

Transitioning regions towards industrial symbiosis

Derrick Taylor of the TRIS Project discusses the methods and projects enabling widespread implementation of industrial symbiosis processes across Europe

Industrial symbiosis is a building block of circular economy – a proven means to sustainable growth increasing resource efficiency and small and medium enterprise (SME) competitiveness and resilience.

Despite the acknowledged advantages, industrial symbiosis is not yet fully mainstream. The challenge addressed by European INTERREG Europe funded project TRIS – Transitioning Regions towards Industrial Symbiosis – is to enable a systemic uptake of industrial symbiosis in five European regions, supporting policymakers to increase the competitiveness of their SMEs by introducing industrial symbiosis practices. To do so, the TRIS consortium are:

- Identifying facilitating elements and obstacles, and embedding (or removing) them from appropriate policy instruments; and
- Engaging with regional actors that can drive and/or be impacted by the change and involving them in structured regional and local networks.

The aim of the TRIS project is to deliver its objectives and benefits from inter-regional co-operation from the partners, including diversity in terms of geography, productive systems and maturity of industrial symbiosis practices:

- The City of Birmingham, UK, project leader, is the most advanced;
- Central Hungary and Emilia-Romagna, Italy, regions have already tested pilot projects;
- While Småland och Öarna, Sweden, and Valencia, Spain, regions have approached industrial symbiosis more recently.

Industrial Symbiosis Ltd – the not-for-profit arm of International Synergies Ltd – is performing an advisory and dissemination role, drawing on its international experience in industrial symbiosis delivery, capacity building and informing related policies.



TRIS partners are determined to accomplish the following results through tangible initiatives reaching out to SMEs, supporting their business through industrial symbiosis and thus minimising industrial waste production while testing new governance models, these include:

- Raising awareness of industrial symbiosis and its economic and environmental benefits;
- Bringing about a mind-shift and build a culture of co-operation in the stakeholder groups (including SMEs and policy actors);
- Standardising industrial symbiosis practices into regional policy instruments (e.g. planning, economic development); and
- Bringing industrial symbiosis to a higher position in the European agenda.

TRIS partners: addressing policy instruments as part of regional project activities
Emilia-Romagna, Italy: Waste Management Plan (WMP) of Emilia-Romagna Region (resolution nr. 103; February 3, 2014)

The WMP implements the recommendations contained in current regulations and represents one

of the regional strategy cornerstones for sustainable development. It defines objectives and actions for waste management, ensures environmental and health protection and reduces the overall impacts of resource use. In accordance with the waste hierarchy, WMP outlines a governance model based on waste prevention, preparation for reuse, recycling, recovery and disposal.

Valencia, Spain: Regional Operational Programme (ROP) 2014-2020 - PROGRAMA OPERATIVO DEL FONDO DE DESARROLLO REGIONAL DE LA COMUNIDAD VALENCIA 2014-2020.

To improve the competitiveness of SMEs, promotional activities and co-operation were applied to areas in eco-innovation, social innovation, agriculture, fisheries, marine, maritime and tourism sectors.

The change is expected to create a highly innovative productive and business fabric to develop products and services in the above areas and to empower Valencian SMEs to increase their competitiveness.

The ROP will contribute to the objective of promoting innovation in SMEs through financial support measures in innovative companies with high potential to create activities and services of high value and wealth for the Valencian region. This will expand opportunities for growth, internationalisation and employment generation in the region and guide their productive capacities in future strategic sectors. As a result, the ROP will help to create the financing conditions necessary for SMEs.

Birmingham, UK: Greater Birmingham and Solihull Local Enterprise Partnership European Structural and Investment Funds (ESIF)

Priority Axis 3: Enhancing the Competitiveness of Small and Medium Sized Enterprises. Investment Priority 3d – supporting the capacity of small and medium sized enterprises to grow in regional, national and international markets to engage in innovation processes.

The primary aim of Priority Axis 3 is to improve the competitiveness of SMEs by increasing their capacity, capability and promoting entrepreneurship through Investment Priority 3d: Supporting the capacity of SMEs to grow in regional, national and international markets and to engage in innovation processes. Existing SMEs face several barriers which restrict their ability to achieve their growth ambitions.

Hungary: Economic Development and Innovation Operational Programme (EDIOP)

1.6.2 National specific objectives. SO 2.1 Creating growth opportunities for SMEs by enhancing the growth potential in the case of SMEs not performing technological innovation.

EDIOP is the main document for the absorption of EU funds in economic development in parts of Hungary, other than in Budapest and Pest county. It covers horizontal measures as priority areas such as:

- Improving the competitiveness of SMEs;
- RDI;
- Employment;
- Competitive workforce; plus
- Priority areas focusing on certain sectors such as tourism, ICT and energy.

Resource efficiency is among the top five government priorities of this operational programme and is recognised as a large opportunity to enhance competitiveness. While only energy efficiency is targeted, closed loop production and collaboration amongst companies to share resources. Use of secondary raw materials, can also support the objectives and enhance the economic and environmental impact of this operational programme. Hence, the TRIS

project envisages the launch of industrial symbiosis to directly address industrial waste reduction and reuse of by-product in forms of structural changes and possibly new projects starting from best practice exchange.

Småland och Öarna, Sweden: Regional Structural Fund Programme for Småland och Oama 2014-2020

The main objective of the programme is to boost growth and employment in the region. The programme focuses on four priorities that correspond to selected thematic objectives:

- Priority 1 – T01: strengthening research, technological development and innovation;
- Priority 2 – T02: Improving access, use and quality of ICTs;
- Priority 3 – T03: Enhancing the competitiveness of SMEs; and
- Priority 4 – T04: Supporting the shift to a low-carbon economy in all sectors.

This investment priority targets the enhanced competitiveness and improved growth of existing SMEs, supporting their capacity to grow regionally, nationally and internationally, as well as to engage in innovation processes. This investment priority supports several activities:

- The business development of SMEs through seminars, workshops, business consultations with focus on leadership, sustainable growth, profitability, strategic competence and/or innovation;
- Stimulation of SMEs' will and capacity for internationalisation; and
- Development of business promotion systems, supporting businesses' capital.

Demonstrating good practices

Some of the best practices identified so far include:

Emilia-Romagna

Project partners developed and tested solutions for the reuse and valorisation of food waste, focusing on tomato and wheat supply chains. Technologies which have a low-impact on the environment were used to extract naturally enriched olive oil in lycopene and wheat germ defatted oils, intended for the food market.

Project partners further wish to create a network of industrial symbiosis through the development of operating manuals and software to enable dynamic mapping of the circular economies of two supply chains.

Birmingham

Tyseley Energy Park is a site within the Tyseley Environmental Enterprise District, strategically located between the city centre and Birmingham airport, thus providing a logical place to deploy refuelling infrastructure for a range of low carbon

fuels. The development of the park emphasises alternative low carbon fuels. Phase 1 of the park has already seen an investment of €50m into a 10.4MW waste wood biomass power plant (thermal catalytic reforming reactor to produce char/syngas/pyrolysis oil). Planning permission has recently been granted for the UK's first low carbon station on Phase 2.

Mellersta Norrland

Green Pipe is a company situated in Växjö, Sweden, that produces conduit systems, and similar products, from 100% recirculated plastic. Their main application is protecting electrical cables placed underground and underwater. The raw material used is primarily car bumpers as they are made of good quality plastics and available in large amounts. Using waste material from one operation as raw material in another company is an example of industrial symbiosis.

Joint deliverable

TRIS, along with three other European funded projects, are supporting the development of a European 'pre-standard' in the form of a CEN Workshop Agreement (CWA). The goal of the industrial symbiosis CWA is to support the effective adoption of industrial symbiosis by the public and private sector, and to advance toward mainstream adoption. The CWA is intended to provide a consensus on best practice methodologies supporting methods of industrial symbiosis implementation across Europe, this being directly relevant to TRIS's aims and objectives.

The kick-off meeting was held in Brussels, Belgium, in February 2018 and addressed by Dr Janez Potočnik, former Environment Commissioner and current co-chair of the International Resource Panel. The final deliverable of this workshop should be completed and published by November 2018. All interested parties are welcome to register for participation and submit comments on the draft workshop agreement (www.sist.sl).



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