16 October 2024
First panel

Chiara Bearzotti, European Bioplastics

Joachim Venus, Leibniz Institute of Agricultural Engineering and Bio-economy e.V. (ATB)/ PERCAL and CAFIPLA projects

Tanja Meyer, Bio Base Europe Pilot Plant/ LUCRA project

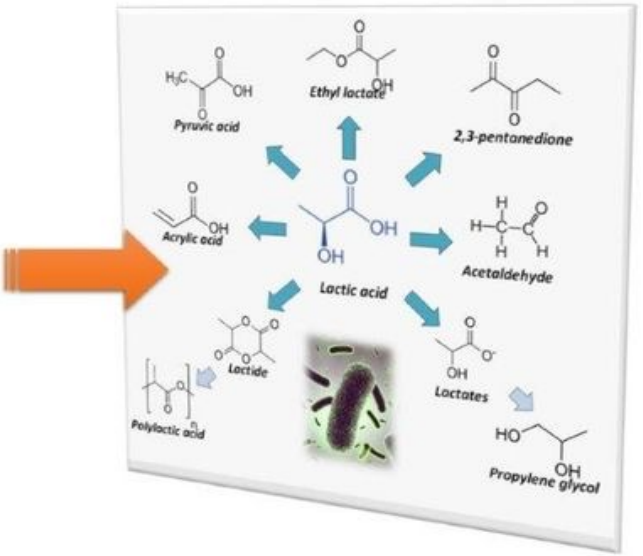
Rafael Jimenez Lorenzo, AIMPLAS/ BioSupPack project

Miriam Lorenzo Navarro, ITENE/ MoeBIOS project

This event is sponsored by the BioSupPack project. has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 101023685. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio-based Industries Consortium.

Biotechnological production of chemicals

(e.g. lactic acid/LA as monomer for polylactic acid/PLA)



López Gómez, J.P.; Latorre-Sánchez, M.; Unger, P.; Schneider, R.; Lozano, C.C.; Venus, J.: Assessing the organic fraction of municipal solid wastes for the production of lactic acid, Biochemical Engineering Journal 150 (2019), 107251, https://doi.org/10.1016/j.bej.2019.107251
López Gómez, J.P.; Unger, P.; Schneider, R.; Venus, J.: From Upstream to Purification: Production of Lactic Acid from the Organic Fraction of Municipal Solid Waste. Waste Biomass Valor 11 (2020) 10, 5247–5254, https://doi.org/10.1007/s12649-020-00992-9

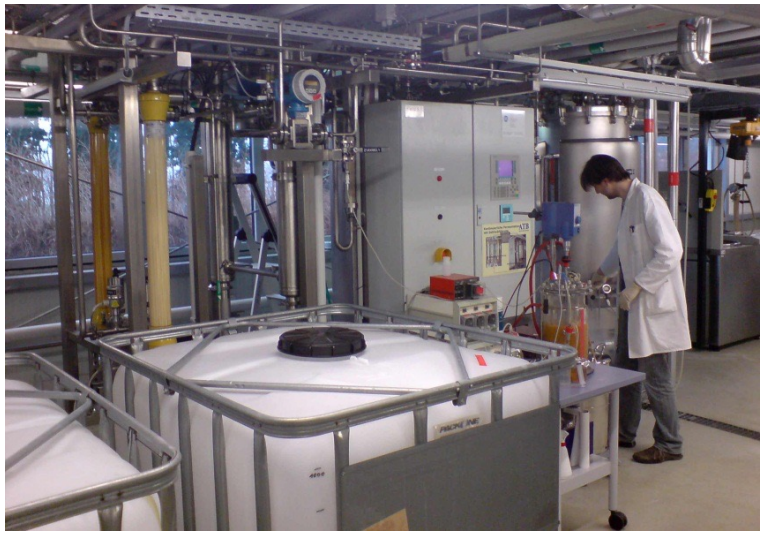
ATB

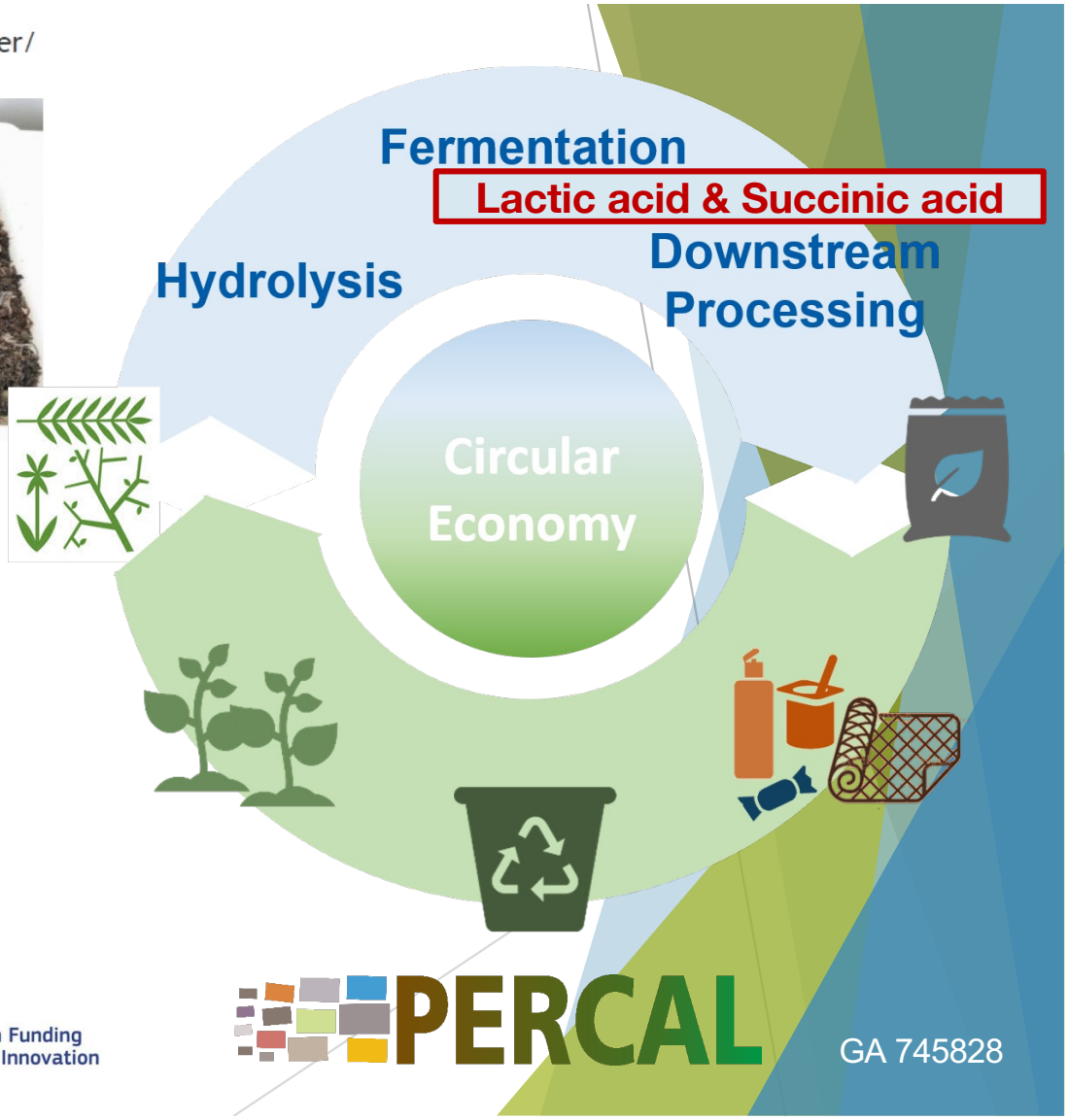
Chemical building blocks from versatile waste processing

Separately collected biowaste

Non separately collected biowaste

Biowaste + paper/ carboard





BIO-BASED INDUSTRIES Public-Private Partnership

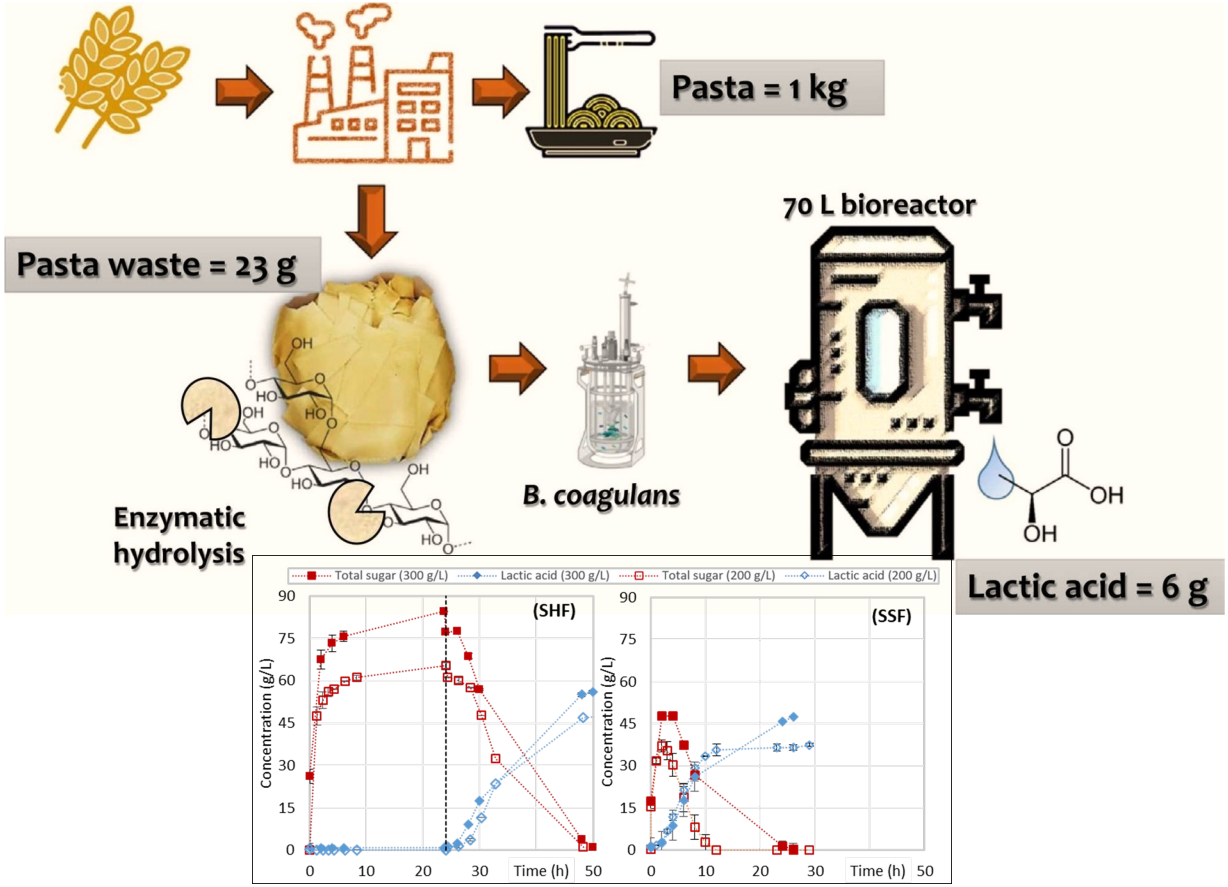
Bio-based Industries Consortium

Horizon 2020 European Union Funding for Research & Innovation

PERCAL

GA 745828

Production of lactic acid from pasta waste using a biorefinery approach



CAFIPLA

Combining carboxylic acid production and fibre recovery as an innovative cost effective and sustainable pre-treatment process for heterogeneous bio-waste

BBI JU
Bio-based Industries Consortium
Horizon 2020 European Union Funding for Research & Innovation

SustainabLe sUCcinic acid production using an integRAted electrochemical bioreactor and renewable feedstock

LUCRA
BIO SUCCINIC ACID

Bio Base Europe
Pilot Plant

Main Challenge

Shifting from fossil-based chemistry:

Re-evaluating the reliance on fossil-based chemical building blocks

Valorising organic waste streams:

Transforming underutilized organic waste and side streams into valuable resources

LUCRA aims to demonstrate a groundbreaking process to convert underutilized organic fraction of municipal solid waste (OFMSW) and wood side streams into bio-based succinic acid and its applications materials

Circular Bio-based Europe Joint Undertaking
Bio-based Industries Consortium
Co-funded by the European Union
UK Research and Innovation

LUCRA is supported by the Circular Bio-based Europe Joint Undertaking and its members. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CBE JU. Neither the European Union nor the CBE JU can be held responsible for them. LUCRA Is also co-funded by UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee grant number 10082169.

Feedstock: Industry wood residues

Saw dust after hot water extraction of hemicelluloses

Pre-treating: Extracted saw dust is treated to make cellulosic carbohydrates available for enzymatic processing in LUCRA, and further valorize lignin fractions

From sawdust residue to cellulosic sugar feed

Boreal Bioproducts

Circular Bio-based Europe Joint Undertaking
Bio-based Industries Consortium
Co-funded by the European Union
UK Research and Innovation

Approach

Novel approach to waste valorisation: Synergistic treatment of relevant waste streams (bio-waste and saw dust)

Cutting edge technologies: Thermal hydrolysis, enzymatic hydrolysis, extraction of valuable components such as sugars and nutrients

Applications

Succinic Acid as a versatile platform molecule with applications across various industries

(e.g., packaging, personal care, food and beverage, textile, agriculture, automotive)

LUCRA BIO SUCCINIC ACID

Circular Bio-based Europe Joint Undertaking

Bio-based Industries Consortium

Co-funded by the European Union

UK Research and Innovation

Bio Base Europe Pilot Plant

Organic Fraction of Municipal Solid Waste and Wood Residues

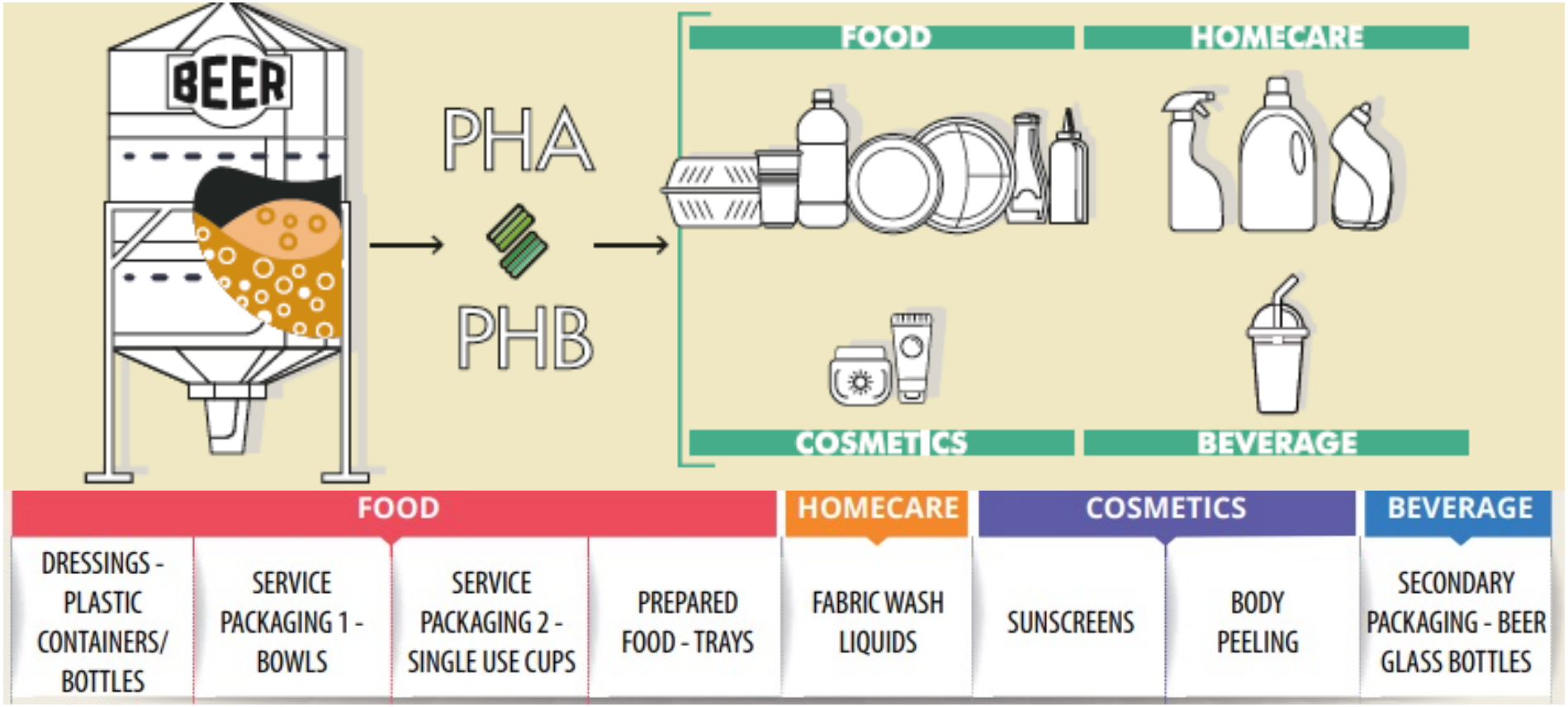
LUCRA BIO SUCCINIC ACID

lucra-project.eu

- Compositional analysis of municipal solid waste from different seasons and regions
- Compositional analysis of wood residues
- Hydrolysis of municipal solid wastes and wood residues to produce hydrolysates rich in fermentable sugars
- Enhance the hydrolysis efficiency to maximize release of the sugars
- Upscale the pretreatment process

Circular Bio-based Europe Joint Undertaking | Bio-based Industries Consortium | Co-funded by the European Union | UK Research and Innovation

Deliver versatile and competitive biobased packaging solution based PHB converted by brewers' spent grains



FOOD				HOMECARE	COSMETICS		BEVERAGE
DRESSINGS - PLASTIC CONTAINERS/ BOTTLES	SERVICE PACKAGING 1 - BOWLS	SERVICE PACKAGING 2 - SINGLE USE CUPS	PREPARED FOOD - TRAYS	FABRIC WASH LIQUIDS	SUNSCREENS	BODY PEELING	SECONDARY PACKAGING - BEER GLASS BOTTLES

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Brewers' Spent Grains Valorisation

Pretreatment

Saccharification

Hydrolytic enzymes

Fermentation

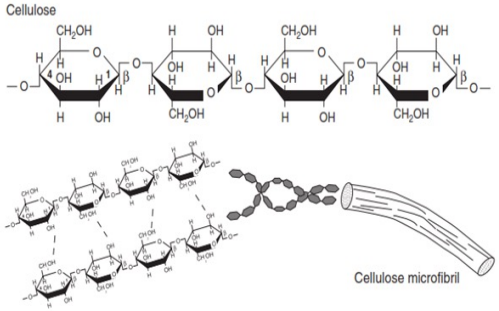
N source and vitamins

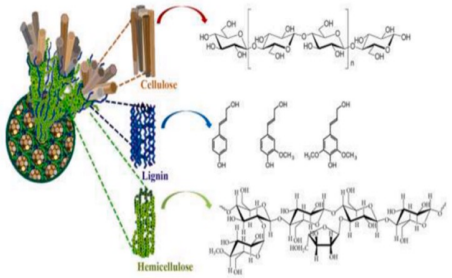
Lignocellulosic biomass

Pretreated biomass

Hydrolyzed sugars

biopolymers



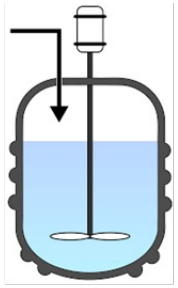


Deliver versatile and competitive biobased packaging solution based PHB converted by brewers' spent grains

Barley, malt

Brew Spent Grains (BSG) from beer production

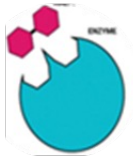
Proteins extraction



Sugars for enzymatic fermentation

Bioplastics (PHAs)

Enzymatic recycling: 3HB monomer



Packaging for food, beverage and cosmetics

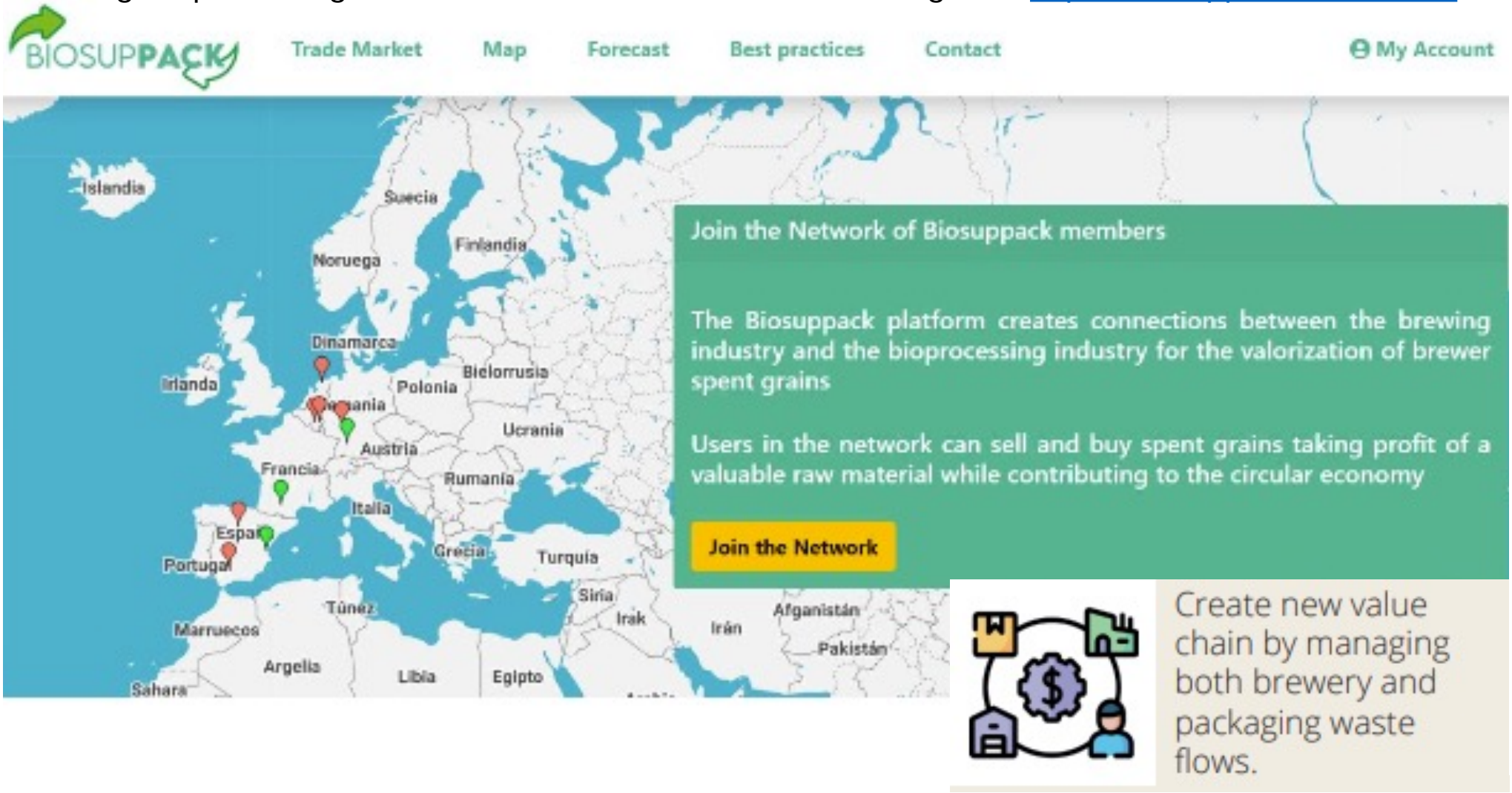
BIO SUP PACK

MATERIALS & PACKAGING WITH LOWER ENVIRONMENTAL IMPACT

This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme.

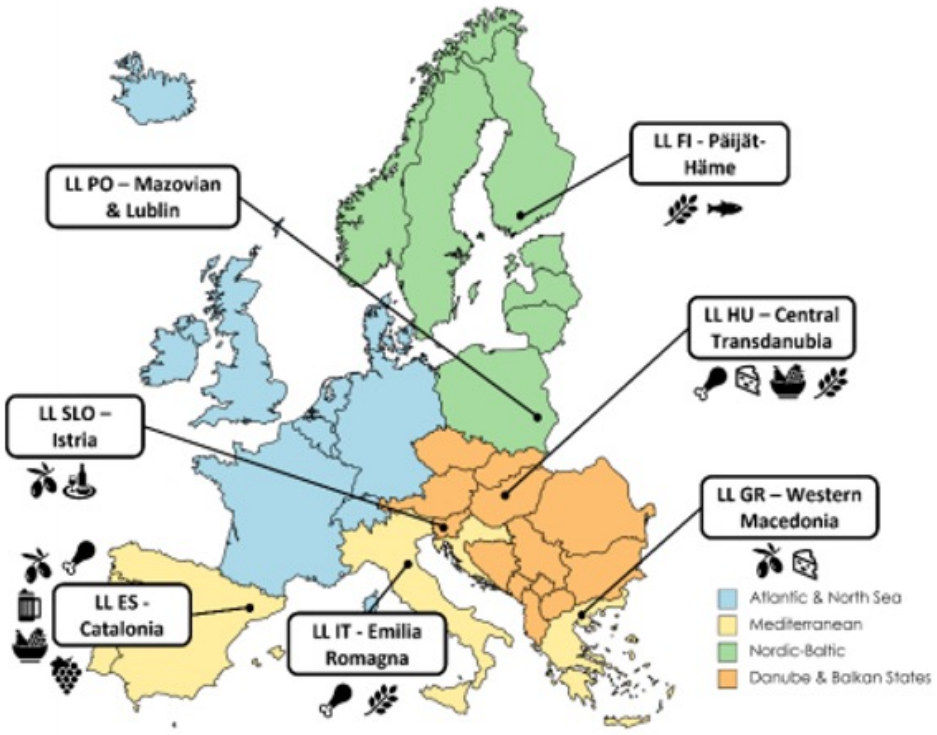
Digital marketplace for brewer spent grains

Brewing-Bioprocessing Industries for valorization on available bagasse: https://biosuppack-market.eu/

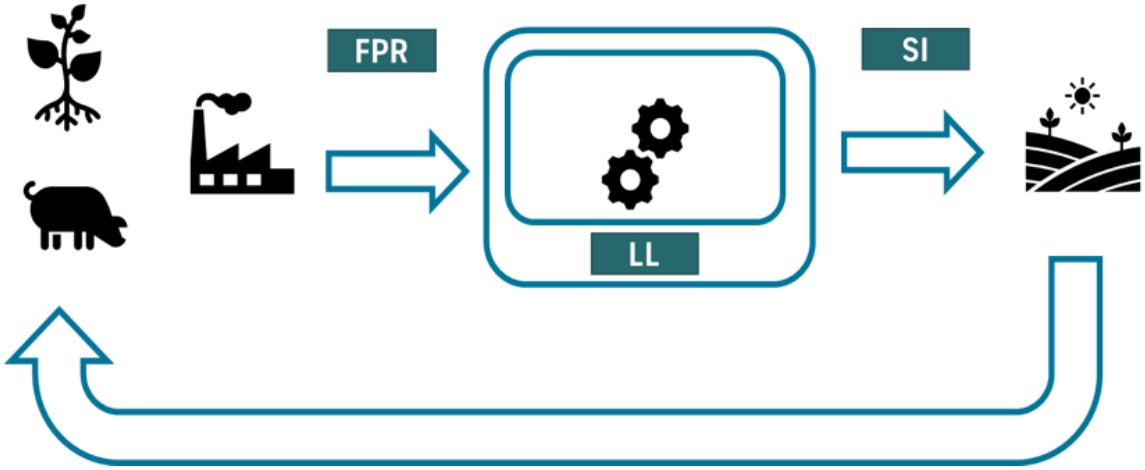


WASTE4SOIL PROJECT

Optimizing logistics and transport at local level for improving **Food Processing** Residues collection https://waste4soil.eu/

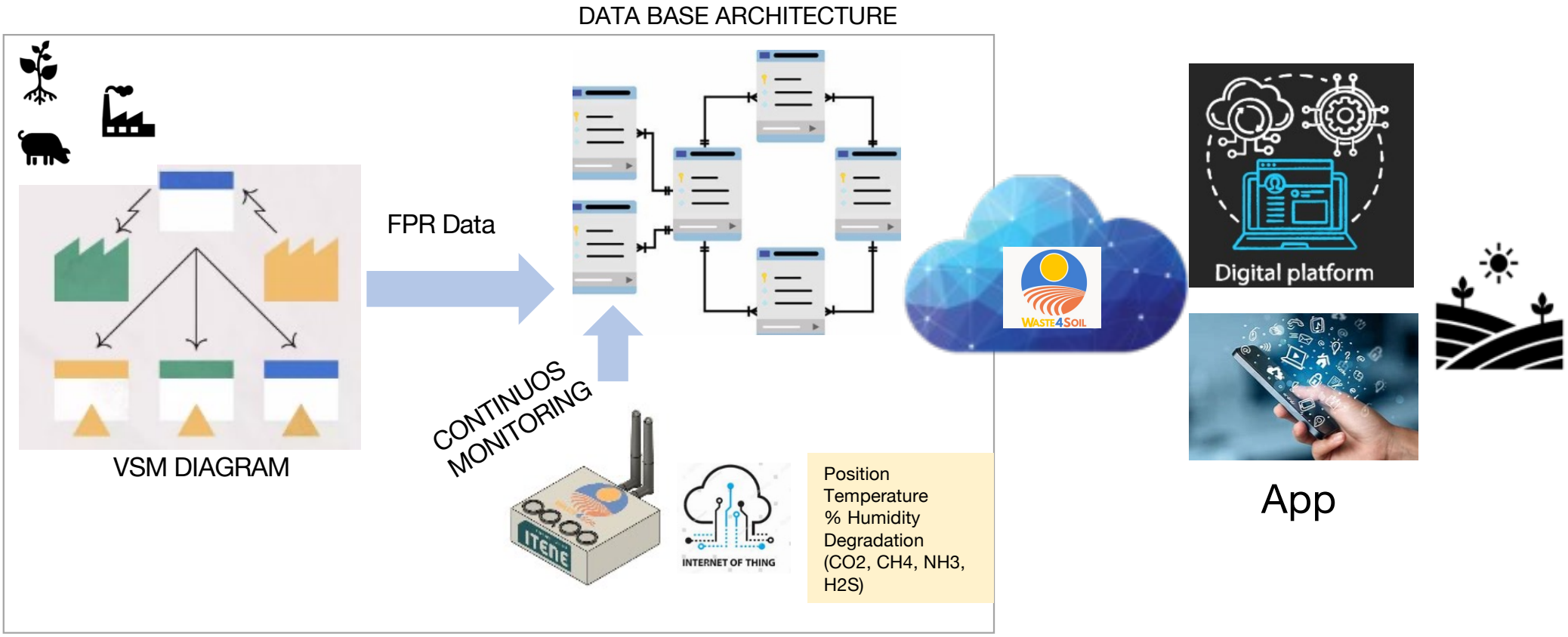


FPR management and logistics improvement to allow optimal resource management



WASTE4SOIL has received funding from the European Union's Horizon Europe Research and Innovation programme under Grant Agreement n° 101112708. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union.

Optimizing logistics and transport at local level for improving FPR collection



Improving waste management of biobased plastics and the upcycling in packaging, textile and agriculture sectors

Main challenge

- Bioplastic (**BIO**s) presence in the waste streams is expected to dramatically grow in **textile, packaging and agriculture** sectors
- Non-effective value chain has been currently implemented for the **BIO**s EoL (including collection, sorting, recycling and upcycling)

Objectives:

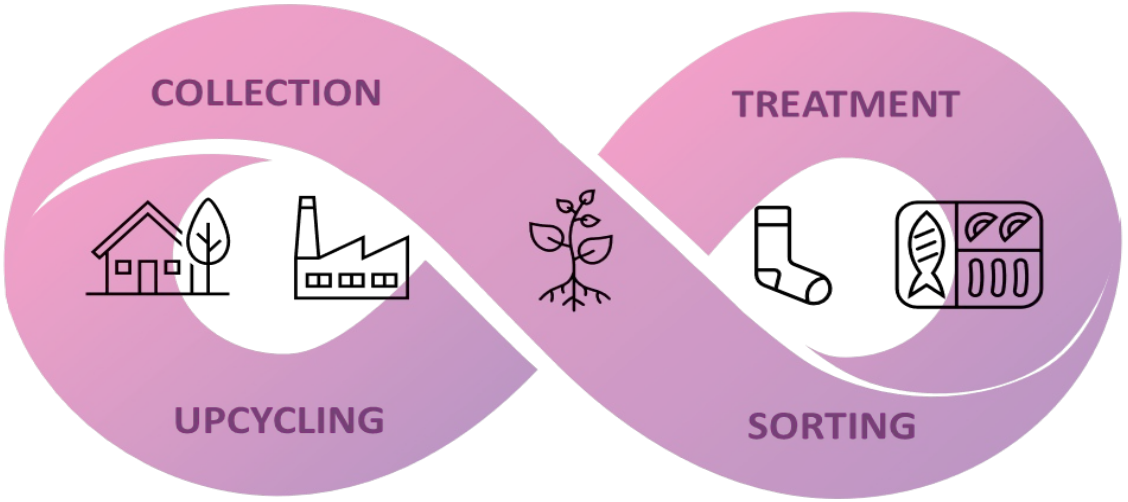
- Establish circular and sustainable value chains for bioplastics that will be found in **packaging, textile and agriculture waste streams**: this will involve bioplastic collection and sorting, recycling with the most efficient techniques and further upcycling into added-value products
- Accompany and support the expected growth of bioplastics in the market by providing effective and upscaled end-of-life solutions

MoeBIOS project has been funded by the EU and the CBE-JU under grant number 101157652. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CBE JU. Neither the European Union nor the CBE JU can be held responsible for them.

Circular Bio-based Europe Joint Undertaking

moBIOS

Closing the loop of the BIOs End of Life



- Decision Support System (DSS)
- Multiactor approach (MAA)
- Safe and Sustainable by Design (SSbD)

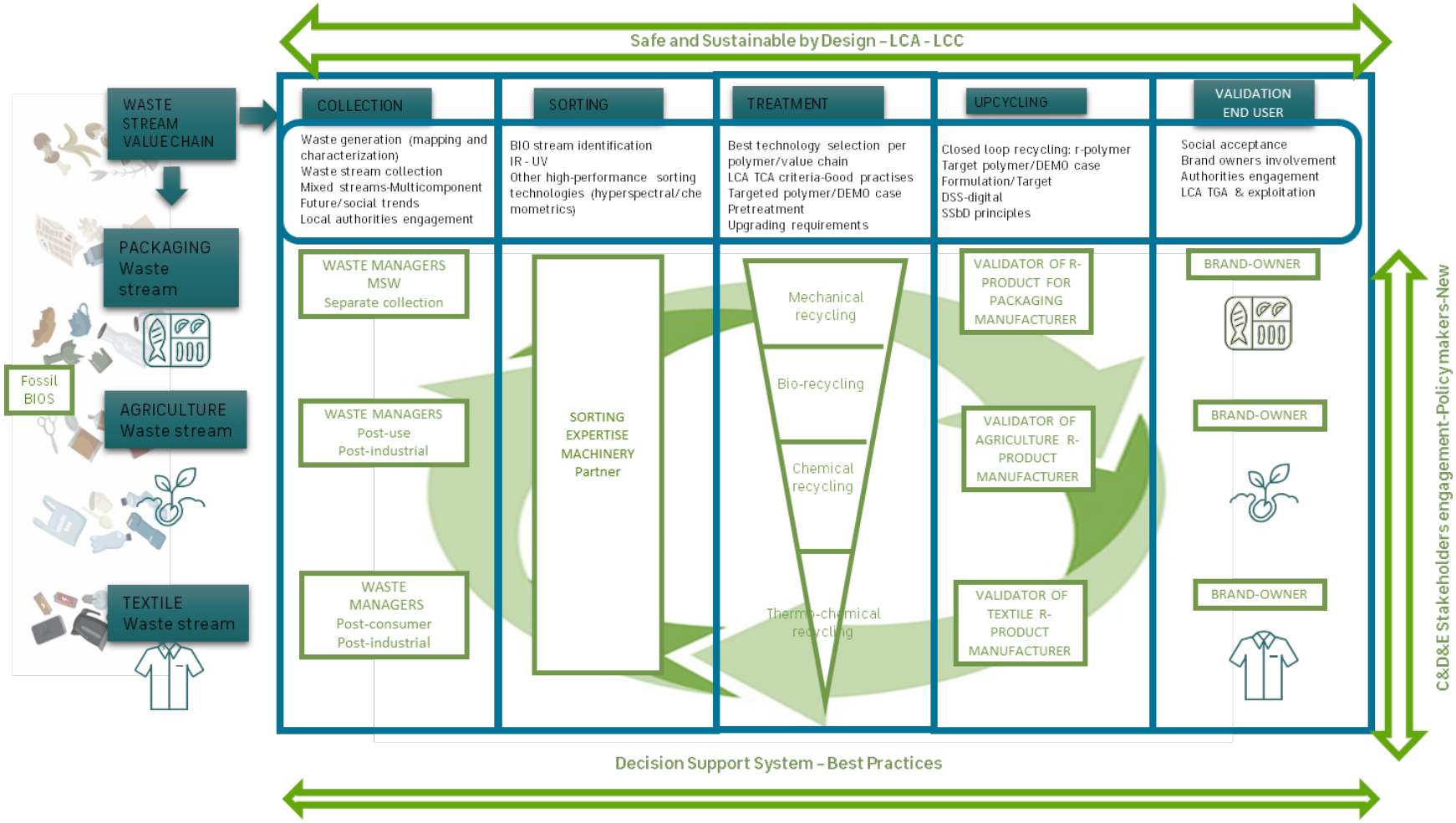
Multiactor approach

- Waste Managers
- Industry
- Citizens
- Brand-owners
- Policy makers
- Research

Approach

- Demonstrating the integration of the bioplastics **BIO**s End of Life value chain from collection, recycling, upcycling in Packaging (Spain), Textiles (Italy) and Agriculture (Germany)
- Waste streams containing **BIOs** as a feedstock
- 3 upcycled demonstrators from developed value chains (packaging, Agriculture and Textile)
- Reduce waste, lower environmental impact, providing a sustainable alternative to fossil resources
- Creation of a novel model for the **BIOs** End of Life in Europe focused in 3 sectors: packaging, textile and agriculture
- Consortium of 21 partners + 2 Affiliated Entities led by **ITENE** Research Centre

How the challenge is addressed:



Technology development and implementation along/across the (3) value chains (systemic innovation)

Integration with current technologies/current recycling lines and models

Multi-actor and transdisciplinary approach engaging relevant agents

Second panel

Roberto Ferrigno, European Bioplastics

Tsjerk Terpstra, DG AGRI – European Commission

Silvia Maltagliati, DG RTD – European Commission

Sara Guerrini, Novamont

Joan Marc Simon, Zero Waste Europe