UPM Biofuels
Development and Pilots

2nd Stakeholder Plenary Meeting of the Biofuels TP
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2G biofuels fit well to our business

Forest biomass
- Forestry
- Harvesting
- Logistics
- Assortment
- Drying

Sustainable biofuel = significant CO₂ reduction + non-food + sustainable total supply chain
1. **2G biodiesel concept**

- **Biomass drying**
- **Gasification & purification**
- **FT-synthesis & up-grading**
- **Water treatment**
- **CHP plant**
- **Pulp & paper mill**

**Flow:**
- **Synthetic biodiesel** $C_nH_{2n+2}$
- **Material flow**
- **Energy flow**
- **Paper mill units**
- **Additional units**

**Inputs:**
- **Wood handling**
- **Bark**
- **Stumps**
- **Residues**

**Outputs:**
- **Pulp & wood**

**Location:**
Gas Technology Institute, Des Plaines, Illinois, US
2G bioethanol concept

Waste handling

Water treatment

De-inking plant & recycled paper mill

Ethanol plant

CHP plant

Bioethanol

Electricity

Paper mill units

Additional units

Material flow

Energy flow

Waste handling

"0" fibres

Material flow

Energy flow
3 2G bio-oil concept

- Stumps
- Residues

Wood handling

Water treatment

CHP plant

Pyrolysis

Bio-oil

- Paper mill units
- Additional units
- Material flow
- Energy flow

Wood handling → Pulp and wood

Water treatment

CHP plant

Pyrolysis

Bio-oil

Pulp and wood

Paper mill

Stumps and Residues

Wood handling