

# Synergy Fact Sheet

## WASTE HEAT

Recover heat from process industry and use for urban heating

RISERS

A Roadmap for Industrial Symbiosis Standardisation for Efficient Resource Sharing

### Introduction

Industrial waste heat represents a valuable opportunity to improve energy efficiency while reducing environmental impact. This heat, which is normally released unused into the atmosphere, can instead be captured and reused to provide energy to urban areas or other industrial sites. By recovering this heat, industries can reduce their dependence on conventional energy sources, reduce greenhouse gas emissions and contribute to a more sustainable energy system (Moser & Jauschnik, 2023, AIDRES, 2023). One promising application of waste heat is its integration into district heating networks, where it serves as an affordable and reliable source of energy for heating and cooling in cities. Utilising waste heat in this way not only increases energy efficiency, but also helps urban utilities transition to lower-carbon operations, which is in line with international climate goals (Atienza-Márquez, Bruno, & Coronas, 2020). District heating systems are particularly suitable for the integration of low temperature waste heat, as they can utilise different energy sources. By utilising waste heat that

would otherwise go unused, these systems can achieve significant energy savings and reduce environmental impact. Thanks to recent technological advances, waste heat can now be transported over longer distances, making it equally interesting for urban and industrial applications (Pakere et al., 2023). The recovery and reuse of waste heat demonstrates the potential for synergies between industrial plants and urban utilities. By converting excess heat into a usable energy resource, industries are taking steps to create innovative, sustainable solutions that benefit both the economy and the environment.

#### Supplying sector(s)

#### Receiving sector(s)

Various

Various industries

Urban

Urban utility services, various industries

#### TECHNICAL FEASIBILITY

**Low technical requirements** mean that the implementation of waste heat recovery systems is straightforward and requires only minimal changes to existing industrial processes and infrastructures.

**Waste heat recovery** relies on advanced technologies that enable the efficient capture and reuse of industrial waste heat, providing a viable and effective solution for reducing energy losses and increasing efficiency.

**Industrial and urban heat networks** enable the seamless integration of waste heat into district heating systems and provide a reliable source of energy for urban and industrial applications via well-developed distribution networks.

#### PPP IMPACT – EU wide potential

Profit



**Wins in industry**

Waste heat recovery generates approximately €5.9 billion in added economic value by improving energy efficiency and reducing operational costs across industries. (source: Scaler Synergy 91, EPOS CW03, Cervo et al., 2019)

Planet



**Environmental gains**

The environmental benefits are relatively low, reflecting modest reductions in emissions and resource use. (source: EPOS CW03, Cervo et al, 2019)

People



**Wins for society**

The sector creates around 60,000 direct jobs, contributing significantly to local employment and economic development. (source: Scaler Synergy 91)

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# RISERS



### About this factsheet

This fact sheet is based on the findings of the RISERS project. Led by Ghent University with the support of project partners, the study involved a systematic assessment of 600+ industrial symbiosis (IS) cases across urban-industrial and cross-sectoral clusters in Europe. These cases formed the basis for the mapping of over 300 MES (Materials, Energies, Services) streams, categorised by output (source) and input (sink) sectors.

The fact sheet provides a detailed overview of a high-potential and high-impact IS synergy, evaluating its implementation feasibility and sustainability impact. Supported by data from public databases (MAESTRI, SCALER, EPOS, AIDRES, etc.) and literature, it offers a generalised insight into the economic, environmental, and social benefits per synergy.

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### About the RISERS project

RISERS is a Horizon Europe project aimed at developing an Industrial Symbiosis Standardisation Roadmap supporting the uptake of high impact synergies and resources considering:

- identification of the needs, gaps and opportunities,
- revision of current standards and standardisation efforts relevant for CE and the priority synergies and resources,
- initiating the process of new standards development (especially for newer technologies and pilot-scale synergies).

The RISERS project was launched in January 2024 with a duration of 3 years.

For more information visit: <https://risers-project.eu>



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