UPM – THE BIOFORE COMPANY

AIMING HIGHER

WITH BIOFORE

Investor presentation
October 2017
UPM today

- **UPM BIOREFINING**: Pulp, Biofuels, Timber
- **UPM ENERGY**: Electricity generation and trading
- **UPM RAFLATAC**: Label materials for product and information labelling
- **UPM SPECIALTY PAPERS**: Label papers, release liners, office papers and flexible packaging
- **UPM PAPER ENA**: Magazine papers, newsprint and fine papers
- **UPM PLYWOOD**: Plywood and veneer products
- **UPM BIOCOMPOSITES**: Biochemicals
- **UPM BIOCHEMICALS**: Wood sourcing and forestry
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

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales</th>
<th>EBIT</th>
<th>ROE</th>
<th>Net debt</th>
<th>Market cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>EUR 9.5bn</td>
<td>EUR 513m</td>
<td>3.5%</td>
<td>EUR 4.3bn</td>
<td>EUR 4.7bn</td>
</tr>
<tr>
<td>2016</td>
<td>EUR 9.8bn</td>
<td>EUR 1,143m</td>
<td>10.9%</td>
<td>EUR 1.1bn</td>
<td>EUR 12.5bn</td>
</tr>
</tbody>
</table>

*) excluding special items for 2008, comparable figures for 2016

Operating 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

Sales
- Vertically integrated paper company in 2008
- Six separate businesses in 2016

Operating 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
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

Sustainable growth
- Pulp +70,000 t
- Pulp +100,000 t
- Pulp +170,000 t

UPM Biorefining
- Renewable diesel +120m litres

UPM Raflatac
- Speciality papers +360,000 t

UPM Specialty Papers
- Magazine +40,000 m³

UPM Plywood
- Magazine +45,000 m³

UPM Energy
- Speciality labels expansion

Focused investments
- Magazine +128,000 t
- Magazine +195,000 t
- Magazine +280,000 t
- Magazine +305,000 t

Capacity closures and divestments
- Magazine -420,000 t
- Magazine -160,000 t
- News -345,000 t
- Magazine -195,000 t

Maintaining strong cash flow
- UPM Paper ENA

Sales 2016

- 100%
- 75%
- 50%
- 25%
- 0%
Value creation through sustainable growth and cash generation

Sales 2016

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

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

Bar chart showing sales distribution:
- 100%
- 75%
- 50%
- 25%
- 0%

Line chart showing Comparable EBIT:
- 2013: 400 EURm
- 2014: 600 EURm
- 2015: 800 EURm
- 2016: 1000 EURm
- LTM: 1000 EURm

Bar chart showing Operating cash flow:
- 2013: 200 EURm
- 2014: 400 EURm
- 2015: 600 EURm
- 2016: 800 EURm
- LTM: 1000 EURm
Growth initiatives – focused growth projects have contributed well to UPM’s profits and returns

Current ongoing focused growth projects
• Kymi pulp mill expansion 2
• Raflatac expansions in Poland and Finland
• Kaukas pulp mill expansion 2
• Chudovo plywood mill expansion

Long term growth opportunity in pulp
• Discussions continue with the Government of Uruguay concerning infrastructure development

New biomolecule businesses
• Evaluation of building a biochemicals refinery
• Lappeenranta Biorefinery reached designed capacity and generates a good financial return
Focused investments are delivering growth

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>Product Line</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPM Biorefining</td>
<td>Pulp, Biofuels</td>
<td>+3%</td>
</tr>
<tr>
<td>UPM Raflatac</td>
<td>Standard products, Films and specials</td>
<td>+4%</td>
</tr>
<tr>
<td>UPM Specialty Papers</td>
<td>Label materials, Cut-size</td>
<td>+4%</td>
</tr>
<tr>
<td>UPM Plywood</td>
<td>Plywood</td>
<td>+3%</td>
</tr>
</tbody>
</table>
Business area long-term targets compared with realised returns

* Shareholdings in UPM Energy valued at fair value.
Group financial performance

Comparable EBIT

Comparable ROE

Net debt and leverage

Target: EBIT growth

Target: 10%

Comparable figures for 2014 – 2017, excluding special items for earlier years
5-year cumulative cash flow – disciplined capital allocation in action

- Strong operating cash flow: EUR 5.9bn
- Deleveraging: EUR 2.1bn
- Focused investments: EUR 1.9bn
- Attractive dividend: EUR 1.9bn

Industry-leading balance sheet:
- Net debt / EBITDA: 0.41x
Capital allocation – maintaining capability for future opportunities

1. Maintain strong balance sheet, investment grade metrics
   Net debt/EBITDA 2x or less

2. Attractive dividend
   30-40% of operating cash flow per share
   Capex in attractive focused growth projects
   IRR exceeds ROCE targets

3. Capex in attractive larger growth opportunities
   IRR exceeds ROCE targets
   M&A, if the opportunity and timing are right
   IRR exceeds ROCE targets

4. Additional shareholder distribution selectively
   balance long term free cash flow cycles
Strong cash flow and balance sheet

Operating cash flow

- Q3/17 operating cash flow EUR 486m
- Working capital decreased by EUR 54m

Net debt

- Net debt / EBITDA (trailing 12 months)
- Net debt EURm
- Net debt / EBITDA (trailing 12 months)
Dividend policy

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

Dividend for 2016

- EUR 0.95 (0.75) per share, totalling EUR 507m
- 30% of 2016 operating cash flow
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 and attractive returns
Q3 2017 – excellent quarter and further steps in transformation

• Comparable EBIT increased by 12% to EUR 351m (314m)
• Good growth in deliveries and strong operational efficiency with no significant maintenance activity
• Operating cash flow was EUR 486m (506m), net debt decreased to EUR 623m (1,479m)
• UPM transformation continues with new initiatives for future growth
Q3 2017 – Good market demand

**UPM BIOREFINING**
- Good demand, pulp deliveries +5%, strong growth in biofuels
- Pulp prices higher
- No significant maintenance

**UPM PAPER ENA**
- Graphic paper deliveries –1%
- Seasonally low fixed costs, including maintenance
- Fibre costs higher

**UPM ENERGY**
- Electricity deliveries –7%
- Hydropower generation recovered to normal level, below last year’s high level

**UPM SPECIALTY PAPERS**
- Good demand, deliveries +3%
- Significant progress in product mix, higher release liner deliveries
- Input cost inflation mitigated

**UPM RAFLATAC**
- Good demand globally, deliveries +9% driven in particular by developing markets
- Input cost inflation in sales margins

**UPM PLYWOOD**
- Good demand, deliveries +4%
- Modest input cost inflation in sales margins
Comparable EBIT by business area

UPM Biorefining

UPM Energy

UPM Paper ENA

UPM Specialty Papers

UPM Raflatac

UPM Plywood

UPM Energy

UPM Paper ENA

UPM Specialty Papers

UPM Raflatac

UPM Plywood

EURm

% of sales

EURm

% of sales

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EURm
Comparable EBIT in Q3 2017 vs. Q3 2016

Prices increased more than variable costs. Growth in deliveries continued. Currencies had a negative impact.

Growth in deliveries in Biorefining, Raflatac, Specialty Papers and Plywood. Pulp prices increased.
Outlook for 2017

- UPM’s profitability improved significantly in 2016 and is expected to continue on a good level in 2017. Comparable EBIT is expected to increase in 2017 compared with 2016.
- 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 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.
- Q4 2017 is expected to include more maintenance activity than Q3 2017 in UPM Biorefining and UPM Paper ENA.
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**

Lost-time accident frequency

5-year change: **−76%**

**Employee engagement**

Manager effectiveness

5-year change: **+9**

**Productivity**

Sales per employee

5-year CAGR: **+4% pa**
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
- 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, September 2016
Market pulp consumed in growing end-uses – supply of alternative white fibres declines

Global paper and board production

- Mixed collection crowding out white recycled fibre
- Stressed supply of white recycled fibre
- Market pulp consumption in growing end-uses

- Containerboard
- Graphic papers
- Cartonboard
- Tissue
- Specialty
Case: Market pulp consumption in growing end-uses

Fibre consumption in tissue, cartonboard and specialty end-uses

White integrated pulp 10
White market pulp 30
Other fibres (RCP, mechanical pulps…) 85

5% demand increase in tissue, cartonboard and specialty end-uses
Increase in market pulp consumption

Million tonnes

Source: Pöyry, Hawkins Wright, UPM
5% fall in global graphic paper production

-7

125

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

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
UPM Biorefining

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
Potential pulp mill in Uruguay could be a competitive alternative – time schedule is several years.

- **Conversation with Government of Uruguay on local prerequisites**
- **Development of infrastructure and permitting**
  - est. 1.5 – 2 years
- **Investment project development of Infrastructure**
  - est. 2.5 years
- **Potential UPM investment decision**
UPM Biofuels in existing and future end-use

Fuel retail

Dedicated green fleets

Marine/Aviation
UPM Biorefining

UPM Biofuels business evolving

- **2010**
  - UPM enters Biofuels
  - Evaluate technologies, define business case

- **2012**
  - Investment decision

- **2015**
  - Commercial start
  - Build Lappeenranta Biorefinery and Biofuels organization
  - Establish Bioverno as a benchmark product and brand in biofuels

- **2020**
  - Technology and Business case proven
  - Start evaluation of future growth opportunities
  - Biocrude concept shaping
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

* Calculated based on "Global EV sales outlook to 2040" by Bloomberg New Energy Finance
* Assuming EV’s represent 38% of new car sales in Europe by 2040 + EV’s are fully emission free
** Assuming annual energy efficiency improvement of 2% in light-duty, 0.5% in heavy-duty
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
In addition to its own power generation, UPM Energy sources electricity from part owned energy companies at full cost (cost-price principle)
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>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Q117</th>
<th>Q217</th>
<th>Q317</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helsinki Front Year</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>System Front Year</td>
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<tr>
<td>UPM average sales price</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparable EBIT, EURm</td>
<td>217</td>
<td>186</td>
<td>202</td>
<td>181</td>
<td>116</td>
<td>22</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>% of sales</td>
<td>45.0</td>
<td>39.9</td>
<td>43.5</td>
<td>43.6</td>
<td>32.7</td>
<td>27.5</td>
<td>18.3</td>
<td>30.5</td>
</tr>
</tbody>
</table>
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%
- ~$12 Bn

**PACKAGING**
- Paper flexpack, k tonnes
- CAGR 2%
- 2014: 44 billion, 2020E: 60 billion
- 2015: 2,370 thousand tonnes, 2020E: 2,702 thousand tonnes
- CAGR 5%
- ~$58 Bn

**OFFICE PAPER ASIA**
- Asian cut size market, million tonnes
- CAGR 2.5%
- 2015: 4.6 billion, 2020E: 5.2 billion
- CHN: 5%, JPN: 4%, AUS: 6%, SEA: 3%, KOR: 1%, OTH: 0.6%
- Mkt value ~$4 Bn
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
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.

Source: Euro-Graph
Paper price vs. cash cost of marginal cost producer

Sources: PPI, RISI, Pöyry
Graphic paper prices

Europe

North America

China

Sources: PPI, RISI

- News
- SC
- LWC
- WFC
- WFU
- WFC r (100% chemical pulp)
- Uncoated Woodfree Reels (100% chemical pulp)
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
New business opportunities for UPM

Biofuels
- High volume products
- Economies of scale
- Drop-in applications

Biochemicals
- Life science prod. e.g. cell culturing and medical care
- Performance chemicals e.g. resin for plywood manufacturing

Biorefinery Chemicals

Biofibrils

Lignin

Biocomposites
- Terrace materials
- New applications, e.g. acoustics pr.

100 kt renewable diesel

Market entry

Scale up
Biofuels and biochemicals are natural evolutionary steps in wood based value creation.
Biochemicals biorefinery targeting to produce bio-MEG, bio-MPG and lignin from hardwood

**BIOREFINERY PROCESS**

**STEP 1: SUGAR PULPING**
Disintegrating wood into sugars, lignin and green energy

**STEP 2: CHEMICAL CONVERSION**
Conversion of sugars into targeted biochemicals

- **Bio-Monoethylene glycol (MEG)**
- **Bio-Monopropylene glycol (MPG)**
- **Lignin**

**BIOMASS**

- **40%** Cellulose
- **30%** Hemi-cellulose
- **25%** Lignin

**SUGARS**

**GREEN ENERGY**
Biochemicals products are sustainable and competitive drop-in alternatives for brand owners

- **Mono Ethylene Glycol (bMEG)**
  - Existing fossil-based market
  - Market demand > 26 mio tons
  - CAGR >3%
  - Application examples:
    - Textiles
    - Bottles & Packaging
    - Deicing fluids

- **Mono Propylene Glycol (bMPG)**
  - Existing fossil-based market
  - Market demand >2 mio tons
  - CAGR >5%
  - Application examples:
    - Composites
    - Pharma & Cosmetics
    - Detergents

- **Lignin**
  - Performance chemical
  - Application driven
  - Strong IP position
  - Application examples:
    - Wood resins
    - Plastics
    - Foams & Coatings