Virtual Pyrolysis Plant Locations

Availability and quality of biomass

CAPAX Biobased development

Bart Tambuyser

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 723070.

Outline

- What makes a bio-based project bankable and financially successful?
- Approach of VPLs (Virtual Pyrolysis plant Locations)
- Feedstock availability
- Feedstock quality
- Selection of VPL's
- Summary

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How to make a biobased project bankable?

- Long term feedstock securement
- Sales agreements

In short you need to secure the IN's & OUT's of your project

- First step → thorough surrounding analysis

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Virtual Pyrolysis plant Locations: approach

Bio4Products project:

- Feedstocks within the EU zone
- Focus on **residual lignocellulosic** feedstocks from 3 domains
  - Agriculture
  - Forestry
  - Food/feed processing

Principle of VPL's (Virtual Pyrolysis plant Locations)→ realistic feedstock scenarios

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Biomass Availability

- Competitive feedstock uses
- Price
- Project competitiveness
- Technology flexibility
- Logistics
- Sustainability

Bio4Products used a scoring system in order to select 3 final feedstocks

Correlation between site choices & feedstock choices

Feedstock (category)		Examples of competitive use
Wheat straw (A)		• Animal feed, bedding • Fuel • Basket making • Thatching • Green construction • Mulching • Pulp manufacturing
Sawmill residues, wood slabs (F)		• Panel wood • Fencing • Energy market • Mulching • Torrefaction products • Domestic heating
Sunflower husks (FP)		• Feed additive • Gardening applications • Construction applications • Fuel source • Bulking agents and fillers

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Quality

- Physical characteristics
- Chemical composition

- Quality influencing parameters:
  - Weather conditions
  - Harvesting operations
  - Logistics
  - Conditioning

Lignin	22%
Hemicellulose	17%
Cellulose	48%

Lignin	17%
Hemicellulose	35%
Cellulose	48%

Lignin	14%
Hemicellulose	24%
Cellulose	34%

Correlation between conversion technology and selected biomass

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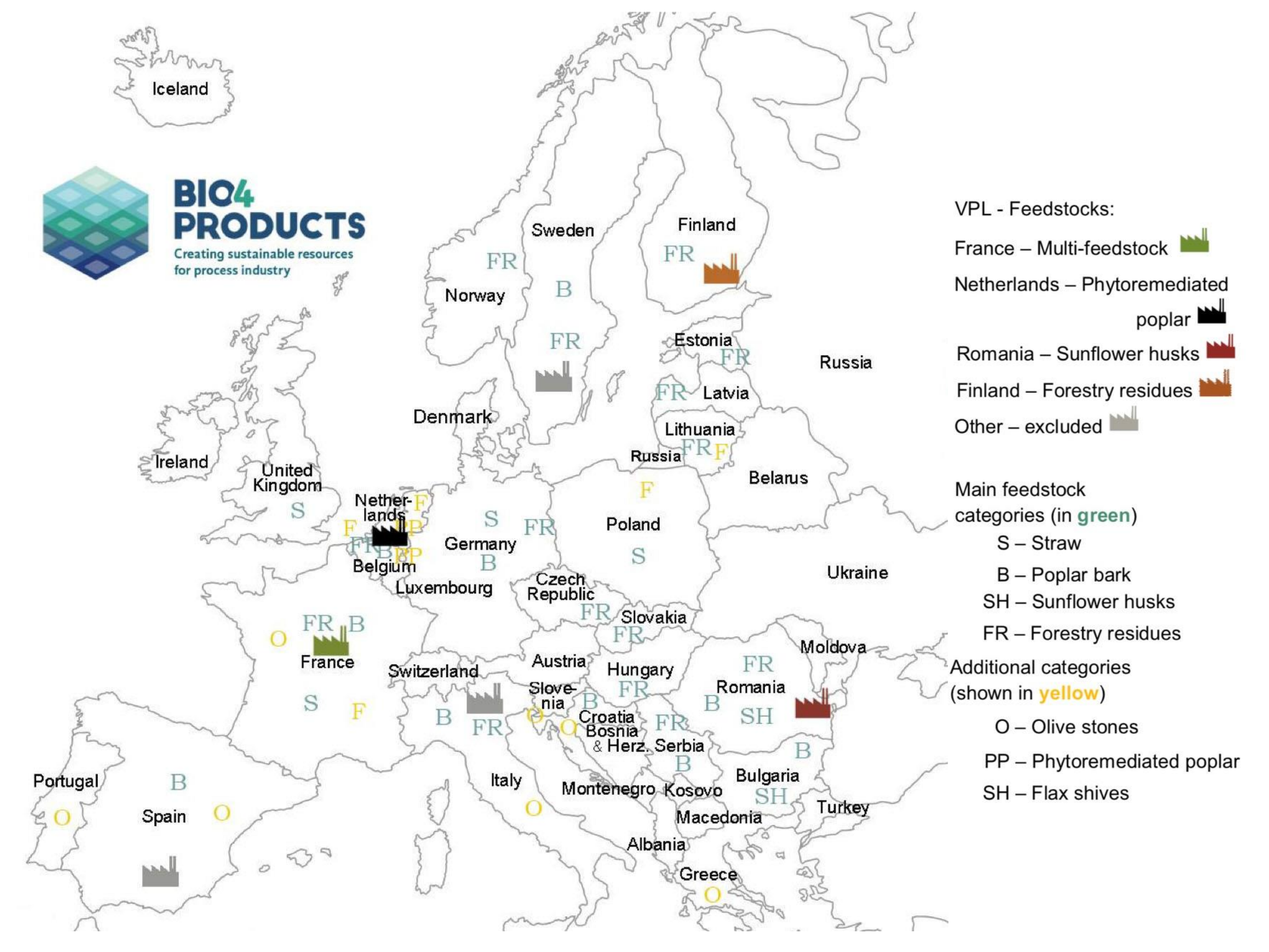
BIO4 PRODUCTS
Creating sustainable resources for process industry
Iceland
Sweden
Finland
Norway
Estonia
Russia
Latvia
Denmark
Lithuania
Ireland
United Kingdom
Belarus
Nether-lands
Poland
Germany
Belgium
Luxembourg
Ukraine
Czech Republic
Slovakia
Moldova
France
Austria
Hungary
Switzerland
Romania
Slove-nia
Croatia
Bosnia & Herz.
Serbia
Portugal
Spain
Italy
Montenegro
Kosovo
Bulgaria
Turkey
Macedonia
Albania
Greece
VPL - Feedstocks:
France – Multi-feedstock
Netherlands – Phytoremediated poplar
Romania – Sunflower husks
Finland – Forestry residues
Other – excluded
Main feedstock categories (in green)
S – Straw
B – Poplar bark
SH – Sunflower husks
FR – Forestry residues
Additional categories (shown in yellow)
O – Olive stones
PP – Phytoremediated poplar
SH – Flax shives

Summary

- **Biobased project success, long term feedstock securement is key!**
- **Profound feedstock assessment**
- **Virtual plant locations – a tool to do a realistic biomass surrounding analysis**

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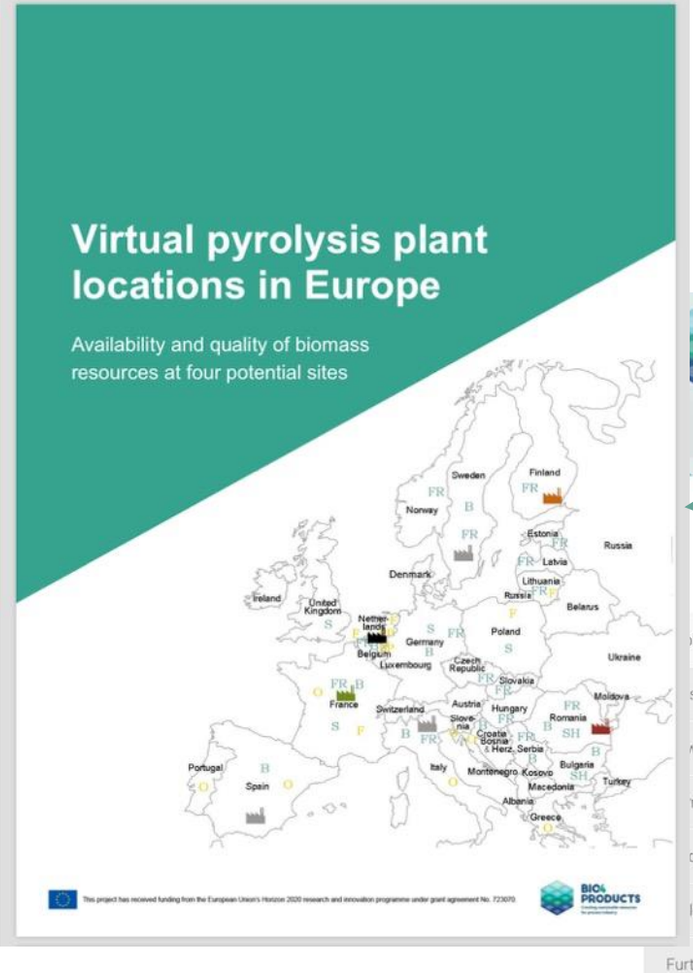

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- Virtual Pyrolysis Plant Locations: Availability and quality of biomass at four potential sites
  Virtual-Pyrolysis-Plant-Locations.pdf

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Coordinator
Bert van de Beld, BTG Biomass Technology
vandebeld(a)btgworld.com

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Thank you for your attention!

Capax Biobased Development

Bart Tambuyser

+32 52 30 26 71 info@capax.be

www.capax.be

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