Black Diamond or Black Death: Diverging transition pathways towards a future without coal consumption in the United Kingdom, Germany and Poland

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Nachwuchsgruppe CoalExit
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Auftraggeber: BMBF, Globaler Wandel
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4 Wissenschaftliche MitarbeiterInnen promovieren im Rahmen des Projektes.

Link zur Nachwuchsforschungsgruppe:
http://www.wip.tu-berlin.de/menue/nachwuchsforschungsgruppe_coalexit/
Geplante Arbeitspakete

- Internationale Transformationsprozesse (WP 1)
- Stakeholder Analyse (WP 2)
- Optionen für Politische Regulierung (WP 3)
- Masterplan für einen deutschen Kohleausstieg (WP 4)
- Fallstudien für einen globalen Kohleausstieg (WP 5)
- Internationale Dissemination (WP 7)
- Modellierung des globalen Kohlemarktes (WP 6)
Why analyse an EU coal phase-out through the UK, Germany & Poland?

The UK, Germany and Poland are the biggest producers, importers and consumers of coal.

Different dependencies on hard coal & lignite production and imports, as well as diverging transitions pathways.

Various quantitative analyses (Breevoort et al. 2015; Climate Analytics 2017; Shearer et al. 2017; Rockström et al. 2017; Oei et al. 2015, etc.) have shown that to comply with the Paris Agreement, coal consumption will have to end around 2030.

Why are transition pathways diverging and how can a coal phase-out be achieved?
Necessity to phase-out coal vs. current status quo.

**United Kingdom**
- Installed coal capacity: 15 GW.
- Import dependence coal: 88%.
- First country to mainly use fossil fuels (steam engine 18th century).
- 52% drop in coal use in 2016 compared to 2015.
- Coal phase-out: by 2025.

**Germany**
- Installed coal capacity: 49 GW.
- Import dependence coal: 45%.
- Biggest lignite producer globally, biggest hard coal importer EU.
- Coal phase-out plans currently discussed on political level, no fixed date set.

**Poland**
- Installed coal capacity: 27 GW.
- Import dependence coal: -8%.
- EU’s 1st hard coal & 2nd largest lignite producer.
- Bad mining conditions, domestic coal more expensive than imports.
- Expansion plans for coal mines and power plants.

Sources: See references pictures and relevant references at the end of presentation.
A coal phase-out is crucial to reach emission reduction targets. It needs to be actively **structured to enable a socially acceptable transition**, to avoid e.g. capacity or grid constraints and to overcome vested interests.
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Which factors led to the **diverging developments** of the coal market in the UK, Germany and Poland?

**Which factors** have **enabled coal regime destructions** in the past, and which ones have **prevented** the **transition**?
Research outline and methodology

**Starting point**

Analysis

A coal phase-out is crucial to reach emission reduction targets. It needs to be actively **structured to enable a socially acceptable transition**, to avoid e.g. capacity or grid constraints and to overcome vested interests.

**Research Questions**

Which factors led to the **diverging developments** of the coal market in the UK, Germany and Poland?

**Which factors** have **enabled coal regime destructions** in the past, and which ones have **prevented** the transition?

**Approach**

An approach needed that incorporates political, social, economic, environmental and technical factors.

Application of a **stakeholder analysis** combined with the **Triple Embeddedness Framework** by Geels (2014).

**Results**
Illustration of Triple Embeddedness Framework (TEF)

- Socio-Political Environment
  - Low political power miner unions
  - Climate Leadership aspirations
  - EPS and other air pollution regulations
  - Stop of government’s CCTS support
  - Agreed coal phase-out date
  - Carbon price floor
  - Old infrastructure
  - Deep coal reserves
  - Low wholesale electricity prices

- Economic Environment
  - Dominance natural gas
  - Technologically advanced renewables
  - Fear of blackouts
  - EU climate policy
  - Climate change and health

- POL
  - Mostly state-owned companies
  - Little competition of and investment in gas and renewables
  - Coal as major employer
  - Fears about energy poverty
  - Rising concerns about health impacts due to air pollution
  - Rising household and industry electricity prices
  - Fostered by NGOs
  - Lead generally to less environmental concerns
  - Regime obtains continuous (financial) support by government; no intention to diversify
  - No political or civil society focus on climate change
  - Fear import dependence
  - Capacity shortage
  - Subsidies and enforced coal company bail-outs
  - Low efficiency, high total labour costs
  - Open coal mines expected to be depleted by ~2030
  - Deep, expensive coal reserves

- UK
  - Support
  - Coal Industry Regime
  - Uneconomic mines and power plants
  - Other pressures

- Ukraine
  - Technologically advanced renewables
  - Low wholesale electricity prices
  - Week financial state Poland compared to Western EU
  - Climate Leadership aspirations

- Germany
  - Support
  - Coal Industry Regime
  - Uneconomic mines and power plants
  - Other pressures

- Economic Environment
  - Technologically advanced renewables
  - Low wholesale electricity prices
  - EU climate policy
  - Climate change and health concerns due to air pollution
  - Fostered by NGOs
  - Split public opinion between mining regions and the rest
  - Lead generally to less environmental concerns
  - Misinformation campaigns on impacts and capabilities of renewables and positive framing of coal to maintain status quo

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TEF analysis results for Poland as illustration for methodology

Socio-Political Environment

- Very high political power miner unions
- No political or civil society focus on climate change
- Long-term political support
- Capacity shortage
- Subsidies and enforced coal company bail-outs
- Low efficiency, high total labour costs
- Open coal mines expected to be depleted by ~2030

Mostly state-owned companies

Support

Coal Industry Regime

- Uneconomic mines and power plants
- Other pressures

Economic Environment

- Little competition of and investment in gas and renewables
- Coal as major employer
- Fears about energy poverty
- EU climate policy
- Rising concerns about health impacts due to air pollution
- Rising household and industry electricity prices
- Lead generally to less environmental concerns

Regime obtains continuous (financial) support by government; no intention to diversify.
Research outline and methodology

Starting point

Analysis

A coal phase-out is crucial to reach emission reduction targets. It needs to be actively structured to enable a socially acceptable transition, to avoid e.g. capacity or grid constraints and to overcome vested interests.

Research Questions

Which factors led to the diverging developments of the coal market in the UK, Germany and Poland, and to the East-West divide?

Which factors have enabled coal regime destructions in the past, and which ones have prevented the transition?

Approach

Approach necessary that can incorporate political, social, economic, environmental and technical factors.

Application of a stakeholder analysis combined with the Triple Embeddedness Framework by Geels.

Results

What were the main factors influencing coal pathways?
Main results of TEF analysis for each case study country

**UK:** The Carbon Price Floor and Emission Performance Standards were successful tools to drive coal out of the market. However, a strong influence had also opposition to miners in the 1980’s and available domestic natural gas resources. Cautionary tale: mere switch to natural gas needs to be prevented in other countries.

**GER:** The overall increase of renewable energies is not enough to drive coal out of the market. Coal’s dominance sustained by successful lobbying of coal regime as well as major electricity corporations and unions against e.g. the climate levy and for continued (financial) support for coal.

**POL:** Uneconomic coal is not enough to end its production due to strong relations between the state and corporations and powerful unions. Past negative experiences with restructuring programs and rising energy prices increase resistance to change. Dwindling resources and rising resistance against air pollution might accelerate coal’s decline.
Main results as a basis for further research

Tailored solutions for each country need to be developed to address concerns about rising energy prices, job losses, energy security, etc.

Ending coal consumption is technologically feasible but power, vested interests and social costs need to be taken into account when designing and implementing coal phase-out strategies.

Hurdles but also opportunities to enable a coal phase-out for each case study country have been identified and (preliminary) policy recommendations were derived.

Further research:

Implementation of findings as realistic scenarios in energy models (like e.g. dynELMOD).

In depth analysis of the impact of politically feasible policies on electricity prices, grid stability, system costs etc.
Thank you for your attention.

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References
Relevant References (1/2)


Relevant References (2/2)


http://greeneconomics.blogspot.co.uk/2015/12/no-more-free-riders-lessons-from-paris.html.


World Coal Association (2016): BASIC COAL FACTS.

References Pictures Presentation

