies 3 –
84 189
Other interest and financial income
Other interest income from group companies 19 3
Other financial income from group companies 33 29
Other financial income from other companies 13 –
68 32
Value adjustments –6 –105
Interest and other financial expenses
Interest expenses to group companies –22 –34
Interest expenses to other companies –95 –97
Other financial expenses to other companies –145 –157
Total 6 –164

8. Closing entries

EUhm 2016 2015
Changes in accumulated depreciation difference 11 44
Group contributions received –1 –4
Group contributions granted 32 6
Losses from mergers 1 –
Total 42 46

9. Income taxes

EUhm 2016 2015
Tax expense for the period 82 61
Tax expense for the previous periods –1 –
Total 81 61

Deferred tax assets and liabilities

EUhm 2016 2015
Deferred tax assets
Provisions 34 12
Shore-based payments 3 2
Other temporary differences – –
Total 37 12
Deferred tax liabilities
Accumulated depreciation difference –91 –122
Revaluations of the land areas –73 –117
Total –164 –239

10. Intangible assets

EUhm INTANGIBLE RIGHTS OTHER INTANGIBLE ASSETS ADVANCE PAYMENTS TOTAL
2016
Accumulated costs 13 282 5 300
Accumulated amortisation and impairments –8 –257 – –265
Carrying value, at 31 December 5 25 5 32
Carrying value, at 1 January 5 178 4 187
Additions 6 4 3 12
Disposals –3 –141 – –144
Amortisation –3 –17 – –19
Impairment – –2 – –2
Revaluations – –2 – –2
Carrying value, at 31 December 5 25 5 32

2015
Accumulated costs 19 523 4 546
Accumulated amortisation and impairments –14 –345 – –359
Carrying value, at 31 December 5 178 4 187
Carrying value, at 1 January 5 198 3 208
Additions 7 4 3 14
Disposals –5 –1 –1 –7
Amortisation –2 –24 – –26
Revaluations – –1 – –1
Carrying value, at 31 December 5 178 4 187

11. Tangible assets

EUhm LAND AND WATER AREAS BUILDINGS MACHINERY AND EQUIPMENT OTHER TANGIBLE ASSETS ADVANCE PAYMENTS AND CONSTRUCTION IN PROGRESS TOTAL
2016
Accumulated costs 449 604 2,026 138 36 3,254
Accumulated depreciation and impairments –345 –1,396 –112 – –1,852
Revaluations 364 – – – – –364
Carrying value, at 31 December 813 259 630 27 36 1,794
Carrying value, at 1 January 891 443 868 37 23 2,262
Additions 8 25 117 2 61 213
Depreciations – –27 –120 –6 – –152
Impairment 1 – –1
Revaluations – 3 35 2 –41 –
Changes in revaluations –57 – – – – –57
Carrying value, at 31 December 813 259 630 27 36 1,794

2015
Accumulated costs 470 1,242 5,027 198 23 6,960
Accumulated depreciation and impairments –799 –4,159 –161 – –5,119
Revaluations –471 – – – ––471
Carrying value, at 31 December 891 443 868 37 23 2,262
Carrying value, at 1 January 934 441 720 38 209 2,342
Additions 8 12 64 3 78 165
Disposals –15 – – – – –15
Depreciations – –33 –155 –6 – –194
Revaluations – –23 –239 2 –264 –
Changes in revaluations –36 – – – – –36
Carrying value, at 31 December 891 443 868 37 23 2,262

12. Other non-current assets

EUhm HOLDINGS IN GROUP COMPANIES HOLDINGS IN PARTICIPATING INTEREST COMPANIES OTHER SHARES AND HOLDINGS RECEIVABLES FROM GROUP COMPANIES RECEIVABLES FROM PARTICIPATING INTEREST COMPANIES OTHER NON-CURRENT RECEIVABLES TOTAL
2016
Accumulated costs 5,780 5 4 255 5 7 6,056
Accumulated value adjustments –1,414 – – – – –1,414
Carrying value, at 31 December 4,365 5 4 255 5 7 4,642
Carrying value, at 1 January 3,984 93 614 723 6 30 4,327
Additions 829 – – – – –829
Disposals –442 –88 –446 –470 –1 –499
Impairment – –1 – –1
Changes in revaluations –36 – – – – –36
Value adjustments – – – – – –3
Carrying value, at 31 December 4,365 5 4 255 5 7 4,642

2015
Accumulated costs 5,393 93 450 723 6 10 6,672
Accumulated value adjustments –1,409 – – – – –1,409
Revaluations – –164 – – – –164
Carrying value, at 31 December 3,984 93 614 723 6 30 3,427
Carrying value, at 1 January 4,648 99 589 846 6 30 5,055
Additions 37 – –32 69 – –165
Disposals –806 –186 –612 –970 –8 –1,648
Impairment – –1 – –1
Revaluations 105 – – – –105
Carrying value, at 31 December 3,984 93 614 723 6 7 3,427

1) Value adjustments are recognised under financial items.
13. Inventories

\[
\begin{array}{c|cc}
\text{EURm} & 2016 & 2015 \\
\hline
\text{Raw materials and consumables} & 132 & 203 \\
\text{Finished products and goods} & 22 & 80 \\
\text{Advance payments} & 19 & 31 \\
\text{Carrying value, at 31 December} & 174 & 314 \\
\end{array}
\]

14. Current receivables

\[
\begin{array}{c|ccc}
\text{EURm} & \text{TOTAL} & \text{FROM GROUP COMPANIES} & \text{FROM PARTICIPATING INTEREST COMPANIES} \\
\hline
\text{Trade receivables} & 437 & 400 & 11 \\
\text{Loan receivables} & 1,495 & 1,495 & - \\
\text{Prepayments and accrued income} & 66 & - & - \\
\text{Other current receivables} & 42 & 5 & - \\
\text{Carrying value, at 31 December} & 2,040 & 1,901 & 12 \\
\end{array}
\]

15. Equity

\[
\begin{array}{c|cc|cc|c}
\text{EURm} & \text{SHARE CAPITAL} & \text{REVALUE RESERVE} & \text{RESERVE FOR INVERTED NON-RESTRICTED EQUITY} & \text{RETAINED EARNINGS} & \text{SHAREHOLDER'S EQUITY} \\
\hline
\text{Carrying value, at 1 January 2016} & 890 & 427 & 1,273 & 2,259 & 4,849 \\
\text{Profit for period} & - & - & - & 255 & 255 \\
\text{Dividend distribution} & - & - & - & -400 & -400 \\
\text{Changes in revaluations} & - & - & - & -221 & -221 \\
\text{Carrying value, at 31 December 2016} & 890 & 206 & 1,273 & 2,115 & 4,481 \\
\text{Carrying value, at 1 January 2015} & 890 & 463 & 1,273 & 2,088 & 4,714 \\
\text{Profit for period} & - & - & - & 545 & 545 \\
\text{Dividend distribution} & - & - & - & -373 & -373 \\
\text{Changes in revaluations} & - & - & - & -36 & -36 \\
\text{Other changes} & - & - & - & -1 & -1 \\
\text{Carrying value, at 31 December 2015} & 890 & 427 & 1,273 & 2,259 & 4,849 \\
\end{array}
\]


\[
\begin{array}{cccccc|c}
\text{EURm} & \text{RESTRUCTURING} & \text{TERMINATION} & \text{ENVIRONMENTAL} & \text{OTHER 1} & \text{TOTAL} \\
\hline
\text{Provisions at 1 January 2016} & 15 & 13 & 12 & 20 & 60 \\
\text{Provisions made during the year} & - & 1 & - & 154 & 155 \\
\text{Provisions utilised during the year} & -2 & -2 & -3 & -7 & - \\
\text{Unused provisions reversed} & - & - & - & -1 & -2 \\
\text{Changes due to restructurings} & -10 & -6 & -2 & -17 & -35 \\
\text{Carrying value, at 31 December 2016} & 3 & 5 & 9 & 153 & 170 \\
\text{Provisions at 1 January 2015} & 17 & 17 & 13 & 21 & 68 \\
\text{Provisions made during the year} & - & 3 & - & 3 & 6 \\
\text{Provisions utilised during the year} & -2 & -6 & -1 & -3 & -12 \\
\text{Unused provisions reversed} & - & -1 & - & -1 & -2 \\
\text{Carrying value, at 31 December 2015} & 15 & 13 & 12 & 20 & 60 \\
\end{array}
\]

1 Other provisions are attributable to onerous contracts and fair value losses of financial derivatives. At the end of 2016 the fair value loss in other provisions of EUR 11 million was attributable to one group internal cross currency swap with nominal value of EUR 104 million and maturity in 2027. Changes in provisions are recognised in personnel or other operating expenses, in sales, materials or financial items.

17. Non-current liabilities

\[
\begin{array}{c|cc}
\text{EURm} & 2016 & 2015 \\
\hline
\text{Bonds} & 593 & 991 \\
\text{Loans from financial institutions} & 1,568 & 911 \\
\text{Pension loans} & 68 & 135 \\
\text{Other non-current liabilities} & 170 & 161 \\
\text{Total} & 1,399 & 2,198 \\
\end{array}
\]

Maturity in 2022 or later (in 2021 or later)

\[
\begin{array}{c|cc|c|cc|c|c|c|c}
\text{EURm} & \text{INTEREST RATE} & \% & \text{CURRENCY} & \text{NOMINAL VALUE ISSUED, MILLION} & \text{CARRYING VALUE, 2016} & \text{CARRYING VALUE, 2015} \\
\hline
\text{Bonds} & 7.450 & USD & 375 & 356 & 344 \\
\text{Loans from financial institutions} & 3.550 & JPY & 10,000 & 76 & 76 \\
\text{Pension loans} & 6.625 & GBP & 250 & 292 & 341 \\
\text{Other non-current liabilities} & 5.500 & USD & 250 & 237 & 230 \\
\text{Total} & - & - & - & 865 & 997 \\
\end{array}
\]

Fixed rate period

\[
\begin{array}{c|cccccc|c}
\text{YEARS} & \text{INTEREST RATE} & \% & \text{CURRENCY} & \text{NOMINAL VALUE ISSUED, MILLION} & \text{CARRYING VALUE, 2016} & \text{CARRYING VALUE, 2015} \\
\hline
1997–2027 & 7.450 & USD & 375 & 356 & 344 \\
2000–2016 & 3.550 & JPY & 10,000 & 76 & 76 \\
2003–2018 & 5.500 & USD & 250 & 237 & 230 \\
\end{array}
\]

Bonds

\[
\begin{array}{c|c|c|c|c}
\text{Carrying value, at 31 December} & 865 & 997 \\
\text{Current portion} & 292 & - \\
\text{Non-current portion} & 593 & 997 \\
\end{array}
\]
18. Current liabilities

<table>
<thead>
<tr>
<th>EURm</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOTAL</td>
<td>PARTICIPATING INTEREST COMPANIES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>292</td>
<td>–</td>
</tr>
<tr>
<td>Loans from financial institutions</td>
<td>3</td>
<td>–</td>
</tr>
<tr>
<td>Pension loans</td>
<td>48</td>
<td>–</td>
</tr>
<tr>
<td>Trade payables</td>
<td>252</td>
<td>40</td>
</tr>
<tr>
<td>Accruals and deferred income</td>
<td>233</td>
<td>16</td>
</tr>
<tr>
<td>Other current liabilities</td>
<td>2,210</td>
<td>2,161</td>
</tr>
<tr>
<td>Carrying value, at 31 December</td>
<td>3,058</td>
<td>2,217</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EURm</th>
<th>2015</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOTAL</td>
<td>PARTICIPATING INTEREST COMPANIES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loans from financial institutions</td>
<td>13</td>
<td>–</td>
</tr>
<tr>
<td>Pension loans</td>
<td>68</td>
<td>–</td>
</tr>
<tr>
<td>Advances received</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Trade payables</td>
<td>353</td>
<td>51</td>
</tr>
<tr>
<td>Accruals and deferred income</td>
<td>260</td>
<td>20</td>
</tr>
<tr>
<td>Other current liabilities</td>
<td>1,474</td>
<td>1,418</td>
</tr>
<tr>
<td>Carrying value, at 31 December</td>
<td>2,169</td>
<td>1,489</td>
</tr>
</tbody>
</table>

19. Commitments

Pension commitments of the President and CEO and the members of the Group Executive Team

Refer Note 3.3 Key management personnel

Related party transactions

Refer Note 8.3 Related party transactions.

Derivatives

All financial derivative contracts of the group were made by the parent company. All contracts were made with external counterparties except for one cross currency swap used in managing foreign currency risk of the group internal assets. Hedge accounting was not applied. Derivatives were initially recognised at cost in the balance sheet. The fair value losses of financial derivatives were recognised through the income statement and presented as a provision in the balance sheet.

Financial risks, fair values and maturities of the group external derivatives are disclosed in Note 6.1 Financial risk management and Note 6.2 Derivatives and hedge accounting and the group internal financial derivative in Note 10 Provisions of the parent company.

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.

Our audit approach

OVERVIEW

Materiality

- Overall group materiality: EUR 54 million, which represents 5% of profit before tax.

Group scoping

- The entities in scope included two individually significant components, nine significant components and four components with selected significant financial statement line items.

Key audit matters

- Valuation of forest assets
- Valuation of energy shareholdings
- Recoverability of deferred tax assets
- Litigations

As part of designing our audit, we determined materiality and assessed the risk 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. Material 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.
In brief
Strategy
Businesses
Stakeholders
Governance
Accounts
140 UPM Annual Report 2016
161 UPM Annual Report 2016

KEY AUDIT MATTER IN THE AUDIT OF THE GROUP
Recovery of deferred tax assets

We assessed whether historical profitability in German subsidiaries supports the recognition of the deferred tax asset. Despite recent history of profits for the German tax group we also assessed whether the management’s forecasts of future profitability support the recognizability of deferred tax assets.

We evaluated the group’s assessment of the nature and status of litigations and claims and discussed them with group management including the external legal counsel for significant cases.

We examined the group’s conclusions with respect to the disclosures made for significant cases, both considering the correspondence between the group and its external legal counsel and independently communicating with certain of those external legal counsel.

As set out in the financial statements, the outcome of such cases is dependent on the future outcome of continuing legal processes and consequently the disclosures are subject to inherent uncertainty.

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:

• Identifying and assessing 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, appropriate and reliable to provide a basis for our opinion.

• Obtaining an understanding of internal control relevant to the financial statements, assess its effectiveness and make the necessary inquiries and tests to evaluate its operating effectiveness.

• Evaluating 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 conclusion is based on the information available at the date of our audit.

We have no key audit matters to report with respect to our audit of the parent company financial statements.

KEY AUDIT MATTER IN THE AUDIT OF THE GROUP HOW OUR AUDIT ADDRESSED THE KEY AUDIT MATTER

Recoverability of deferred tax assets

Refer to note 7.2 in the consolidated financial statements for the related disclosures.

The group has recognised deferred tax assets of EUR 226 million on net operating loss carry-forwards, of which most relate to German subsidiaries. In Germany the net operating loss carry-forwards do not expire. We focused on this area because the recognition of deferred tax assets relies on the significant application of judgement by the management in respect of assessing the probability and sufficiency of future taxable profits.

Litigations

Refer to note 9.1, in the consolidated financial statements for the related disclosures.

We focused on this area because the group is subject to challenges in respect of a number of legal matters, many of which are beyond its control. Consequently, management makes judgements about the incidence and quantum of such liabilities arising from litigation which are subject to the future outcome of legal processes. In particular the group has disclosed that it is participating in a project to construct a new nuclear power plant unit Olkiluoto 3 through its shareholdings in Pohjolan Yliopiston Voima Osakeyhtiö. The supplier AREVA-Siemens, which is constructing the power plant unit initiated arbitration proceedings in 2008 and submitted a claim concerning the delay of project and related costs.

We have no key audit matters to report with respect to our audit of the parent company financial statements.

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.

We found the methodologies used and the assumptions applied to be appropriate.

In testing the valuation of 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 found the methodologies and the assumptions applied to be appropriate.

Valuation of forest assets

Refer to note 4.2, in the consolidated financial statements for the related disclosures.

The group owns about one million hectares of forests and plantations in Finland, the United States and Uruguay valued at EUR 1,734 million at 31 December 2016. 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 liquid market. Young sappings 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.

Valuation of energy shareholdings

Refer to note 4.3, in the consolidated financial statements for the related disclosures.

The energy shareholdings amounted to EUR 1,932 million at 31 December 2016. 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.

AUDITOR’S RESPONSIBILITIES FOR THE AUDIT OF THE FINANCIAL STATEMENTS

Our objectives are to obtain reasonable assurance on 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 judgement 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, appropriate and reliable to provide a basis for our opinion.

• Obtain an understanding of internal control relevant to the financial statements, assess its effectiveness and make the necessary inquiries and tests to evaluate its operating effectiveness.

• 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 conclu-
Other reporting requirements

Other information

The Board of Directors and the Managing Director are responsible for the other information. The other information comprises information included in the report of the Board of Directors and in the Annual Report, but does not include the financial statements and our auditor’s report thereon.

Our opinion on the financial statements does not cover the other information.

In connection with our audit of the financial statements, our responsibility is to read the other information 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, we conclude that there is a material misstatement of the other information, we are required to report that fact. We have nothing to report in this regard.

Other opinions

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 the proposal that the financial statements are adopted.

In connection with our audit of the financial statements, we determine those matters that were of most significance in the audit; we determine if those matters are potentially material to users of the financial statements, and where applicable, related safeguards.

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 of the planned audit scope and timelines, and significant audit findings, including any significant deficiencies in internal control identified during the audit.

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 those 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 is so insignificant that disclosure is not necessary. We consider the key audit matters in the context of identifying the most significant risk to the understanding and communication of the financial statements.

Helsinki 17 February 2017

PricewaterhouseCoopers Oy
Authorised Public Accountants

Merja Lindh
Authorised Public Accountant [KHT]
<table>
<thead>
<tr>
<th>SHARE INDICATORS</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per share (EPS), EUR</td>
<td>Profit for the period attributable to owners of the parent company divided by adjusted average number of shares at the end of period.</td>
</tr>
<tr>
<td>Comparable EPS, EUR</td>
<td>Earnings per share calculated in accordance with IFRS excluding items affecting comparability and their tax impact.</td>
</tr>
<tr>
<td>Dividend per share, EUR</td>
<td>Dividend distributed by adjusted average number of shares at the end of period.</td>
</tr>
<tr>
<td>Dividend to earnings ratio, %</td>
<td>Dividend per share as a percentage of earnings per share.</td>
</tr>
<tr>
<td>Effective dividend yield, %</td>
<td>Adjusted dividend per share as a percentage of adjusted share price at 31.12.</td>
</tr>
<tr>
<td>EBITDA</td>
<td>Operating cash flow divided by adjusted average number of shares during the period excluding treasury shares.</td>
</tr>
<tr>
<td>Market capitalisation</td>
<td>Total number of shares (excluding those held as treasury shares) multiplied by the share price at the end of period.</td>
</tr>
<tr>
<td>Adjusted share price at the end of period</td>
<td>Share price at the end of period in relation to share issue coefficient.</td>
</tr>
<tr>
<td>Adjusted average share price</td>
<td>Total value of shares traded in relation to adjusted number of shares traded during the period.</td>
</tr>
</tbody>
</table>

Adjusted share-related indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings per share (EPS), EUR</td>
<td>1.65</td>
<td>1.72</td>
<td>0.96</td>
<td>0.63</td>
<td>-2.14</td>
<td>0.88</td>
<td>1.08</td>
<td>0.33</td>
<td>-0.35</td>
</tr>
<tr>
<td>Comparable EPS, EUR</td>
<td>1.45</td>
<td>1.38</td>
<td>1.20</td>
<td>0.91</td>
<td>0.74</td>
<td>0.93</td>
<td>0.99</td>
<td>0.11</td>
<td>0.42</td>
</tr>
<tr>
<td>Dividend per share, EUR</td>
<td>0.54</td>
<td>0.75</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
<td>0.55</td>
<td>0.45</td>
<td>0.60</td>
<td>0.75</td>
</tr>
<tr>
<td>Dividend to earnings ratio, %</td>
<td>57.6</td>
<td>43.6</td>
<td>72.9</td>
<td>95.2</td>
<td>neg</td>
<td>68.2</td>
<td>50.9</td>
<td>136.4</td>
<td>neg</td>
</tr>
<tr>
<td>Dividend to operating cash flow, %</td>
<td>3.6</td>
<td>2.22</td>
<td>2.33</td>
<td>1.39</td>
<td>1.98</td>
<td>1.99</td>
<td>1.89</td>
<td>2.42</td>
<td>1.21</td>
</tr>
<tr>
<td>Effective dividend yield, %</td>
<td>4.1</td>
<td>4.4</td>
<td>5.1</td>
<td>4.9</td>
<td>6.8</td>
<td>7.1</td>
<td>4.2</td>
<td>5.4</td>
<td>4.4</td>
</tr>
<tr>
<td>P/E ratio</td>
<td>14.1</td>
<td>10.0</td>
<td>14.2</td>
<td>19.5</td>
<td>neg</td>
<td>9.7</td>
<td>12.2</td>
<td>25.2</td>
<td>neg</td>
</tr>
<tr>
<td>Operating cash flow per share, EUR</td>
<td>3.16</td>
<td>2.33</td>
<td>2.23</td>
<td>1.39</td>
<td>1.98</td>
<td>1.99</td>
<td>1.89</td>
<td>2.42</td>
<td>1.21</td>
</tr>
<tr>
<td>Dividend distribution, EUR/m</td>
<td>507</td>
<td>400</td>
<td>373</td>
<td>317</td>
<td>317</td>
<td>285</td>
<td>234</td>
<td>208</td>
<td>234</td>
</tr>
<tr>
<td>Share price at 31 Dec, EUR</td>
<td>23.34</td>
<td>17.23</td>
<td>13.62</td>
<td>12.28</td>
<td>8.81</td>
<td>8.51</td>
<td>13.22</td>
<td>8.32</td>
<td>9.00</td>
</tr>
<tr>
<td>Lowest quotation, EUR</td>
<td>13.71</td>
<td>12.19</td>
<td>10.07</td>
<td>7.50</td>
<td>7.82</td>
<td>7.34</td>
<td>7.37</td>
<td>4.33</td>
<td>8.15</td>
</tr>
<tr>
<td>Average quotation for the period, EUR</td>
<td>17.51</td>
<td>16.37</td>
<td>12.26</td>
<td>9.42</td>
<td>9.21</td>
<td>11.17</td>
<td>10.43</td>
<td>7.06</td>
<td>11.32</td>
</tr>
<tr>
<td>Market capitalisation, EUR/m</td>
<td>12,452</td>
<td>9,192</td>
<td>7,266</td>
<td>6,497</td>
<td>4,664</td>
<td>4,684</td>
<td>8,835</td>
<td>8,243</td>
<td>5,691</td>
</tr>
<tr>
<td>Shares traded, EUR/m</td>
<td>6,749</td>
<td>7,669</td>
<td>6,233</td>
<td>5,308</td>
<td>5,334</td>
<td>4,835</td>
<td>2,563</td>
<td>6,109</td>
<td>5,147</td>
</tr>
<tr>
<td>Shares traded (1,000)</td>
<td>385,355</td>
<td>456,168</td>
<td>506,318</td>
<td>563,382</td>
<td>690,968</td>
<td>790,967</td>
<td>790,964</td>
<td>805,914</td>
<td>932,136</td>
</tr>
<tr>
<td>Number of shares, average (1,000)</td>
<td>533,505</td>
<td>533,505</td>
<td>531,574</td>
<td>525,434</td>
<td>521,965</td>
<td>519,970</td>
<td>519,970</td>
<td>519,970</td>
<td>519,970</td>
</tr>
<tr>
<td>Number of shares at the end of period (1,000)</td>
<td>533,736</td>
<td>533,736</td>
<td>532,502</td>
<td>526,124</td>
<td>524,973</td>
<td>519,970</td>
<td>519,970</td>
<td>519,970</td>
<td>519,970</td>
</tr>
<tr>
<td>Number of shares at the end of period</td>
<td>231</td>
<td>231</td>
<td>231</td>
<td>231</td>
<td>231</td>
<td>231</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Financial information 2007–2016

6.73 6.73 6.73 6.73 6.73 6.73 6.73 6.73 6.73 6.73

*EBITDA 2007-2011 includes change in fair value of unrealised cash flow and commodity hedges.*

To access the full document, please refer to the UPM Annual Report 2016.
Financial information 2007–2016

In 2016 UPM has relabeled the previously referenced “excluding special items” non-GAAP financial measures with “comparable” performance measures. Corresponding 2014 and 2015 group measures have been revised accordingly.
In brief

Strategy  Businesses  Stakeholders  Governance  Accounts

More on responsibility


168 169

In brief Strategy  Businesses Stakeholders Governance

More on responsibility

2,000
4,000
5,000

■ 2014, total 20,414
■ 2015, total 19,578
■ 2016, total 19,310

■ 2014, total 20,414*)
■ 2015, total 20,184
■ 2016, total 20,811

*) 2014 figure for UPM employees, since 2015 for UPM workforce including employees and supervised external workers.

UK  France  USA  Poland  Finland  Uruguay  China  Russia

CONTENTS

1–5
6–10
11–15
16–20
21–30
>30
<1

ACCOUNTS

Sales without eco-labels
Sales with eco-labels (incl. products with multiple labelling)

10,000
15,000
20,000

UPM's eco-labeled sales*)

87% over the last ten years. Since 2007, the figure includes UPM Raflatac's label products only.

The electricity consumption per tonne of paper decreased by 14% over the last ten years due to continuous improvements of energy efficiency.

The amount of solid waste sent to landfills has decreased by 50% over the last ten years. However, from 2012 to 2013, the amount increased significantly. This is due to the fact that former reuse possibilities for ash ceased at one of UPM’s paper mills. Starting from 2014, new methods of recycling were established, with better options for recycling still being investigated.

The ratio is calculated by comparing the years of service for 2016 of women to men on the same job grades, for the nine biggest countries in terms of salaried employees. These countries cover 90% of UPM’s total number of salaried employees.

Lost-time accident frequency, UPM workforce

The lost-time accident frequency (LTAF) is the number of lost-time accidents per one million hours of work. LTAF improved significantly over the last ten years.

Lost-time accident frequency (LTAF) decreased mainly due to higher CO2 emissions from purchased electricity (Scope 2) because of change in energy supply at UPM Hürth mill. CO2 emissions from on-site energy generation (Scope 1) decreased mainly due to continuous improvements of energy efficiency.

Sources of UPM’s greenhouse gas emissions*, 2016

Compared to the previous year UPM’s overall greenhouse gas emissions have remained about the same. According to the calculation, approximately 50% of the direct and indirect greenhouse gas emissions are related to UPM’s energy use, i.e. raw materials, transportation and processing of sold products also have a significant impact. More details are available at www.upm.com/responsibility.

UPM’s fossil carbon dioxide emissions per tonne of paper

In 2016 onsite CO2 emissions (Scope 1) decreased mainly because of change in energy supply at UPM Hürth mill. CO2 emissions from purchased electricity (Scope 2) increased mainly due to higher CO2 factors in Germany and Finland.

UPM’s capacity for CO2 emission-free power generation has increased over the last ten years.

UPM’s solid waste to landfills per tonne of converted product

The amount of solid waste sent to landfills has decreased by 50% over the last ten years. However, from 2012 to 2013, the amount increased significantly. This is due to the fact that former reuse possibilities for ash ceased at one of UPM’s paper mills. Starting from 2014, new methods of recycling were established, with better options for recycling still being investigated.

Solid waste to landfills per tonne of converted product decreased by 87% over the last ten years. Since 2007, the figure includes UPM Raflatac’s label products only.

UPM’s solid waste to landfills per tonne of converted product

Solid waste to landfills per tonne of converted product decreased by 87% over the last ten years. Since 2007, the figure includes UPM Raflatac’s label products only.

UPM’s CO2 emission-free power generation capacity

UPM’s CO2 emission-free power generation capacity has increased over the last ten years.

UPM’s CO2 emission-free power generation capacity

The electricity consumption per tonne of paper decreased by 14% over the last ten years due to continuous improvements of energy efficiency.

The amount of solid waste sent to landfills has decreased by 50% over the last ten years. However, from 2012 to 2013, the amount increased significantly. This is due to the fact that former reuse possibilities for ash ceased at one of UPM’s paper mills. Starting from 2014, new methods of recycling were established, with better options for recycling still being investigated.

Solid waste to landfills per tonne of converted product decreased by 87% over the last ten years. Since 2007, the figure includes UPM Raflatac’s label products only.

UPM’s CO2 emission-free power generation capacity has increased over the last ten years.

UPM’s CO2 emission-free power generation capacity
## UPM BIOPROCESSING

- A versatile range of chemical pulp for many growing and uses with annual production capacity of 3.6 million tonnes produced in Finland and in Uruguay.
- Annual capacities in tonnes by mills: UPM Fray Bentos 1.3 million, UPM Kaukas 850,000, UPM Kymi 760,000 tonnes.
- Certified suave timber with annual capacity of 1.3 million cubic metres, produced in Finland.
- Wood-based renewable diesel with the annual capacity of 120 million litres produced in Finland.

## UPM ENERGY

- Cost competitive low-emission electricity generation in Finland consisting of hydro, nuclear and condensing power.
- The total electricity generation capacity is 1.494 MW, including UPM’s own hydropower plants and shareholdings in other energy companies.
- Largest shareholdings: 44% of Polhainen Viisa Oy (PVÖ), which is a majority shareholder (58.5%) in Steelwool Viisa Oy (SVO); 19% of Kemijoki Oy’s hydro power shares.

## UPM RAFLATAC

- Self-adhesive label materials for product and information labelling.
- 10 factories and 26 slitting and distribution terminals in all continents.

## UPM SPECIALTY PAPERS

- Labeling materials for global markets and fine papers for Asian markets.
- Annual production capacity of 1.0 million tonnes of fine papers and 0.7 million tonnes of labelling and packaging materials.

## UPM RAFLATAC

- Labeling materials for global markets and fine papers for Asian markets.
- Annual production capacity of 1.0 million tonnes of fine papers and 0.7 million tonnes of labelling and packaging materials.

## UPM PAPER ENA

- Magazine paper, newsprint and fine papers for a wide range of end uses.
- Annual paper production capacity of 8.6 million tonnes, manufactured in 15 paper mills.
- Capacities: Annual production capacity of 4.2 million tonnes of magazine papers, 2.1 million tonnes of newsprint and 2.1 million tonnes of fine papers.
- The combined heat and power (CHP) plants operating on paper mill sites included in the business area.

## UPM PLYWOOD

- Plywood and veneer products mainly for construction, vehicle flooring and LNG shipbuilding as well as other manufacturing industries.
- Production capacity: approximately one million cubic metres.
- Production in 9 mills in Finland, Estonia and Russia.

## OTHER OPERATIONS

- Wood Sourcing and Forestry: Purchasing wood and biomass in 14 countries, 640,000 ha of own forests in Finland and 75,000 ha in the USA, offering forestry services to private forest owners in Finland.
- UPM Biocomposites producing UPM ProFi outdoor products and UPM Formi composite material for injection moulding and extrusion.
- UPM Biochemicals developing chemical building blocks, lignin products, biofibrils, and biomedical products.

## Biocomposites mills

- UPM Lanka
- Germany: UPM Bruchsal (Karlsruhe)

## Biochemicals innovation unit

- Finland: BioAim research and educational centre, Helsinki.
UPM-Kymmene Corporation will hold its Annual General Meeting on Wednesday 29 March 2017 at 14:00 (EET), at Messukeskus, Messuaukio 1, 00520 Helsinki, Finland. Instructions for those wishing to attend are given in the notice to the meeting, which is available on the company’s website at www.upm.com.

Dividend
The Board of Directors has decided to propose to the Annual General Meeting that a dividend of EUR 0.95 per share be paid for the 2016 financial year. The dividend will be paid to the shareholders who are registered in the company’s shareholder register held by Euroclear Finland Ltd. on 31 March 2017, which is the record date for the dividend payment. The Board of Directors proposes that the dividend will be paid on 12 April 2017.

Financial information in 2017
UPM will publish the financial reports in 2017 as follows:
The Interim Report for January–March (Q1) on 25 April 2017
The Interim Report for January–June (Q2) on 25 July 2017
The Interim Report for January–September (Q3) on 24 October 2017