

INDUSTRIAL SYMBIOSIS IN MAESTRI PROJECT

Conceptual integration of Industrial Symbiosis into the Total Efficiency Management Framework

The MAESTRI project aims to tackle improvements in the impact of manufacturing activities at both company level and system level in order to achieve significant results.

A holistic approach will enable process monitoring and optimization, as well as focus on an integrated and cross-sectorial interaction that can have a greater impact within the process industry.

MAESTRI project encompasses an Industrial Symbiosis (IS) approach, which, within the scope of sustainable manufacturing for process industries, fosters the sharing of resources (energy, water, residues and recycled materials) between different processes of a single company or between multiple companies.

WORK IN PROGRESS

Benefits of adopting Industrial Symbiosis approach

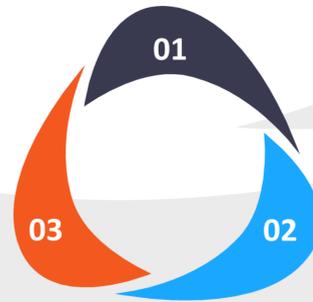
- Economic benefits from savings in inputs costs and waste management and from new opportunities of revenues generated by waste and by-products;
- Environmental benefits due to reduction in resource needs, reuse and recycling of waste streams and pollution control;
- Additional business benefits derived from new and/or improved relationships with other agents and the community, green marketing, social corporate responsibility and the creation of new market opportunities;
- Benefits for the community as a source of new employment, securing existing jobs, improving local ecosystems and of a cleaner and safer environment.

Challenges and success factors identification

Based on the analysis of literature and the review of state of practice.

● Opportunity identification & definition

- Opportunities need to take advantage of the nature of the waste / by-product; however, its nature is also a source of limiting factors.
- Efforts to analyse and characterise themselves their waste streams, which may vary with changes in production plans.
 - Awareness of the difficulties of dealing with their waste discourages the search for opportunities for those particular waste types.



● Exchanges design & planning

Main challenges are related to partner identification and to legislation barriers to trade a particular types of waste, either due to non possible trade or to need to involve intermediaries.

- Success factors at this stage:
- Keep a learning approach to explore different designs
 - Design a solution that maximizes the value of waste/by-product
 - Collaboration with competitors to achieve volume

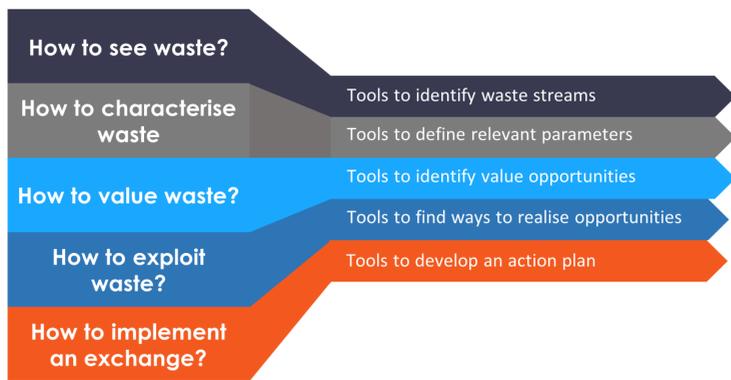
● Exchanges implementation & progress

- Success factors in network management, coordination and evolution:
- Trust and cooperation environment
 - Institutional capacity
 - Mutually beneficial transactions
 - Social capital and embeddedness
 - Joint network vision

- Challenges in network resilience:
- Entrants / exits of companies in network
 - Community reaction and sector trends

Tools to fully exploit Industrial Symbiosis

There is a need for tools that can support companies to identify and evaluate, at early stages of ideation, the different possibilities for their waste streams and by-products.



NEXT STEPS



01 Build a library of case studies

Collect a set of different case studies of Industrial Symbiosis and made them available through MAESTRI dissemination platforms

02 Build an open source waste database

Create a database of exchanges, based on findings from the analysis of case studies. This database will inform MAESTRI management system

03 Develop a toolkit for Industrial Symbiosis

Create, test and refine a set of tools to support Industrial Symbiosis activities, in particular companies could use the toolkit to identify opportunities to obtain higher value from their waste.



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HOW TO ENGAGE?

We are working closely with companies!

If you would like to:

- ❖ explain us your approach towards Industrial Symbiosis;
- ❖ include your company case in the library of case studies;
- ❖ participate in the toolkit development and testing activities.

To find out more about Industrial Symbiosis activities within MAESTRI project and how your institution could participate please contact us!

4-year project | 01.09.2015 – 31.08.2019

15 partners from 5 different countries

+ 30 researchers / industrialists participating

Total effort: 787.25 Person-months

