

**VANGUARD INITIATIVE**

New growth through smart specialisation

# The Bioeconomy Pilot of the Vanguard Initiative

Interregional cooperation on innovative use of non-food biomass

Natural Fibertastic 2022, October 13<sup>th</sup> 2022

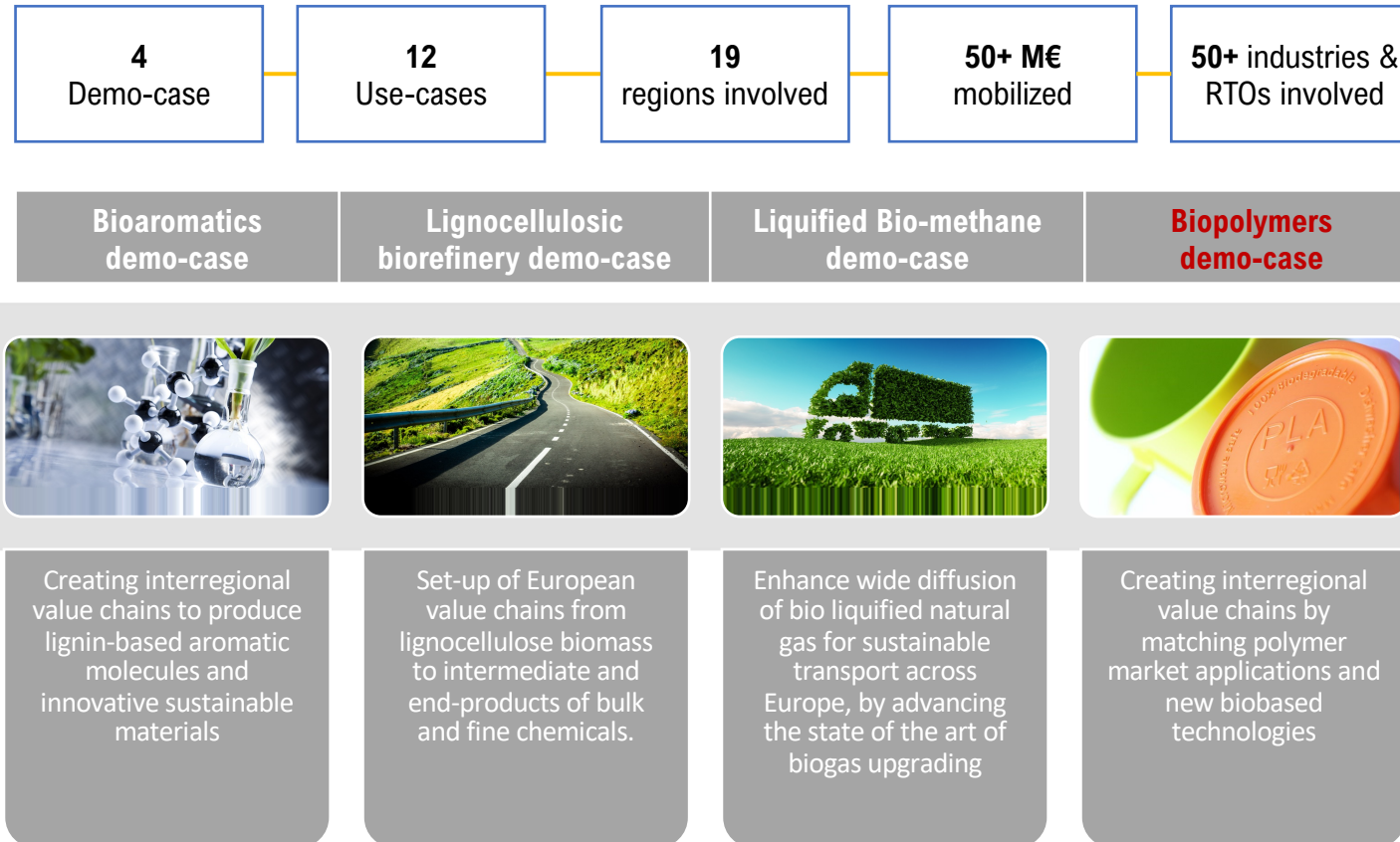
Bergen op Zoom

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# The Bioeconomy Pilot demo-cases



## STRONG TREND TOWARD SUSTAINABILITY OF PLASTICS VALUE CHAINS

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graph TD; A[STRONG TREND TOWARD SUSTAINABILITY OF PLASTICS VALUE CHAINS] --> B[FOSSILE-BASED]; A --> C[BIO-BASED];
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### FOSSILE-BASED

- RecyclABLE and “recycle sourced”
- Sustainable by design

### BIO-BASED

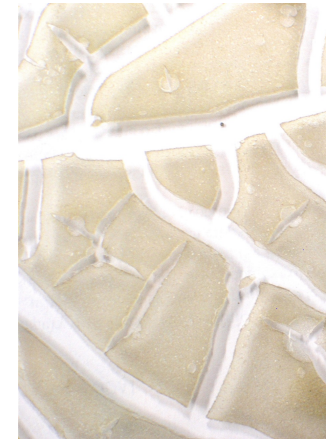
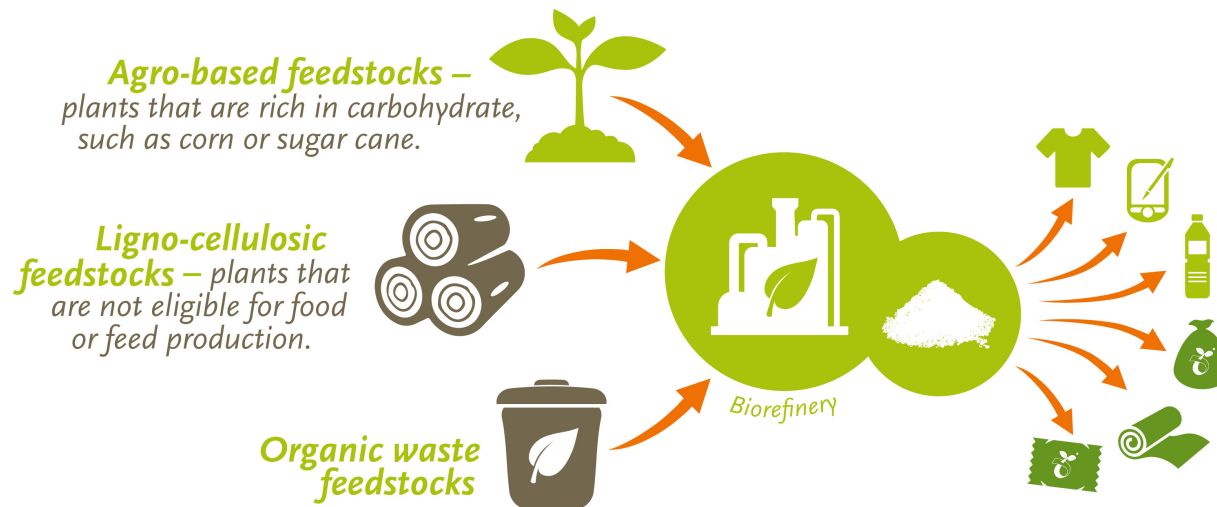
- Sustainable raw material
- Biochemical and chemical biomass conversion
- Biodegradability, also in biocomposites

# Challenges and opportunities of biopolymers

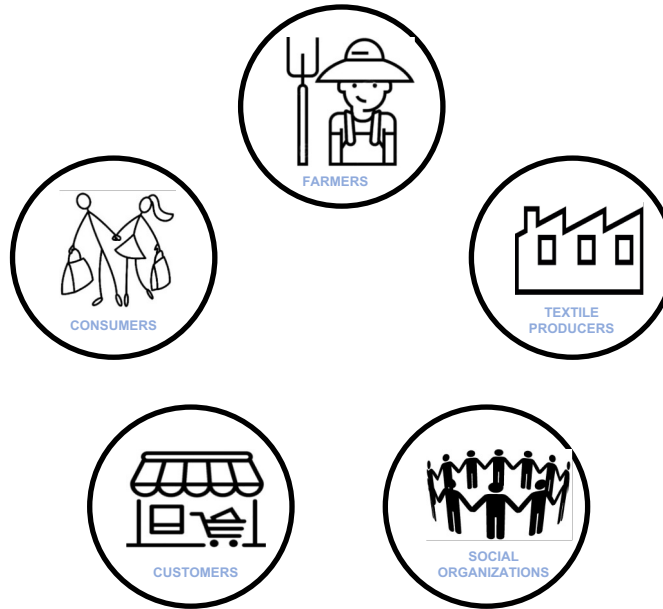
## COMPETITIVENESS OF BIOPLASTICS AGAINST CONVENTIONAL PLASTICS

### RAW MATERIAL AVAILABILITY

### PERFORMANCES AND QUALITY COMPARED TO TRADITIONAL PLASTICS



# Challenges and opportunities of biopolymers



**RAW MATERIAL AVAILABILITY**

**VALUE CHAIN FROM LAND TO USE**

**PERFECT FOR INTERREGIONAL COLLABORATION**

**SPECIAL APPLICATIONS ARE A FIRST WINDOW OF OPPORTUNITY**



## FOCUS ON APPLICATION

1. **Biopolymers for fashion.** Polyester and polyurethane-based synthetic leather from agricultural waste
2. **Biopolymers for medical applications.** PLA, PHA and others for medical and industrial applications from postconsumer feedstock and bio-based substrates

## FOCUS ON RAW MATERIAL SUPPLY

1. PLA from food waste.
2. Lignin-derived biopolymers.



Biopolymers and  
biocomposites



### BIOPOLYMERS DEMO-CASE

NEW AND SUSTAINABLE BIOPOLYMERS



PHA/PHB/PLA polyurethanes and  
polyesters from agriculture waste



#### Application owners

Biopolymers for medical applications  
Biopolymers for fashion



#### Raw material supply

PLA from food waste  
Lignin-derived polyurethanes

#### FOCUS:

creating interregional value chains by matching  
market applications and new technologies

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## FOCUS ON APPLICATION

Biopolymers and  
biocomposites

### 1. Biopolymers for fashion. Polyester and polyurethane-based synthetic leather from agricultural waste



**BIOPOLYMERS  
DEMO-CASE**  
NEW AND SUSTAINABLE BIOPOLYMERS

- PHA/PHB/PLA polyurethanes and polyesters from agriculture waste
- Application owners**
  - Biopolymers for medical applications
  - Biopolymers for fashion
- Raw material supply**
  - PLA from food waste
  - Lignin-derived polyurethanes

**FOCUS:**  
creating interregional value chains by matching market applications and new technologies

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# VEGEA

INNOVATIVE BIOMATERIALS





- **Synthetic Leather Value chain from two sides:**

A new **bio-based and low-environmental impact material**  
as green and cruelty-free alternative to animal and  
synthetic leather.

**Driver an example of full value chain from waste to use**

*Supported by :*



AlumniPolimi Award 2017 **ANGUARD INITIATIVE**

Cooperation  
opportunities on  
**bioeconomy** consistent  
with **Interregional  
Innovation Investment I3**

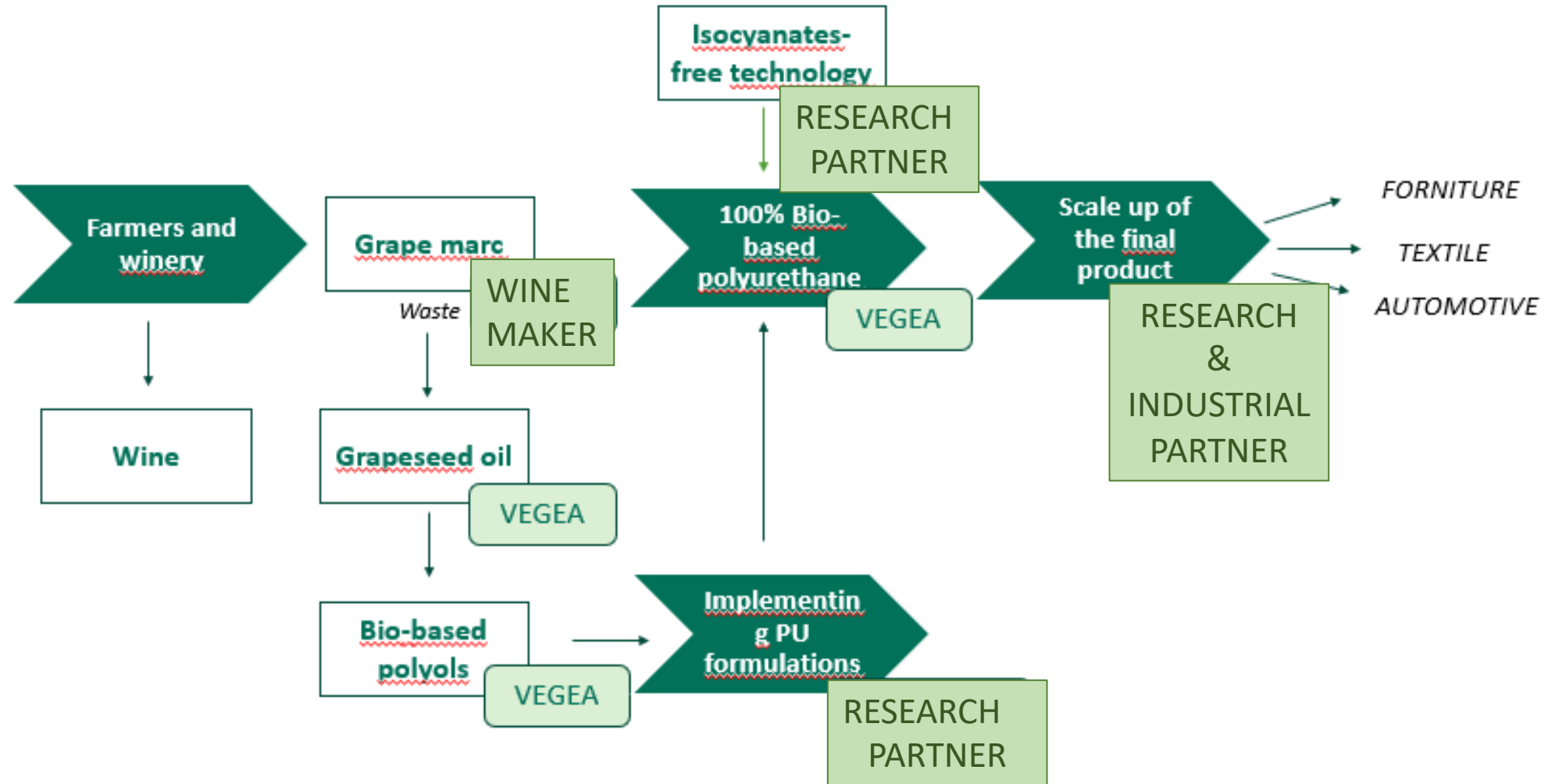
Interregional alliances  
for sustainable  
development

**FUNDING ACCESS  
SUPPORT**





# A new biobased synthetic leather value chain: the challenge of biobased PU

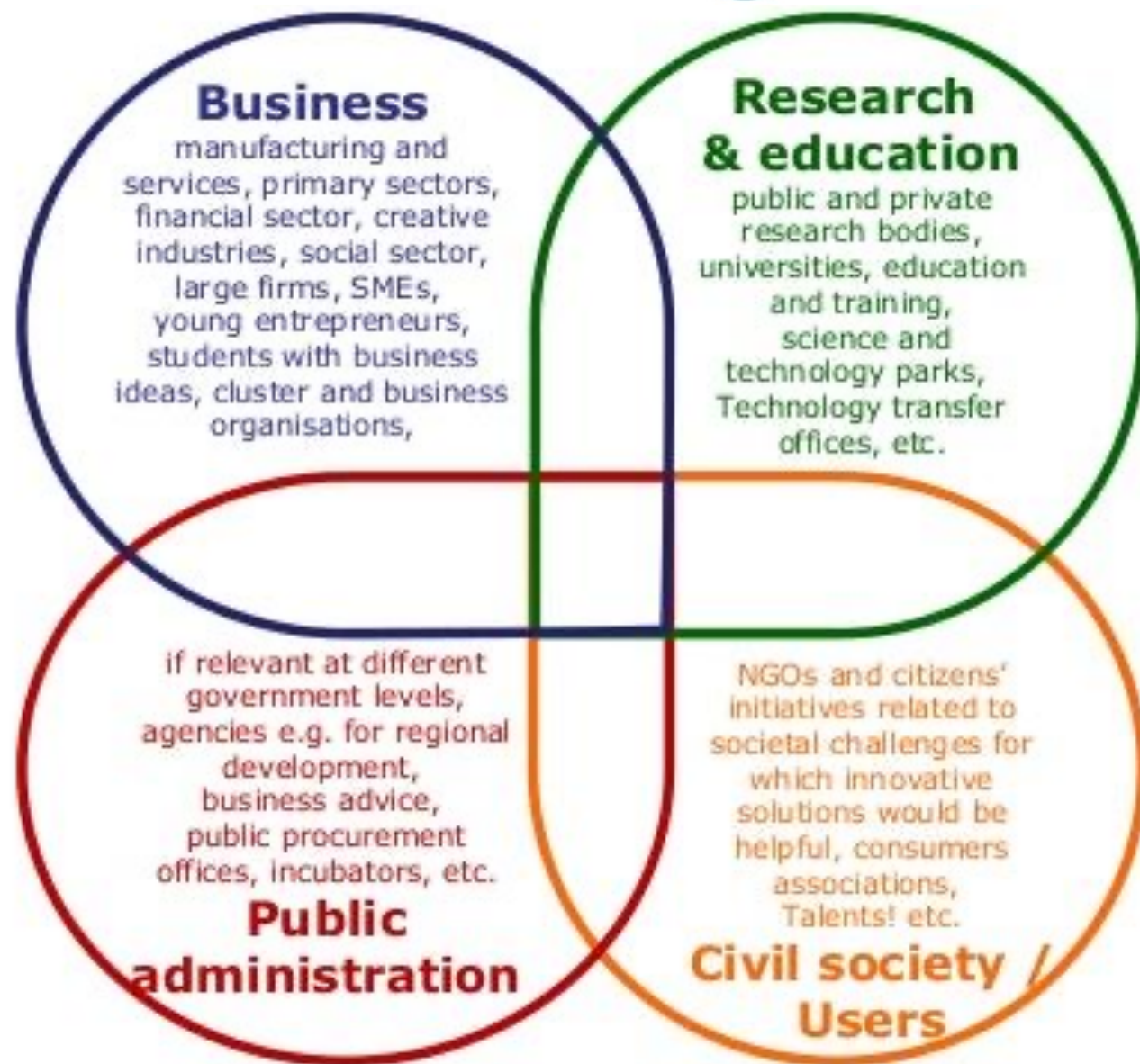




## Other value chain: waste oil/pomace to high-end products



## Call for interest





# Many thanks for your attention!

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