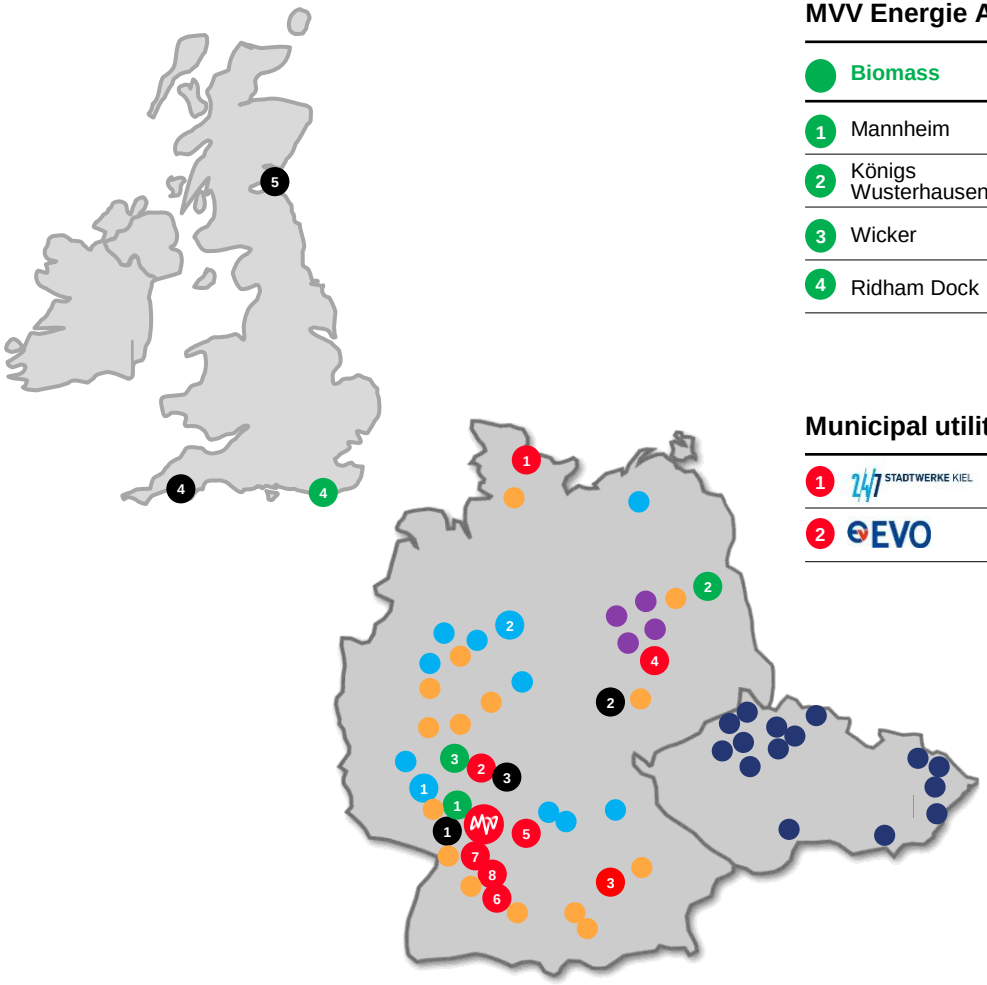
Impulses for a new heat market design

MVV Energie
Dr. Florian Weiser
12th of April 2019

We inspire
with energy.

MVV
Location map



MVV Energie AG

Biomass	Waste to energy	Wind farms	Services
1 Mannheim	1 Mannheim	Biomethane	
2 Königs Wusterhausen	2 TREA Leuna		
3 Wicker	3 Offenbach		
4 Ridham Dock	4 Plymouth		
	5 Dundee (planned)		

Municipal utility companies

1 24/7 Stadtwerke Kiel
2 EVO
3 Stadtwerke Ingolstadt
4 Köthen Energie
5 Stadtwerke Buchen
6 Stadtwerke Sinsheim
7 Stadtwerke Schwetzingen
8 Stadtwerke Walldorf GmbH

Renewable energies project development

1 juwi – Die Energie ist da
2 WINDWÄRTS

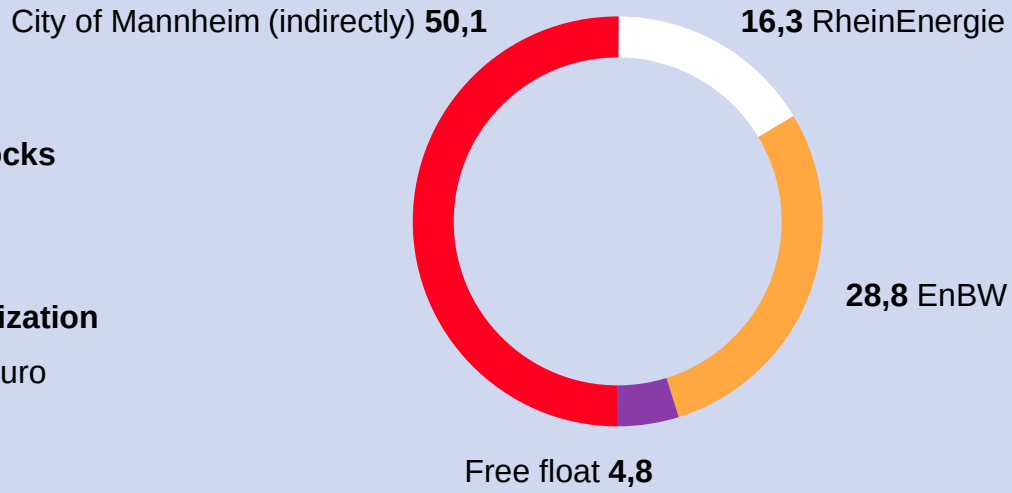
Czech Republic

District heating supply locations

MVV Energie AG
Shareholder structure and key figures

Shareholder structure

In percent



Number of stocks

65,907 million

Market capitalization

ca. 1,7 billion Euro

MVV at a glance
2018 Financial year

Sales

3.9 billion Euro

Adjusted EBIT

228 million Euro

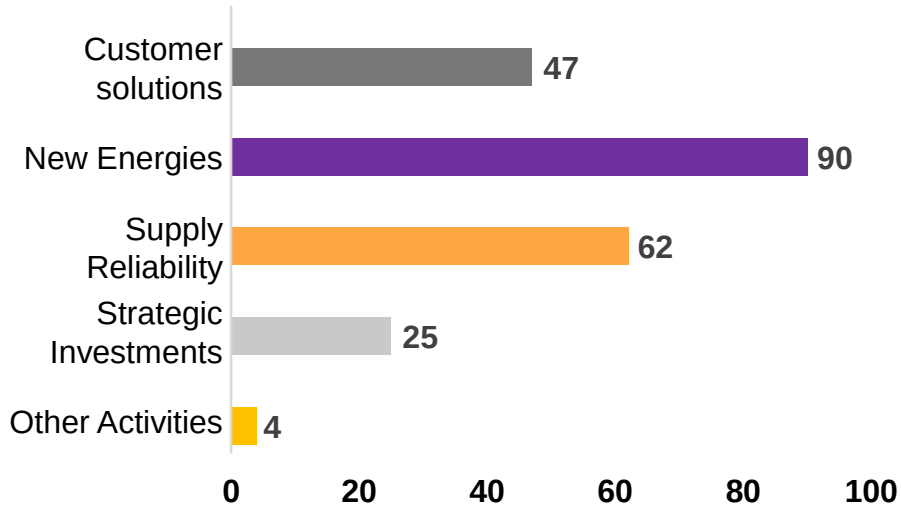
Investments

290 million Euro

About 6,000 employees

Adjusted EBIT by reporting segment

Euro million



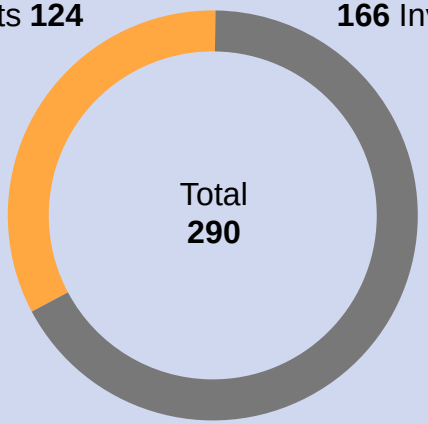
Investments
2018 Financial year

Investments

Euro million

Growth investments **124**

166 Investments in existing business



Growth investments

- Construction of the waste-fired CHP plant in Dundee
- Connection of the waste-fired Mannheim CHP plant to district heating grid
- Takeover of organic waste fermentation plant in Dresden
- Measures to expand and increase the density of our district heating grids

Investments in existing business

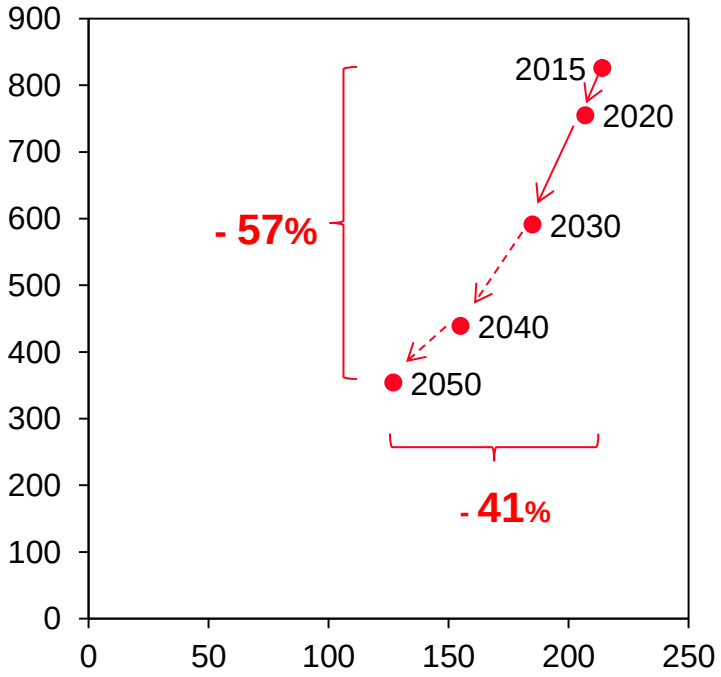
- Construction of the gas-powered CHP plant in Kiel
- Maintenance and renewal of our distribution grids

MVV study from December 2018

What are implications of the climate targets (-80% less CO_2 until 2050 compared to 1990) for the building heating sector?

Heat demand
in TWh p.a.

Path for a -80%-scenario



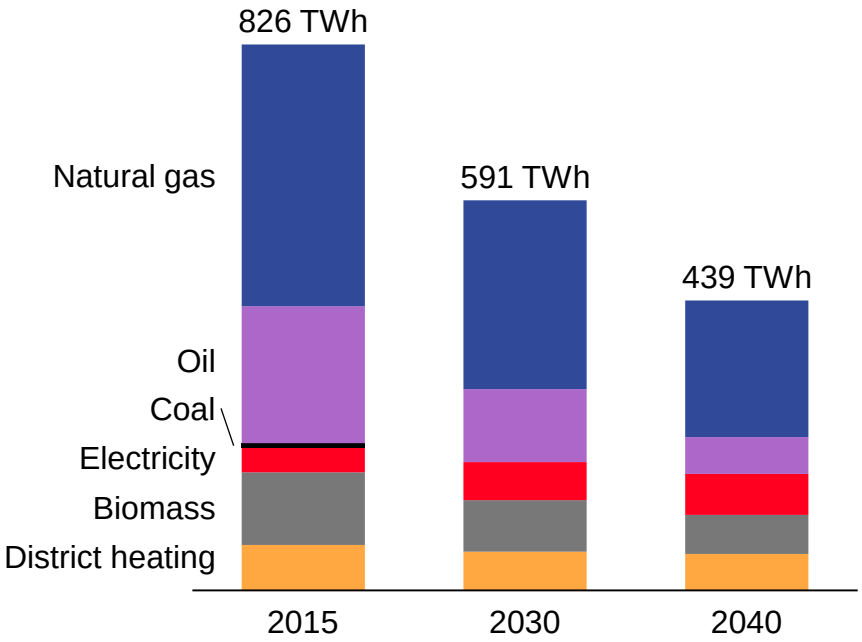
CO_2 intensity
in g/kWh

- Heating demand has to be reduced
- Heating generation has to be decarbonized.

Source: Dena Leitstudie

Which technologies will supply heat in the future?

Final energy consumption for the building heating sector (-80%-scenario)

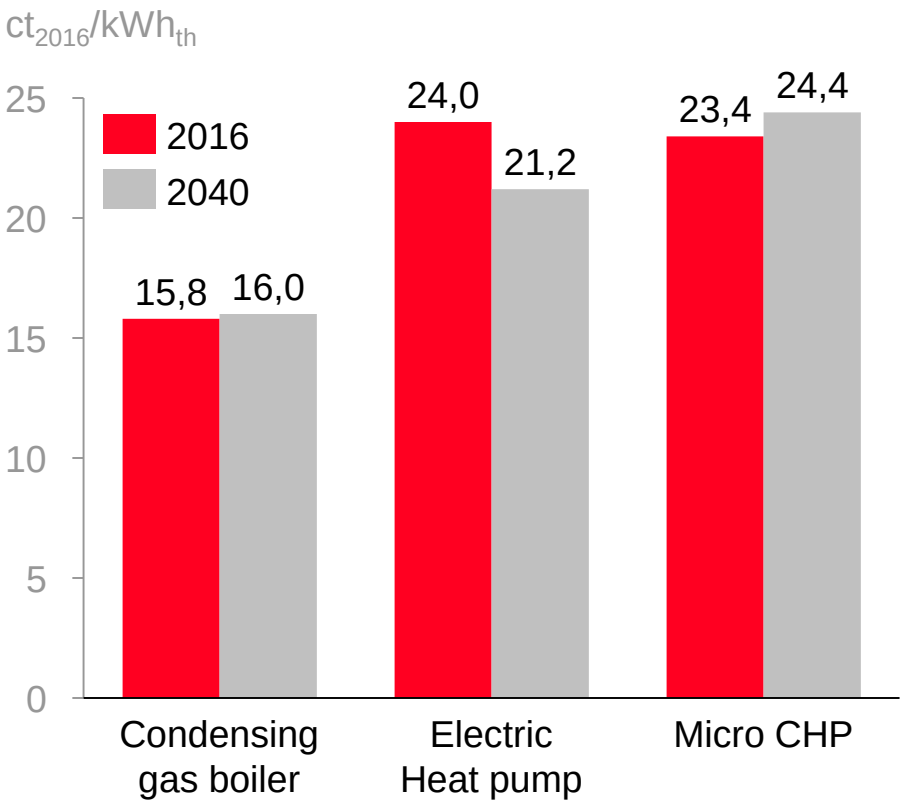


- Final energy consumption decreases due to energy efficiency
- Fossil heating systems lose importance
- Expansion of electric heating systems
- District heating continues to play a significant role

Source: Dena Leitstudie

Green technologies will stay significantly more expensive than conventional heating technologies

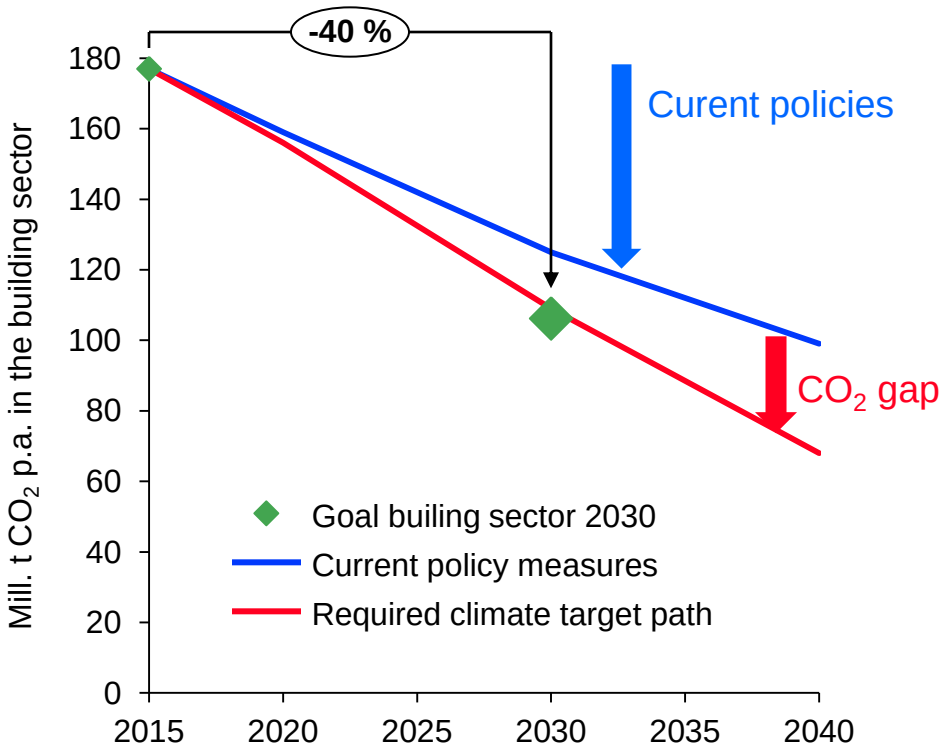
Exemplary levelized cost of heating in a single-family-home (existing building)



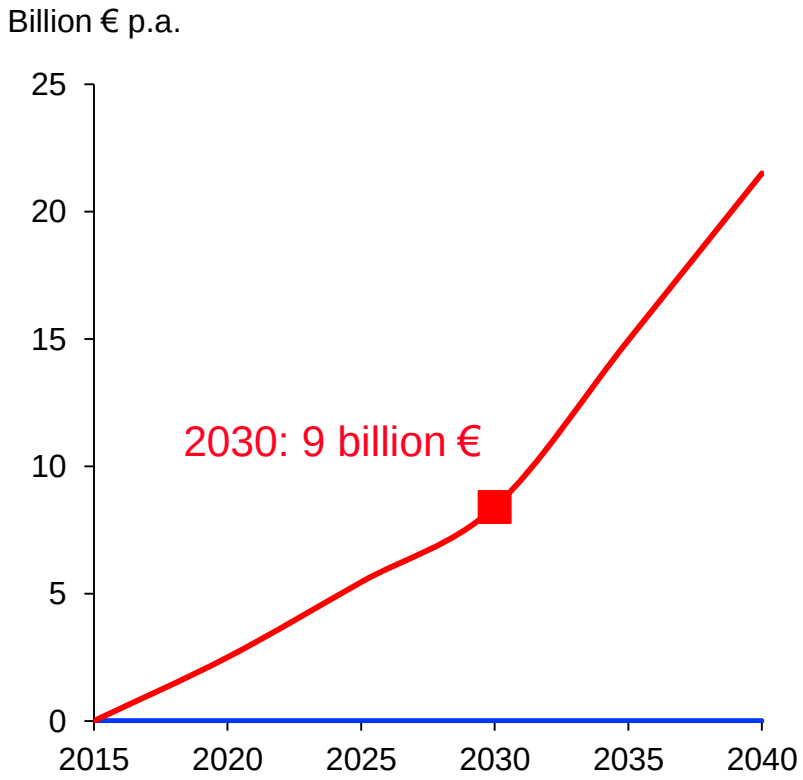
Sources: IER / MVV (2016), Kopp et. al. (2016);
CHP: combined heat and power

New efforts are necessary to reach the CO_2 goals

Current policies in Germany are not sufficient in order to reach the CO_2 goals for the building sector

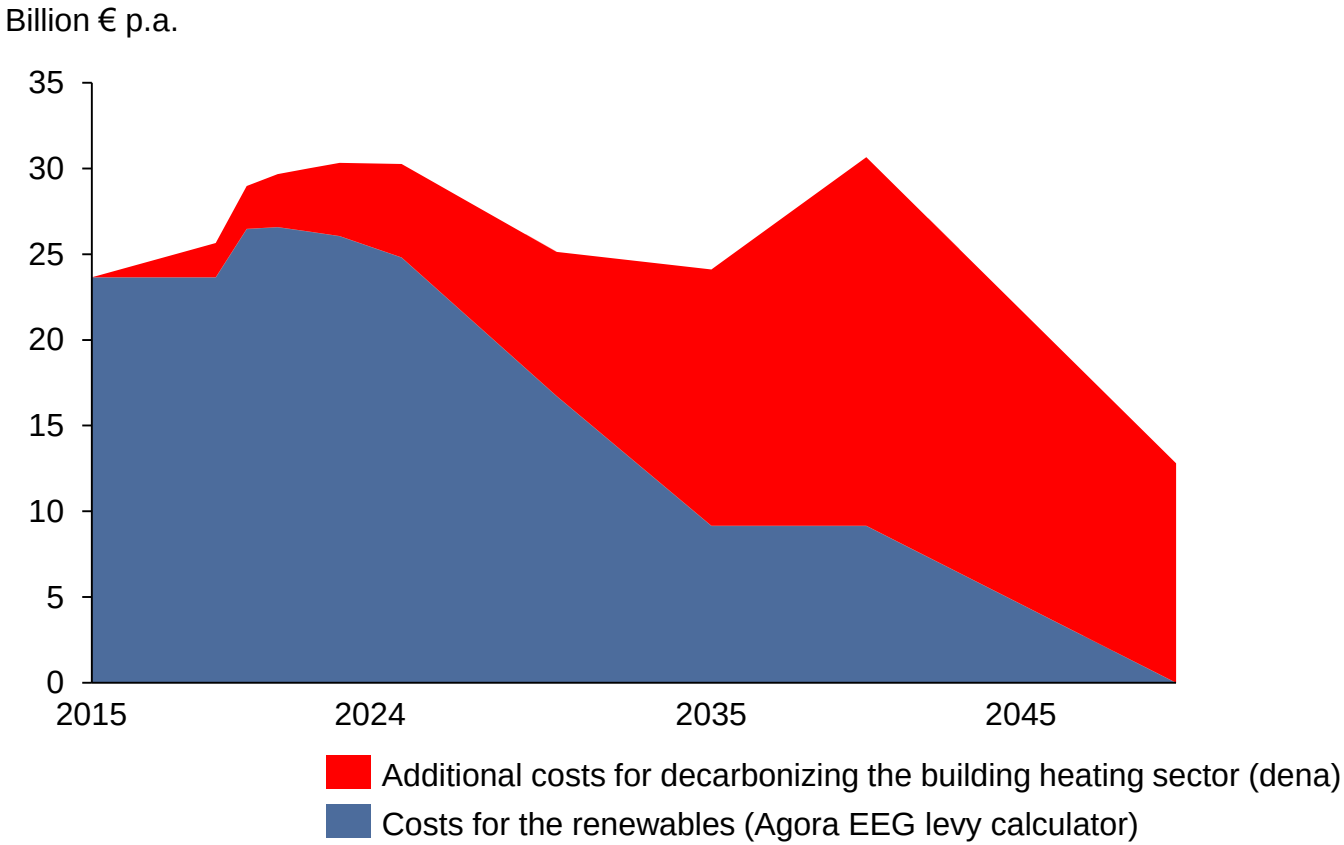


Closing the CO_2 gap would cost additionally 9 billion EUR in the year 2030



Sources: dena Leitstudie 2018, Klimaschutzplan Bundesregierung

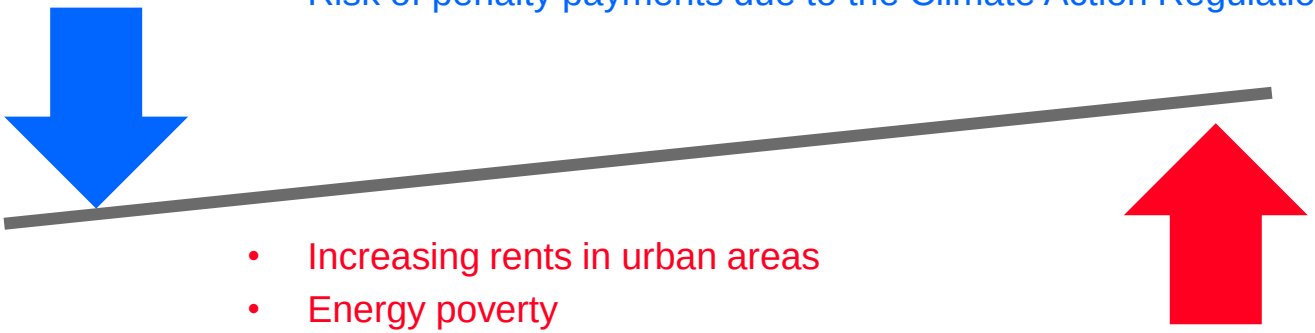
If the costs for decarbonizing the building heating sector would be passed on to the consumers, the following burdens would result:



Costs for renewables in the electricity sector decrease, costs for decarbonizing the heating sector increase – total burden stays similar

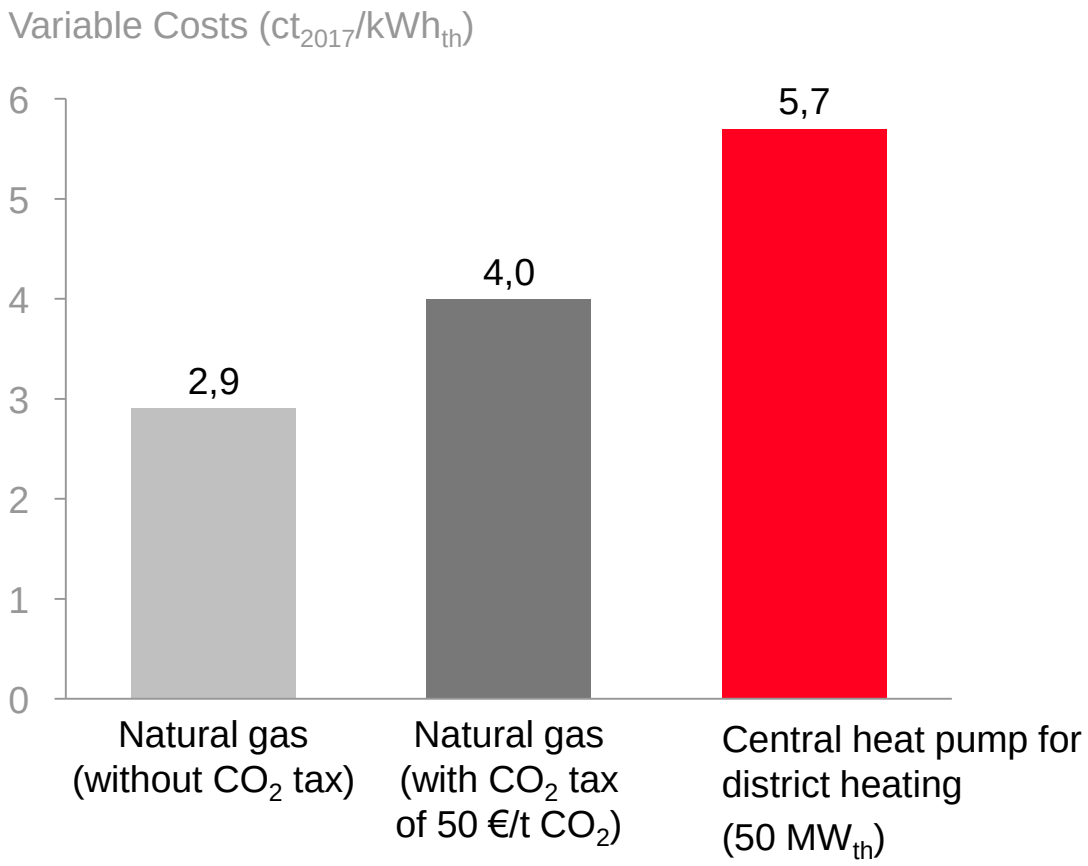
Political context of decarbonizing the building heating sector in Germany

- Binding decarbonization targets for the building sector
- Risk of penalty payments due to the Climate Action Regulation

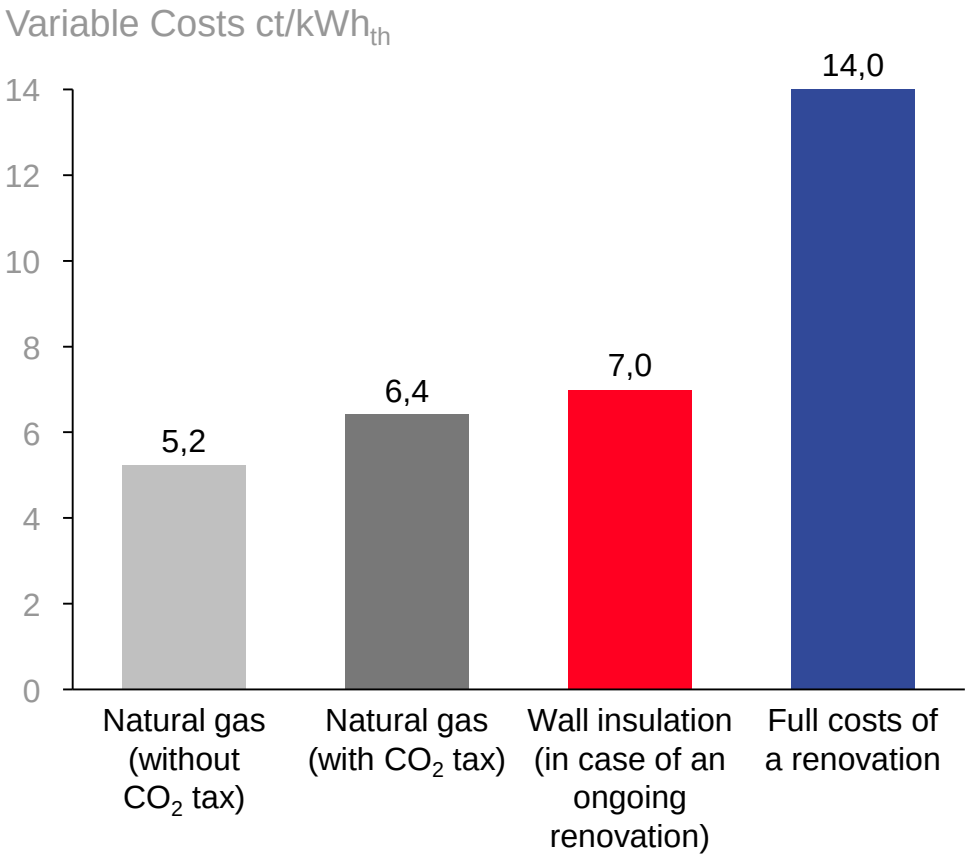


- Increasing rents in urban areas
- Energy poverty
- Social housing
- Acceptance of the energy transition
- Difficult political power relations

A CO_2 tax of 50 €/t CO_2 is not sufficient to make green heating technologies profitable…



A CO_2 tax of 50 €/t CO_2 is not sufficient to trigger renovations



- Even with an ongoing renovation, wall insulation is not profitable without CO_2 taxes.
- A CO_2 tax of 50 €/t CO_2 almost closes the profitability gap for the wall insulation in the case of an ongoing renovation.
- However, the full costs of a renovation are much larger than variable costs of fossil fuels.

Six fields of action for decarbonizing the building heating sector

1) Price instrument: CO_2 tax on fuels

2) Regulatory law: CO_2 limits for the buildings stock (with financial compensation option in the case of non-fulfillment of the limits)

3) Financial funding for decentralized heating

4) Financial funding for district heating in urban areas

5) Financial funding for energy efficiency in buildings

6) Municipal heat plans

What can Germany learn from other countries?

Switzerland: CO_2 tax on fossil fuels

- Currently 96 CHF/t CO_2 (210 CHF/t CO_2 in 2030)
- 2/3 of tax revenues are reimbursed through health insurance, 1/3 is used for decreasing emissions in buildings

Denmark: Heat Supply Act

- Introduced in 1979 with the goal to decrease the dependence on oil
- Expansion of district heating

France: Obligation for renovation

- Buildings with primary energy consumption > 330 kWh/(m2a) have to be renovated (affects 8-10 million buildings)
- Combination with tax credits

France: White certificates

- Suppliers of energy are obliged to meet energy saving targets
- “White certificates” certifying energy savings can be traded (but no liquid market)

UK: Green Deal

- Opportunity to pay for energy efficiency measures through the savings on the energy bills
- Program canceled, because only 14.000 households used it

Summary

- The climate targets cannot be reached without decarbonizing the heating sector that currently accounts for approximately one third of Germany's CO_2 emissions.

- Green technologies will continue to be significantly more expensive than conventional heating systems.

- Closing the CO_2 gap between a current policy path and a climate target path in the building heating sector would cost approximately 9 billion euros in the year 2030.

- MVV study "Take-Off Wärmewende" proposes a mixture of instruments to accelerate the energy transition in the heating sector
  - CO_2 tax on fossil fuels
  - CO_2 limits for the building stock
  - Funding schemes
  - Municipal heat plans

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