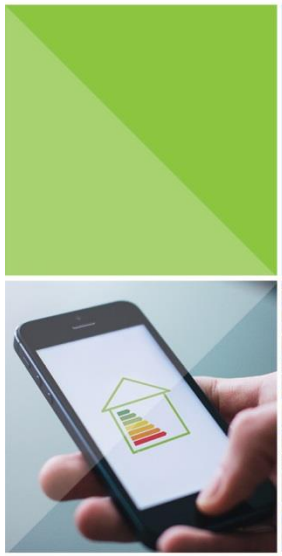





Session 7:
Waste heat in the context of REDII, EED and EPBD

Joint CAs, Barcelona, 31 January 2020

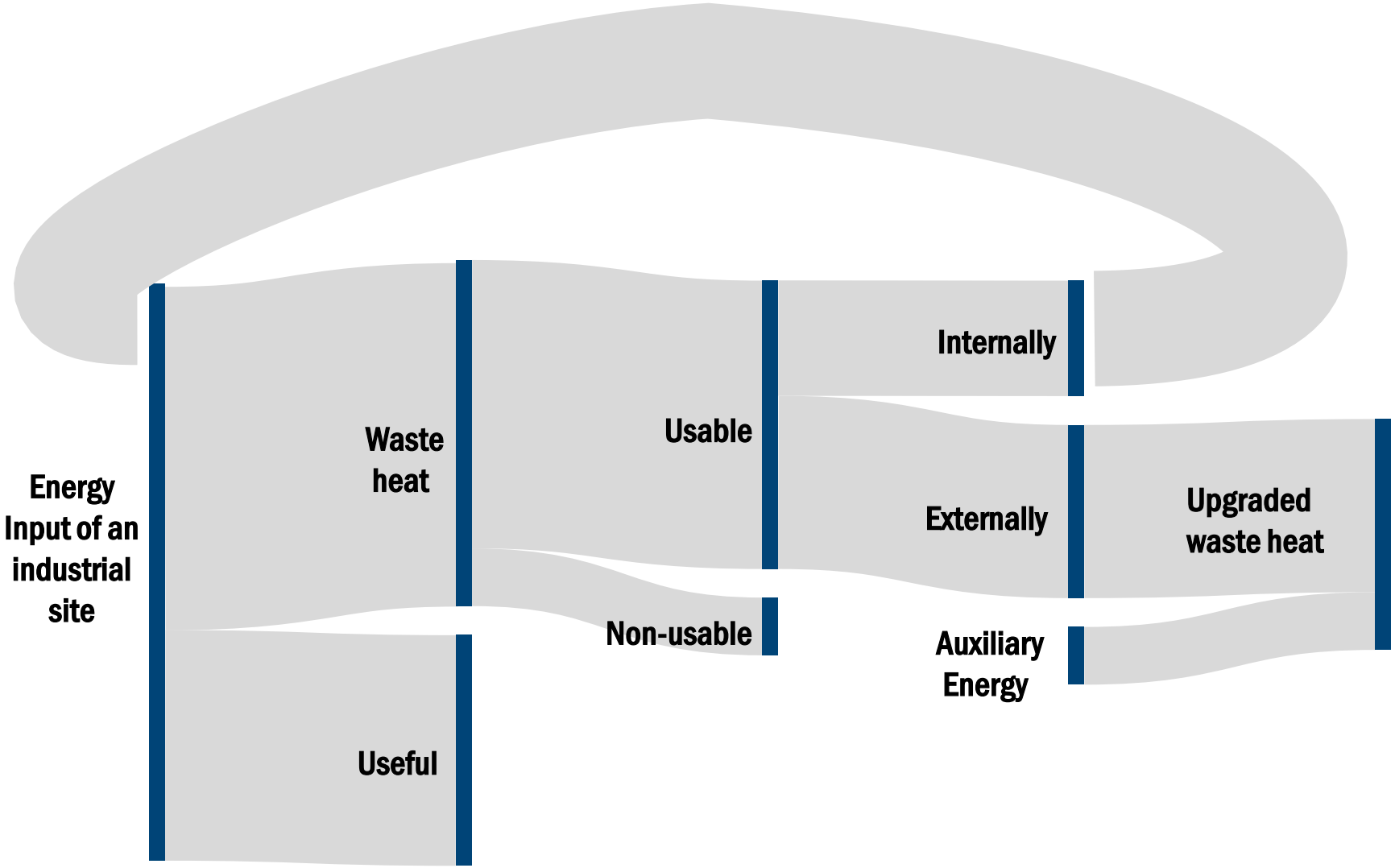
Definition of waste heat - RED II Art.2(9)

„Waste heat and cold means unavoidable heat or cold generated as a 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.”

Key elements of the definition

- **Unavoidable** – all other feasible energy efficiency options have been exhausted to reduce waste heat/cold, including cogeneration. The technical and economic feasibility to apply these energy efficiency options has to be analysed. Cost-benefit analysis for CHP feasibility for power, industrial and district heating installation > 20 MW is mandatory (EED Art.14)
- **By-product** – waste heat/cold has not been produced intentionally; it is not the goal of the energy producer
- Only recognised under RED II, if **utilised via a district heating/cooling systems**

Energy process lifecycle



Source: JRC

Common waste heat sources

Industrial waste heat:
- Anything that can be proven that could be not recovered 'reasonably'

Power generation
- Output of condenser or gas turbine

Sewage
- And other wastewater

Services:
- Active cooling/refrigeration systems (heat pumps)
- Passive cooling: Data centers, Power conversion
- Other combustion-related activities: e.g. crematories

Ambient heat released through other projects (DEBATABLE)
- Disused minewater, metro stations, etc.

Justification is needed (pinch)

Calculation is straight forward (internal heat recovery usually not applicable)

Source: JRC

Waste heat/cold under REDII

- Waste heat/cold **does not count as renewable** for the purposes of the EU RES target or national RES contributions
- It is **equivalent with RES** under *Art. 23 and Art.24* and can **count towards the HC target** up to 40% of the 1,3% point annual average increase and **to the DHC target** up to 100% of the 1% point annual average increase
- It **does not count as RES in the context of minimum RES levels in buildings** (Art. 15(4)), even if it can be delivered through DHC networks together with RES

Waste heat/cold under EED

- Waste heat/cold use is promoted through
  - **the comprehensive national Heating and Cooling Assessments - Art. 14(1)-(5)**
  - **the obligation to assess via CBA the CHP & waste heat recovery potential of power, industrial and DHC installations for the purposes of issuing an authorisation – Art. 14(5)-(7)**
- To promote efficient DHC, efficient individual HC and high-efficiency cogeneration
- Efficient DHC is defined as a DHC system using at least 50% RES, 50% waste heat, 75% cogenerated heat or a 50% of a combination of such energy and heat. – Art.2(41) of EED
- Waste heat/cold is not defined
- All kinds of waste heat use is encouraged, industrial, tertiary (e.g. ICT) and buildings, etc.

Link of EED and RED II on the comprehensive heating and cooling assessments

- Assessment is required every 5 years. 2nd round is due **by 31 Dec 2020** – Art. 14 (1)-(4) of EED
- 2nd round must **include assessment of RES and waste heat/cold potentials for heating/cooling** - Art.15(7) of REDII
- **Content and methodology is defined** in Annex VIII and IX, as amended by Commission Delegated Regulation (EU) 2019/826 of 4 March 2019 and explained in Commission Recommendation (C(2019) 6625 of 25 September *2019.*
- RED II uses the EED definition of EED for efficient district heating and cooling, high-efficiency cogeneration

Possible role of waste heat/cold under EPBD

- It can contribute to the Primary Energy Factor assigned to DHC for the purpose of calculating the energy performance of buildings expressed as primary energy use in kWh/m2/year, as well as to additional numeric indicators, such non-RES PEF, RES-PEF and GHG indicator of kgCO2eq/m2/year.
- It can contribute to NZEB definition if a MS chooses so.

On-going studies on waste heat/cold

Accounting & Reporting of waste heat/cold for the purposes of:

- *Identifying waste heat/cold sources*
- *Clarifying definition and boundaries, including with ambient energy*
- *REDII HC and DHC targets*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THANK YOU!