



HEATLEAP

Valorising waste heat for enhanced energy efficiency

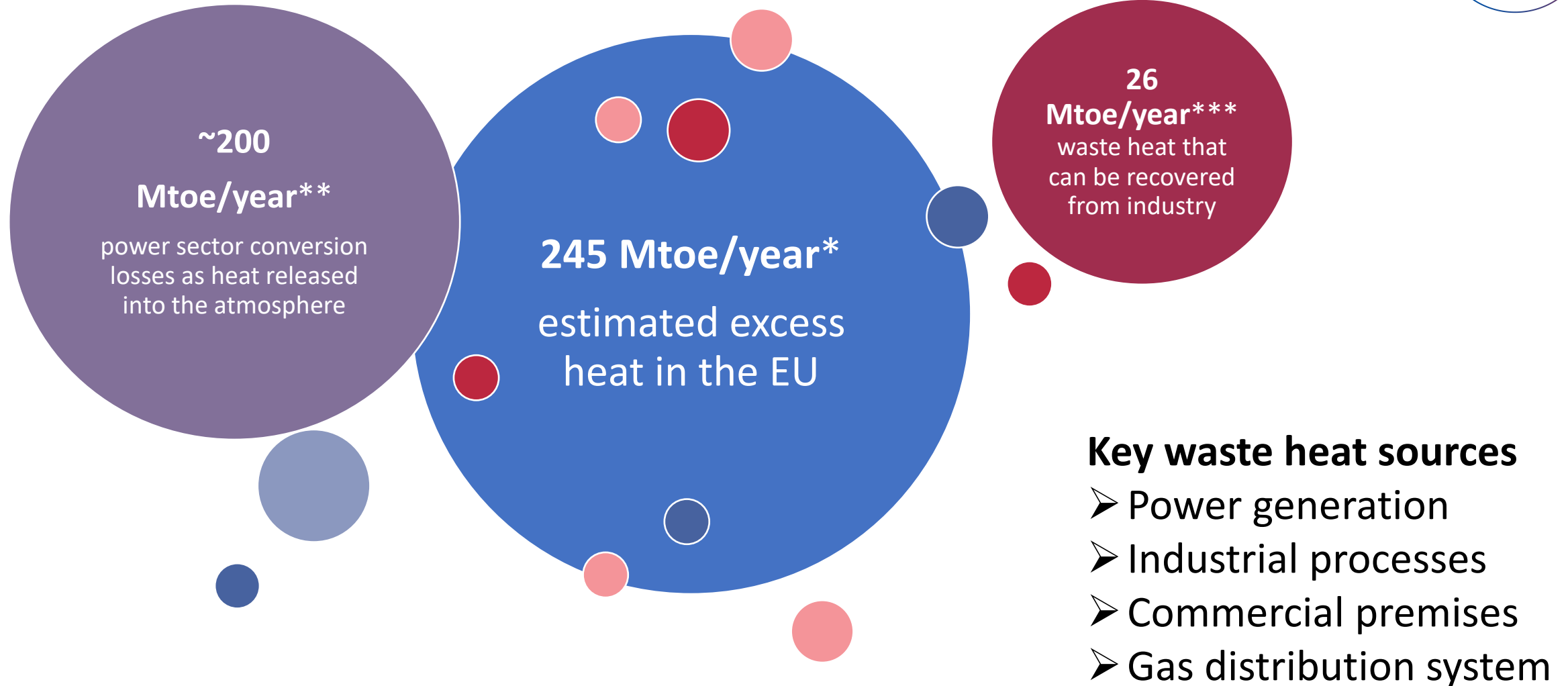
***Waste heat: Potentials, applications
and recommendations for better
policies***

COGEN Europe: who we are

- COGEN Europe, the European Association for the Promotion of Cogeneration, is the cross-sectoral voice of the cogeneration industry.
- We have over 60 members: 13 national associations and 50 organisations spanning the entire value chain from technology manufacturers and users to consultancies.
- Our mission is to work with EU institutions and stakeholders to shape better policies and eliminate administrative, regulatory and market barriers to the wider use of cogeneration in Europe.
- We are the HEATLEAP Work Package Leader for Policy/Communications.



EU's significant excess heat potential

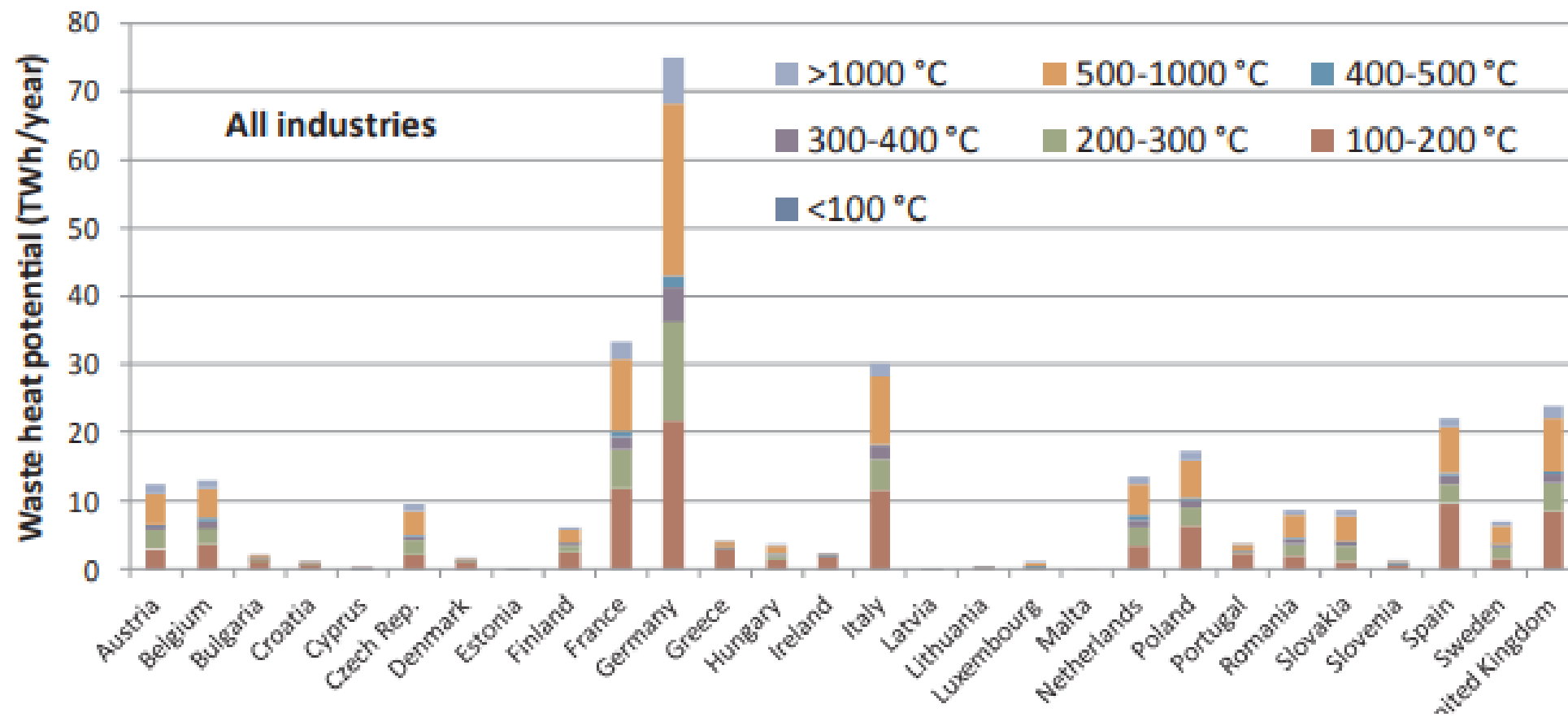


*Heat Roadmap Europe, 2013

** Eurostat, 2023

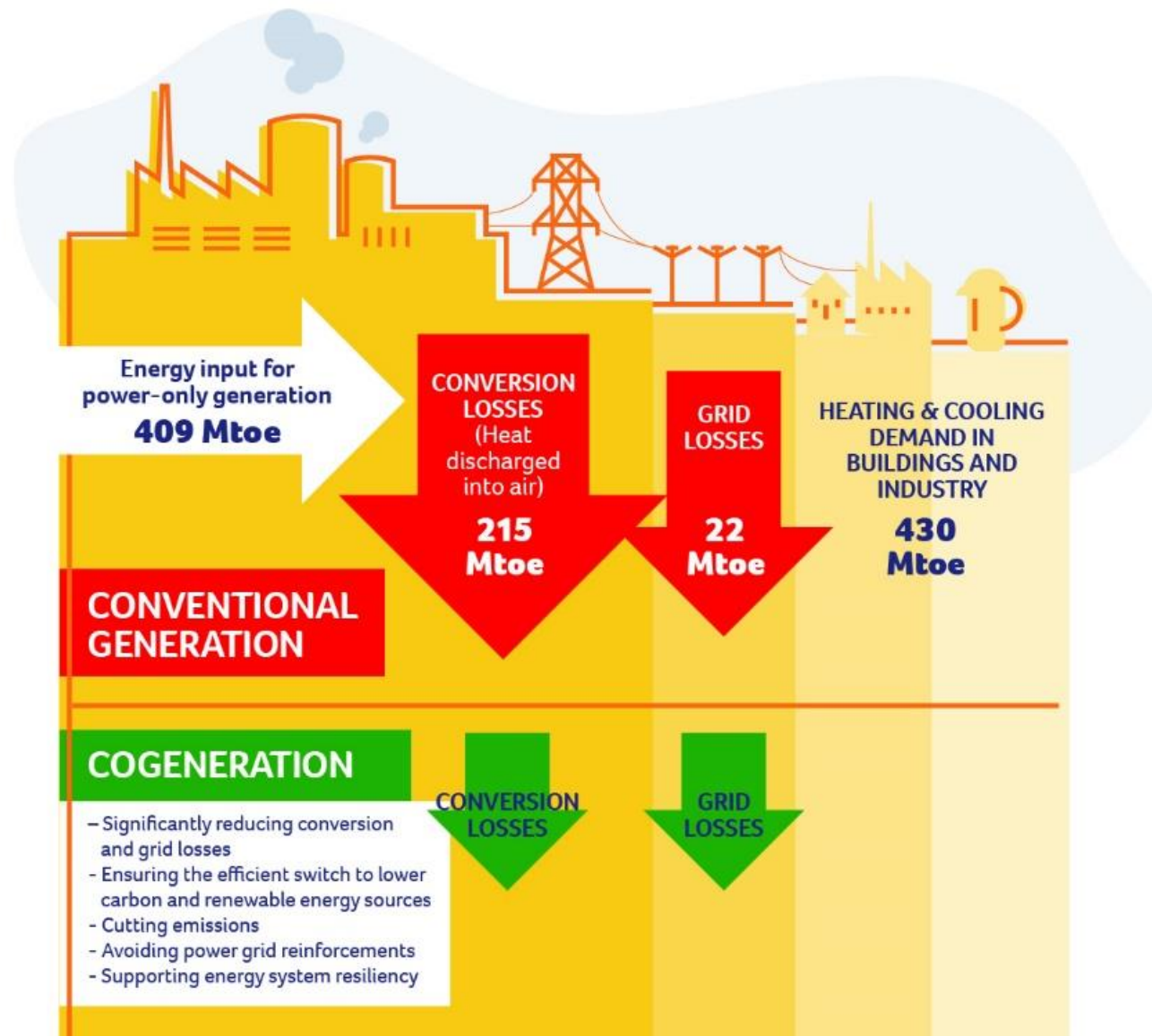
***Papapetrou, et al, 2018

Industrial excess heat across Europe



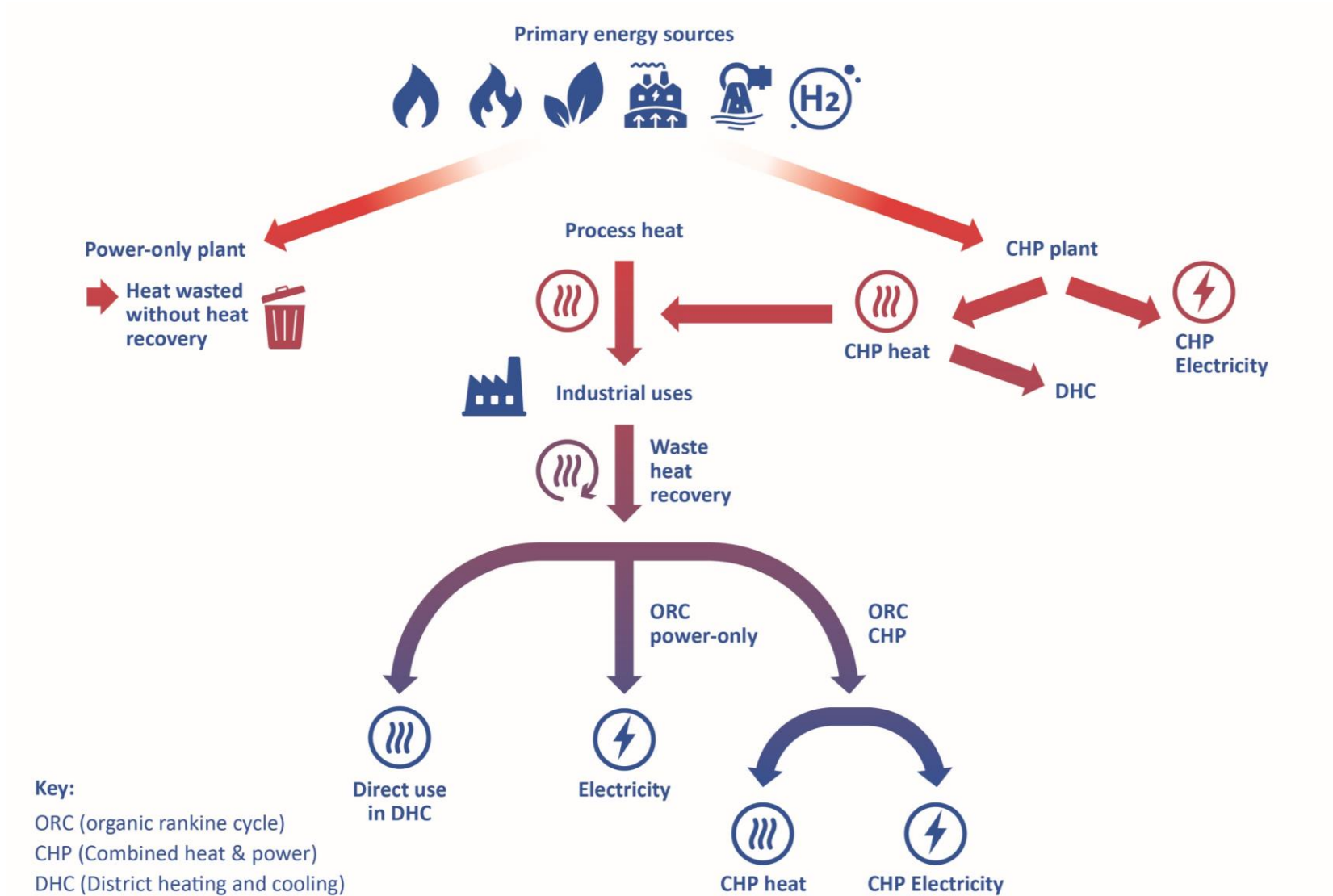
Source: Papapetrou, et al, 2018

EU's Power Sector Heat Waste



Source: Eurostat, 2023

Multiple waste heat recovery applications

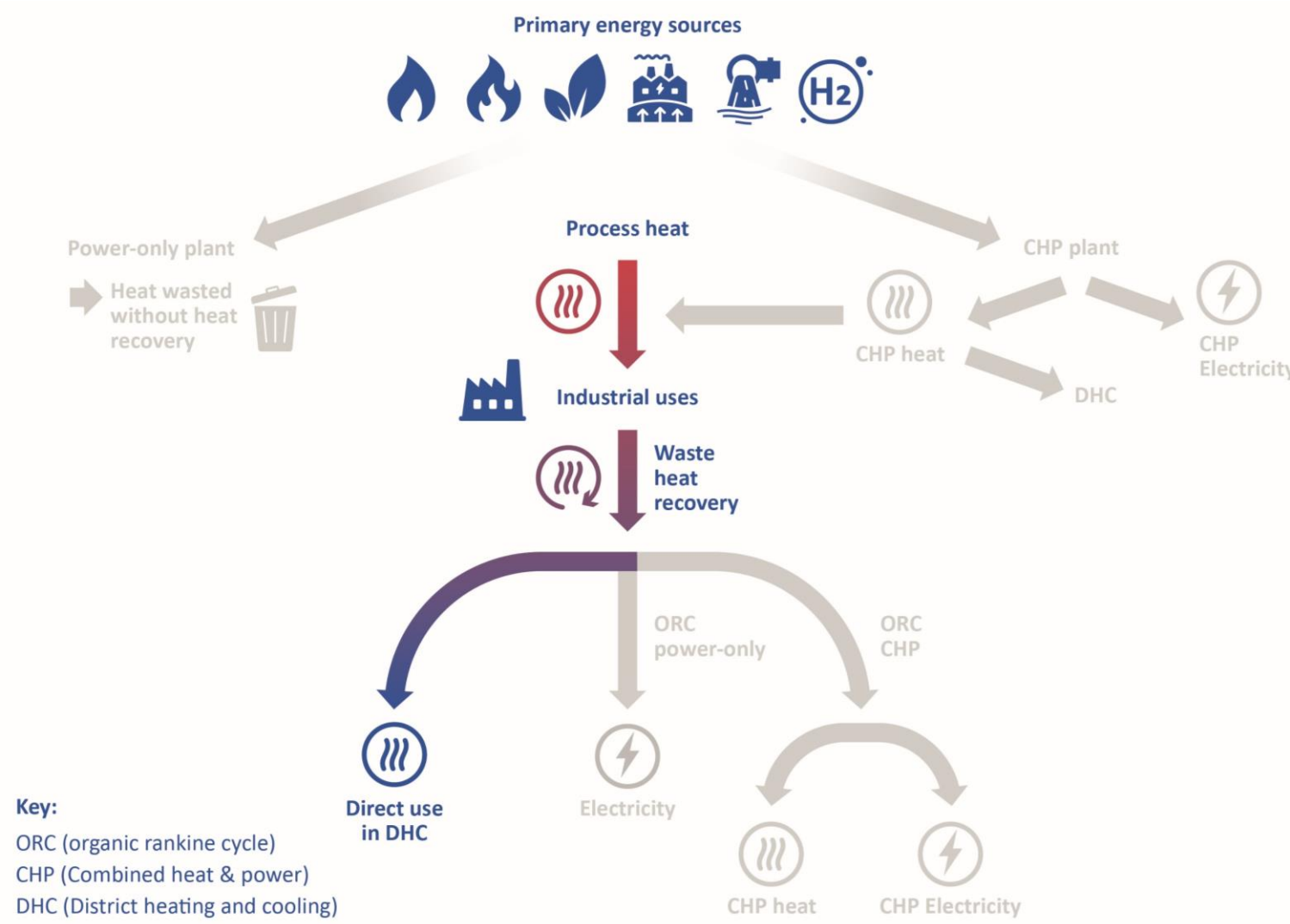


Key:
ORC (organic rankine cycle)
CHP (Combined heat & power)
DHC (District heating and cooling)

Waste heat in EU legislation



EU “WASTE HEAT” DEFINITION
unavoidable heat or cold generated as by-product in industrial or power generation installations, or in the tertiary sector, which would be dissipated unused in air or water without access to a district heating or cooling system, where a cogeneration process has been used or will be used or where cogeneration is not feasible. RED III, Article 2 (9)



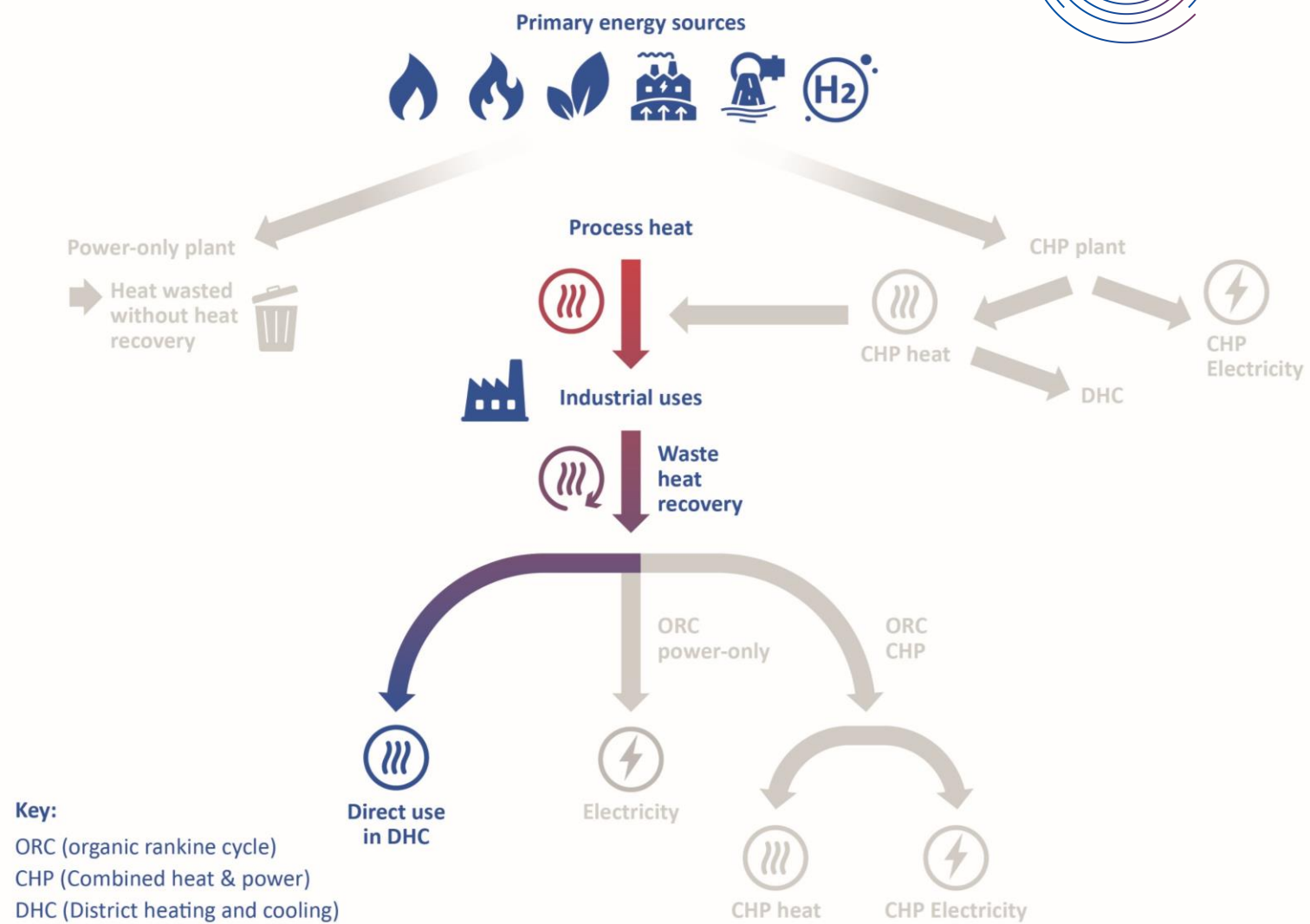
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RED III, Article 2 (9)



EU policy centers around the direct use of waste heat in DHC

Waste heat in EU legislation

Comprehensive definitions

- Harmonise waste heat definitions to capture all sources and uses of waste heat

>> *Energy Efficiency Directive, Renewable Energy Directive*

Promote and support

- Full range of waste heat applications

>> *Energy Efficiency Directive (EED), Renewable Energy Directive (RED), EU Taxonomy, Net-Zero Industry Act, State Aid*

Assess full potential

- As part of integrated energy systems' planning

>> *Heating & Cooling Assessments/Local Plans (EED), National Climate and Energy Plans (Energy Union & Climate Change Regulation), System Adequacy Assessments and Flexibility Assessments (Electricity Regulation/Electricity Market Design)*

Recognise all sources and applications

- Adopt policy measures giving visibility to the entire range of waste heat recovery solutions

>> *Energy Efficiency Directive, Renewable Energy Directive, EU Taxonomy, Net-Zero Industry Act*

Thank you for your attention!

Read the full paper →

Waste heat: Potentials, applications and recommendations for better policies



Energy supply, energy affordability and mitigating environmental impact are at the centre of EU policy, investments and increasingly consumer concerns. Despite efforts to prioritise energy efficiency, significant potential remains untapped when it comes to reducing energy waste across the entire energy value chain and making the best use out of the energy that we have available. Waste heat recovery and utilisation is a largely untapped energy efficiency resource, which presents important opportunities across many sectors and applications. To unlock this potential, policy must recognise its potential and promote all applications for waste heat recovery and utilisation for heat and/or power production, in both industry and district heating.

Most energy losses in energy conversion, industrial processes and energy consumption take the form of heat waste. There is a range of waste heat recovery methods and applications, depending on heat quality, proximity to a potential customer, specific customer needs, availability of the resource short, medium and long-term, as well as potential contractual constraints and requirements involved. Based on technical, commercial and local circumstances, waste heat may be used on-site or in district heating, in the form of heat and/or power.

Valorisation of waste heat and cascading its use can help decarbonise hard-to-abate industries and cities, thus delivering system integration locally and industrial symbiosis. Excess heat can become of the main sources for clean heat and power generation, thus playing a key role in the global decarbonisation path.

As demonstrated through EU-funded HEATLEAP project³, the benefits of waste heat recovery systems include:

- **Environmental benefits:** Waste heat recovery reduces greenhouse gases (GHG) and harmful emissions such as SO_x and NO_x. It will help stop global warming and improve air quality.
- **Socio-economic benefits:** Waste heat recovery helps boost European industry competitiveness and supports the decarbonisation of heat and power for local communities, SMEs and public authorities.
- **Energy security:** Waste heat recovery reduces the dependence on fossil fuels, providing a reliable source of heat and/or power for surrounding consumers
- **Reduction of energy cost:** Waste heat recovery secures a fixed price of energy for more than 20 years and the impact of energy cost increase is reduced.
- **Reduction of energy cost:** Waste heat recovery secures a fixed price of energy for more than 20 years and the impact of energy cost increase is reduced.
- **European benefits:** Waste heat recovery is a crucial solution for Europe to achieve its climate and energy goals.

Call to action: Given the scale of heat waste available across the EU, it is important that policy prioritises the avoidance of heat waste to start with and promotes the cost-effective recovery of waste heat across all relevant applications.