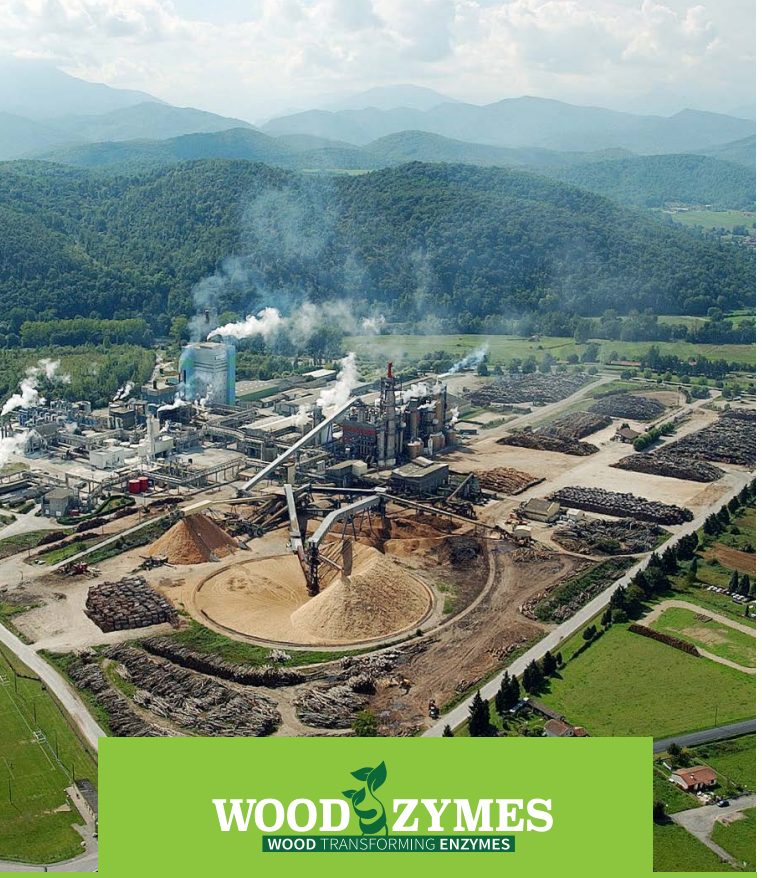


WOODZYMES
WOOD TRANSFORMING ENZYMES

The **WoodZymes Project** is a Research & Innovation Action funded by the Bio-based Industries Joint Undertaking, a Public-Private Partnership between the EU (under H2020 framework programme) and the Bio-based Industries Consortium. Within this project, eleven participants from four European countries join efforts to develop and provide the wood industries with «WOOD transforming enZYMES» able to work under extreme operation conditions (i.e. extremozymes).

WOODZYMES COORDINATOR
Susana Camarero
CIB, CSIC
Madrid (Spain)
susanacam@cib.csic.es

PROJECT MANAGER
Dr. Marta Pérez-Boada
CIB, CSIC
Madrid (Spain)
mpboada@cib.csic.es

PARTNERS

CSIC CIB

IRNAS CSIC

ctp centre technique du papier

FCBA INSTITUT TECHNOLOGIQUE

FIBRE EXCELLENCE SAINT-GAUDENS

FINSA soluciones en madera

iata Instituto de Agroquímica y Tecnología de Alimentos

METGEN

THE NAVIGATOR COMPANY

RAIZ

SOPREMA

BBI JU

Bio-based Industries Consortium

Horizon 2020 European Union Funding for Research & Innovation

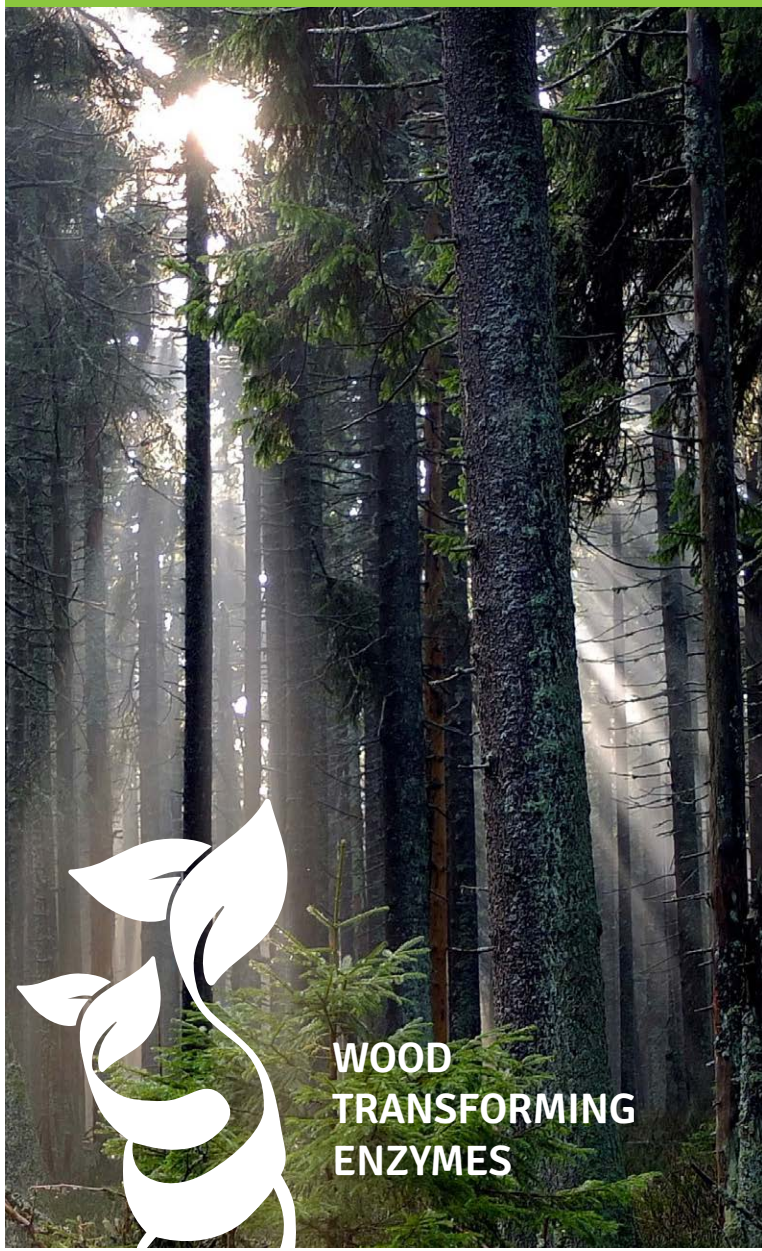
WoodZymes [Wood (transforming) enZymes]: Extremozymes for wood based building blocks: from pulp mill to board and insulation products. This project has received funding from the Bio Based Industries Joint Undertaking (JU) under grant agreement No 792070. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio Based Industries Consortium.

Follow us on Twitter: @WoodZymes

WOODZYMES
WOOD TRANSFORMING ENZYMES

More information: **www.woodzymes.eu**

WOODZYMES
WOOD TRANSFORMING ENZYMES



PROJECT CONCEPT

WOOD ZYMES
WOOD TRANSFORMING ENZYMES

The WoodZymes project aims to provide the wood industries with «wood transforming enzymes» able to work in the extreme operation conditions (i.e. extremozymes) required to remove or modify hemicelluloses and recalcitrant lignin protecting cellulose in the plant cell wall.

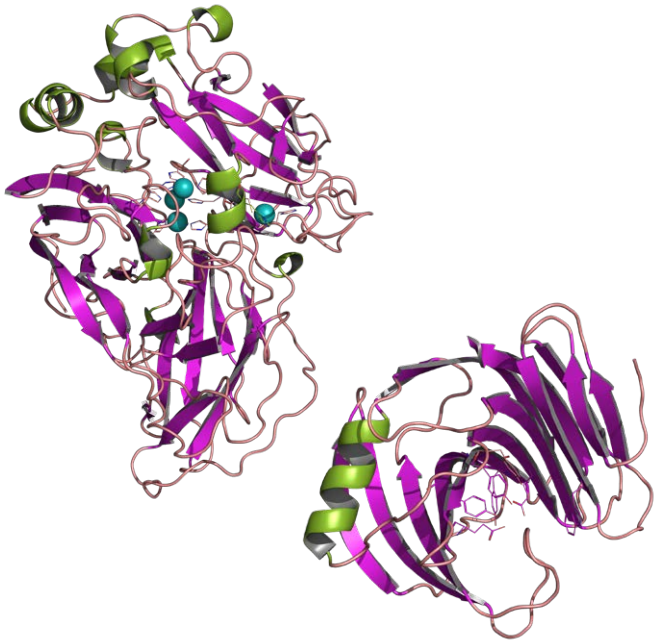
To achieve this goal we will develop tailor-made extremozymes tolerating the extreme conditions of pH and temperature in wood processing. The selective valorisation of underutilised lignin and hemicellulose fractions will provide high-value bio-equivalents of petroleum-derived chemical building blocks.

WoodZymes illustrates the potential of extremozymes in the global bio-based economy, contributing to the sustainability and competitiveness of cellulose and board/polyurethane manufacture and establishing a direct link between the pulp and wood industrial sectors.

PROJECT WORKFLOW

WoodZymes partners already have available extremozymes resisting very high temperature and pH that will be further optimized to be used as biocatalysts in wood industries.

Enzyme application will include the recovery of phenolic compounds from enzymatic breakdown of technical lignin, and of lignin and hemicellulose compounds from enzymatic delignification and bleaching of kraft pulp (also resulting in more sustainable final cellulosic pulp).



Extremophilic enzymes will also be used to valorise the latter compounds as bio-based precursors for adhesives in the manufacture of medium-density fibreboards (MDF), and as components of insulation polyurethane (PU) foams (substituting fossil building blocks), as well as for obtaining renewable sugar-based papermaking additives.

Finally, technical, environmental and socio-economic analyses of the newly developed materials and processes will be carried out to be compared with currently available ones.

OBJECTIVES

1. To develop extremozymes adapted to industrial operation conditions by screening and protein engineering, to be applied as biocatalysts in the wood conversion sector.
2. To use the developed extremozymes for the production of lignin-derived phenols and hemicellulose-derived sugars from underutilized side streams of kraft pulp mills, followed by chemical characterization.
3. To obtain new MDF and PU materials by using lignin-based resin precursors and phenols, respectively, and to use hemicelluloses-derived sugars as papermaking additives.
4. Evaluation of the technical, environmental and socio-economic feasibility of the previous objectives, including life-cycle assessment/ life-cycle costing and other analyses.