



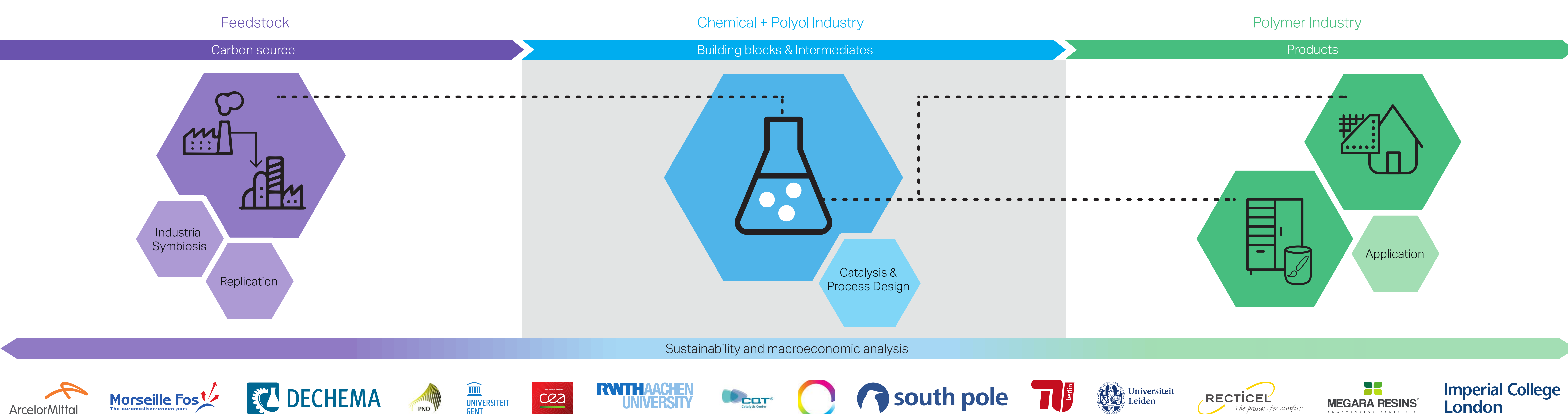
# Turning industrial waste gases (mixed CO/CO<sub>2</sub> streams) into intermediates for polyurethane for rigid foams/building insulation and coatings

## ABOUT Carbon4PUR

The Carbon4PUR project explores industrial symbiosis between steel and chemical industry to produce polymer foams and coatings from steel off-gases.

Flue gases from steel manufacturing contain a mixture of carbon dioxide and carbon monoxide, valuable feedstock gases for chemical production. The ambition of Carbon4PUR, a 7.8 Mill. Euro Horizon2020 project with 14 partners from 7 countries, is to manufacture high value polyurethane materials from these flue gases.

The unique Carbon4PUR technology will valorise steel off-gas without previous cleaning or separation of the gas components.

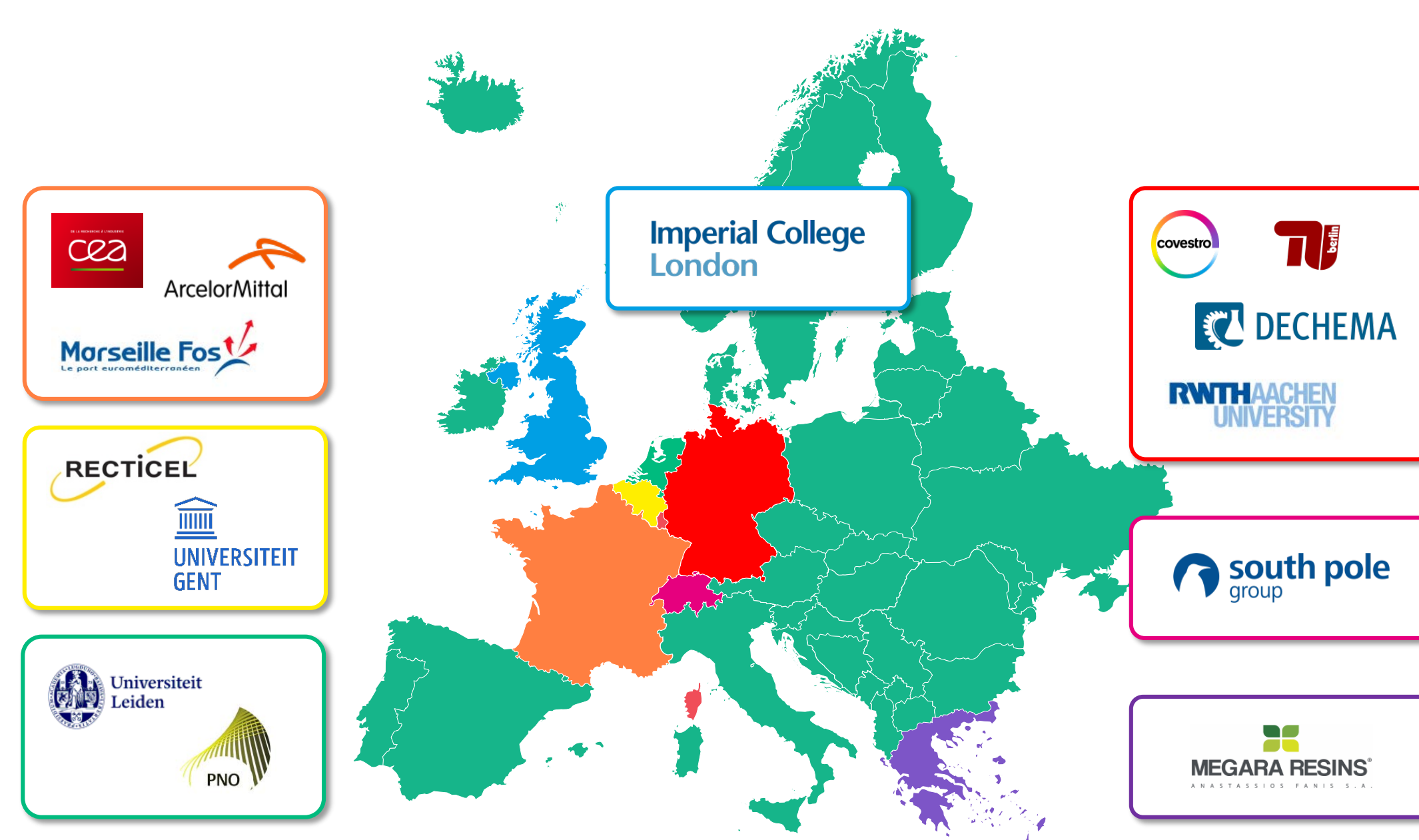


## OBJECTIVES

- ◆ **Develop and demonstrate (TRL 4-6)** an economically viable technology to transform the carbon from a **steel industry waste gas** into “ready to use” **C1 building blocks** for the production of high value intermediates.
- ◆ **Provide chemicals** and building blocks for the production of new, **sustainable polyurethane** (short: PUR) applications (rigid foam and coatings) as an example of high value polymers – **a novelty for waste CO/CO<sub>2</sub>**.
- ◆ **Implement a direct conversion of mixed flue gases containing both CO and CO<sub>2</sub>**: Avoid expensive “traditional” purification and conditioning methods. Mixed flue gases are provided by many industries, the Carbon4PUR project sets its focus on CO rich flue gases from the steel industry.
- ◆ **Reduce the carbon footprint of PUR intermediates by 20-60 %** compared to today’s PUR products manufactured from crude oil due to the re-utilisation of anthropogenic CO and CO<sub>2</sub>. With Carbon4PUR, the polyol producing industry will be able to **reduce up to 15-36 % of petrochemical epoxy compounds and 70 % of process energy**.
- ◆ **Demonstrate the economic feasibility, the environmental impact and social benefits** by an LCA and further assessments.
- ◆ **Prepare Industrial Symbiosis** between consortium partners in the Port Maritime de Fos (France).
- ◆ **Exploit and transfer project results to key stakeholders** and additional EU industries.

## AT A GLANCE

- ◆ **Duration:** 36 months
- ◆ **Start date:** 01/10/2017
- ◆ **Call:** H2020-SPIRE-8-2017
- ◆ **Contribution from the EC:** 7.8 M€
- ◆ 14 partners from 7 countries
- ◆ Contributing to:
  - Circular economy
  - Industrial symbiosis
  - Carbon productivity
  - Renewable materials



## EXPECTED RESULTS

- ◆ Demonstration of an adjustable process for on-purpose and on-demand tailor-made production of high value polymers, taking into account all variables at the same time:
  - Steel plant flue gases characteristics
  - Material and process parameters
  - End product market requirements
- ▶ **Full value chain**
- ◆ Small piloting of the new process (20 t/y)

## CONTACT

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