

TOP-REF Frequently Asked Questions (FAQs)

(This document does not seek to answer technical questions but to support the dissemination and the understanding of the project among non-technical/ scientific public and media)

What is an intensive industry (in the use of energy and resources)?

There is not a quantitative limit to consider an industry intensive and the reference addresses not a single company but an integrated sector.

Process industries such as chemical, cement, steel and ceramics among others requires a high amount of raw materials, including water, and energy within their production process and to satisfy the high demand of the market.

As a matter of fact chemical sector in Europe accounts for 12% of total EU energy demand.

Why is it important to address intensive industries in terms of Resources efficiency?

Currently EU industries are importing 70% of all the resources and raw materials used in their processes¹. This dependence together with the new emerging economies increasing consumption, affect to the to the EU competitiveness.

In addition the EU is highly dependent on external energy sources from non-stabilized regions.

One of the key challenges of the chemical and refining industry is the increasing of the energy costs. In 2009, the European chemicals industry, including Refining used a total of 50,4 million tonnes of oil equivalent (TOE) of gas consumption, with a total of 147.4 million tonnes of CO₂ equivalent²

What is the motivation of TOP-Ref considering EU 2020 challenges and EU Policies?

As considered in the “Europe 2020 Strategy”, the European Union is facing major challenges such as the economic crisis, sustainability and the competition with emerging economies. In this context, TOP-REF contributes to a smart and sustainable growth while promoting a more efficient, greener and competitive economy based on knowledge and innovation³. In addition, the improvement of resource efficiency in process industries is a key action to accomplish three main EU concerns⁴:

1. The productivity and competitiveness of European Industry for securing growth and jobs.
2. The efficient use of resources to deal with the climate change and other environmental issues.
3. The improvement of resource efficiency to secure Europe’s supply of raw materials for making the EU economy more resilient to future increases of global energy and commodity prices.

TOP-REF is committed to increase the competitiveness and efficiency of the EU resource-intensive process industry, as well as to assure a long-term greener economy. All this by the innovation focused on an optimized monitoring and control of the processes, providing a deeper knowledge of the processes.

¹ <http://ec.europa.eu/enterprise/policies/industrial-competitiveness/>

² *Facts and figures 2011 the European Chemical Industry in a worldwide perspective; CEFIC*

³ *COM (2012) 2020 final. A strategy for smart, sustainable and inclusive growth*

⁴ *COM(2011) 21; A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy*



Why does the project address specifically the fertilizer, refining and chemical sectors?

The EU **chemical industry** comprises about 27.000 enterprises, 98% of which are considered SMEs, employing a total staff of about 1,9 million employees. In addition the chemical industry contribution to the EU gross domestic product amounts 1,3%, with €178,5 billion of value added. In addition the chemical sector accounts for 12 percent of total EU energy demand and for one third of EU industrial energy use.

Furthermore the chemical industry features prominently among Europe's exports: its 28% share of global production makes the EU the world's biggest chemical-producing area⁵. Nevertheless since the year 2001 has lost gradually the ground to the emerging economies.

The refining industry in EU-27 holds a capacity of 767million tonnes per year, about a 18% of the global capacity. The overall cost for refining one barrel is between 1.0 and 2.5 Euro/ton depending on refining complexity. CO₂ emissions correlate strongly with refinery capacity and the typical emissions are 15.0 tons of CO₂ per 1000 barrels of crude oil in direct emissions and 1.4 tons of CO₂ per 1000 barrels in indirect emissions. This means a total of 88 millions

Fertilizer imports into Europe (EU-27) in 2010/2011 from countries outside the EU were 0.9 million tonnes more than the previous year. These accounted for 25% of total European fertilizer consumption compared to 20% the year earlier.

The fertilizer industry is EU's single industrial use of natural gas⁶. It is a primary raw material for fertilizers production and represents a 50%-70% of its total production costs. The industry depends on a freely available supply at a competitive Price. But the European gas market is dominated by a small number of key suppliers including Russia, Algeria and Egypt. Prices have increased by over 230% in the past 10 years

Can the solutions developed be useful for other sectors?

One of the aims of TOP-REF is to facilitate the **future implementation of cross-sectorial solutions**. According to this, it does exist a huge commitment of the consortium with the improvement of the sustainability and resources efficiency in the industry. This is reflected in the fact that several members of the consortium belong to the SPIRE initiative, moreover, the coordinator of TOP-REF (CIRCE) is the leader of the SPIRE Task Force for Processes: "Solutions for more efficient processing and energy systems for the process industry, including industrial symbiosis. The high resource intensive sectors included in SPIRE (*Sustainable Process Industry through Resource and Energy efficiency*)"⁷, represent 450,000 individual enterprises, with 6,8 million employees and 1,600 billion € turnover.

What are the expected impacts that TOP-REF will cause in the industrial sector?

TOP-REF will improve the competitiveness and efficiency of the European process industry by means of specific indicators, methodologies and tools that will contribute to:

- Improve energy and resources efficiency by 20%.

⁵ *Observatoire Social Européen (2010) European Sectoral Social Dialogue*; <http://www.worker-participation.eu/EU-Social-Dialogue/Sectoral-ESD>

⁶ *2010 Fertilizers Europe overview* www.fertilizerseurope.com

⁷ <http://www.spire2030.eu/>



- Pave the way for achieving SPIRE2030 objectives of reducing non-renewable, primary raw material intensity and fossil energy intensity
- Increase the reusability and recycling of materials around 30%.
- Reduce production costs up to 15 %.
- Achieve a significant reduction of the environmental impacts

