UPM – THE BIOFORE COMPANY
Investor presentation
March 2017
## UPM today

<table>
<thead>
<tr>
<th>UPM BIOREFINING</th>
<th>UPM ENERGY</th>
<th>UPM RAFLATAC</th>
<th>UPM SPECIALTY PAPERS</th>
<th>UPM PAPER ENA</th>
<th>UPM PLYWOOD</th>
<th>UPM BIOCOMPOSITES</th>
<th>UPM BIOCHEMICALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulp Plantations Biofuels Sawmills Wood Sourcing and Forestry</td>
<td>Hydro-, nuclear- and condensing power (incl. shares in energy companies) Electricity production and trading</td>
<td>Label materials for product and information labelling</td>
<td>Fine papers in China and APAC Labelling materials globally</td>
<td>Magazine papers, newsprint and fine papers for various end-uses</td>
<td>WISA® plywood and veneer products UPM Grada™ wood material</td>
<td>UPM ProFi UPM Formi</td>
<td>Chemical building blocks Lignin products Biofibrils Biomedical products</td>
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Global businesses – local presence

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

- 13% North America
- 63% Europe
- 18% Asia
- 6% Rest of the world

- 54 production plants in 12 countries
- 12,000 customers in 120 countries
- 19,300 employees in 45 countries
- 85,000 shareholders in 40 countries
- 55,000 suppliers in 70 countries
# UPM in transformation

## Business model
Promotes value creation

## Business portfolio
Increasing share of businesses with strong long-term fundamentals for profitability and growth

## Business performance
Continuous improvement in financial, social and environmental performance

## Disciplined capital allocation
Driving value creation

### 2008: Vertically integrated paper company

<table>
<thead>
<tr>
<th>Sales</th>
<th>EUR 9.5bn</th>
<th>EUR 513m</th>
<th>3.5%</th>
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### 2016: Six separate businesses

<table>
<thead>
<tr>
<th>Sales</th>
<th>EUR 9.8bn</th>
<th>EUR 1,143m</th>
<th>10.9%</th>
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1) excluding special items for 2008, comparable figures for 2016
UPM business portfolio today*)
Competitive businesses with strong market positions
Operating on healthily growing markets

Growth drivers:
Private consumption
Sustainability
Population growth
Urbanisation
E-commerce
Construction
Transportation

UPM PLYWOOD
Plywood, veneer ~3%

UPM PAPER ENA
Graphic papers ~−4%

UPM Specialty Papers
Label papers ~4%
High-end office papers ~4%

UPM RAFLATAc
Self-adhesive labels ~4%

UPM BIOREFINING
Pulp ~3%
Biofuels strong
Timber ~2%

UPM ENERGY
Electricity ~1%

*) by comparable EBIT 2016
Demand trend growth, % pa
Increasing share of businesses with strong long-term fundamentals for profitability and growth

Sales 2016

Sustainable growth
- UPM Biorefining
- UPM Raflatac
- UPM Specialty Papers
- UPM Plywood
- UPM Energy

Maintaining strong cash flow
- UPM Paper ENA

UPM Biorefining
- Pulp +70,000t
- Pulp +100,000t

UPM Raflatac
- Label stock expansions
- Renewable diesel +120m litres
- Specialty papers +360,000t

UPM Specialty Papers
- Pulp mill efficiency improvement
- Plywood +40,000 m³

UPM Plywood
- Label stock expansion

UPM Energy
- 420,000t magazine
- 160,000t fine

UPM Paper ENA
- 460,000t magazine
- 345,000t news

- 280,000t news
- 305,000t magazine
- 195,000t magazine
Value creation through sustainable growth and cash generation

Sustainable growth
- Commercial success
- Cost efficiency
- Focused growth investments
- Product mix development

Maintain strong cash flow
- Commercial success
- Cost efficiency
- Efficient use of assets, including restructuring
Focused growth investments contributed significantly to 2016 results

Fully contributing in 2016
• Pietarsaari pulp mill expansion
• Fray Bentos pulp mill expansion
• Kymi pulp mill expansion
• Raflatac expansion in APAC, Poland

Further optimisation potential
• Lappeenranta biorefinery
• Changshu speciality papers

Ramp-up in progress
• Otepää plywood mill expansion
• Kaukas pulp mill efficiency

Under construction
• Kymi pulp mill expansion
• Raflatac expansion in Poland

80% run-rate of the EUR 200m EBITDA target achieved in 2016
Focused investments are delivering growth

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<tr>
<th>Product Line</th>
<th>CAGR</th>
<th>New Business</th>
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<tbody>
<tr>
<td>UPM Biorefining</td>
<td>+3%</td>
<td>New business</td>
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<tr>
<td>UPM Raflatac</td>
<td>+4%</td>
<td></td>
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<tr>
<td>UPM Specialty Papers</td>
<td>+4%</td>
<td></td>
</tr>
<tr>
<td>UPM Plywood</td>
<td>+3%</td>
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Average delivery growth 2011 –2016

- **UPM Biorefining**
  - Pulp
  - Biofuels
  - CAGR +3%
  - New business

- **UPM Raflatac**
  - Standard products
  - Films and specials
  - CAGR +4%
  - CAGR +8%

- **UPM Specialty Papers**
  - Label materials
  - Cut-size
  - CAGR +4%
  - CAGR +6%

- **UPM Plywood**
  - Plywood
  - CAGR +3%
Financial performance in 2016 – disciplined capital allocation in action

Top performance
- Comparable EBIT: EUR 1,143m (+25%)
- Comparable ROE: 10.9% (+1.4 pp)

Strong cash flow
- Operating cash flow: EUR 1,686m (+42%)

Attractive dividend
- Dividend (proposal): 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

Net debt reduction: EUR 969m, -46%

Industry-leading balance sheet
- Net debt/EBITDA: 0.73x

5/6 business areas achieved their financial targets
New long-term financial targets

Business area targets

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<tr>
<th>Business area</th>
<th>Return target</th>
<th>Target</th>
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<tr>
<td>UPM Energy</td>
<td>ROCE</td>
<td>6%</td>
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<tr>
<td>UPM Biorefining</td>
<td>ROCE</td>
<td>14%</td>
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<td>FCF/CE</td>
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<tr>
<td>UPM Raflatac</td>
<td>ROCE</td>
<td>20%</td>
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UPM group targets

- **Comparable EBIT growth** through focused top-line growth and margin expansion
- **Comparable ROE**: 10%
- **Net debt / EBITDA**: around 2x or less
- **Dividend policy**: 30-40% of operating cash flow per share
Business area long-term targets compared with realised returns

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* shareholdings in UPM Energy valued at fair value

Long-term return target
Group financial performance

Compared figures for 2015 and 2014, excluding special items for earlier years

**Comparable EBIT**

- **Target: EBIT growth**

**Comparable ROE**

- **Target: 10%**

**Net debt and leverage**

- **Net debt**: EURm
- **Net debt/EBITDA (x)**

- **Policy: ≤ 2x**

Target: EBIT growth

Target: 10%

Comparable ROE

Net debt and leverage

Comparable figures for 2015 and 2014, excluding special items for earlier years
Record strong cash flow and balance sheet

Operating cash flow

Net debt

Cash flow after investing activities

Working capital decreased by EUR 195m in 2016

Operating cash flow

Net debt / EBITDA (trailing 12 months)

Working capital decreased by EUR 195m in 2016
Dividend proposal

Dividend policy

• UPM aims to pay an attractive dividend, 30–40% of operating cash flow per share

Board’s dividend proposal for 2016

• EUR 0.95 (0.75) per share, totalling EUR 507m
• 30% of 2016 operating cash flow of EUR 1,686m
Low investment needs in existing assets allow growth projects with modest total capex

Focused growth investments
- Good returns and fast payback
- Low implementation risk
- Financed from operating cash flow

Low replacement investments
- Asset quality in all businesses, e.g. large competitive pulp mills
- UPM Paper ENA

Modest total capex, attractive returns and continuously strengthening balance sheet
Comparable EBIT by business area
Growth projects contributed significantly and cost efficiency measures continued on a strong track.

Comparable EBIT 2016 vs. 2015

- Prices: 916 EURm (9.0%)
- Variable costs
- Fixed costs
- Deliveries other BAs
- Paper ENA
- Currency: 1,143 EURm (11.6%)
- Other
Outlook for 2017

- UPM’s profitability improved significantly in 2016 and is expected to remain on a good level in 2017.

- Demand growth is expected to continue for most of UPM’s businesses, while demand decline is expected to continue for UPM Paper ENA. The focused growth projects continue to contribute gradually to UPM’s performance.

- Following a deflationary environment in recent years, 2017 is expected to show modest input cost inflation. UPM will continue measures to reduce fixed and variable costs to mitigate this.

- 2017 starts with lower pulp prices and lower availability of hydropower than in the beginning of 2016.
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, thereby increasing the company value."

UPM Annual Report 2015
Creating competitive advantage and long-term value by engagement

**Safety**

Per million hours

- Lost-time accident frequency

5-year change: **−77%**

**Employee engagement**

Index

- Manager effectiveness
- Employee engagement

5-year change: **+11**

**Productivity**

EUR million

- Sales per employee

5-year CAGR: **+5%**
Creating competitive advantage and long-term value by efficiency
Case: UPM Changshu mill in China

- Water: -60% Per tonne of paper
- Energy: -30% Per tonne of paper
- Waste to landfill: -60% Per tonne of paper
- Certified fibre: 85% In 2015

- COD in effluent: -75% Per tonne of paper
- Water intake: water discharge
- SO₂ emission: -90% Per tonne of paper

2015 compared to 2005

Source: UPM
Consistent long-term work receives external recognition

UPM in sustainability indices

Sustainable and Responsible (SRI) investors form a significant part of UPM’s shareholders

Source: Nasdaq, October 2015
Pulp is used in products we all use daily
UPM Biorefining

Market pulp consumed in growing end-uses – supply of alternative white fibres declines

Global paper and board production

- Market pulp consumption in growing end-uses
- Mixed collection crowding out white recycled fibre
- Stressed supply of white recycled fibre
- Graphic papers
- Containerboard
- Cartonboard
- Tissue
- Specialty

Global paper and board production
Case: Market pulp consumption in growing end-uses

Fibre consumption in tissue, cartonboard and specialty end-uses

- White integrated pulp: 10 million tonnes
- White market pulp: 30 million tonnes
- Other fibres (RCP, mechanical pulps...): 85 million tonnes
- 5% demand increase in tissue, cartonboard and specialty end-uses
- Increase in market pulp consumption: +1.5 million tonnes

Source: Pöyry, Hawkins Wright, UPM
Case: Stressed supply of white recycled paper

- 5% fall in global graphic paper production
- Fall in market pulp demand: -2
- Market pulp to replace fall in white recycled paper supply: +3
- Net increase in market pulp demand: +1

Source: Pöyry, UPM
Case: Mixed collection crowding out white recycled fibre

- White RCP grades: 75
- Mixed RCP: 49
- Old corrugated boxes: 135

5%-point increase in mixed collection share

+4

Market pulp to replace fall in white recycled paper

Source: Pöyry, UPM
Summary of pulp demand outlook

Increase in end use …

- Decline in Graphic papers
- Healthy growth in other White Papers & Boards
- Strong growth in Containerboards (brown fibre)

… will drive fibre demand in coming decades

- Growth in Market pulp vs. decline in Integrated pulp
- Declining White RCP
- Demand of Brown fibre may overwhelm the supply

Estimated growth of White RCP + Integrated Pulp + Market Pulp is still conservative (~1 Mt/a)

Source: UPM, Pöyry, RISI
White fibres in different stages of life-cycle; 64 Mt capacity closed within 2000–2015

- **Hardwood pulp** capacity has experienced strong net growth after 2000 and is expected to continue growing.
- **Softwood** has faced closures as much as hardwood. New demand in China is turning decline into a slow growth.
- **White RCP** was the fastest-growing fibre in Europe and NA in early 1990’s. After recession capacity has been in decline due to very high collection rates and diminishing supply of graphic paper.
- **Mechanical** pulp continues to decline along with graphic papers.
- **Non-wood** pulps consumed mostly in China are under pressure due to environmental reasons.
- **Sulphite** has been in decline for decades.

Note: Including both market and integrated pulp

Source: Pöyry
Chemical pulp market

Q4 NBSK pulp price remained stable from Q3
Q4 BHKP pulp price decreased 2% from Q3

Source: FOEX Indexes Ltd.

Pulp inventories

Source: PPPC World-20 statistics
UPM Biorefining

Large modern assets allow growth through debottlenecking with high pay-off at low risk

- Pietarsaari pulp mill expansion 70,000t
- Kymi pulp mill expansion 170,000t
- Kaukas pulp mill efficiency improvement, paper and pulp decoupling completed

- Fray Bentos pulp mill expansion 100,000t

Capacity increase since 2013 more than 500,000 tonnes with investments of ~ EUR 350m
Uruguay could be a competitive alternative – time schedule is several years

Conversation with Government of Uruguay

Development of Infrastructure
Pre-engineering
Tendering and Permitting
est. 1.5–2 years

UPM Investment Decision

Investment Project Development of Infrastructure
est. 2.5 years

Phase I

Phase II

Phase III
UPM Biorefining

UPM Biofuels in existing and future end-use

- **Fuel retail**

- **Dedicated green fleets**

- **Marine/Aviation**
UPM Biorefining

UPM Biofuels business evolving

- UPM enters Biofuels
- UPM Biofuels commercial start 2015
- Investment decision 2012
- Technology and business case proven
- Biocrude concept shaping
- Evaluate technologies, define business case
- Build Lappeenranta Biorefinery and Biofuels organization
- Establish Bioverno as a benchmark product and brand in biofuels
EU’s greenhouse gas reduction targets cannot be met without significant emission cuts in transport – actions needed in all sectors.
Decarbonizing European transport requires effective use of all energy and technology options – renewable drop-in fuels a fast-lane solution.
UPM Energy

Cost competitive and flexible asset base

Power generation breakdown

Condensing power

Flexible hydro production with optimisation opportunities

Nuclear as reliable base load with world-class availability performance
Cost efficient generation enables robust profitability also in challenging market environment.

Market electricity prices vs UPM sales price

<table>
<thead>
<tr>
<th>Year</th>
<th>Comparable EBIT, EURm</th>
<th>% of sales</th>
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<tbody>
<tr>
<td>2012</td>
<td>217</td>
<td>45.0</td>
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<tr>
<td>2013</td>
<td>186</td>
<td>39.9</td>
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<td>2014</td>
<td>202</td>
<td>43.5</td>
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<td>2015</td>
<td>181</td>
<td>43.6</td>
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<tr>
<td>2016</td>
<td>116</td>
<td>32.7</td>
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</table>
UPM Raflatac

Self-adhesive labels in end-use
UPM Raflatac

Leading position in a growing market

The self adhesive labelstock market

- > EUR 8bn global market
- ~ 4% p.a. growth
- Private consumption driven

UPM Raflatac

- #2 globally
- Business in 120 countries
- > 8,000 customers
- 3,000 people in six continents
UPM Raflatac

Continuing growth

1. Capturing the market growth in the current markets and product areas
2. Increased distribution coverage and customer reach
3. Wider product portfolio
4. M&A when opportunities emerge

Enabled by scalable operating platform & efficient investments
UPM Specialty Papers

Focus on global Labelling materials, Packaging in Europe and Office paper in APAC
Our end use markets are growing

**LABELING MATERIAL**
- CASE: Siliconized release liner market, 44 Bn m²
- CAGR 5%
- 2014: 44
- 2020E: 60
- 2020E: 9%
- 44 Bn

**PACKAGING**
- Paper flexpack, k tonnes
- CAGR 2%
- 2015: 2,370
- 2020E: 2,702
- 2020E: 5%
- 58 Bn

**OFFICE PAPER ASIA**
- Asian cut size market, million tonnes
- CAGR 2.5%
- 2015: 4.6
- 2020E: 5.2
- 2020E: 6%
- 4 Bn

<table>
<thead>
<tr>
<th>Region</th>
<th>2015</th>
<th>2020E</th>
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<td>CHN</td>
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UPM Specialty Papers

Global release liner market: Applications

Product functions:
Release liner carries the adhesive and face material
• Prevents the adhesive from sticking permanently
• Important and often critical feature of a layered construction

Source: AWA
UPM Specialty Papers

Changshu mill: focus on growing end uses with a flexible swing production line

Illustration: UPM Changshu Mill Quarterly Capacity

Business plan

- Accelerate growth of glassine
- Invest in the development of specialty grades – end-use segments in packaging
- Service existing long-term customers with graphic paper grades (WFU and WFC)
- Continue to grow in the “quality” copy paper segment primarily in China

WFU: wood free uncoated
WFC: wood free coated
Source: UPM
Historically Home & Office end-use has been the **most resilient** to structural changes.

Despite the digital alternatives personal preferences (way of working and learning), regulation (archiving) and lack of common standards have mitigated the change.

A **moderate decline** has taken place in Direct marketing end-use.

Paper based marketing is still recognized to be the **most effective medium** for retailers and cataloguers.

**Steady decline** in Magazine Publishing circulation and pagination, however number of titles increasing.

Publishers still rely **heavily on the revenues** from print.

Newspaper publishing being historically the **most vulnerable** to structural changes but remarkable differences between countries.

Monetizing digital circulation for Magazines and Newspapers continue to be challenging.
What does it take to perform in challenging markets?

1. Assets: "stringent capacity management"
2. Sales: "profound customer- and market understanding"
3. Cost base: "smart initiatives in push mode"
4. Cash flow: "performance management and discipline"
Demand-supply balance in European graphic paper is visible in margins

Sources: PPI, RISI, Pöyry
UPM Plywood

UPM Plywood in end-use

Construction  
Vehicle flooring  
LNG shipbuilding
Relevant high-end market offers meaningful growth potential

Relevant market ~5 million m\(^3\)

- High-end demanding applications & customers
- Medium range standard products
- EMEA region
- Global LNG business
- Europe is net importer of plywood
- Imports focus mainly on standard products in mid-low ranges

Source: FEIC; FAOSTAT; UPM
Selected focus end-uses provide further growth potential

- The recovery of the European construction sector is driving demand (annual growth 2–3% p.a.)
- The financial crisis created a backlog for trailers driving the current replacement need (average growth 4% p.a.)
- The LNG market is expected to remain solid as countries secure energy availability, thereby supporting the demand for LNG vessels (existing orderbook for plywood based LNGC ~90 vessels)

Sources: Euroconstruct, West European trailer registrations for Big 7 Countries (1985–2016), LNG World Shipping
New business opportunities for UPM

- Biofuels
  - High volume products
  - Economies of scale
  - Drop-in applications
  - 100 kt renewable diesel

- Biochemicals
  - Biofibrils
    - Auxiliary for pharma R&D
    - Industrial Applications
  - Lignin
    - Performance chemical
    - New applications
  - Market entry

- Biocomposites
  - New material
  - End-user product
  - 2 prod. sites
New separation technologies ensure best overall value capture

Wood-to-Sugar-Process

Woody Biomass

Glucose

Xylose

Lignin

Sugar-to-Chemical-Process

Chemical A

Chemical B

€

€

€
Partial overlap with fossil-based value chains in chemicals

**Feedstocks**
- Oil
- Gas
- Coal
- Biomass

**Key Intermediates**
- C1: Syngas
- C2: Ethylene
- C3: Propylene
- C4: Butadiene
- C6: Benzene
- C7: Toluene
- C8: Xylene
- C5 Xylose
- C6 Glucose

**Chemical Building Blocks**
- 600 Mtons

**Final products**
- 10 Mtons

Refinery Cracker Coal-to-olefins