

Heat grids in the context of the heat transition: Current perspectives and funding mechanisms

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Nina Lepsius, division IIA2 – Heat grids, heat planning,
municipal heat transition

Heat transition in the focus of energy policy

- Around half of final energy consumption in Germany is accounted for by heat - energy transition will only succeed with successful transformation of the heat supply system
- Massive progress needed to achieve climate and energy policy goals:
- Meet 1.5 degree target, greenhouse gas neutrality by 2045, 50 % renewable heat by 2030 (Coalition Agreement)
- Priority solutions in the heating sector:
 1. (green) district heating
 2. for decentralised heat supply: Heat pumps where possible

Heat grids in the context of the heat transition: Central infrastructure

- Heat grids play a **strategic role** in the heat transition :
 - Enable the integration of various renewable heat sources including deep geothermal energy and unavoidable waste heat
 - Compared to decentralised supply: smaller area and immission restrictions in urban areas
 - Economies of scale can be exploited
 - Creation of sector coupling options
- In general: efficient decarbonisation option

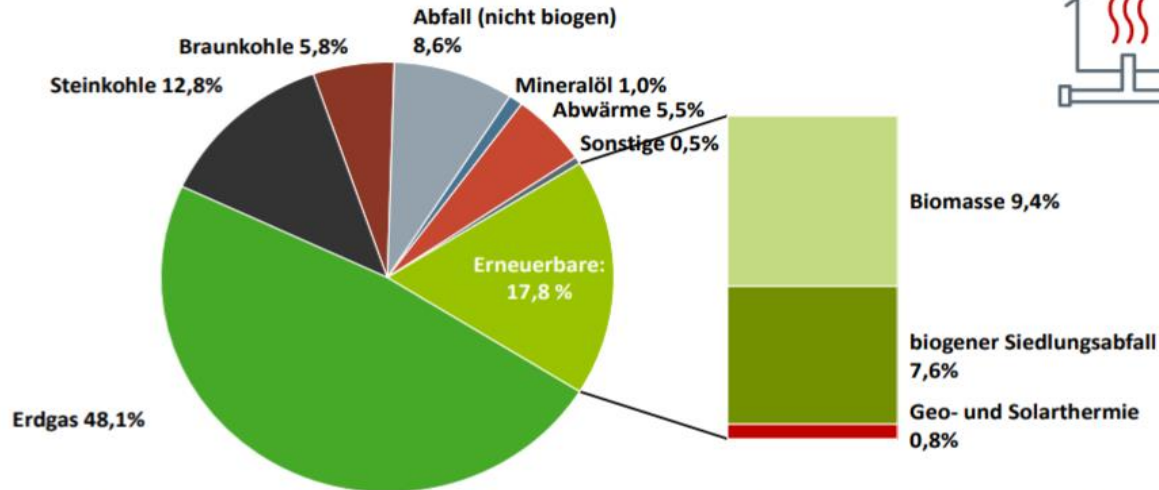
Current situation and need for action

- District and local heating currently (2018) contributes 8 % to the heat supply, predominantly fossil-fueled.
- **Coal phase-out creates need for action** (ideally by 2030) - and at the same time a window of opportunity for early switch to renewable energies (without fossil gas as a bridge)
- Current focus: rapid expansion of renewable energies **reduces dependence on coal and gas imports**
- KSP 2030: Expansion and conversion of heat grids (conversion to renewable energies and unavoidable waste heat), NECP: RE share in heat grids of 25% by 2025, 30% by 2030
- RED II: Increase of the RE share in district heating and cooling grids by +1 % p.a.

Heat mix in heat grids 2020 by energy source

Nettowärmeerzeugung* nach Energieträgern in Deutschland

zur leitungsgebundenen Wärmeversorgung 2020: 126 Mrd. kWh**



Quellen: Destatis, BDEW; Stand 12/2020

* der Wärmeversorger sowie Einspeisungen von Industrie und Sonstigen; ** vorläufig, teilweise geschätzt

Heat grids in the context of the heat transition II:

The challenge of transformation

- Major challenge: 38 large grids in urban areas, decarbonisation cost estimate approx. 500 million euros per grid.
- **Complex transformation processes:** Interdependence of generation, pipeline infrastructure and heat offtake (state of renovation).
- Economic operation of heat grids with reduced heat demand requires expansion and densification is necessary:
 - **Consistent legal framework** for climate-friendly expansion and conversion of heating networks
 - **Transparent guidelines** for the heat transition
 - **Support** to stimulate the transformation and compensate for cost disadvantages for investments in renewable energies

Heat grids in the context of the heat transition III: Perspective of municipal heat planning

- **Municipal heat planning (KWP)** could provide a long-term orientation framework - also for the expansion and conversion of heat grids
- Process to plan and implement the heat transition on the local level with the involvement of **local stakeholders**
- **Orientation in view of long investment cycles** for infrastructure, buildings and heat generation
- KWP not yet widespread (Baden-Württemberg, now also Schleswig-Holstein) → Development of standards and provision of advisory services by the federal government

Funding landscape and further funding needs

- Up to now, no funding programme for the comprehensive climate-neutral conversion of heating grids
- Cost disadvantage due to investment in renewable energies and waste heat must be compensated in order to stimulate rapid conversion
- Long-term programme required: decarbonisation is only possible gradually, long investment cycles, planning security is crucial
- Existing funding programme *Model Projects Heat Grid Systems 4.0* (WNS 4.0) for the creation of efficient heat grids with a high share of RE through new construction and conversion is to be merged into BEW, remains in force until BEW is launched

Objectives and key points of the BEW

Funding objective: Climate-neutral heating networks by 2045 by increasing the share of renewable energies and unavoidable waste heat in heating and cooling networks.

Funding for:

- New construction of heating grids with min. 75% RE heat/waste heat (= max. 25% fossil heat – no coal! – target: GHG neutrality by 2045).
- Transformation of heating grids towards a CO₂-neutral heat supply, expansion
- Additionally: Individual measures

Investment cost subsidy with subsidy rate of 40 %

Operating cost subsidy ≤ 10 years for solar thermal energy and heat pumps

Eligibility criteria

Module 1: Feasibility studies and transformation plans

- Funding of feasibility studies for the construction of heating grids with at least 75 % heat feed-in from RE and unavoidable waste heat
- Funding of transformation plans with the aim of converting existing heating networks to full supply from eligible renewable heat sources by 2045

Funding rate Module 1: 50 %, max. 600,000 euros

Feasibility studies examine the feasibility and economic efficiency of the concept of a heating network with predominantly renewable heat generation.

Transformation plans represent the temporal, technical and economic conversion of existing heat grids over a longer period of time with the aim of fully supplying the grids with eligible renewable heat sources by 2045.

Eligibility criteria

Module 2: Systemic investment funding

Investment cost subsidy (40 %) for

- The implementation of new heating networks on the basis of a feasibility study (funding requirement)
- Packages of measures for the implementation of a transformation plan for existing networks (funding requirement)

Subsidised heat sources:

Solar thermal energy and PVT/hybrid systems*

(Large-scale) heat pumps*

Deep geothermal energy

Biomass plants

Integration of unavoidable waste heat

*with operating cost subsidies

Infrastructure:

Heat distribution (e.g. pipelines, transfer stations, leakage monitoring)

Optimisation measures (e.g. control technology, digitalisation, storage)

Environmental measures

Planning services

Eligibility criteria

Module 3: Individual measures in heating grids

- Solar thermal systems
 - Heat pumps
 - Biomass boilers
 - Heat storage
 - Pipelines for the connection of RE generators and the integration of waste heat as well as for the expansion of heating grids
 - Heat transfer stations
- *to make the implementation of a transformation plan more flexible – investment cost subsidy 40 %, with operating cost subsidy*
- *without transformation plan – investment cost subsidy 40 %, without operating cost subsidy*

Differentiation and complementarity with other programmes

- Federal Funding for Efficient Buildings (BEG): Funding for building networks (up to 16 buildings/100 residential units) in BEG, for heating networks in BEW.
- KWKG: Instead of individual components, BEW focuses on the funding of complete systems. Differentiation also from innovative combined heat and power systems in the KWKG, which regularly represent only a part of a heating network system. BEW does not promote fossil heat feed-in. Combination of KWKG and BEW possible, no cumulation of subsidies for the same investment.
- Federal Funding for Energy Efficiency in the Economy (EEW): BEW promotes the integration of waste heat from industrial plants incl. installations owned by the heat network operator on the company premises, individual measure, EEW promotes investments of the decoupling company (synergy effects).



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Thank you for your interest.