



AMBITION

Demonstration of the whole technology for plastic waste valorisation in a **pilot plant** able to process >100 kg/h of plastic (TRL-7).

- ✓ Chemical recycling.
- ✓ Production of high valuable chemicals.
- ✓ Maximisation and complete exploitation of currently non-recyclable plastic waste.
- ✓ Improvement of process efficiency to reduce the carbon footprint and ensure the viability and sustainability.



Plastic Recycling and Valorisation



Added-Value Chemicals (alkil-aromatics)



Energy efficiency Sustainability

Adaptable to other waste materials (e.g. biomass).

Involved technologies/developments can be exploited in many other industries.

CALL: H2020-NMBP-SPIRE-2018

Duration: Oct. 2018 – Oct. 2022

EC funding: 6.51 M€

10 partners from 5 countries

Advisory board: stakeholder and 3 multinationals

CONSORTIUM



HOW TO ENGAGE

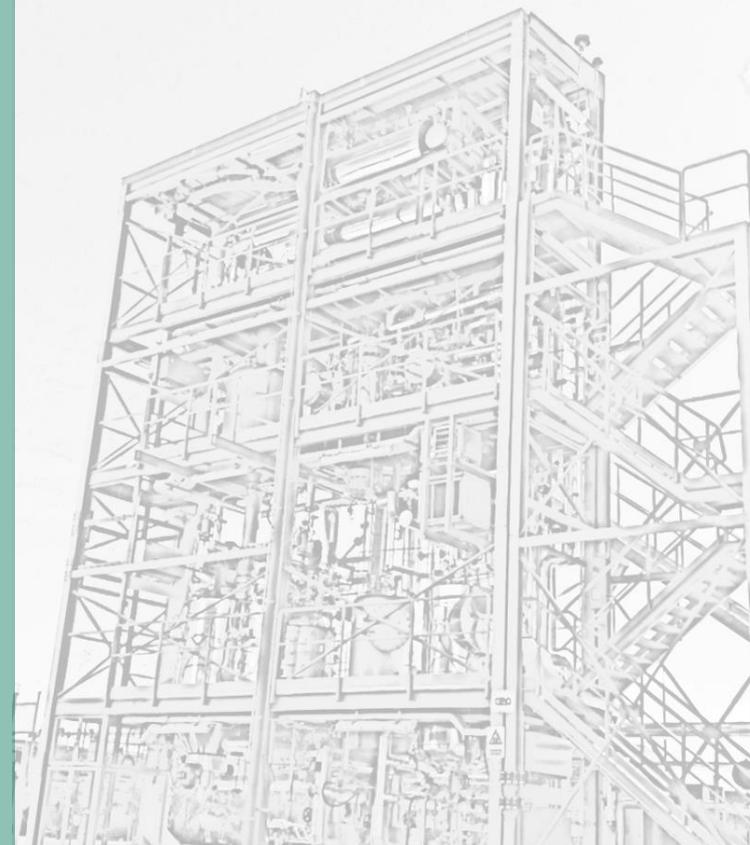
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Integrated Catalytic
Recycling of Plastic Residues
Into Added-Value
Chemicals

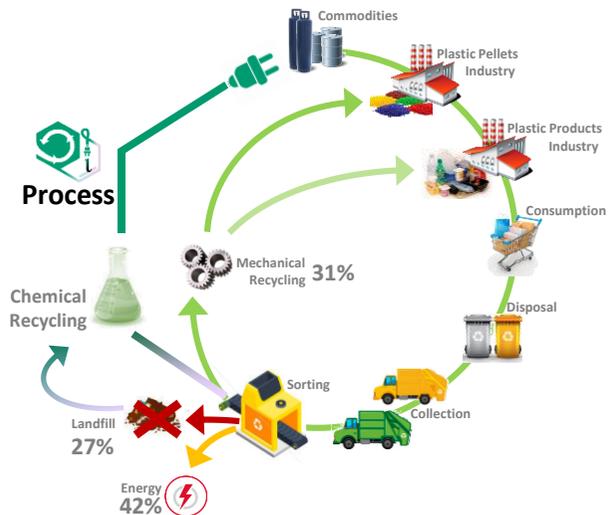
www.icareplast.eu



CHALLENGE: Closing the Plastic Recycling Loop

27.1 Mt/year Plastic waste recovered in EU
70 % \cong 18.5 Mt/year NOT RECYCLED

- 42% Incineration
- 37% Landfill



iCAREPLAST addresses the **cost and energy-efficient recycling** of a large fraction of today's non-recyclable plastics and composites by combining **chemical routes** to produce **valuable products**.



EFFICIENT & SUSTAINABLE
both in terms of energy and cost



FLEXIBLE
suitable for treating heterogeneous plastic materials



INTEGRATED
with current value chains

CONCEPT



- iCAREPLAST **plastic recycling** process will combine *pyrolysis, catalytic treatment and membrane separation technologies* to obtain high **added-value chemicals**: (alkyl-) aromatics, that can be used for the production of virgin-quality polymers or as raw materials for other processes.
- To ensure **efficiency and sustainability** of the process, *advanced control techniques* will be applied making use of meaningful indicators defined taking into account *LCA and LCC* analyses.
- Hydrocarbon-rich side-streams will be recovered for **energy valorisation** through *oxy-fuel combustion* integrated with **CO₂ capture**, improving energy sustainability and avoiding GHG emissions. The valorisation of by-products (coke and CO₂) will contribute to economic sustainability of the process (zero-waste).

