OPPORTUNITIES AND CHALLENGES FOR FOREST PRODUCTS INDUSTRIES

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## UPM structure

| UPM Biorefining | • Pulp (3.3 million tonnes p.a.), incl. plantation operations  
|                 | • Biofuels  
|                 | • Timber  

| UPM Energy      | • Power generation (1,721MW), incl. UPM’s hydropower plants and shareholdings in energy companies  
|                 | • Physical and derivatives trading  

| UPM Raflatac    | • Self-adhesive label materials for product and information labeling  

| UPM Paper Asia  | • Fine papers in China  
|                 | • Label papers  
|                 | • Total capacity 1.5 million tonnes p.a.  

| UPM Paper ENA   | • Magazine papers in Europe and NA  
|                 | • Newsprint and fine papers in Europe  
|                 | • Total capacity 10.3 million tonnes p.a.  

| UPM Plywood     | • Plywood and veneer products (1 million m³ p.a.)  

**Other operations:** Forests (over 900,000 hectares of forests) and wood sourcing, New Business Development and Group services
Competitiveness of the forest sector

- Market - demand/price
  - Innovation
    - New products
  - Labour
    - Agreement
    - Development
  - Production
    - Efficiency
  - Location
    - Logistics
  - Regulation
    - Taxes...

- Raw material - demand/price
Asia is the largest market
European capacity reduction in line with demand

Europe

North America

Asia

Source: Cepiprint, Cepifine, PPCP, PPI
Integration of current operations and competencies into new knowledge and operations

Current businesses & competencies

+ 

New knowledge & new businesses

= 

New forest industry
Wood raw material for many products

Fibres to pulp

Fibres to biofibrils

Extractives to biodiesel or biochemicals

Logs for sawn goods and plywood

Fibres to biocomposites

Bark and branches to biofuels and energy

Lignin to energy and biochemicals

Cellulose or hemicellulose to biochemicals
New opportunities for the future

- UPM is developing a range of new businesses
- Potential for increasing value added in UPM’s value chain
- Large target markets with potentially healthy profitability and sustainable competitive advantage
- New businesses based on UPM’s in-house development and synergies with existing businesses
Renewables targets to replace fossils with renewables
Europe offers a variety of policies that are relevant to the biobased economy and can trigger its development by 2020:

- **Renewable energy directive**: Support demand for advanced biofuels
- **Common agricultural policy**: Support biomass mobilisation as part of Greening the CAP
- **EU BIO-ECONOMY Strategy & Action Plan**: Support investment in biorefineries with a PPP on Biobased Industries
- **HORIZON 2020**: Support investment in biorefineries with a PPP on Biobased Industries
Biorefinery attractive growth investment based on UPM’s competitive advantages

Competitive raw material
- Crude tall oil, a residue from pulp production
- Steady supply partially from own sources
- Outside food value chain
- No indirect land-use change

Efficient production process
- Technology based on UPM innovations
- Efficient use of raw material
- Integrate synergies
- Industrial infrastructure

High quality product
- 2nd generation biodiesel fully compatible with current diesel motors
- 80% reduction in greenhouse gas emissions
- High energy content
- No blend wall issues
FOREST OF NEW OPPORTUNITIES

World is changing
- Resource scarcity
- Power shift in global economy
- Climate change
- Digitalisation

Biofore growth and competitiveness
- Materials and energy efficiency
- Renewable and recyclable products
- Innovation and new businesses
Competitiveness of the forest sector

Market - demand/price

Innovation
New products

Labour
Agreement Develpmnt

Production
Efficiency

Location
Logistics

Regulation
Taxes...

Raw material – demand/price
European Union long term targets will be implemented through various means