



INSTITUT FÜR ENERGIE-  
UND UMWELTFORSCHUNG  
HEIDELBERG

# The „Wärmewende“ – integral part of the Energy Transition

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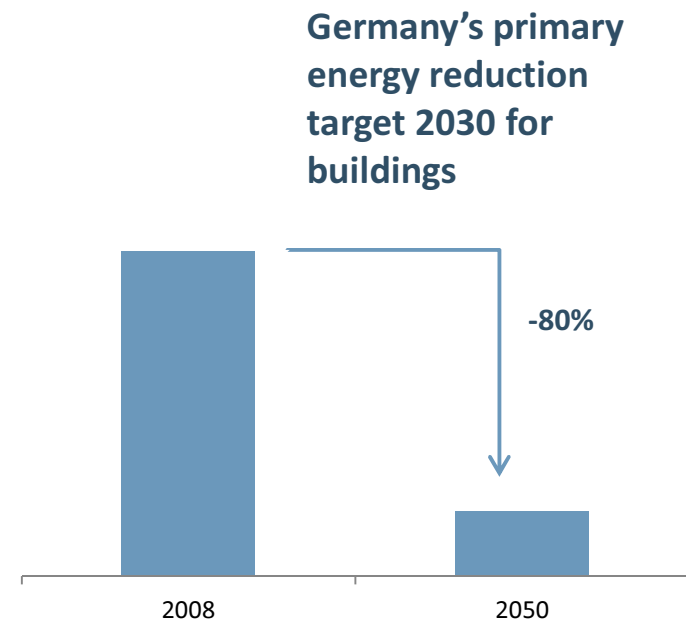
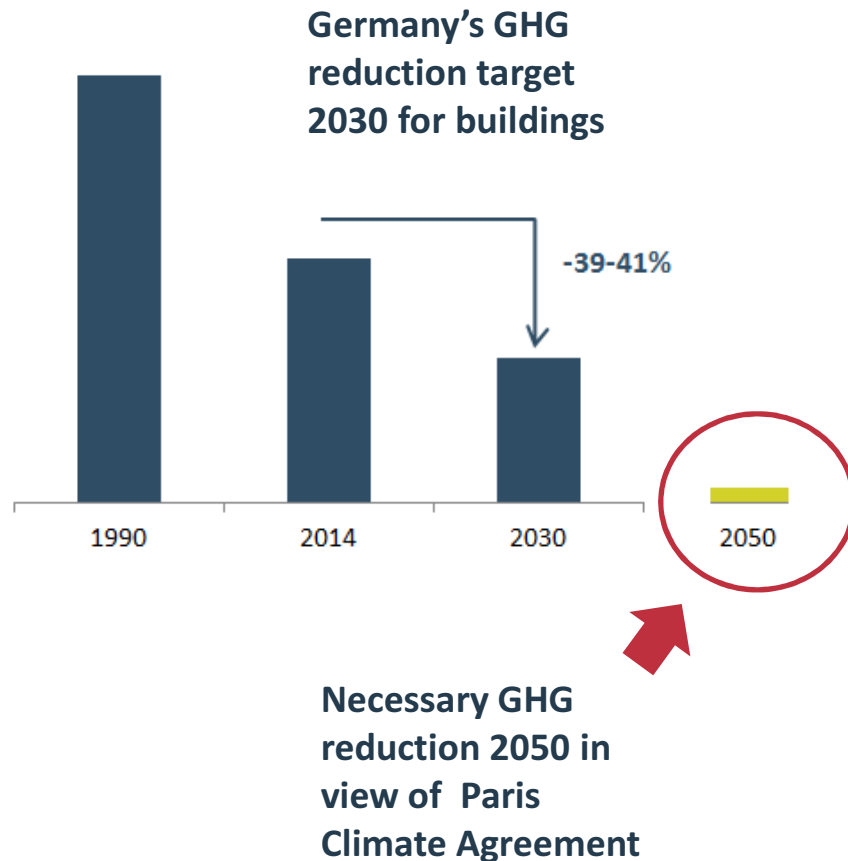
Konferenz „Die Finanzierung der Energiewende in Deutschland und Frankreich“, 12th June 2018 ●●



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The goals of the German energy transition are ambitious. The implementation of these targets is at risk and requires further political instruments.

# Climate goals for the heating sector



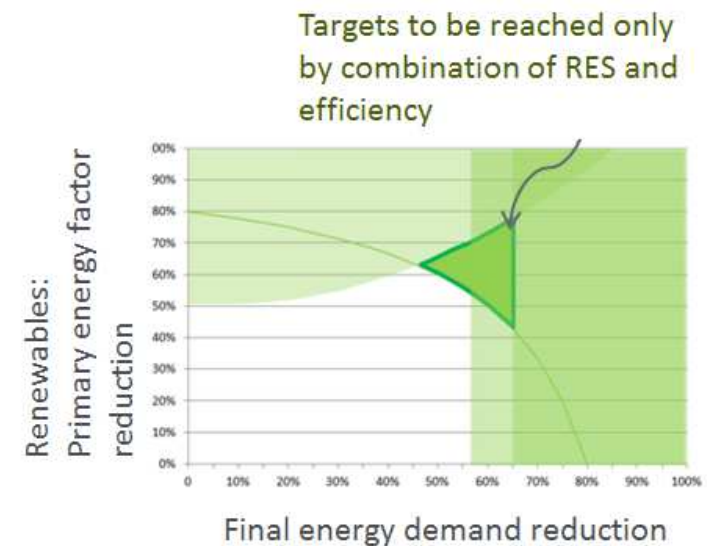
# Climate goals: status



- **Current projections** show direct GHG emissions of buildings in line with a reduction of about **31% in 2030**
  - much less than target of around 40% GHG reduction
  - leaves an important gap to be filled with new policies
- Other indicators:
  - **share of renewables in the heating sector**: 13% in 2016, stagnant
  - **reduction of heat demand** in buildings: stagnant since 2009.

➔ **More and deeper renovations needed**

➔ **More renewable heat needed**



# Reasons for Slow Demand Reduction



**Insulation Restrictions**



**Effect of the Last Centimeter**



**Acceptance and Implementation Rate of Efficiency Measures**



**Living Space Growth**



**Rebound through Greater Comfort**

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Scenarios show that the ambitious climate targets in the building sector can be met, but require ambitious measures and a dynamic market growth.

# Scenarios of Building Energy Consumption

An ifeu/IEE/Consentec study for Agora Energiewende

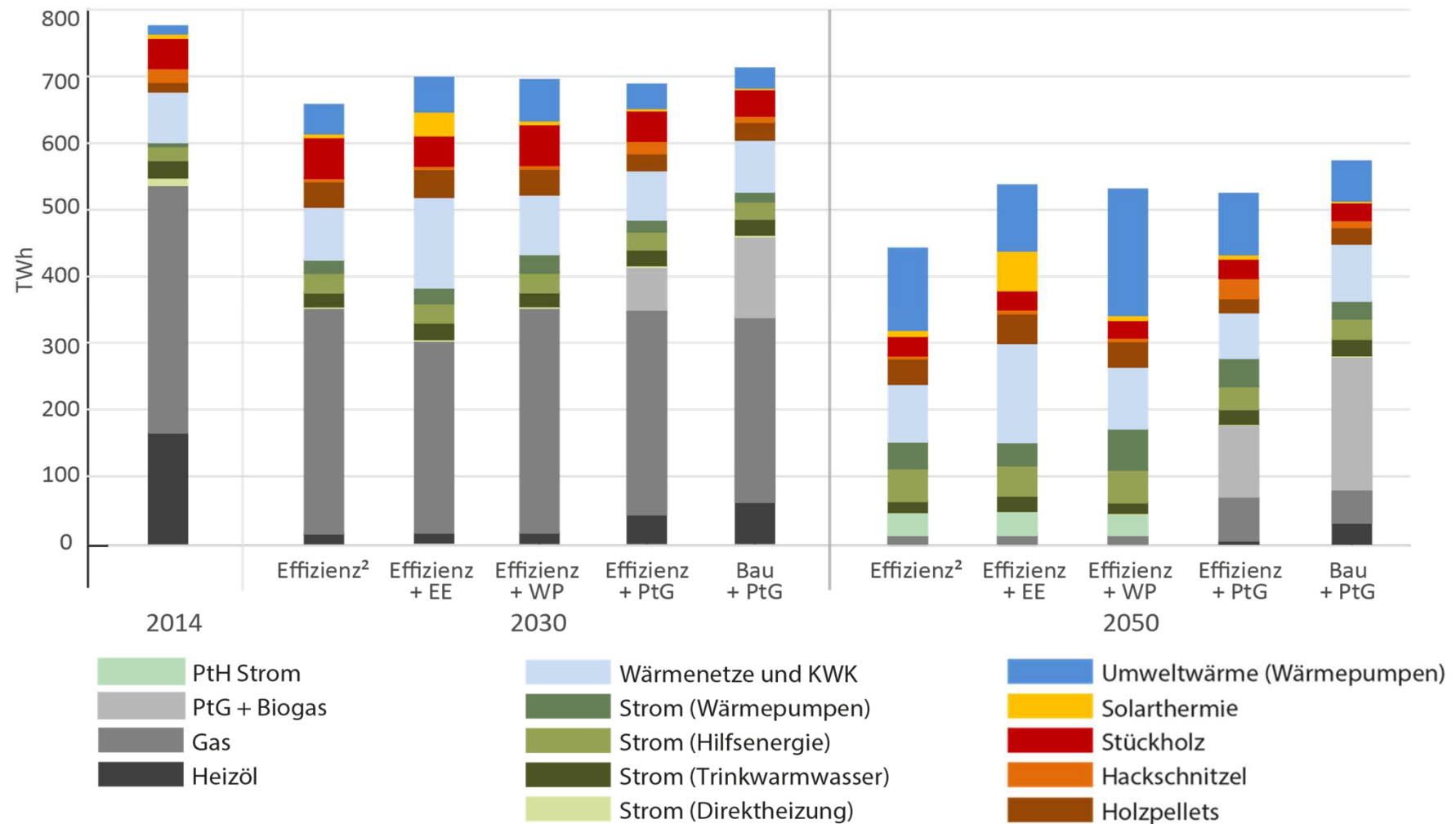


Using five coupled energy models, the overall costs, strengths and weaknesses of five building scenarios were analysed which comply with an ambitious climate target (-87,5 % reduction of energy related emissions).

- Scenario Effizienz<sup>2</sup> with very high energy efficiency standards
- Scenario Effizienz + EE, featuring „classical renewables“
- Scenario Effizienz + WP, focussing on renewables and heat pumps
- Scenario Effizienz + PtG, employing Power to Gas
- Scenario BAU + PtG, with less efficiency and more Power to Gas

# Scenarios of Building Energy Consumption

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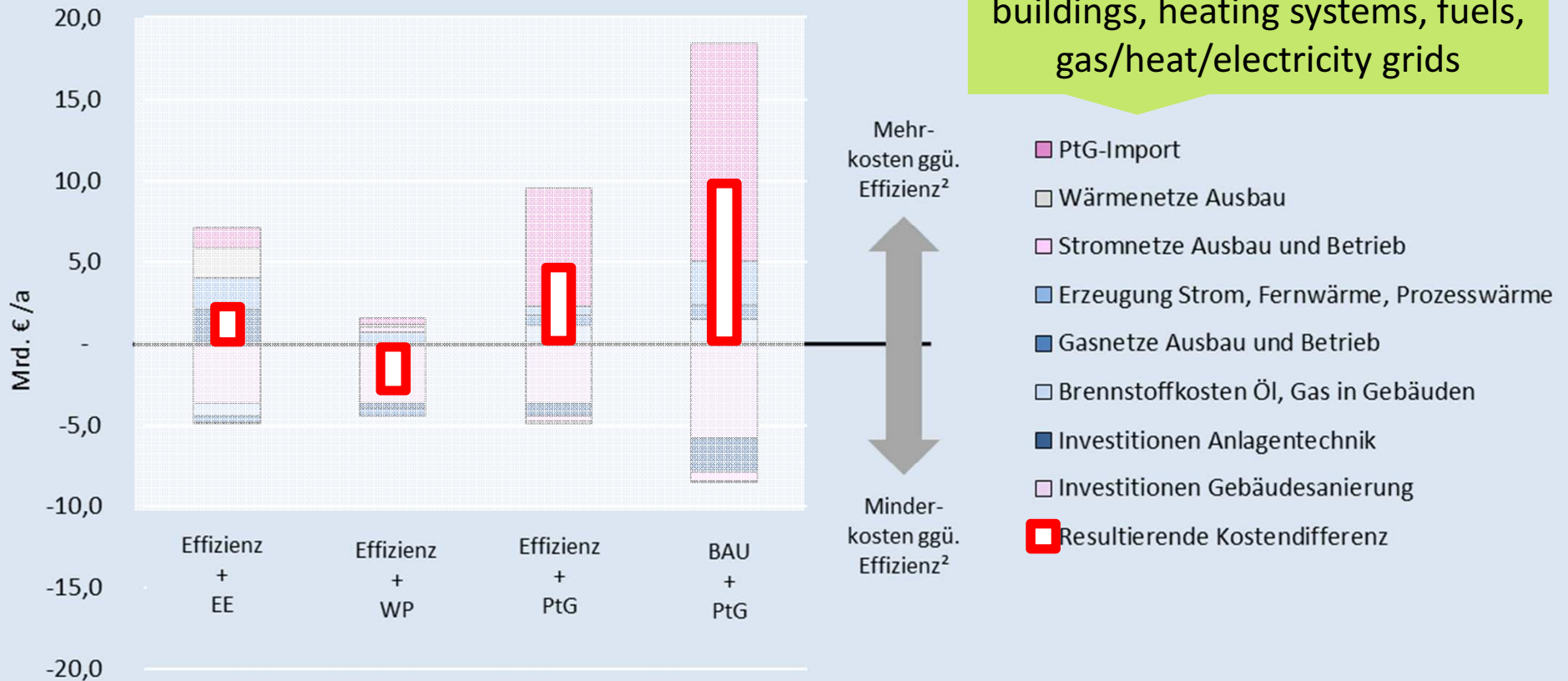


The scenarios require total investments in the building sector between 21 and 28 bill. €/a .  
 A development based on efficient building shell/supply technology saves up to 8 bill. €/a and leads to a building stock with high property value and comfort level.

# Total annual costs   of scenarios compared to the Effizienz<sup>2</sup> scenario

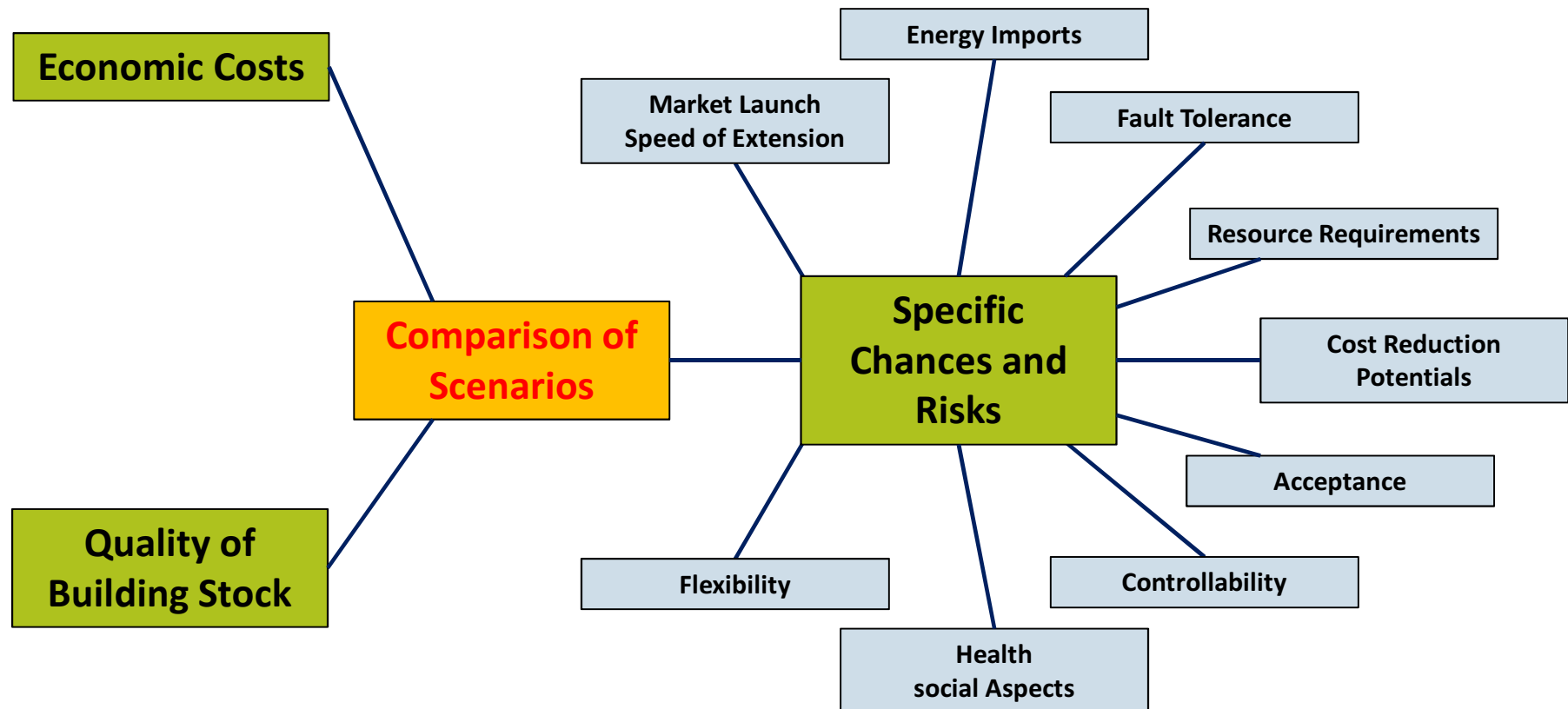


Considering investments in buildings, heating systems, fuels, gas/heat/electricity grids



Differenz der mittleren Annuitäten für den Zeitraum 2017 bis 2050 bei 1,5 % Abzinsung

# Holistic Evaluation of Scenarios

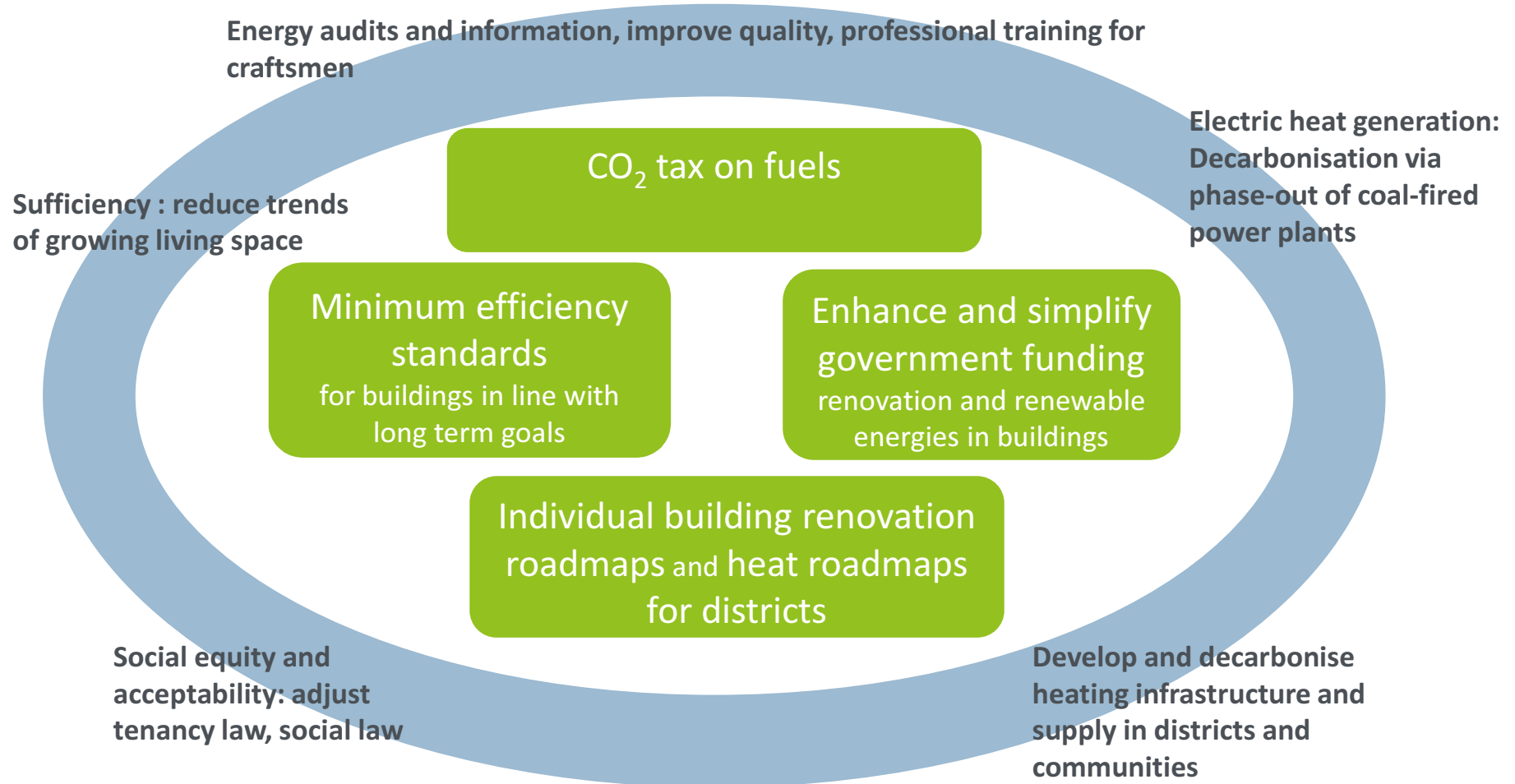


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# 4

The heat transition requires ambitious political measures.

# Measures to accelerate the transition of the heating sector



# ifeu and the Heat Transition // [www.ifeu.de](http://www.ifeu.de)



## Topics and Focii



Heat Map  
Building Model  
Energy Model



Strategies  
Political  
Instruments



Energy Consulting  
Renovation Plan



Heat Network  
Waste Heat  
CHP System



Renewable  
Energies



Insulation



Pilot Projects



Local Climate  
Protection



Craftsmen  
Building Contractors



Information  
Materials  
Media



Sufficiency



International  
Cooperation