

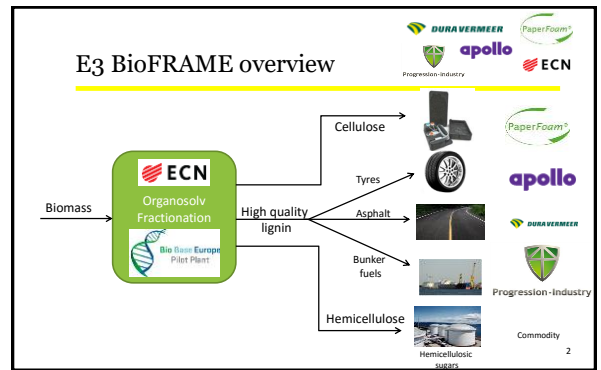
apollo **DURAVERMEER** **Progression-Industry** **PaperFoam** **ECN**

E3 BioFRAME – Energy Efficient Exploitation of Biomass for Fuels, Rubber, Asphalt, packaging Materials and Energy
TKI-BBE project TEBE115001

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Challenges

- **Organosolv fractionation**
 - High quality lignin obtained from ECN Organosolv technology
 - Lignin valorisation is essential for fractionation economics
 - Scale-up to pilot requires commitment of value chain partners
- **Cellulose**
 - Paperfoam can be made with some cellulose fibres
- **Lignin**
 - Lignin can partly replace carbon black in tyres
 - Bitumen can be partly replaced with lignin
 - Lignin can partly be dispersed in fuel oil

Do Organosolv products have added value over traditional materials?

Overall objective

- To develop four green product applications using lignin and cellulose:
 - Packaging
 - Tyres
 - Asphalt
 - Bunker fuel
- For these applications we assess:
 - Which biomass feedstock is most suitable
 - The added value of Organosolv lignin/cellulose compared to traditional pulping (Kraft)
 - Scale-up of Organosolv technology for two large batch runs in Bio Base Europe Pilot Plant in Ghent (Belgium)

Goals and deliverables

- **Organosolv fractionation (ECN)**
 - Supply and selection of lignin/cellulose
 - Scale-up to large batch run
 - Techno-economics
 - Setting the prerequisites for a pilot facility through creation of a value chain
- **Packaging (Paperfoam)**
 - better and/or cheaper packaging products
 - Prototype packaging product



Goals and deliverables



- **Tyres (Apollo)**
 - Use added value of high-quality lignin for green resin/softener/filler
 - Prototype tyre
- **Asphalt (Dura Vermeer)**
 - Use added value of high quality lignin as bitumen (additive)
 - 1 m² lignin asphalt
- **Bunker fuels (Progression industry)**
 - Improve fuel quality by dispersing lignin in bunker fuels
 - Motor test with lignin/fuel mixture

Impact of E3 BioFRAME

- **Innovative products**
 - Improved, cheaper and green products
 - Tyres, asphalt, bunker fuel and packaging

- **Innovative biomass fractionation technology**
 - Creating value chains for using lignocellulosic biomass
 - Prerequisite for developing an Organosolv pilot facility project
 - Business cases and exploitation plan








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Thank you for your attention!

For more information, please contact:










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