

IEA EGRD workshop, SYSTEM RESILIENCE AND FLEXIBILITY

# Opportunities and challenges in the context of the coal phase-out in Germany

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# **Wuppertal Institute** Research for a sustainable development







projects per year



# **Coal phase-out in Germany** Overview



- Current situation
- Comparison with business as usual
- Security of supply
- Structural change and employment
- > Outlook

### **Current situation**



# The coal phase-out is mainly driven by climate policy



Source: DIW, WI, Eco 2019

# **Current situation**



# Emissions budget – cumulated emissions per period are the key climate impact factor



Source: DIW, WI, Eco 2019

# **Current situation**

# Current economic incentives seem insufficient





Source: DIW, WI, Eco 2019

# Current situation Stakeholder commission recommend a coal phase-out



- The Commission on Growth, Structural Change and Employment recommended in January 2019:
  - The phasing out of the coal-fired power generation in Germany until 2038 (2035)
  - To withdraw the corresponding CO2 certificates
  - A financial compensation for particularly affected regions
  - Speedup of renewable capacity expansion
  - Detailed monitoring of the security of supply
  - A financial compensation for possibly occurring price increases

## **Comparison with business as usual**



# Until 2030 lignite power plants are decommissioned according to their lifetime



### Lignite power plants in Germany

Source: own calculations

## **Comparison with business as usual**



# Until 2030 hard coal power plants are decommissioned according to their lifetime



### Hard coal power plants in Germany

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#### Coal phase-out in Germany

# Security of supply



# Forecasts of the security of supply have been changing significantly within the last years



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#### Coal phase-out in Germany

# Security of supply

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There are several instruments to ensure the security of supply in Germany

- Close monitoring of the security of supply situation
- The prohibition on decommissioning power plants if security of supply is threatened
- > Strengthening the capacity reserve
- Strengthening the network reserve
- If there is a foreseeable threat to the security of supply, the transmission system operators have the option of launching tenders for new gas-fired power plants
- The development of further load flexibilities for major industrial customers
- The expansion of the transmission grid and stronger integration into the European internal market

## **Structural change and employment**



# Overall jobs in the coal sector have already been declining



# Coal mining jobs decreased from over 750,000 to less than 21,000 in 2016. This was driven by purely economic reasons.

Source: own calculations based on Statistik der Kohlenwirtschaft e.V. (2016a, 2016b, 2017)

#### Coal phase-out in Germany

# **Structural change and employment**

But certain regions are heavily dependent on coal





GDP per Capita

Source: Friedrich-Ebert-Stiftung (2016)

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# Conclusion



The coal phase-out will probably not be enough to reach climate targets, but won't cause security of supply issues either

- The suggested coal phase-out will not be enough to reach climate targets which are in line with the Paris agreement
  - Depending on the implementation, the current intermediate targets for 2030 and 2040 might not be totally in line with a pathway being able to reach the Paris Agreement
  - However for the moment it is of much more importance to have a starting point for a step by step phase-out process and to learn
    - if a faster phase-out is possible even from an economic point of view if cost degression of renewable energy technology continues
    - if the energy sector would have to reduce emissions even faster as other sectors lag behind

# Security of supply won't be a critical issue

- The rate of decommissioning is manageable
- There are several instruments to ensure the security of supply

# Outlook



The energy system transformation could be given a boost, but the real challenges of industrial structural change lie ahead

- A coal phase-out could release political commitment to accelerate the energy system transformation
  - A public agreement on the medium-term design of the energy system makes it possible to tackle the challenges and work on concrete solutions without being captured in intensive controversial political debates
- The challenges arising in connection with structural change in industry are still ahead of us
  - In terms of its economic impact, the expected transformation process in the automotive industry is compared to the coal sector even more challenging for the national economy



# Thank You For Your Attention

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### Literature



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