

Biorefinery of flax shives: source of bioaromatics and fibers

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Center for Sustainable Catalysis and Engineering (CSCE)

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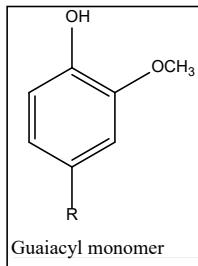
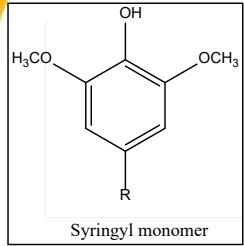
Agricultural side streams: flax Shives

- Major flax producers in EU
 - France, Belgium, the Netherlands
 - About 80 000 ha
- Flax shives is major side product from flax straw production to fibers
 - About 240 ktons shives per year in the 3 major countries
 - 40 ktons in Belgium
- Current use: animal bedding
- Interesting feedstock for the biorefinery
 - Lignocellulose (2nd gen)
 - Limited variability (1 species)
 - No additional mechanical downsizing required



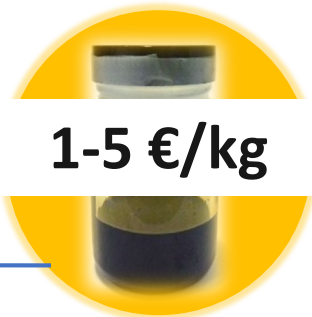
Biorefinery technology platform

Non-edible Biomass – Side streams



KU LEUVEN PATENTED
US201862689655; EP2019066887

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PATENTED
WO2022023510



Lignin oil

← 20%



Catalytic biorefinery
process

→ 80%



Carbohydrate pulp
+ sugars



Flax shives refinery

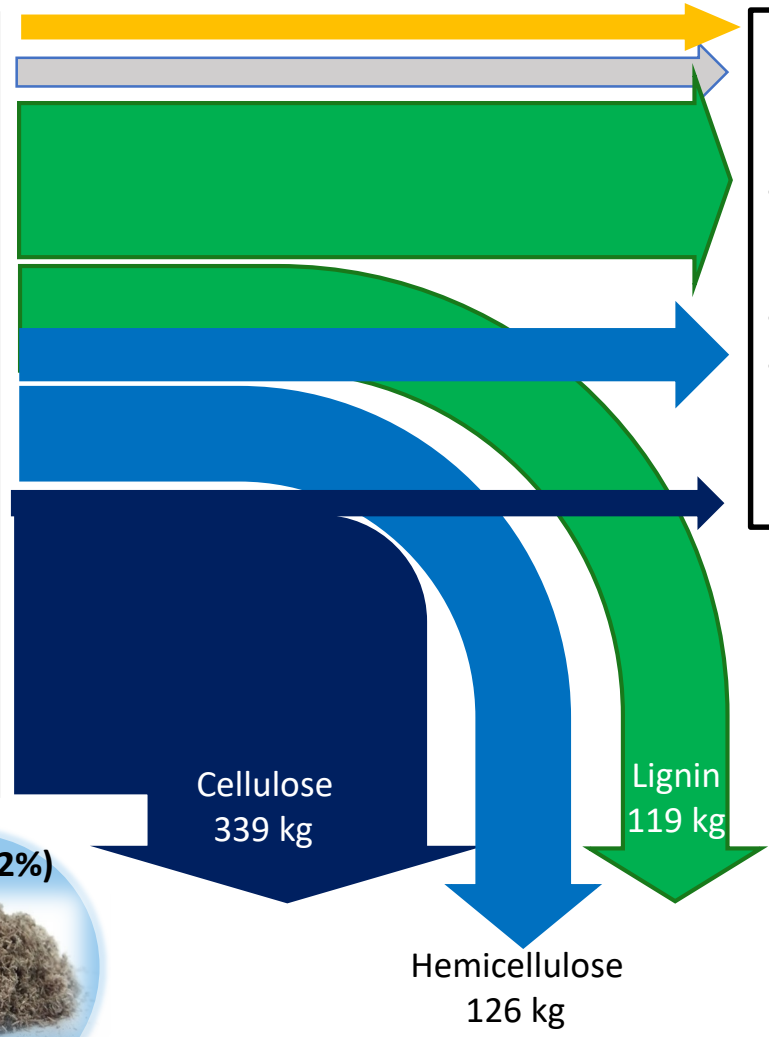
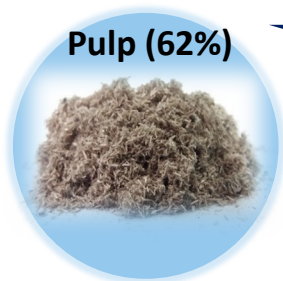
Lignin oil (21%)



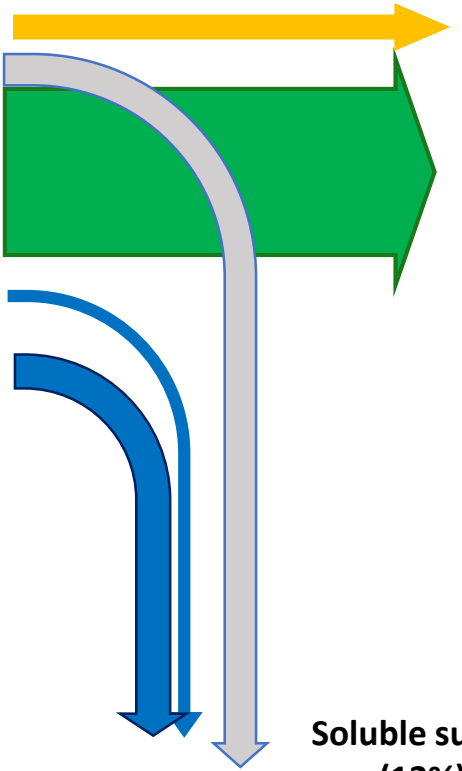
- Extractives (wt%)
- H₂O (wt%)
- Inorganics (wt%)
- Lignin (wt%)
- C5 (wt%)
- C6 (wt%)



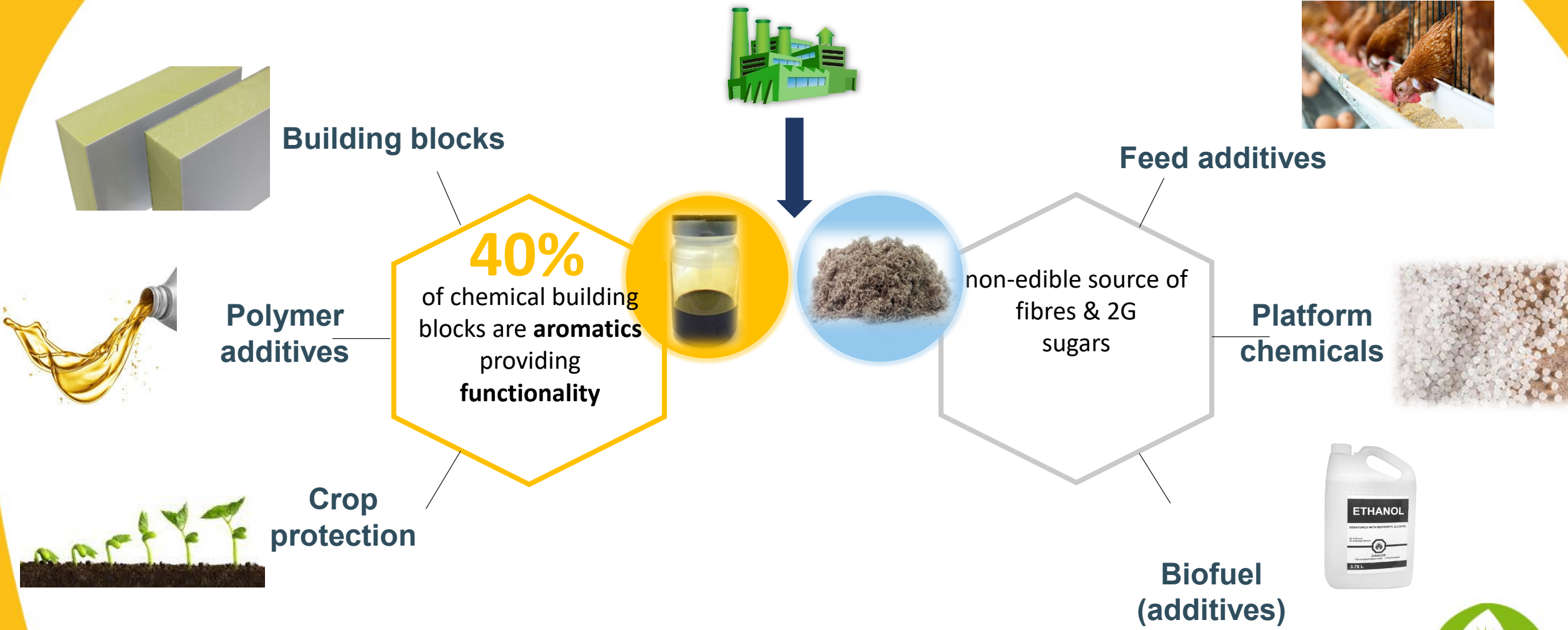
BIOREFINERY



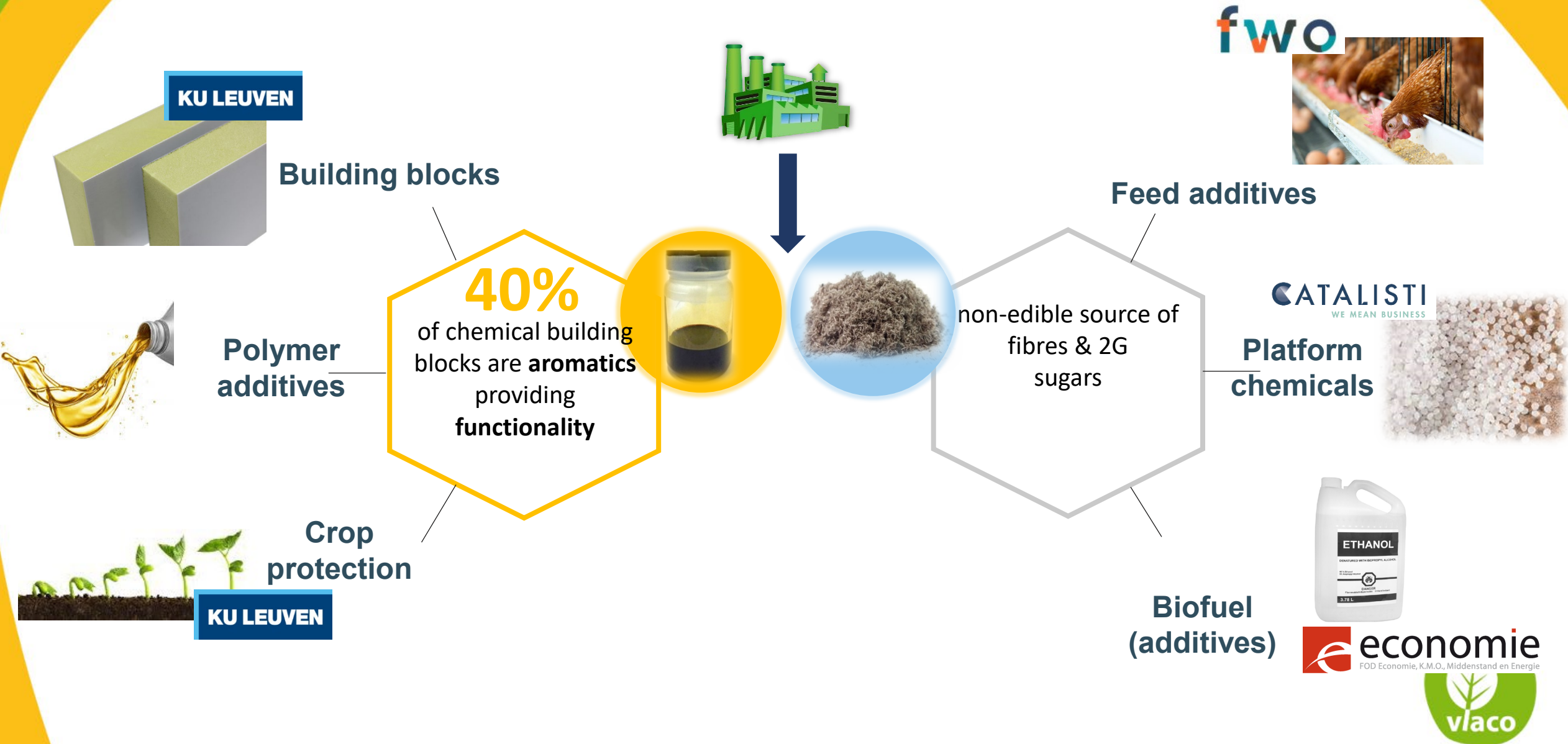
Liq-Liq Extraction



Broad application platform

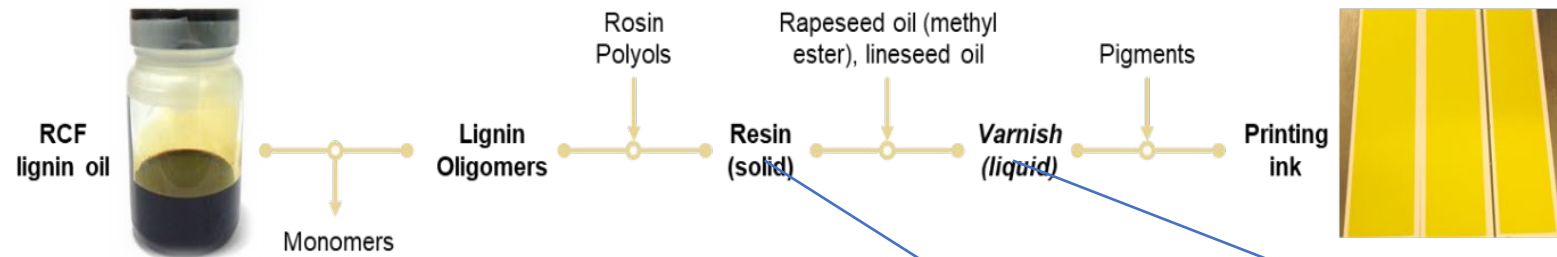


Broad application platform



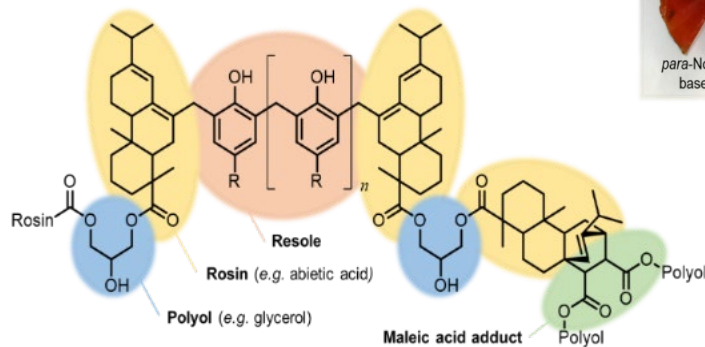
Example: lignin oil to resins and ink

CATALISTI
WE MEAN BUSINESS

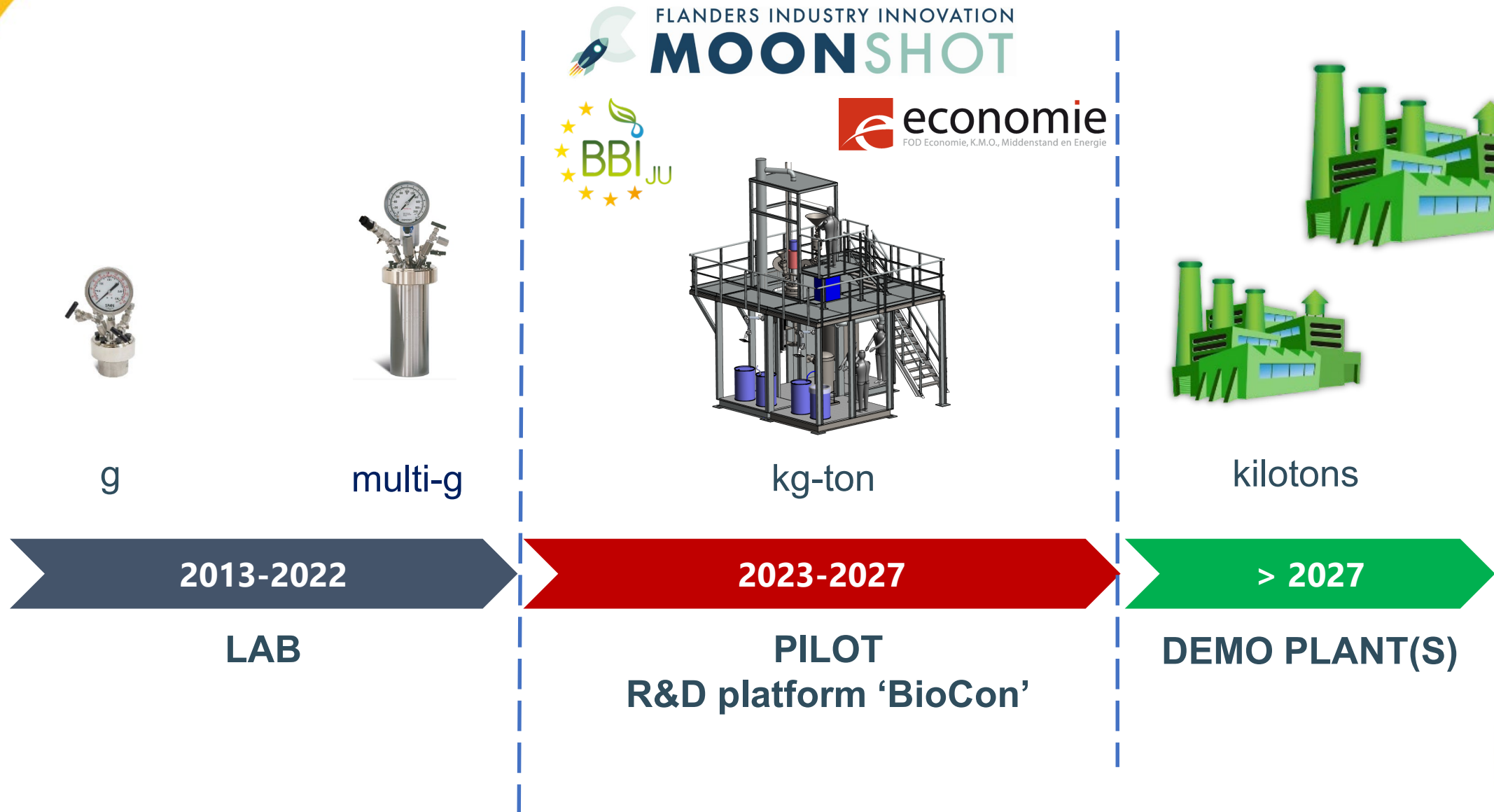


LAWTER
INNOVATION

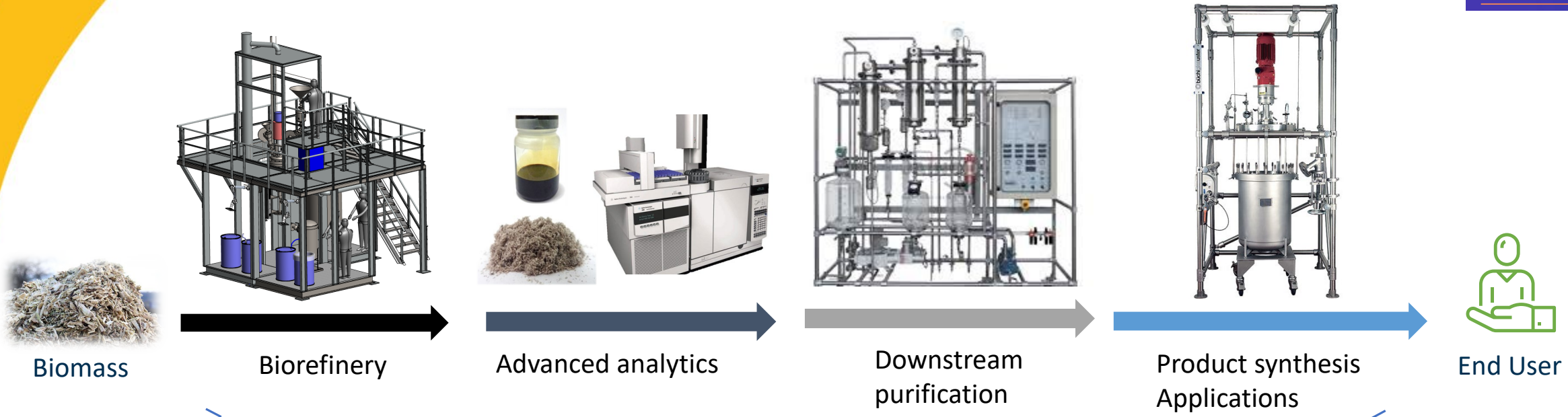
Thanks to Lawter !



Roadmap: from lab to industry



EU RRF – BioCon platform

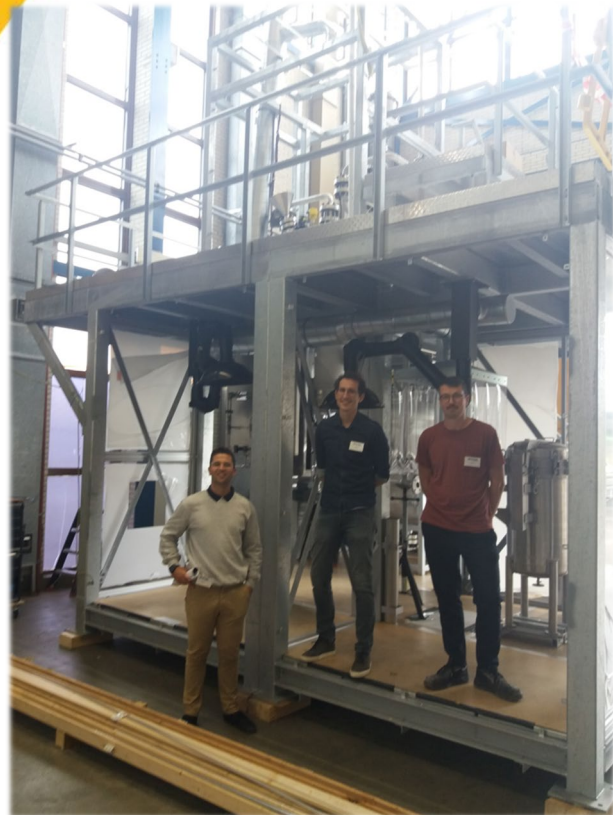


TRANSfarm
Pilot hall Green Chemistry

- Site Utilities
- Safety equipment
- On-site Lab
- Biomass handling



Status – Base of Pilot platform



Frame



200L custom reactor and knockout drum



Bottom valve to filter



Solid/liquid Filter



Piping & valves



CONFIDENTIAL



Acknowledgements

- Financial support from the MAIA project (Catalisti)



- Companies that contributed to the research

- Flax shives from Cobalin



- Application testing by Lawter



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