

20- Waste & surplus heat utilization in DH-systems

1 Introduction - Potentials of waste heat utilization

- **Waste heat utilization** can increase energy efficiency in the corporate sector
- By waste heat recovery the CO₂ reduction targets set for 2030 and 2050 could be reached
- Savings of primary energy
- **However: Avoiding, reducing, Reutilisation, Disposing of or displacing WH e.g. into a heating system, should always be the chronology of possible waste heat utilization!**
- Waste heat can be used either to **replace** or **supplement** heat generated using conventional methods
- heating networks are particularly suitable for the utilisation of waste heat, because they are capable of **combining** heat obtained from a variety of heat sources

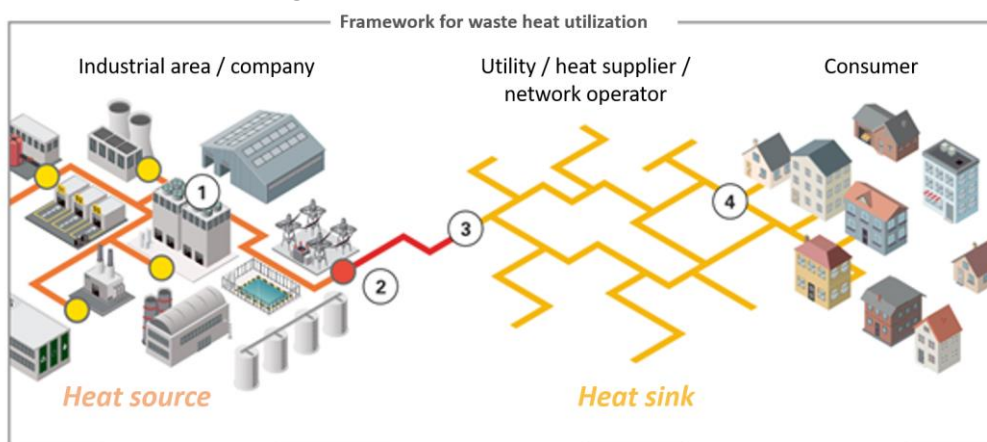


Figure 1: Exemplified waste heat integration into a DH-system (Source: AGFW)

2 Waste heat utilisation in Europe

Following aspects are important for an effective and efficient waste heat utilisation on a European and national scale:

- **Creating** a suitable political framework
- **Developing** national waste heat registers (e.g. mapping possible heat sources)
- **Accelerating** the creation of heat plans on a municipal and regional level

- **Ensuring and intensifying** the transfer of know-how, by means of transfer points or funding agencies, or via energy efficiency networks
- **classify waste heat as 100% CO₂-free** (e.g. important for funding options)

3 Potentially viable sources of waste heat

- **Production** (e.g. refineries, steel processing, chemical industry)
- **Services** (e.g. computer centres, laundries, cold stores and wastewater and water resources management)
- **Waste disposal** (e.g. thermal processing of waste, closing material cycles within individual companies)
- **Energy conversion** (e.g. condensing power plants, waste gas heat derived from combustion processes).

4 Conclusion: Potentials and obstacles

General obstacles:

- the **higher the temperature level**, the more **frequently, regularly and predictably** the heat is available, the more effectively it can be utilised by heating supply companies
- Waste heat occurs at different temperature levels, at different frequencies and at differing degrees of continuity (→ different qualities of heat source)
- the **lower the quantity of waste heat** and the more **irregularly and less predictably** it occurs, the greater the **necessity for heat storage facilities** and for measures to ensure the **security of supply**
- important sources, but usually **big distance from existing heating networks or heat sinks**

Obstacles for heat partnerships:

- Waste heat projects usually have a **long planning lead time due to numerous technical, legal and contractual issues**
- **Usually several different actors with different interests are involved** (companies, utilities, network operators, consumers, etc.)

Possible solutions for long lasting heat partnerships and reduction of obstacles:

- Creation of financial incentives **on both sides** (heat sources & heat sinks)
- Incentives could **reduce the costs and project risks** to be borne by the companies involved
- **Pricing of CO₂ emissions** is an option that would affect both partners and competitors in equal measure
- **far-sighted political view** of the opportunities of waste heat utilization
- **clear political framework** would give both sides planning security & security of investment