Doubling DHC in Germany

How do we get there and what are the requirements for the EU?

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Overview

- German heat market and regulatory framework
- Influence of the Emission trading system on DHC
- Primary energy efficiency within the framework of the European building directive
- Summary

German heat market

The heat sector in Germany will have undergone **major structural change** by 2050:

- Demand for heat will have dropped by 50%
- 2/3 can be met by renewable sources
- Due to retrofitting and newly constructed buildings the average heat requirement will drop to 73 kWh/m²a, which is 40% of the current average level.

CHP penetration and renewables expansion require a considerable conversion of individual on-site heating systems to **grid-connected heat supply systems**.

Source: Lead study 2008, Federal Ministry of Environment

Regulatory framework in Germany

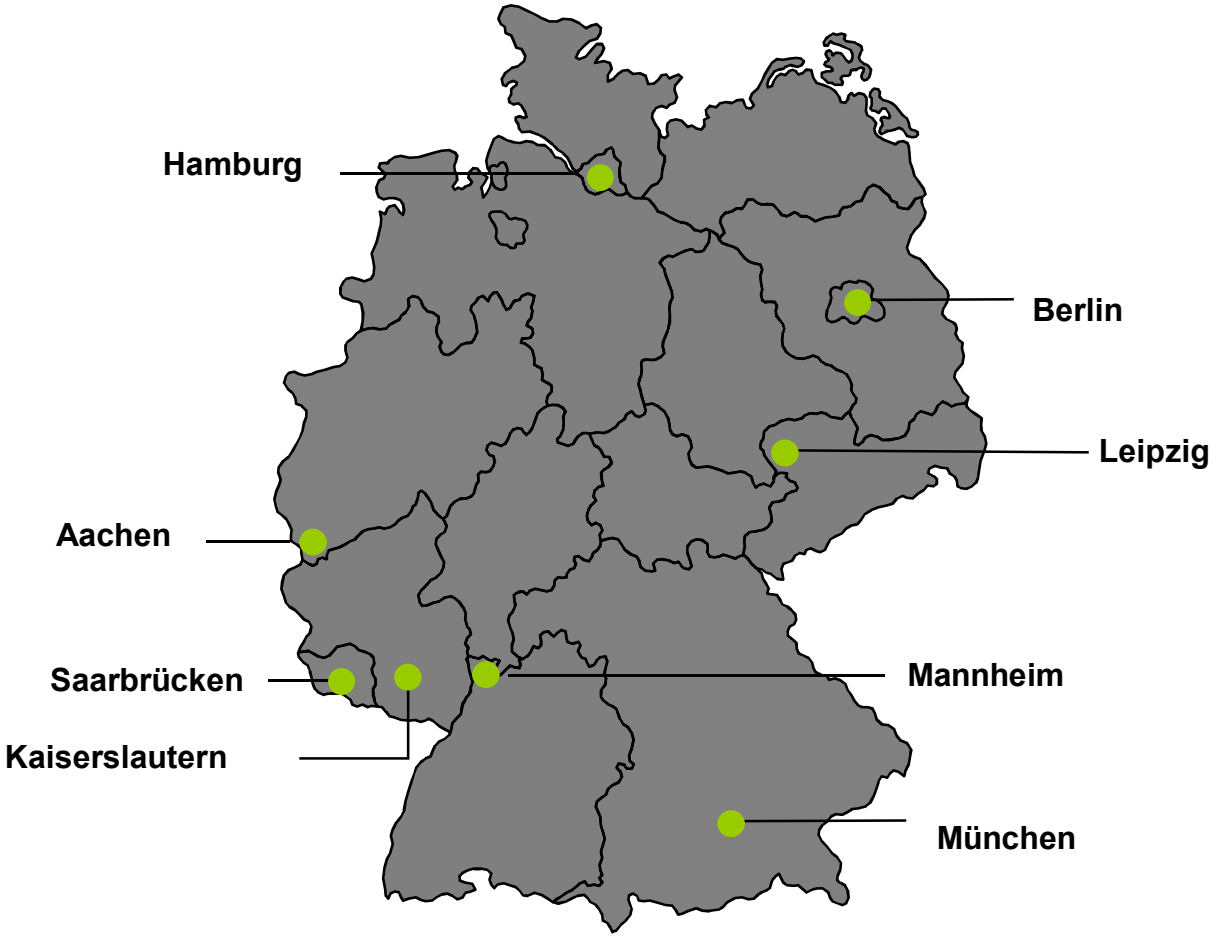
Federal Government Targets 2020:

- Renewable power: doubled to >30%
- Renewable heat: doubled to 14%
- Power from CHP: doubled to 25%

- **German CHP-Act**
  - consideration of heat grids, CHP-plants regardless of capacity limits, plants starting operation between 2007 and 2016, building refurbishment
- Adoption of the German **Renewable Energies Heat Act** (EEWärmeG)
- Amendment of the **Building Energy Conservation Ordinance** (EnEV)

Honouring the efficiency and technical soundness of CHP and district heating, German Government **supports investments**.

Expansion of district heating in Germany



- Besides a lot of investments in existing heating networks, utilities in Germany plan to invest in expanding district heating networks.
- Few district heating areas have a connection density of 50%

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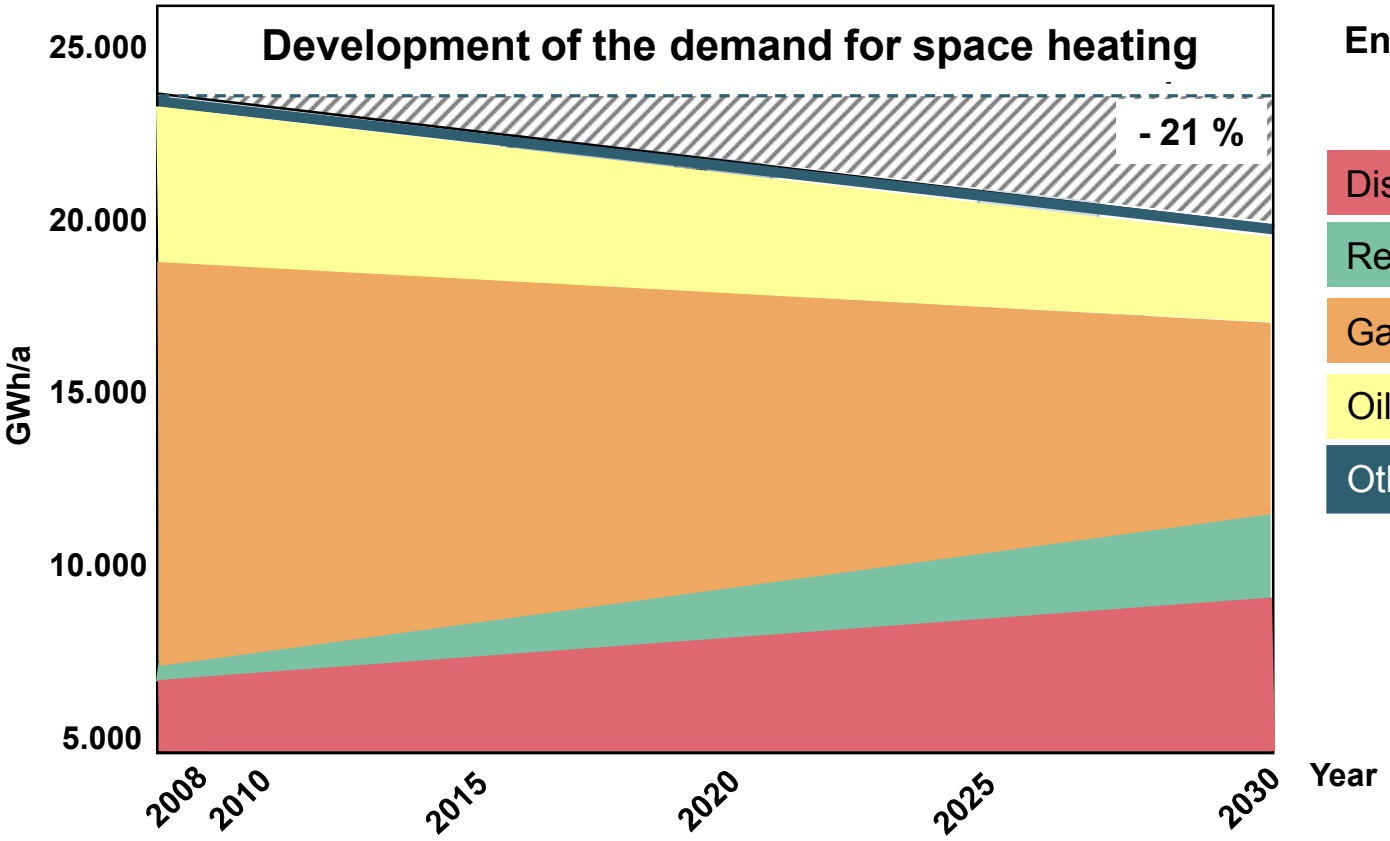
Expansion strategy for district heating in the Rhine-Neckar Metropolitan Region



Energy sources in %

	2008	2030
District heating	13,0	28,9
Renewables	0,6	14,4
Gas	63,4	46,2
Oil	22,0	10,0
Others	1,0	0,4

Even in urban areas with already high market share of district heating, further potential is given.

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The European regulatory framework is putting the German DHC expansion at risk

DHC and CHP contribute to reach the energy policy targets. These technologies should therefore benefit from the European regulatory framework.

Unfortunately current legislation on European level do not give the right incentives for an investment in DHC and CHP.

Climate change package

- EU ETS Directive
- RES Directive
- CCS Directive

Other regulation

- Buildings Directive
- Consumers Directive

Negative incentives for DHC and CHP in the EU ETS

European Emission Trading Scheme for the 3rd Trading Period:

- **Auctioning of allowances** by Member States
- **No** free allocation for **electricity** from cogeneration
- **Partially** free allocation for **heat** from DH and CHP, starting with 80 % in 2013, linear reduction to 30 % in 2020, with a tendency towards **compulsory auctioning in 2027**

Consequences for CHP/ DH:

- Heat generated from CHP is facing strong competition both from individual boilers and the separate generation of heat and power.
- Individual boilers below 20 MW are not subject to any CO_2 constraints and not affected by the ETS.
- Costs for the generation of heat from CHP rise compared to other heating systems.

The EU ETS does **not** lead to **a level playing field** for DHC and other heating systems.

What do we need to achieve in the EU ETS?

- Disadvantages for CHP and district heating should be kept as low as possible.

- Allocation of emission certificates for DH and CHP should have been based on **alternative methods like Grandfathering**.
- A uniform benchmark for DHC and CHP would not reflect their efficiency benefits and would result in a shortage in allocated certificates for most installations.
- **If benchmarks** are used, they should be **fuel based**.

To avoid an unequal treatment of heating systems, the allocation method **should reflect the efficiency benefits** of district heating and CHP.

Current Buildings-Directive proposal

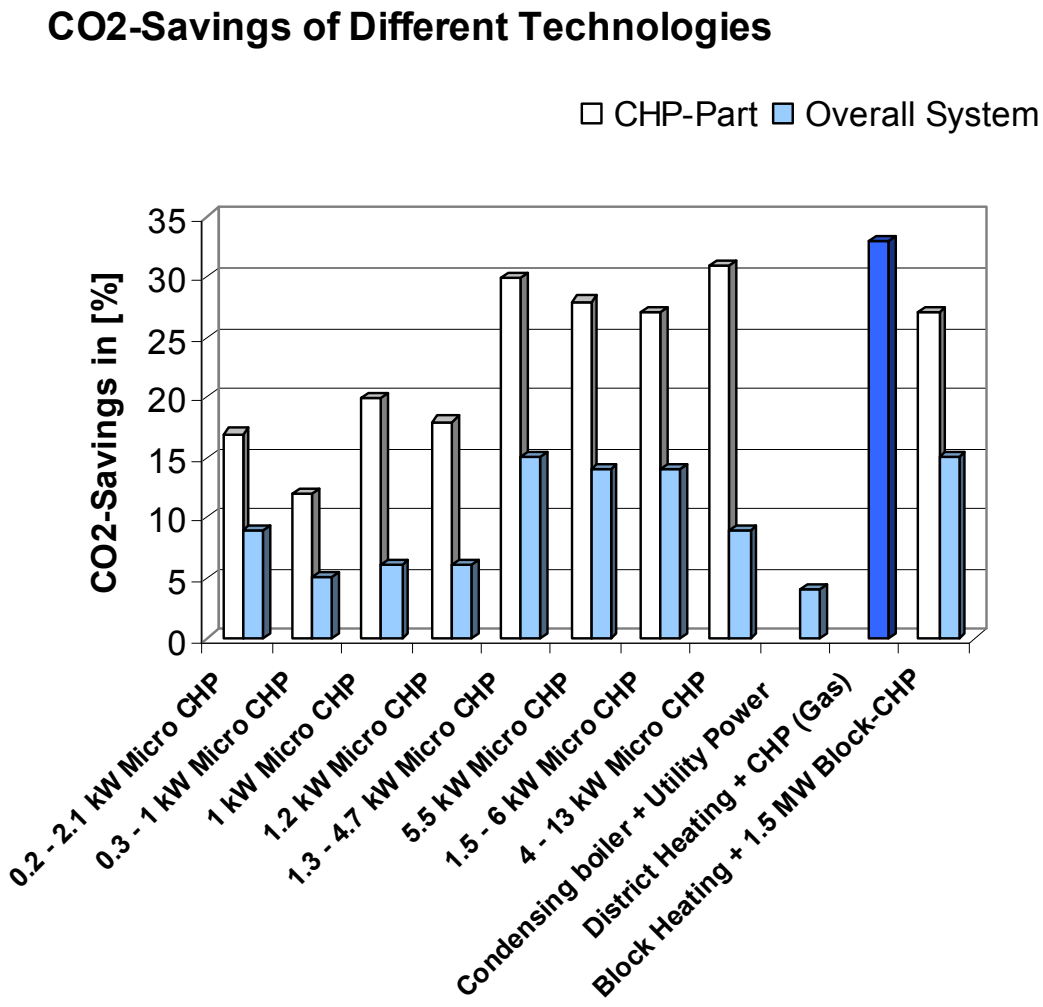
- Objective of the buildings directive: Reduction of the energy consumption of buildings
- In November 2008 the European Commission presented a proposal for an amendment of the buildings directive.
- The directive could be adopted until the end of 2009.

- Resolution by the European Parliament comprises:
  - Focus on individual on-site installations instead of DHC, CHP and heat networks.
  - New buildings to be net-zero-energy buildings
  - Net-zero-energy buildings have to produce energy from RES on-site

The draft does not reflect the primary energy efficiency to the necessary extent.

Efficiency benefits of DHC and CHP compared to on site Micro-CHP

- The cogeneration of heat and power saves primary energy and CO_2 compared to a separate generation.
- Comparing the overall system and not just the CHP part, DHC and CHP save more primary energy and CO_2 than on-site Micro-CHP systems.
- Focus of the Buildings Directive should therefore be on DHC, CHP and heat networks
- CHP in combination with DHC is the most efficient way to use renewables.



Source: Sandner/ Rhein, TU Dresden, 2009

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What are our demands for the Buildings Directive?

- A cost-efficient implementation of energy savings requires a focus on the primary energy efficiency.
- DHC and CHP provide a successful and inexpensive way to increase the energy efficiency of buildings and incorporate more renewables in the heating market and building sector.
- The building sector and CHP/ DHC are closely linked.

The regulatory framework for the building sector has to be appropriate for DHC and CHP in order to reach energy policy targets in an efficient way.

Summary

- **The restructuring of the energy sector** challenges utility companies and provides chances: expansion/ integration of renewables, expansion of combined heat and power and heat networks, reduction of CO_2.
- DHC is an efficient technology that **minimizes the consumption of primary energy,** no matter what fuel is used and which type of cogeneration takes place.
- Germany has created a **favourable regulatory framework** for the expansion of DHC and CHP.
- The **EU needs to follow this example** in order not to put national expansion plans at risk.
- A **coherent European approach** favouring energy efficient technologies like DHC and CHP is needed to meet the environmental and efficiency targets set by politics and society.

Thank you
for your attention!

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