



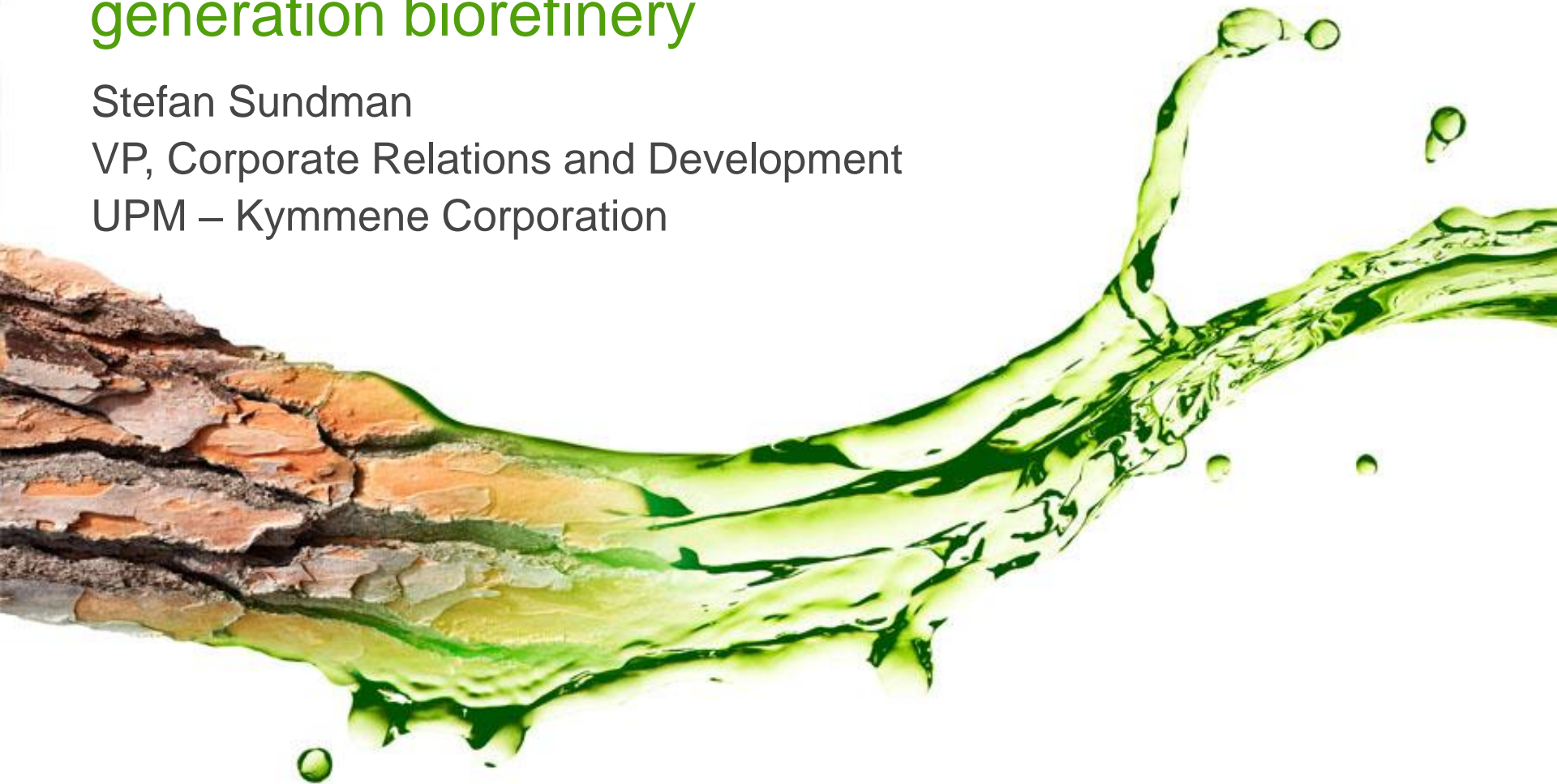
The Biofore Company **UPM**

# Private financing of a second generation biorefinery

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UPM – Kymmene Corporation





# 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

## New products and businesses from biomass

- A resource that offers a range of possibilities
- Renewable, sustainable raw material
- UPM's profound and extensive knowledge of biomass
- Strong synergy with UPM's current businesses

# Integration of current operations and competencies into new knowledge and operations

Current businesses  
&  
competencies



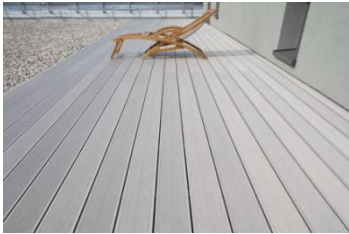
New knowledge  
&  
new businesses



New  
forest industry

# Building new on current businesses

UPM ProFi



UPM Biofibrils



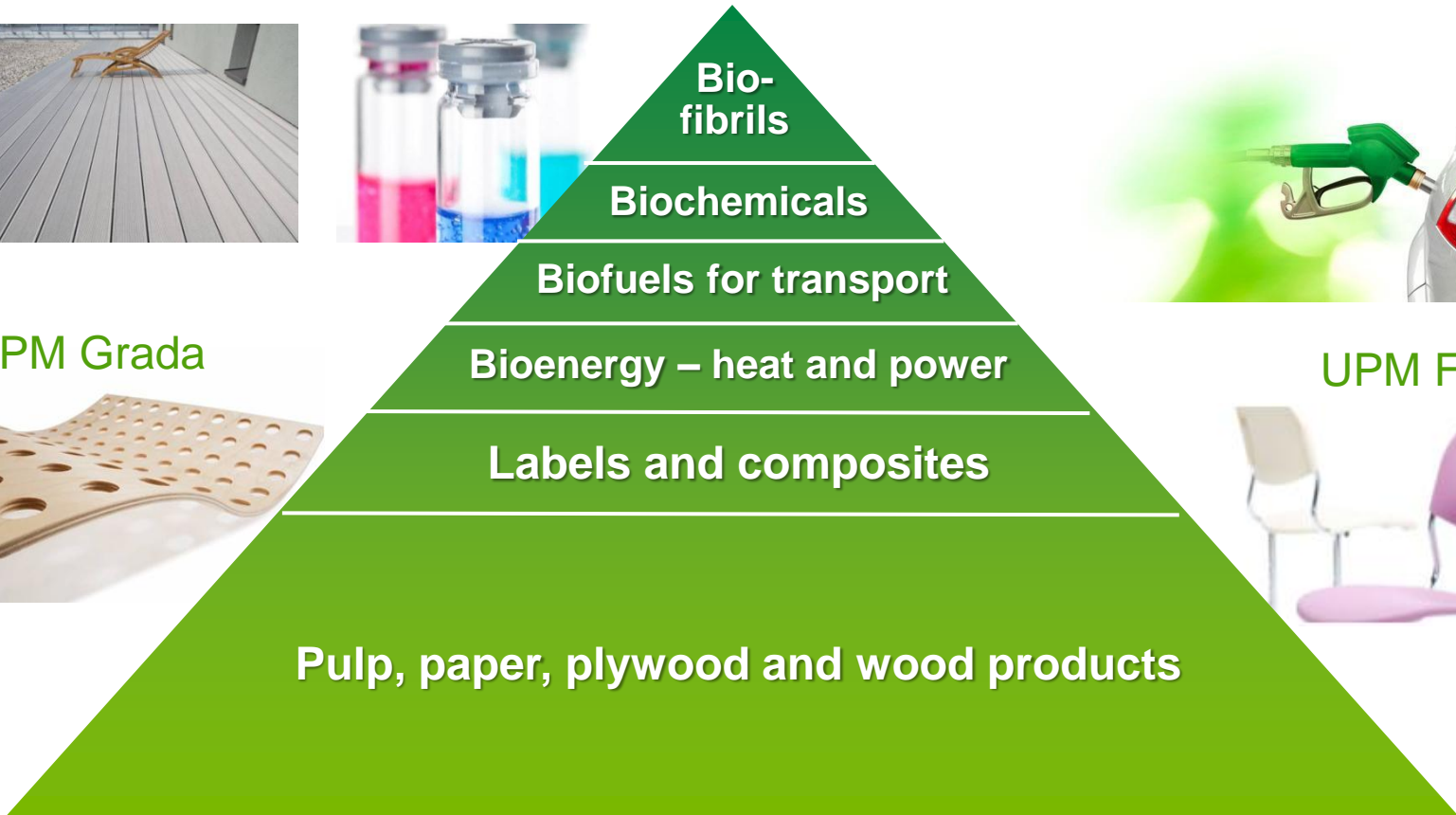
UPM BioVerno



UPM Grada



UPM ForMi



Wood-based biomass procurement and logistics



## UPM invests in wood based biodiesel in Lappeenranta

- UPM invests in the world's first advanced wood based biodiesel production in South Eastern Finland, Lappeenranta.
- Main product of the biorefinery is advanced, second generation biodiesel
- Raw material is sustainably produced crude tall oil, which is used in a more efficient way than previously
- Technology is based on UPM's innovations and Biofore strategy inspired long-term development work





## UPM Lappeenranta biorefinery

- **Commercial scale industrial investment**
  - Total investment of appr. 150 MEUR
  - Production 100 000 tonnes/a of advanced biodiesel
  - Production starts in 2014
  - Employes approx. 200 persons directly and indirectly
- **Profitable investment**
  - Know-how and volumes in raw material procurement and logistics
  - Mill integrated synergies in energy and infrastructure
  - High quality product
  - UPM's innovative technology (technology partner Haldor Topsøe)
- **Demand is growing fast**

# Growing UPM Kaukas mill site in Lappeenranta

- 1 RESEARCH CENTRE
- 2 BIOREFINERY
- 3 BIOMASS POWER PLANT
- 4 PULP MILL
- 5 SAW MILL
- 6 PAPER MILL





# UPM's vision for Biofuels business

1

## Refining liquid feedstocks

- Sustainable wood based raw materials
- Hydrogenation
- Lappeenranta biorefinery 1<sup>st</sup> step

2

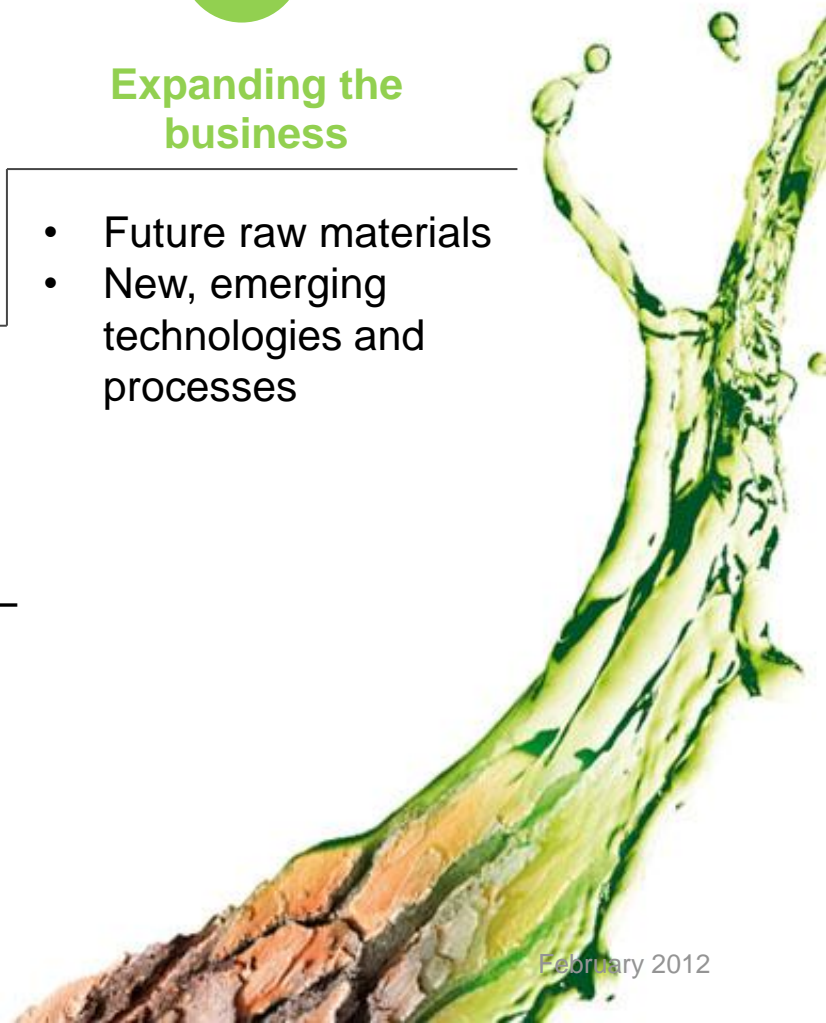
## Refining solid feedstocks

- Energy wood as raw material
- Process e.g. BTL\*) meaning gasification and Fischer-Tropsch – synthesis
- Rauma or Strasbourg as first choices of location

3

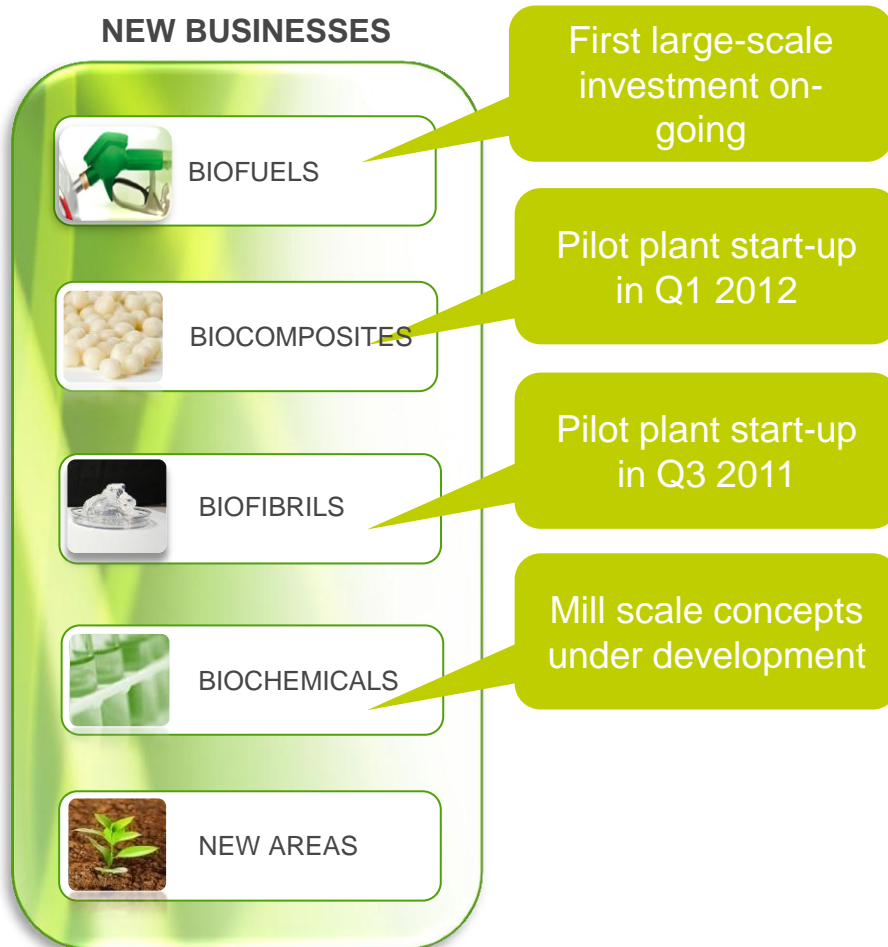
## Expanding the business

- Future raw materials
- New, emerging technologies and processes



# Biofore in action

## New opportunities for the future



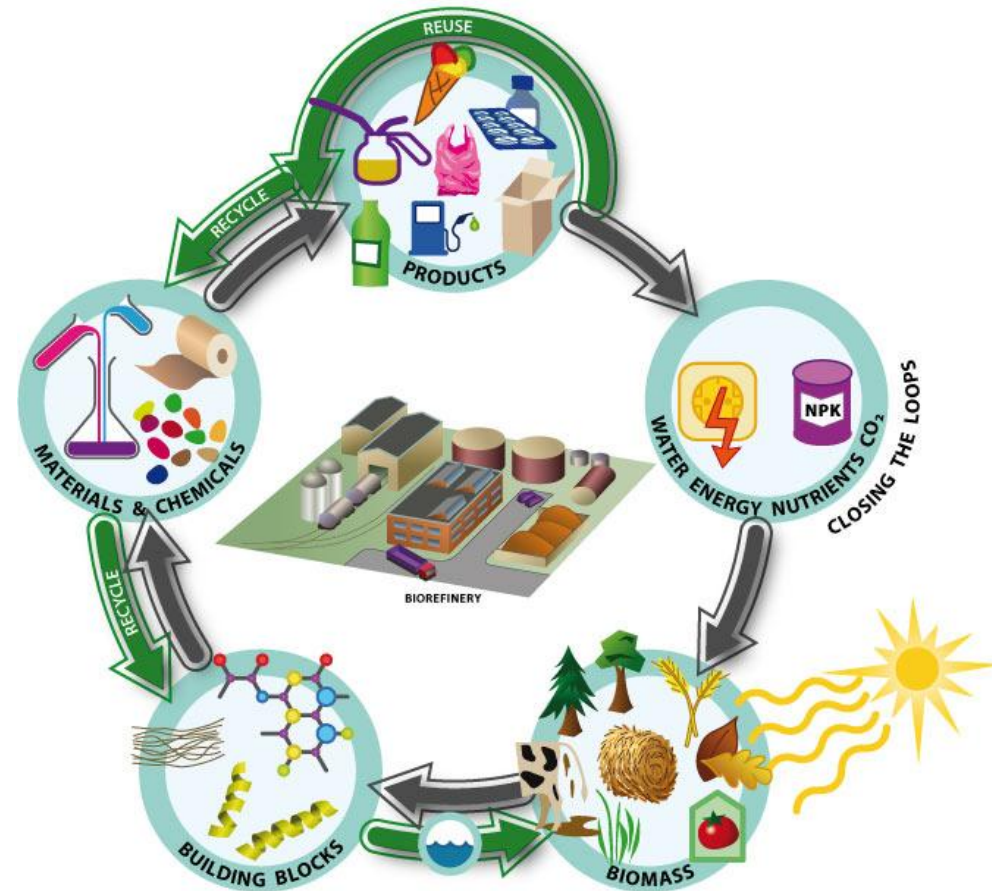
- UPM is developing a range of new businesses
- Potential for increasing value added in UPM's value chain
- Large target markets with potentially healthy profitability and sustainable competitive advantage
- New businesses based on UPM's in-house development and synergies with existing businesses

# Public Private Partnership on Biobased Industries

A joint initiative to overcome industry challenges

- Investment & implementation
  - in order to keep Europe in the global race
- Innovation:
  - New products and new value chains
- Integration
  - to accelerate the building of value chains

Focused on development and actual realisation of integrated biobased value chains





**UPM**

The Biofore  
Company





storaenso



 Smurfit Kappa Group

ABENGOA BIOENERGIA



HOLMEN



DONG  
energy



Metsä



sappi



CLIB  
2 0 2 1  
CLUSTER  
INDUSTRIELLE  
BIOTECHNOLOGIE



kemira



europaean  
bioplastics

EUROPA BIO™

The European Association for Bioindustries



Forest-Based Sector  
Technology Platform



copa \* cogeca  
european farmers      european agri-cooperatives

