URBOFIN & PERCAL Projects

Res Urbis Project closing meeting
December 11th, 2019

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About 100 Mt of municipal biowaste is generated every year in Europe.
Only about a third (30 Mt) of this was separately collected and composted and/or digested (European Compost Network (ECN))
Waste Framework Directive
Demand of sustainable and competitive biowaste treatment processes

INDUSTRIAS MECÁNICAS ALCUDIA S.A.

We transform the metal to shape your ideas and projects since 1979.

perseo biorefinery®

TRANSFORM THE ORGANIC and CELLULOSIC WASTE into Advanced fuels, Bioproducts and Bioenergy



BIOREFINERY FROM ORGANIC WASTE since 2007

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BIOREFINERY FROM ORGANIC WASTE since 2007

LABORATORIES

Laboratory pilot until 50 L

Biotechnological process
Pretreatment processes
Fermentation processes
Organic waste integral valorization

SEMI-INDUSTRIAL PLANT

Capacity 25 t/d in fermentation process

PERSEO BIOREFINERY WORKFLOW

Laboratory optimization

Process demonstration

IMECAL

Engineering and workshop

Process Design and Building up

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Economic Feasibility study

Ongoing Biorefinery Projects

2017-2021 URBIOFIN urban biorefinery	*Demonstration of an integrated innovative biorefinery for the transformation of Municipal Solid Waste (MSW) into new BioBased products. (GA No. 745785)*	BIO-BASED INDUSTRIES Public-Private Partnership Bio-based Industries Consortium Horizon 2020 European Union Funding for Research & Innovation
2017-2020 PERCAL	*Chemical building blocks from versatile MSW biorefinery. (GA No. 745828)*	
2017-2020 W2B Waste2Bio	*Valorization of urban wastes to new generation of bioethanol (EXP-00098459 / SERA-20171009)*	*Este proyecto ha recibido financiación del programa ERA-NET CO-FUND BESTF3 con cofinanciación de CDTI y MINECO en España y DECC en Reino Unido así como del Programa Marco de Investigación e Innovación, H2020, de la Unión Europea.* Ministerio de Economía, Industria y Competitividad CDTI Centro para el Desarrollo Tecnológico Industrial Horizon 2020 European Union Funding for Research & Innovation BESTF3

URBIOFIN
urban biorefinery

BIO-BASED INDUSTRIES Public-Private Partnership
Bio-based Industries Consortium
Horizon 2020 European Union Funding for Research & Innovation

Demonstration of an integrated innovative biorefinery for the transformation of Municipal Solid Waste (MSW) into new BioBased products (GA 745785)

NEW MODEL OF OFMSW TREATMENT

Landfill
Composting
Anaerobic Digestion

Biorefinery
Multiple bioproducts
Higher value

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URBIOFIN urban biorefinery

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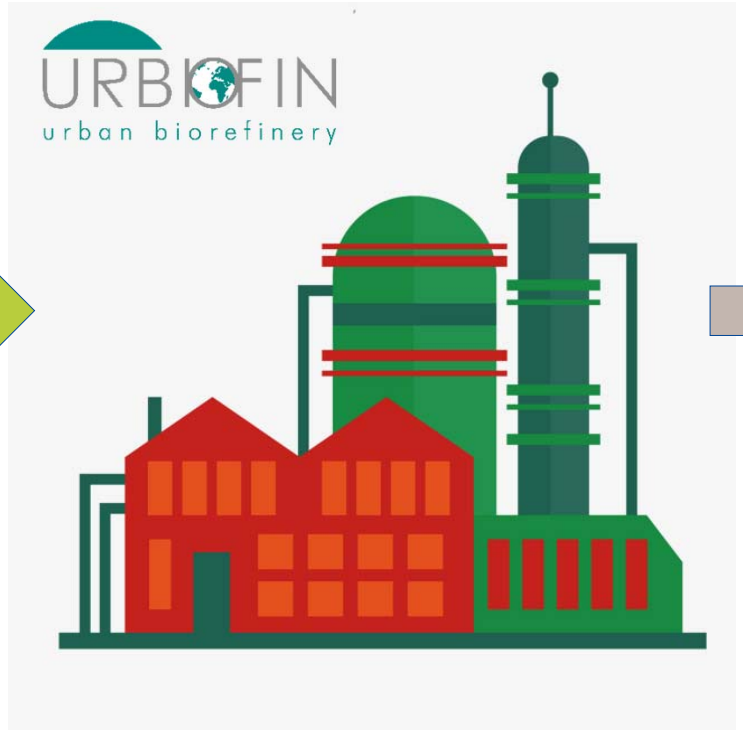
Project Objective

10 t/d OFMSW



BIO-BLOCKS

- Bioethanol
- Volatile fatty acids
- Biogas

BIO-POLYMERS

- Polyhydroxyalkanoates
- Combined PHA's

ADDITIVES

- Bioethylene
- Biochemical products

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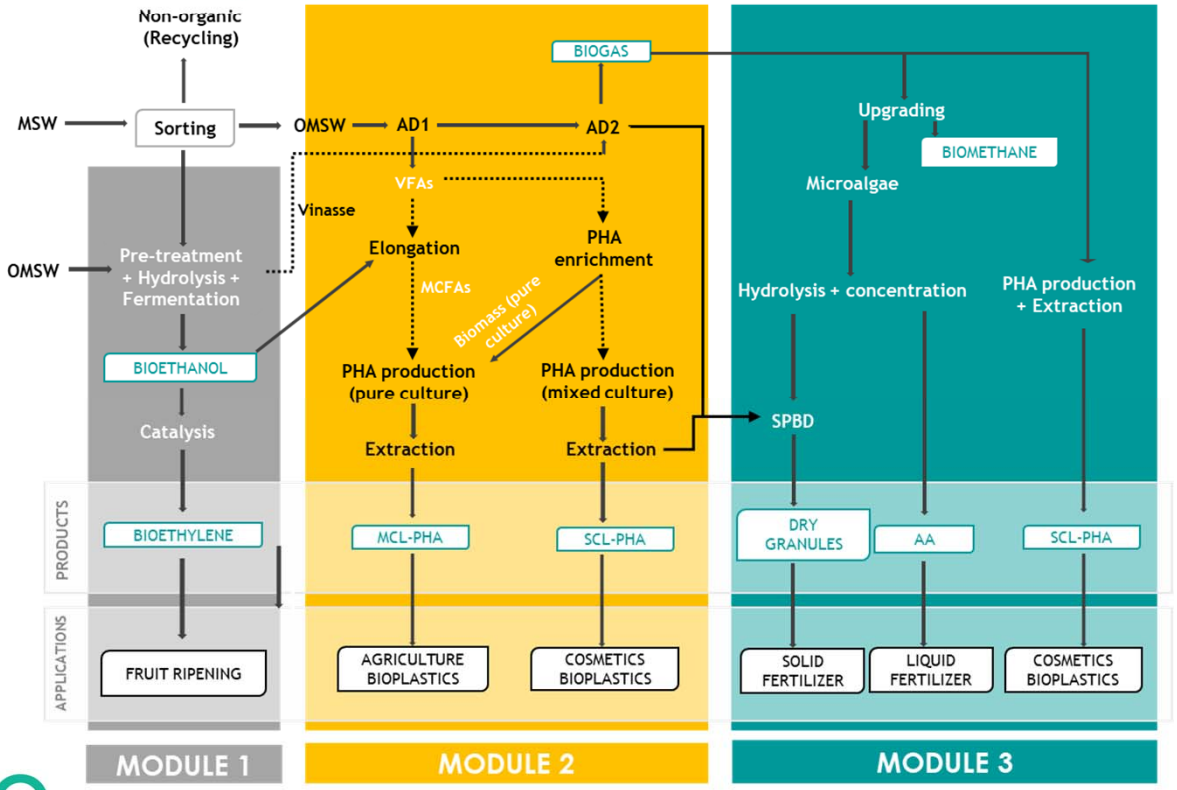

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IMECAL. PERSEO Biorefinery® Plant

URBASER. Centro Alfonso Maillo

IRIAF. CLAMBER Demo Plant

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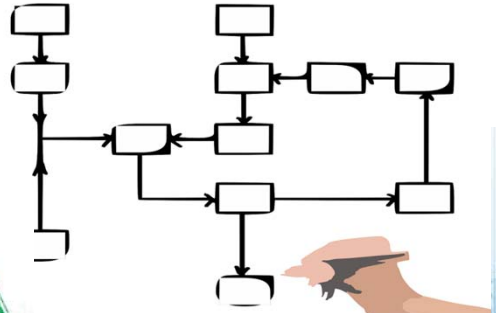
✓ Feedstock requirements

✓ Final products requirements

✓ Biorefinery process integration and improvements



✓ Biorefinery engineering design and building up

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Pilot plants
DEMO activitiy.

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BIO-BASED INDUSTRIES Public-Private Partnership

Bio·based Industries Consortium

Horizon 2020 European Union Funding for Research & Innovation

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 745785

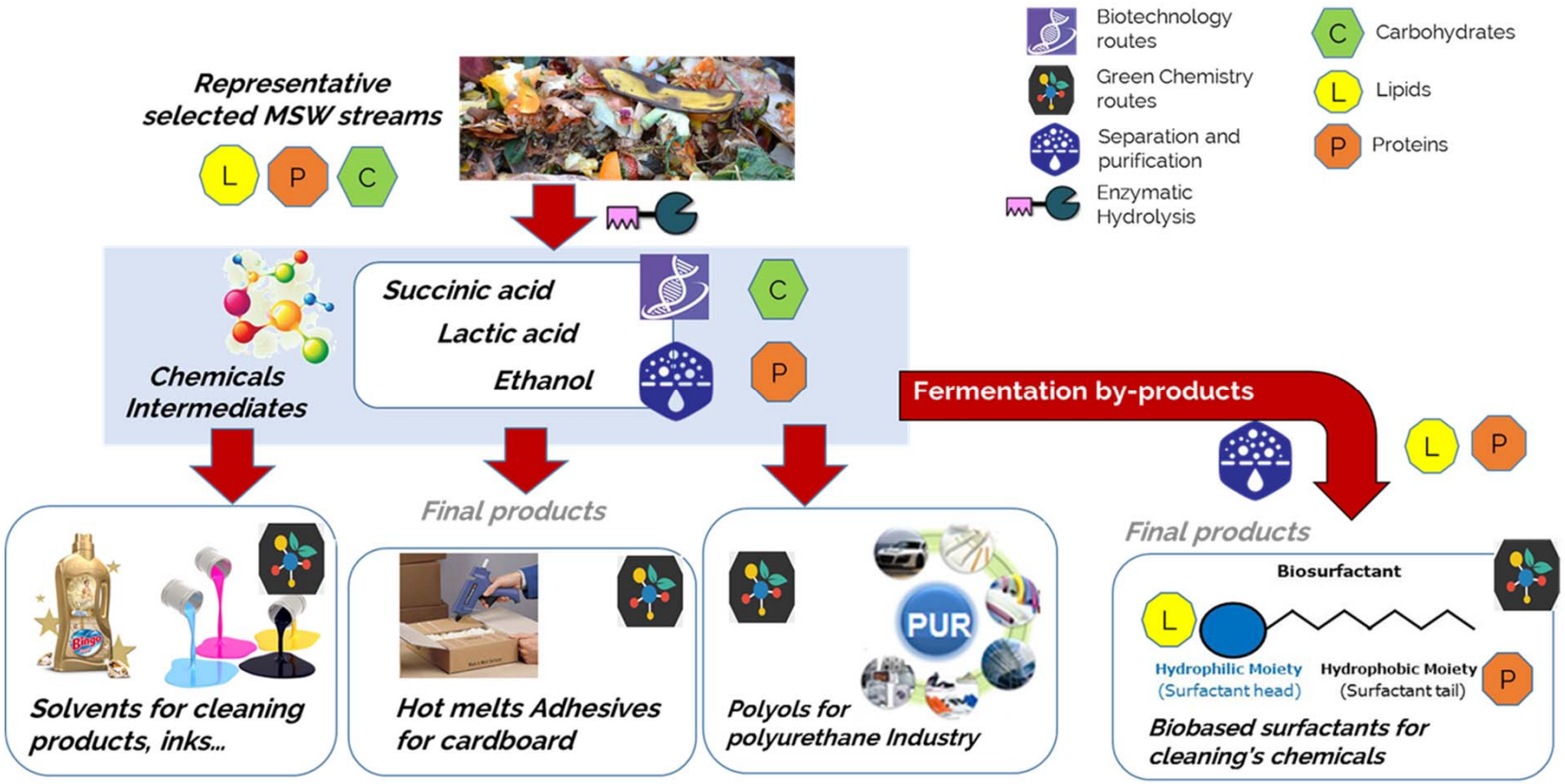
PERCAL Chemical building blocks from versatile MSW biorefinery

PERCAL will exploit **OFMSW** as feedstock to develop **intermediate chemical products** at high yield and low impurity level with huge industrial interest.

- ***Bioethanol*** (current PERSEO Bioethanol® technology) as chemical building block.
- ***Lactic acid (LA)*** to produce:
  - Eco-friendly **ethyl lactate** solvents by reactive distillation from lactic acid & bioethanol.
  - **Hot-melt adhesives** in combination with maleic anhydride by reactive extrusion.
- ***Succinic acid (SA)*** as an intermediate building block to produce **polyols** for the polyurethane industry.
- ***Biosurfactants*** by chemical modification of proteins and lipids from the remaining fraction of MSW fermentations.

PERCAL

Overall concept



PERCAL

Project challenges

- ☑ To **maximise the yield of intermediates** and **minimise the presence of inhibitors**.
- ☑ To achieve **an overall economic feasibility of a waste-to-chemicals value chain**.
- ☑ To **address the heterogeneous and variable composition of organic MSW**.
- ☑ To **evaluate the competitiveness of process technologies when scaled-up**.
- ☑ To **perform an environmental and socio-economic assessment**.

BIO-BASED INDUSTRIES Public-Private Partnership

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PERCAL

Chemical building blocks from versatile MSW biorefinery

- ✓ 12 partners covering the value chain of MSW treatment to bioproducts

www.percal-project.eu

Percal Project

@PERCAL_project

Project coordinator: IMECAL perseo bioethanol

Partners:

AIMPLAS PLASTICS TECHNOLOGY CENTRE

ATB Leibniz-Institut für Agrartechnik und Bioökonomie

IRIS TECHNOLOGY GROUP

covestro

CENER ADItech

tbw RESEARCH

YPAREX

HAYAT

exergy

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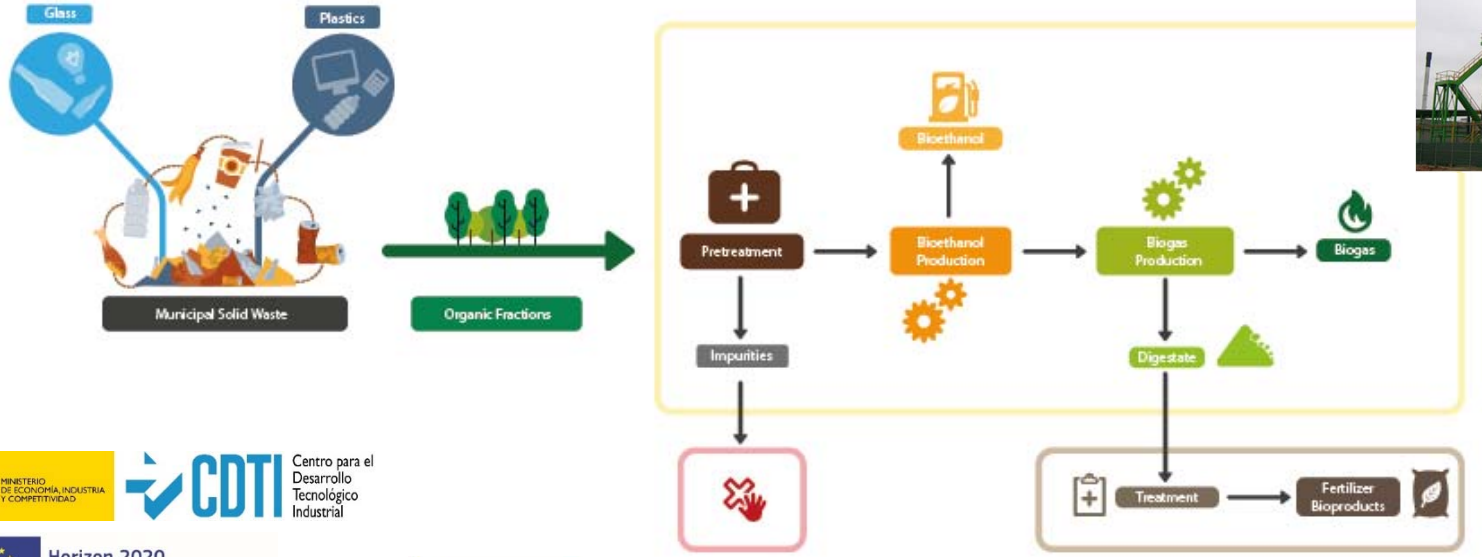
WASTE2BIO PROJECT

The **main objective** of the WASTE2BIO project is to **validate and demonstrate a global process for the production of bioethanol as liquid biofuel and biogas from the remaining recoverable organic fraction from MSW** in order to **enhance the valorization of residues, reducing energy costs and impacts** from waste management and contribute to an improved balance of GHG emissions from biofuels and to the achievement of the EU's objectives.



MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

CDTI Centro para el Desarrollo Tecnológico Industrial

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BESTF3

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