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80 MILLIONEN GEMEINSAM FÜR ENERGIEWECHSEL

Effective support framework for waste heat utilisation

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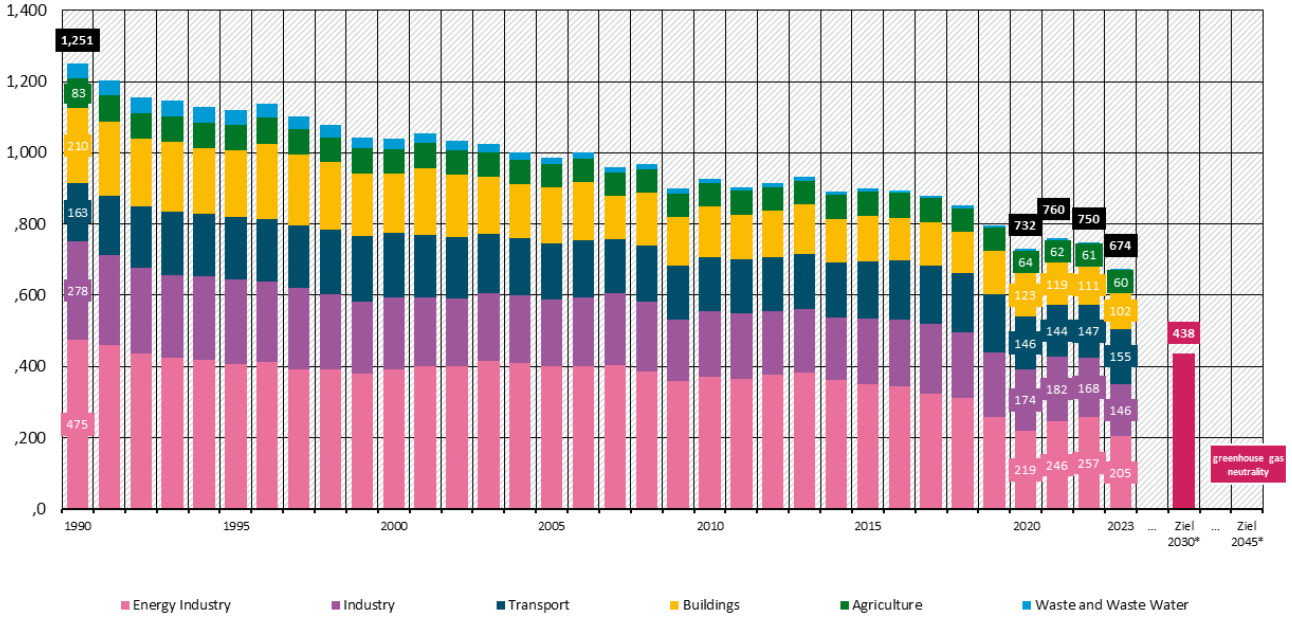
CA EED: WG 6.3, Berlin, 27.03.2025

Emissions of GHGs by Sector

- **Industrial sector** causes around 24 percent of all GHG emissions in Germany
- **Climate Protection Act sets sector target.**
- FEC only fell by around 2 percent between 2008 and 2019. **It must fall by 20 to 25 percent by 2030.**



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Industrial Waste Utilization: Important decarbonization option

1. Regulatory law I: Heat planning act (WPG)

2. Regulatory law II: Energy efficiency act (EnEfG)

3. Deep-dive: Waste heat platform

4. Flagship projects funded by the Federal funding for energy and resource efficiency (EEW) and the Federal funding for district heating networks (BEW)

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Regulatory law I:
Heat Planning Act (WPG)

Heat Planning Act

The Heat Planning Act organizes the local heat transition and creates security for planning

- Based on experiences of federal states
- Deadlines: mid-2026 (>100.000 Ew.), mid-2028 (<100.000 Ew.)
- Heat planning is initiated and approved by resolution of the body responsible under state law and the heat plan is then published on the internet

Heat planning process according to WPG

Analysis of current status

Basis:. Existing data from state authoritoes, district chimney sweeps, etc.

Potential Analysis

Useable renewable energy and waste heat in the planning area

Target scenario

Definition of decentralized heating, district heating, H2-grids and test areas

Action Plan

Roadmap for achieving heat planning goals

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Regulatory law II:
Energy Efficiency Act (EnEfG)

Energy Efficiency Act

- Binding targets for both primary and final energy reduction in alignment with the EED.
- First legal framework to improve energy efficiency in Germany across sectors, in force since November 2023.
- In parallel, it will implement important requirements from the EED.
- From 2024 until end of 2030: 45 TWh reduction (in FE) per year on the federal level; in each state 3 TWh per year (from 2026-2030)

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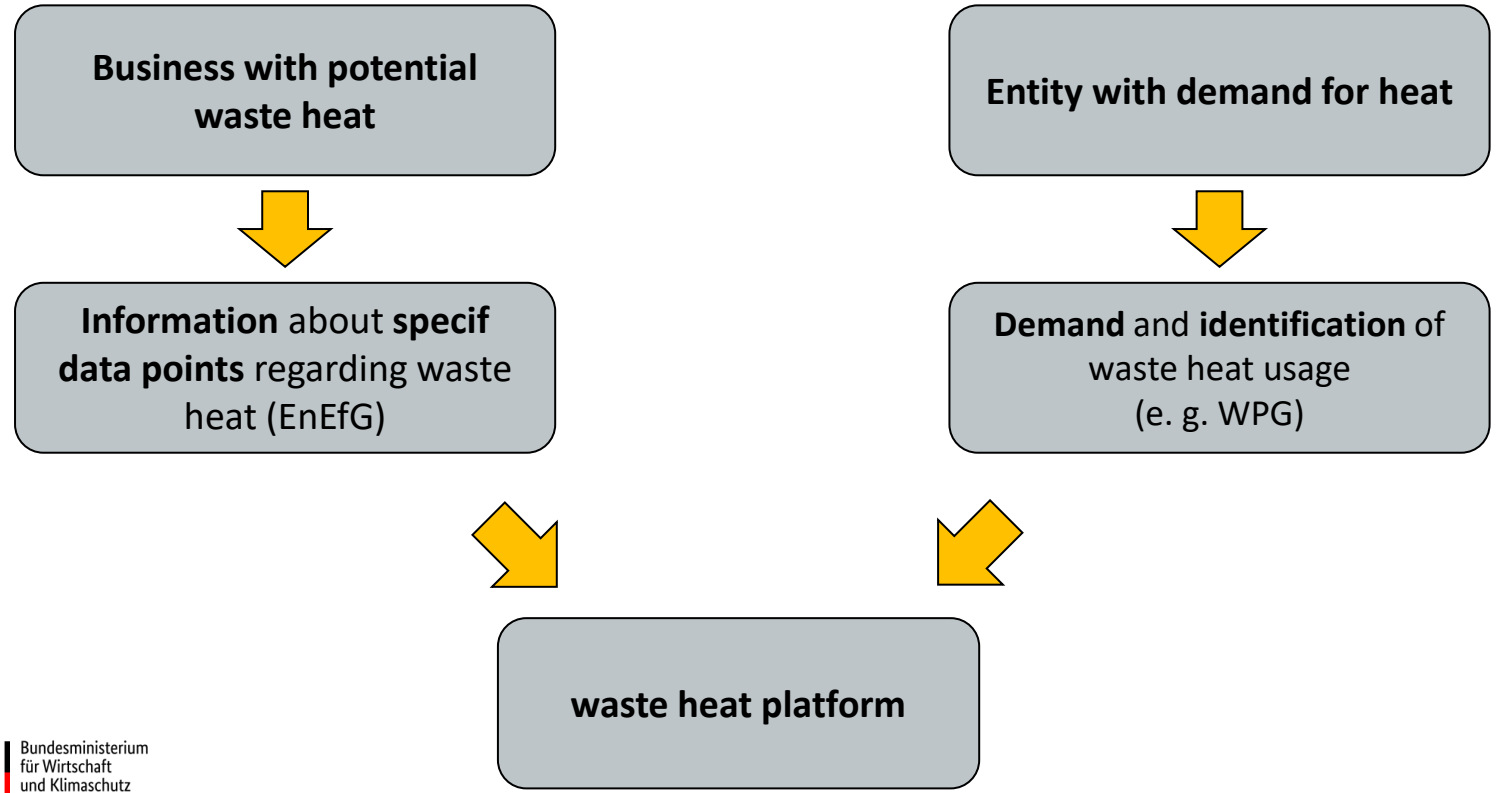
Deep-dive:
Waste Heat Platform

Prevention and use of waste heat; Waste heat plattform

Businesses with an energy consumption > 2.5 GWh/a

- Obligation for companies to **avoid waste heat** from production processes
- If avoidance is not possible, then **obligation to use waste heat** (waste heat utilization)
- Companies that emit waste heat are obliged to provide information to operators of district heating networks via **public platform for waste heat**
- The aim is to bring market participants together, in particular to drive forward the necessary decarbonization of heating networks and remove obstacles caused by information deficits

„Matchmaking“ via waste heat platform



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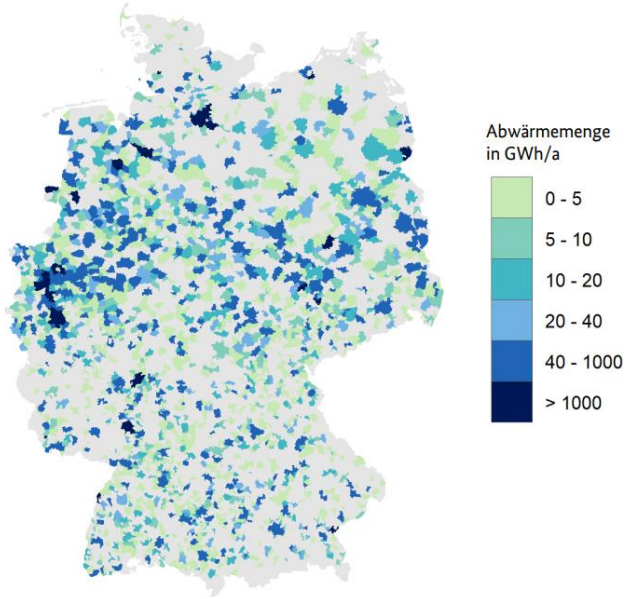
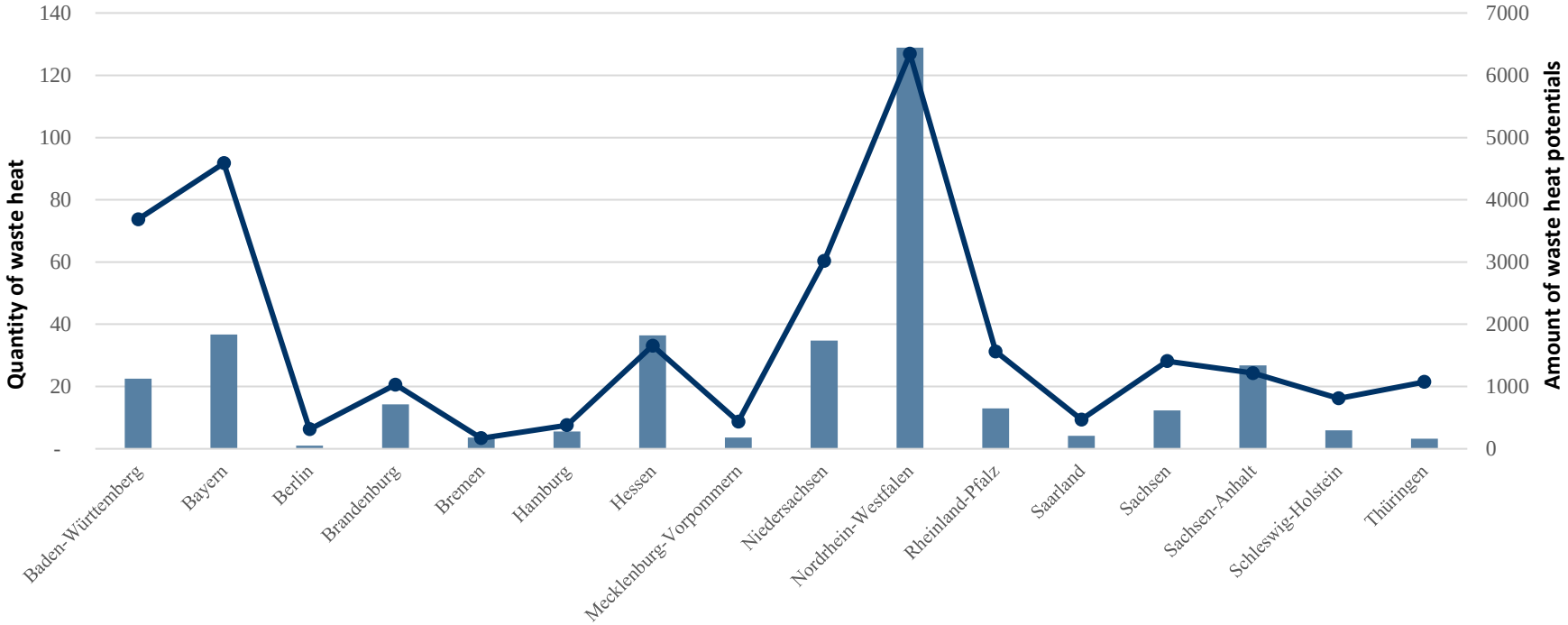
Waste Heat Platform – reported data

- 3,751 companies have reported approx. 28,100 waste heat potentials.
- These 28,100 waste heat potentials provide a total waste heat quantity of over 352 TWh per year.
- Wide spread of waste heat potentials per location. Some very large waste heat potentials but also many small ones.
- Regional clusters in heavy and chemical industry and energy production: Bremen, Duisburg/ Krefeld, Frankfurt am Main, Halle/ Leuna, Ludwighafen



Data source: BfEE, Platform for Waste Heat, as of 15 January 2025; own preparation of the data.Own presentation using the data set for Germany: Postcodes, available online via govdata.de)

Waste heat potential by federal state



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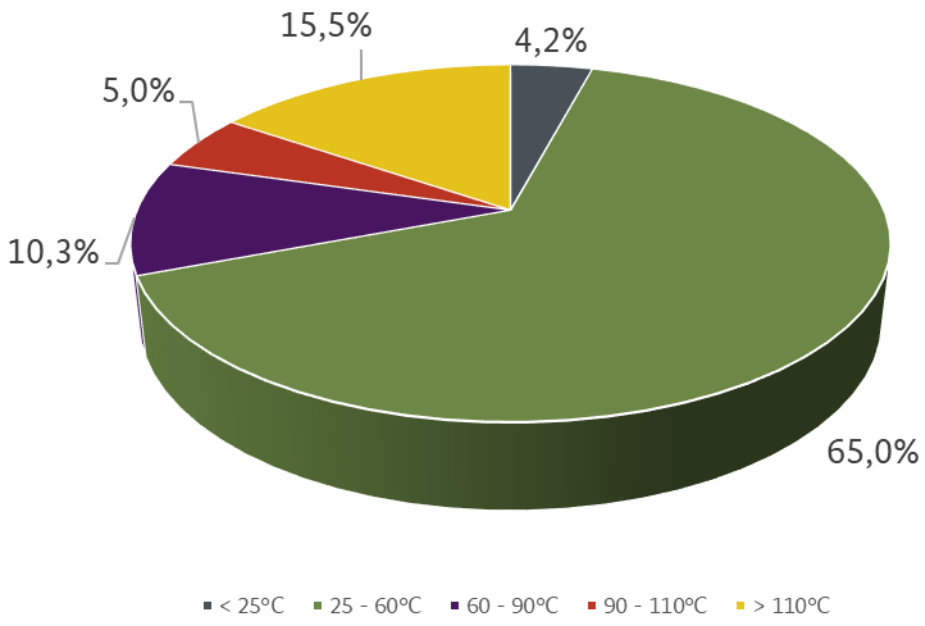
Waste heat potential by temperature levels



Source: BfEE

Average temperature level	Waste heat quantity in GWh/a	Share in %
< 25 ° C	14.672	4,2 %
25 - 60 ° C	229.414	65,0 %
60 - 90 ° C	36.334	10,3 %
90 - 110 ° C	17.700	5,0 %
> 110 ° C	54.592	15,5 %
In total	352.714	100 %

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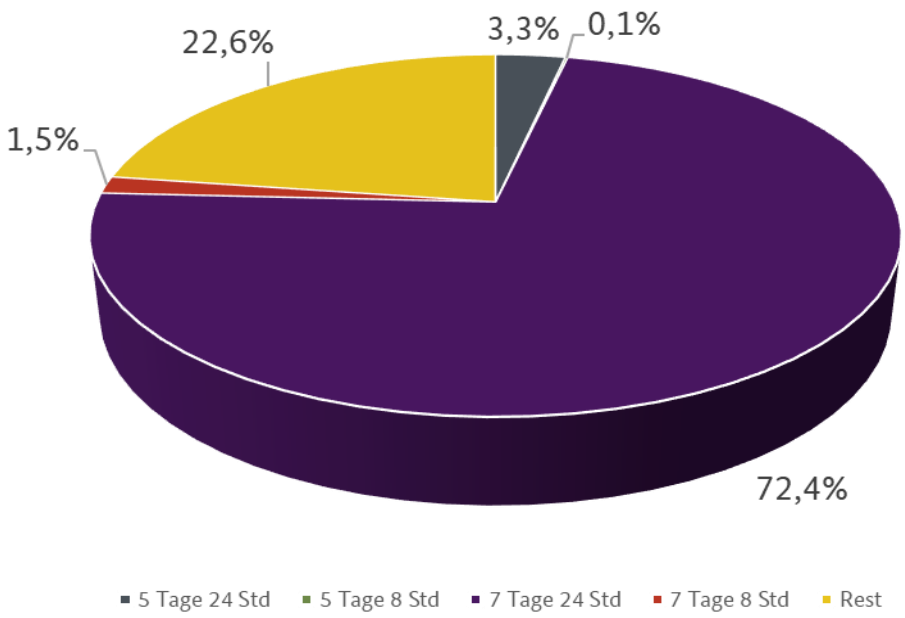
Waste heat potential by availability



Source: BfEE

Availabilty	Waste heat quantity in GWh/a	Anteil in %
5 d 24 h	11.684	3,3 %
5 d 8 h	430	0,1 %
7 d 24 h	255.303	72,4 %
7 d 8 h	5.433	1,6 %
Rest	79.862	22,6 %
In total	352.714	100 %

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Flagship projects funded by the (1) Federal funding for energy and resource efficiency (EEW) and the (2)Federal funding for district heating networks (BEW)

Aurubis in Hamburg

Waste heat project by Hamburger Energiewerke & Aurubis AG

- carbon-neutral heat for up to 20,000 households
- up to 100,000 t of CO2 emissions avoided
- heat is released when needed in 860-kilometer-long city network
- total investment of more than EUR 100 million
- Aurubis was supported by federal funding for energy and resource efficiency in the economy (EEW)
- Hamburger Energiewerke received a funding commitment from Heating Grids 4.0, Module 2, the predecessor Federal funding for district heating networks (BEW)

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Waste Heat from Leuna to Leipzig

EEW-Funding in Leuna

1) Extraction of waste heat from oil refinery
2) Extraction of waste heat from POX methanol plant

Includes heat exchangers and pipes on site

Flagship project for waste heat utilization, as aimed in Energy Efficiency Act

BEW-Funding in Leipzig

Waste heat will cover up nearly 40 % of heat demand in Leipzig‘s district heating network

Includes 19 km transition pipes from Leuna to Leipzig

Important role in Leipzig heat planning activities

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Thank you

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Funding I:
Federal Funding for Energy and Resource Efficiency (EEW)

Federal Funding for Energy and Resource Efficiency (EEW):

- → EEW is **broad-based support programme** for the decarbonisation of industry.
- → In 2023, around **14,000 applications** with a funding volume of **1.2 billion euros** were approved. Almost half of the funding went to SMEs.
- → In addition to investments in energy and resource efficiency, projects for electrification and the production and use of hydrogen are also funded.

Promotion of industrial waste heat projects in the EEW:

- Waste heat measures are often funded under the EEW programme.
- Measures **on the premises of the company** extracting waste heat and the necessary connection lines outside the premises are eligible for funding.
- Funding amount **max. 20 million euros** per project
- Funding in module 4 or funding competition possible

  → **Module 4**: energy-related optimization of plants and processes, 10-15% funding of eligible costs, max. 20 million euros per project.

  → **Funding competition:** Applicants can choose a funding rate of up to 60% of the eligible investment costs. Only applications with the best funding efficiency (funding amount/CO2 savings) in the respective competition round (which takes place every two months). Waste heat projects are often successful in the competition.

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Funding II
Federal Funding for District Heating Networks (BEW)

Modular Structure of the DH Funding Scheme „BEW“

- **Module 1**: support for feasibility studies and transformation plans for district-heating networks
- **Module 2**: Systemic support for investment in the construction of new DH networks, expansion and decarbonisation in existing networks
- **Module 3**: Additional funding for single measures
- Operating cost support is granted for solar thermal installations and heat pumps.

All modules are relevant for connecting surplus heat sources to district heating systems

Investment aid can be granted for heat generation (e.g. heat pumps, geothermal), integration of waste heat, heat storages, pipelines and other district-heating infrastructure.