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The power of Industrial Symbiosis

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Industrial symbiosis connects companies across different sectors by enabling the exchange of resources such as by-products, energy, water, services, or expertise. Its power lies in the ability to transform linear production models into collaborative systems, where waste streams become valuable inputs and efficiency is achieved through cooperation.

In practice, industrial symbiosis strengthens companies' resilience to resource constraints and market volatility while simultaneously reducing environmental impact. By fostering cross-sectoral collaboration, it supports eco-innovation, creates new value chains, and reinforces local and regional economies. Rather than being solely a sustainability concept, industrial symbiosis represents a practical and scalable approach to increasing industrial competitiveness through smarter use of existing resources and knowledge.

Within the [SYMBIOS project](#), the power of industrial symbiosis was explored through focus groups conducted in the agri-food and leather sectors. Across both sectors, discussions revealed a shared understanding of industrial symbiosis as a collaborative model that generates added value through cooperation, rather than through bilateral exchanges. Participants frequently described this logic as a situation in which 1 + 1 gives more than 2.

In the agri-food sector, industrial symbiosis was seen as having strong potential along the entire value chain. While material and resource exchanges were recognized as important, participants equally emphasized the exchange of knowledge, skills, and expertise. This highlights that the power of industrial symbiosis does not lie solely in physical flows, but in its capacity to enable learning-oriented partnerships, joint development of novel solutions, and innovation across sectors. Environmental, economic, and social benefits were widely regarded as evident, reinforcing the perception of industrial symbiosis as a practical and credible approach rather than a theoretical concept.

The leather sector provides a complementary perspective, illustrating both the maturity and the limitations of industrial symbiosis in practice. As leather originates as a by-product of the meat and dairy value chains, symbiotic practices are already embedded in the sector. However, focus group discussions confirmed that much of this potential remains underexploited. Here, the power of industrial symbiosis lies primarily in early-stage coordination within the value chain. Cooperation between slaughterhouses and tanneries directly influences material quality, process efficiency, chemical use, and the ability to direct different material streams towards their highest-value applications.

Considered, the insights from the agri-food and leather sectors point to a shared conclusion. While the potential and benefits of industrial symbiosis are widely recognised, they cannot be realised through isolated initiatives or informal collaboration alone. In both contexts, the power of industrial symbiosis is constrained not by a lack of technical solutions, but by structural and systemic barriers. These include fragmented value chains, regulatory constraints, limited access to data and financing, and insufficient mechanisms to connect companies with relevant partners and research expertise. Unlocking the full potential of industrial symbiosis therefore requires coordinated action, supportive frameworks, and dedicated structures that can transform individual opportunities into sustained and scalable collaboration across value chains.

Building on these insights, the SYMBIOS project addresses one of the key enablers, identified in the focus groups, which is the need for structured support for learning, connection, and collaboration. The SYMBIOS Platform is being developed as an open digital environment, designed to support this role. It is conceived as a space that combines learning and collaboration, bringing together training and awareness-raising on industrial symbiosis. The project aim is to create conditions in which companies can explore opportunities, share information, and engage in joint problem-solving and co-development processes.

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