INTRODUCTION

This insight summarises the investigation of both the potential for industrial symbiosis in Europe, and the main requirements by local managers for implementing symbiotic initiatives.

EPOS MARKET STUDY IN NUMBERS...

- 240 pages
- 5 hotspots in Europe
- 1000 ideas and synergies examined
- 8 authors involved
- 3 EPOS clusters are in hotspots
- 28 potential synergies
- 12 resources

CONTEXT

Industrial symbiosis offers a wide variety of opportunities to the process industry. More than 1,000 ideas of potential synergies have been generated via interviews with field actors working on industrial sites, and via joint brainstorming sessions with academic researchers and SME innovators.

The main potential for industrial symbiosis revealed in this study is the valorisation of physical resources. This is followed by the mutualisation of equipment, along with organisational and service related synergies.

Symbiosis potential is recognised across all EPOS sectors. Especially steel, cement and petrochemical sectors have proven to be most fertile in creating synergies and collaborations. For each spotted symbiosis a value chain based assessment has been carried out. The EPOS market study defines recommendations and measures to optimise the solutions to be proposed by the EPOS toolbox, and to identify the most promising exploitation schemes.
RESULTS

All European industrial sites in the cement, steel and chemicals sectors have been mapped. The geographical dimension of industrial symbiosis has been systematically assessed.

**Five main hotspots are identified in Europe.**

- The largest one covers Northern France, Belgium, the Netherlands, Luxembourg and Western Germany. It gathers 20% of the European sites, and 40% of the potential couples of sites below 200km.

- The second biggest hotspot is Northern Italy. Here the presence of electric arc furnaces and cement plants is predominant.

- Three medium hotspots are identified around Krakow in Poland, Bilbao in Spain, and the UK Midlands. In between, the density of industrial sites is lower and more stretched.

**With the exception of Spain, EPOS is active in all hotspots, especially with its industrial clusters in Hull and Rudniki and its district cluster in Dunkirk.**

An in-depth techno-economic assessment was carried out on a selection of technically credible set of 12 resources for 28 potential synergies. Only a minor share of the synergy ideas was found to be economically credible.

The profile of resources with higher potential for IS appears to be solid or liquid resources, with a high intrinsic value and produced in sufficiently large amounts both on each site and at EU level.
CONCRETE EXAMPLES OF POTENTIAL INDUSTRIAL SYMBIOSIS

**Tar sludge**
- **19 TWh/year** valorisation of tar sludge of steel to cement sectors in Europe = **1%** of the European annual solid fuel consumption = **24%** annual energy consumption of the cement sector in Europe

**Dust**
- mutualised treatment of dusts from EPOS sectors

**District heating**
- **225 TWh/year** current district heating consumption in Europe
- within **8 km from a site in EPOS sectors**
- **52 million inhabitants**
- **317 TWh/year** yearly production in EPOS sectors representing a theoretical heat demand of **346 TWh/year**

**CONCLUSION**
The Market Study presents a first step in exploring the potential for industrial symbiosis and provides a strong basis for entering the cross-sector exchanges and interactions in the EPOS clusters. It sets the starting point both for the development of generic business cases for industrial symbiosis across sectors, and for the extracting optimal exploitation schemes that are vital to achieve the project objectives and maximise the project impact.
The research project receives funding from the European Community’s Framework Programme for Research and Innovation Horizon 2020 (2014-2020) under grant agreement no. 679386. This work was supported by the Swiss State Secretariat for Education, Research and Innovation (SERI) under contract number 15.0217.

The opinions expressed and arguments employed herein do not necessarily reflect the official views of the European Commission nor of the Swiss Government.