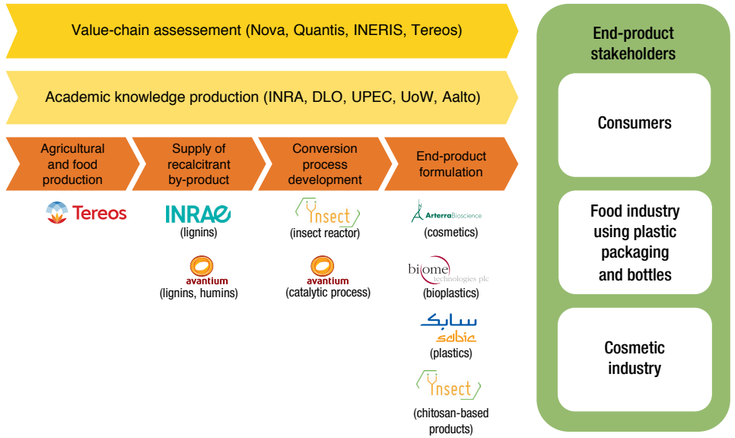
ZELCOR partners all along the value chain



No.	Title of the Publication	Title of the Journal	DOI
1	Imidazolium-Based Ionic Liquids as Efficient Reagents for the C–O Bond Cleavage of Lignin	ChemSusChem	10.1002/cssc.201701668
2	Uncovering the Potential of Termite Gut Microbiome for Lignocellulose Bioconversion in Anaerobic Batch Bioreactors	Frontiers in Microbiology	10.3389/fmicb.2017.02623
3	Highly Promiscuous Oxidases Discovered in the Bovine Rumen Microbiome	Frontiers in Microbiology	10.3389/fmicb.2018.00861
4	Strong, Ductile, and Waterproof Cellulose Nanofibril Composite Films with Colloidal Lignin Particles	Biomacromolecules	10.1021/acs.biomac.8b01364
5	Colloidal Lignin Particles as Adhesives for Soft Materials	Nanomaterials	10.3390/nano8121001
6	Chemo-enzymatically prepared lignin nanoparticles for value-added applications	World Journal of Microbiology and Biotechnology	10.1007/s11274-019-2697-7
7	Enhancing the Antioxidant Activity of Technical Lignins by Combining Solvent Fractionation and Ionic-Liquid Treatment	ChemSusChem	10.1002/cssc.201901916
8	Agglomeration of Viruses by Cationic Lignin Particles for Facilitated Water Purification	ACS Sustainable Chemistry and Engineering	10.1021/acssuschemeng.9b06915

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ZELCOR

Zero Waste Ligno-Cellulosic Bio-Refineries

www.zelcor.eu

10/2016 - 09/2020

This project has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 720303

Converting recalcitrant side streams into high added-value biobased products

Zelcor project aims at demonstrating the feasibility of transforming lignocellulose biorefinery recalcitrant side streams into high added-value biobased products, including fine chemicals. Its concept is to combine chemical and enzymatic catalysis with insects-based biological conversion, within a biorefinery integrated approach.

The project is conceived to avoid waste production by recycling waste bio-based products and improve the sustainability of existing second generation biorefineries. It addresses three types of recalcitrant raw materials: lignocellulosic residues from ethanol production, lignins dissolved during pulping process and lignin-like humins formed by sugars conversion. Enzyme and process engineering are implemented to design efficient conversion routes and permit technological breakthroughs.

A platform for assessment of the biomolecules functionalities

A transversal platform for the characterisation of biomolecules has been settled to identify bio-products of commercial interest among lignins and humins multifunctional nanoparticles, phenolic antioxidants, insects-based chitosans and aromatic chemical intermediates. Thanks to this platform, Zelcor is enhancing knowledge of the structure-function relationships and the mechanisms involved in recalcitrant raw materials catalytic depolymerisation and bioconversion.

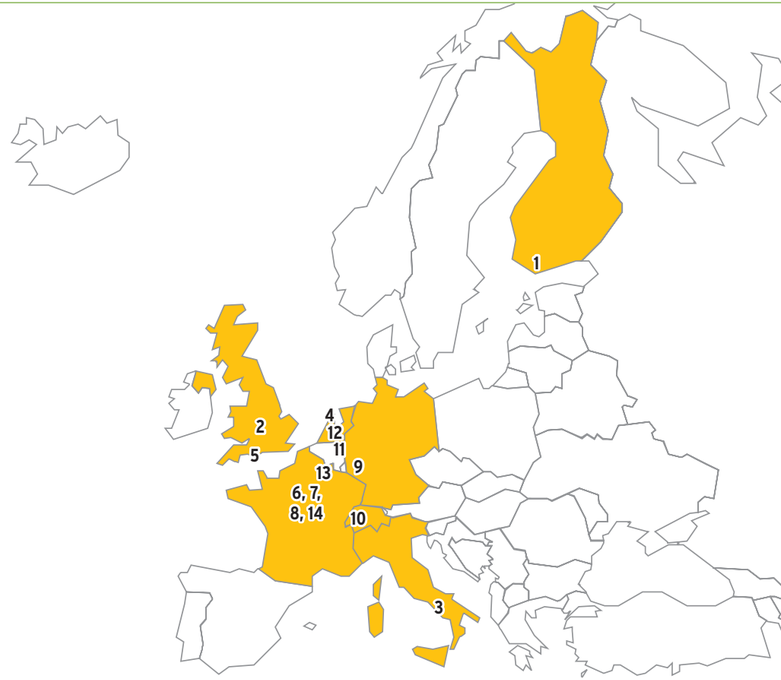
Demonstration of the approach feasibility is performed by process scaling-up, formulation of end-product prototypes and value chain sustainability and safety assessment.

The presence of industrial partners all along the value chains, from lignocellulosic feedstock to end products, facilitates demonstration activities and technological transfers. With this strong industry drive, Zelcor will lead to large scale production of biomolecules for cosmetics, packaging and chemical industry, as well as novel biocatalysts.

Zelcor is a 5.2 M € collaborative project, 49% of which for SMEs (43% EC grant). It gathers 14 organisations from 8 countries including 5 academia, 7 SMEs, and 2 corporations.

Zero Waste Ligno-Cellulosic Bio-Refineries

Zelcor Consortium



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