

# CarbonNext

The Next Generation of Carbon  
for the Process Industry



- Call: SPIRE-05-2016 Potential use of carbon dioxide / carbon monoxide and non-conventional fossil natural resources in Europe as feedstock for the process industry; CSA - Coordination and support action
- Start/end date: September 2016 – August 2018

• Partners:  **DECHEMA** Trinomics 



The  
University  
Of  
Sheffield.



# Project Case Study

## 1. The EU/ SPIRE needs

Transition from fossil based feedstocks to renewables. SPIRE goal: 20% less non-renewable raw material usage

## 2. The Project Solution

- Map of unconventional carbon sources
- Identified value chains and industrial symbiosis opportunities for CO/CO<sub>2</sub> waste stream utilisation
- Potential business models and economic drivers
- Assessment of policies and regulatory framework

## 4. How will this happen?

Forecast study on the use of CO<sub>2</sub>/CO containing process gases + non-conventional fossil natural resources to produce high value added products

## 3. Value to Customers

Inform, as a basis for decision-making, Europe's SME's, large industry and policymakers with an enhanced understanding of the impact and opportunities for new sources of carbon for the processing industry



# What are the key expected sustainability impacts

## Findings of the project

Indicator	Baseline	Expected Impact
<b>CO<sub>2</sub> emission reduction</b>	1780 Mt from large stationary emitters in Europe	Long-term, implementation of CO <sub>2</sub> based routes can completely valorise these emissions; emission reduction >50% feasible (depending on route and electricity mix)
<b>Fossil energy intensity</b>	European Chemical industry energy demand: 52.6 Mtoe = 612 TWh	CO <sub>2</sub> based routes to synfuels and basic chemicals require <u>high amounts of renewable power</u> , exceeding the energy demand of the fossil routes
<b>Total material consumption</b>	100% fossil carbon feedstock	20-100% reduced fossil carbon feedstock, depending on route for electrolysis based synthesis routes stronger dependence on metals

\*Core SPIRE indicator



# What **outputs or learning** from Project X could have value for other SPIRE projects here?

**The following deliverables /project outputs will be available to the entire SPIRE community:**

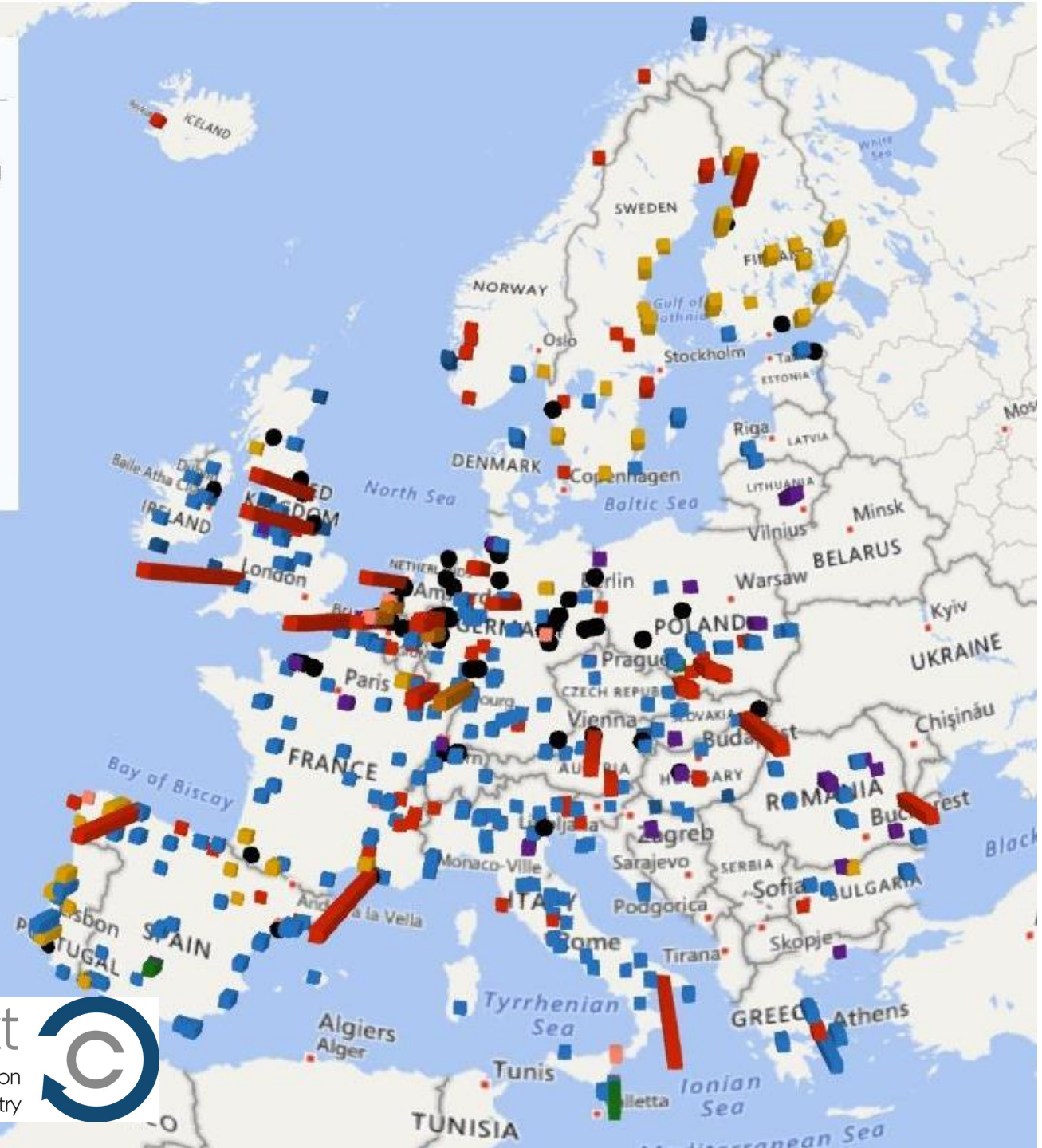
- Extensive data on sources vs. chemical production sites
- Detailed description of technology routes and value chains with particular emphasis on industrial symbiosis opportunities, e.g. steel-chemistry CO valorisation
- Potential business models and economic drivers
- Barriers and opportunities from current policy and regulatory framework and recommendations for supporting measures

### Hierarchy

- 1 Hydrogen SRM
- 2 Natural Gas processing
- 3 Ethylene Oxide
- 4 Ammonia production
- 5 Paper Pulp Industry
- 6 IGCC
- 7 Iron and Steel
- 8 Cement

### Chemical Parks

- Chemical Parks



Closing the carbon loop is essential, we can't rely on biomass only!

# Contact

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