

Roadmap for Industrial Symbiosis Standardisation

Building the foundations for scalable Industrial Symbiosis in Europe

Introduction

Industrial symbiosis (IS) can help Europe reduce waste, strengthen resource resilience and accelerate the transition to a circular economy. By enabling companies to use underutilised materials, energy, water and other resources from other industries, IS creates environmental, economic and strategic benefits across value chains.

Although many successful examples of IS already exist, they sometimes remain isolated and difficult to replicate across sectors, regions and countries. Fragmented regulations, inconsistent data practices and limited interoperability continue to slow down wider implementation and scale-up.

The RISERS project addresses these challenges by building a cohesive framework that connects practice, policy, research and innovation to support IS standardisation focused on priority synergies and resources for EU resilience. The project's main outcome is the Roadmap for Industrial Symbiosis Standardisation.

RISERS



The Roadmap for Industrial Symbiosis Standardisation

Goal of the Roadmap

The RISERS Roadmap for Industrial Symbiosis Standardisation serves as a strategic framework to support the large-scale implementation of IS across Europe by identifying where standardisation actions can reduce barriers and enable more efficient resource sharing across sectors. The Roadmap is to serve as a practical orientation tool for Technical Committees, standardisation bodies, policymakers, and IS stakeholders when planning future standardisation and policy actions.

Objectives of the Roadmap

- Identify priority areas where standardisation can improve the scalability and replication of IS practices across sectors and regions;
- Highlight barriers, gaps and coordination challenges related to regulation, data interoperability, quality assurance, governance, infrastructure and resource classification systems;
- Provide recommendations for policymakers, standardisation bodies, industry and research organisations to strengthen the enabling framework for IS;
- Support the uptake of research and innovation results into standardisation, ensuring that emerging IS solutions can be implemented consistently and at scale;
- Promote harmonised terminology, digitalisation and cross-sector cooperation, helping industries exchange resources more efficiently and reliably.

Methodology

To ensure that the Roadmap serves as a practical and evidence-based reference for future standardisation, policy development and IS upscaling across Europe, RISERS adopted a development process based on:

- Analysis of over 600 Industrial Symbiosis cases and practices across Europe to define high-impact priority synergies**
The analysis identified 50 Material, Energy and Service (MES) streams exchanged between industrial sectors. These streams were assessed using the 3P framework (People, Planet, Profit) and further analysed through the LESTS methodology to evaluate Legal, Economic, Spatial, Technical and Social barriers, enabling factors, and high-potential IS opportunities leading to the definition of 7 sectoral and 3 cross-cutting areas for IS standardisation.
- Mapping of existing IS standardisation landscape**
RISERS developed an interactive Standards Mapping Tool enabling stakeholders to identify relevant standards, Technical Committees, gaps, overlaps, and opportunities for future IS standardisation activities.
- Analysis of stakeholders and policy environment related to IS and priority resource flows**
RISERS identified key policy barriers, sectoral priorities and regulatory needs affecting IS implementation, translating these findings into policy recommendations that support the development of the Roadmap.
- Cross-sector discussions covering horizontal topics such as harmonisation of IS terminology and End-of-Waste criteria**
RISERS analysed the EU End-of-Waste framework, regulatory barriers and cross-border challenges affecting IS, while also developing harmonised terminology, definitions and a dedicated glossary to support clearer, more consistent implementation of IS across Europe.
- Mapping of existing R&D outputs to ground the Roadmap on existing scientific, technological and standardisation knowledge**
RISERS analysed more than 150 EU-funded R&I projects (2015–2027) to identify 21 highly relevant projects that provide standard-oriented, technology-oriented and policy-oriented research outcomes. These outcomes directly contribute to standards development, technical validation, and policy alignment for IS implementation across Europe.
- Stakeholder engagement to align the Roadmap with real industrial, regulatory and standardisation needs**
RISERS engaged with industry, IS practitioners and facilitators, policymakers, sector associations, public authorities, researchers and standardisation experts to identify IS standardisation needs, gaps and barriers. Stakeholder input was collected through 2 Europe-wide surveys gathering over 300 responses and more than 20 expert interviews. Around 120 experts participated in 10 thematic Working Groups that laid the foundations for the first version of the Roadmap.
- Iterative refinement and public consultation to build consensus across the communities involved in IS standardisation and implementation**
So far RISERS organised 2 rounds of consultation sessions with Working Groups, standardisation experts and external stakeholders to validate findings and contribute feedback for the final roadmap version. Third public consultation round is ongoing.

Outlook and next steps

The roadmap presented in this poster is the first consolidated overview of the standardisation needs, regulatory considerations and system enablers required to scale IS across European value chains. Developed as a living document, the roadmap will be refined during 2026 through consultation with industry experts, policymakers, standardisation bodies, Technical Committees and public authorities. This process will help validate priorities, identify gaps and align future standardisation actions with evolving EU circular economy, digitalisation and sustainability policies. The final roadmap will support CEN and CENELEC Technical Committees, policymakers and industry stakeholders in developing coordinated approaches that enable more resource-efficient, resilient and interconnected industrial systems across Europe.

Explore the draft Roadmap and join the consultations

