



PERCAL: Chemical building blocks from versatile MSW biorefinery

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



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WORKSHOP “BIO-WASTE”: Opportunities for bio-based
industries. New feedstock driven

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INDUSTRIAS MECÁNICAS ALCUDIA S.A.



- Metal mechanical company funded in 1979.
- High technological capacity.
- Experience in petrochemical and refinery sectors.
- 25.000 m² of facilities. 180 employees.
- Semi-industrial plant PERSEO Bioethanol®.



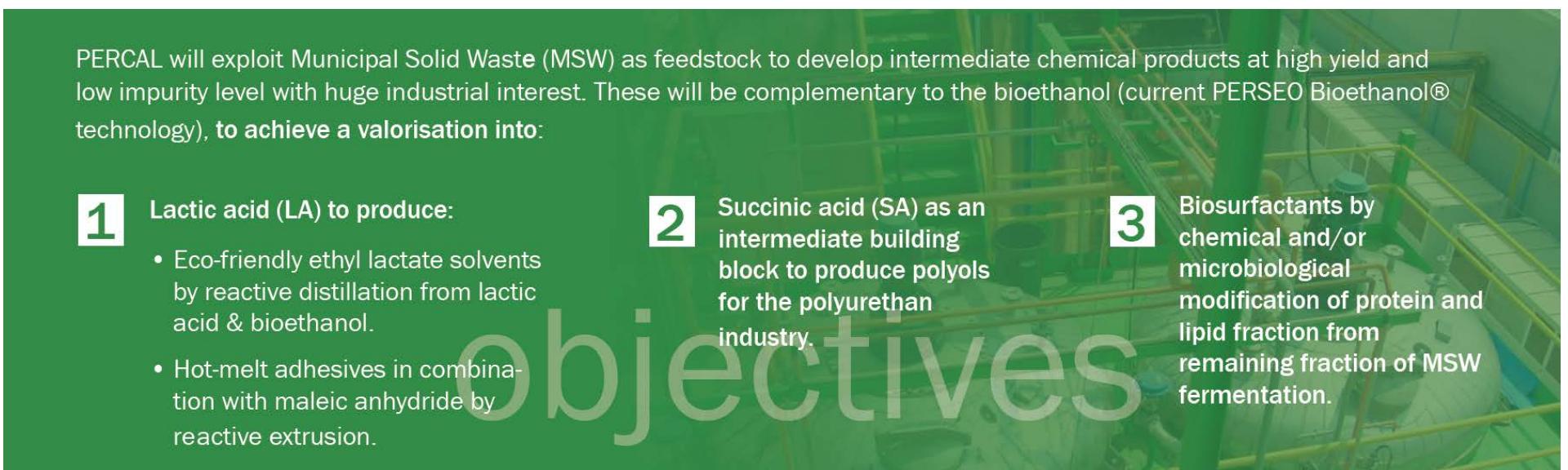
perseo
bioethanol



Biotechnological process:
Transform the organic fraction of municipal waste into advanced bioethanol, bioproducts and bioenergy.



PERCAL will exploit Municipal Solid Waste (MSW) as feedstock to develop intermediate chemical products at high yield and low impurity level with huge industrial interest. These will be complementary to the bioethanol (current PERSEO Bioethanol® technology), to achieve a valorisation into:

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- 1** 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.
 - 2** Succinic acid (SA) as an intermediate building block to produce polyols for the polyurethane industry.
 - 3** Biosurfactants by chemical and/or microbiological modification of protein and lipid fraction from remaining fraction of MSW fermentation.

Consortium:

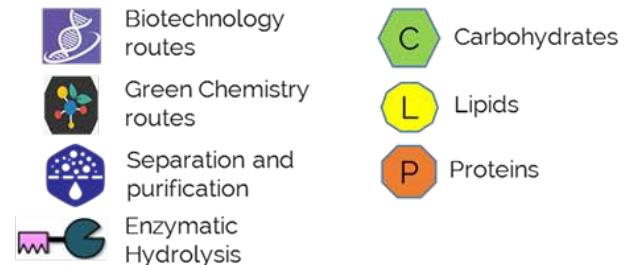


ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
AGRICULTURAL UNIVERSITY OF ATHENS



Horizon 2020
European Union Funding
for Research & Innovation

Representative selected MSW streams



Chemicals Intermediates

*Succinic acid
Lactic acid
Ethanol*



Fermentation by-products



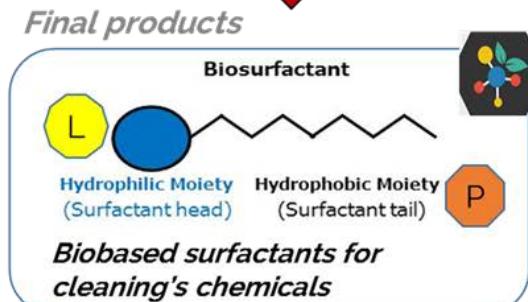
Solvents for cleaning products, inks...



Hot melts Adhesives for cardboard



Polyols for polyurethane Industry



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

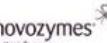
Demo Project Budget: 15 M€

Duration: 4 years project (2017 – 2021)

The consortium:

16 partners covering the value chain of MSW treatment to bioproducts

 IMECAL www.imecal.com/perseo (Coordinator)	www.imecal.com/perseo
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 NaturePlast Bioplastics Experts www.natureplast.eu	www.natureplast.eu

 IRIAF Centro de Referencia clamber.castillalamancha.es	clamber.castillalamancha.es
 BioEconomy Cluster www.bioeconomy.de	www.bioeconomy.de
 ses SUSTAINABLE PACKAGING www.ses-packaging.com	www.ses-packaging.com
 NATRUE www.natru.org	www.natru.org

Project Objective



Landfill
Composting
Anaerobic Digestion



NEW MODEL OF OFMSW TREATMENT

Biorefinery
Multiple bioproducts
Higher value



URBIOFIN
urban biorefinery

OFMSW



URBIOFIN - Biorefinery



BIO-BLOCKS

- Bioethanol
- Volatile fatty acids
- Biogas

BIO-POLYMERS

- Polyhydroxyalkanoates
- Combined PHA's

ADDITIVES

- Bioethylen
- Biochemical products

VALUE



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

Barriers:

- Waste legislation.
- Necessity of standards for bioproducts.
- Consumer acceptance of bioproducts coming from waste.
- Barriers to entry of new and feasible technologies in waste management.

Thank you for your attention!!



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