Coal Regions in Transition

Structural Change and New Perspectives
Agenda

1. The long Farewell from Hard Coal: Structural Change in the Ruhr Area
2. Lignite Regions: From Backbone of Power Supply to Zero in 20 Years
3. Regional Policy in Germany
4. Recommendations
German Electricity Market: Coal in full retreat

Input of different Sources in German net Electricity Production

Source: Fraunhofer ISE/Energy Charts
Hard Coal and Lignite-producing regions

Big differences between hard coal and lignite regions in Germany

Hard Coal
- Ruhr Area, northern Northrine-Westphalia, Saarland
- Labor-intensive due to underground mining
- Heavily subsidized
- Ended in 2018 after years of shrinking production

Lignite
- Western Northrine-Westphalia, Leipzig Area, Lusatia
- Capital-intensive due to open pit mines
- No subsidies necessary, but high carbon emissions
- Production ongoing until 2038 according to “coal compromise”

Sources: carolinenglück3-2004, braunkohletagbau– Fotolia
The „Ruhr Area“

Profile

- 5.1 million inhabitants
- Biggest German agglomeration
- 15 counties, 13 cities above 100,000, 40 smaller municipalities
- Biggest cities: Dortmund and Essen, with 585,000 inhabitants each
- Belonging to 3 administrative districts
- Regionalverband Ruhr (RVR) as co-ordinationg institution of the area

Structural Change after WW II

- The reconstruction of Germany led to a renewed boom in the Ruhr Area: in 1957 the mining industry set an absolute record with 450,000 employees.

- The mono-structure of the Ruhr Area led to other industries being neglected (for example, the first university was founded in 1961).

- The boom led to high wages, new industries and companies settled in other regions.

- From 1957, cheaper oil caused a drop in demand for coal (coal crisis), and from the end of the 1960s there was also a drop in demand for iron and steel.
Centralized structural policy (1975-1986):

➢ Oil price shock of 1973 made Ruhr coal profitable again in the short term.

➢ The state government introduced subsidy programs that were oriented towards "old" industries (mining, steel).


➢ Future Initiative Mining Region (ZIM):
  ▪ Promotion of innovation and technology;
  ▪ Qualification of workers;
  ▪ Improvement of the environmental situation

➢ After 1990, German reunification led to an orientation of funds towards Eastern Germany.
Number of inhabitants: stabilization successful?

Development of the number of inhabitants, 2000 = 100

Source: National accounts of the federal states, 2018
Cluster-oriented structural policy (2000-today):

- Definition and support of industry clusters, offering advantages in global competition.

- Current NRW clusters:
  automotive, biotechnology, chemistry, energy research and energy industry, nutrition, health, ICT, cultural and creative industries, plastics, logistics, mechanical engineering/production technology, media, health, nano/microtechnology, materials, photonics, environmental technologies.
GDP per inhabitant in the top 7 metropolitan areas

Gross domestic product per inhabitant, 2000 and 2016

Source: National accounts of the federal states, 2018
Structural change in the Ruhr Area: Dortmund Phoenix Lake

The old industrial location Phoenix-East of the former Hörder mining and smelting association is being restructured into a residential, office, culture and leisure location.
Structural change in the Ruhr Area: Dortmund Phoenix Lake

The old industrial location Phoenix-East of the former Hörder mining and smelting association is being restructured into a residential, office, culture and leisure location.
Lignite Production in Germany

Three remaining regions with producing lignite mines:
- Rhineland
- Leipzig (Central Germany)
- Lusatia

Mines in the Helmstedt area are already closed.

In 2019 Lignite production (and electricity production from lignite) were reduced dramatically (by approx. 38 Percent).
Lignite Production in Germany

Timetable to phase out Lignite power plants:
- Rhineland starts 2020 to 2022 (End: 2038)
- Lusatia follows 2025 to 2028 (End: 2038)
- Leipzig (Central German district) 2034/35

Phase-out according to Plan is very expensive:
- 4.1 billion Euro compensation for Power suppliers
- 40 billion Euro regional subsidies over 20-year-period
- Emission trading could reach same CO₂-reduction much cheaper

Source: Handelsblatt
Employment Effects of Lignite Production

Germany, in persons, fiscal year 2016

Employment multiplier: 2.99

Contribution to employment (direct): 0.05 percent
Contribution to employment (total): 0.14

The number of all those employed directly or indirectly in the lignite industry corresponds to 35 percent of those employed in electricity supply.

Source: Own calculation TwinEconomics (2018); Destatis.
## Differences of ETS-Scenario (2050) vs. 2038-plan

Loss of employment due to rapid exit; annual review

<table>
<thead>
<tr>
<th>Employment differences</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lusatian district</td>
<td>0</td>
<td>-2.801</td>
<td>-8.192</td>
<td>-6.848</td>
<td>-5.232</td>
</tr>
<tr>
<td>Central German district</td>
<td>0</td>
<td>-507</td>
<td>-3.625</td>
<td>-4.794</td>
<td>-1.858</td>
</tr>
<tr>
<td>Rhineland district</td>
<td>0</td>
<td>-9.802</td>
<td>-10.337</td>
<td>-7.001</td>
<td>-7.284</td>
</tr>
<tr>
<td>Rest of Germany</td>
<td>0</td>
<td>-9.961</td>
<td>-16.527</td>
<td>-12.300</td>
<td>-9.443</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>-23.072</td>
<td>-38.681</td>
<td>-30.943</td>
<td>-23.817</td>
</tr>
</tbody>
</table>

In 2030, if the "Climate Protection Programme" (KSP) scenario is implemented, there will be approx. 39,000 fewer jobs than according to the "EU Emissions Trading System" (ETS) scenario.

Source: Own calculation TwinEconomics (2018); Deviations due to rounding
Regional Policy in Germany
Federal Government/Länder scheme 'Improving regional economic structures' (GRW)

**Main Aim:**
Reduction of interregional income differentials
Creation of new jobs

**Funding Scheme:**
Mainly direct subsidies for investments of private companies
Economic base theory (Haig)
Additional noninvestment support for SMEs, and business-oriented municipal infrastructures

**Demarcation of the Regions:**
Based on a model of indicators in pre-defined labour market regions
Regions are ranked according to set of indicators
Underdeveloped regions representing about a quarter of German population included
Funding rates cover 10 up to 40 percent of investment costs.

The level of funding depends on region and firm size.

→ SMEs are subsidized to a larger extent
→ Eastern border regions get highest subsidy rates
Distribution of Funds
between Eastern and Western Germany, Approvals 1991-2015

Almost 90 percent of the GRW funds are granted in Eastern Germany.

The share of funds is proportional to the share of inhabitants in Eastern Germany with the exception of Berlin, which has a lower support priority.

Source: BAFA (2016)
Recommendations for Coal Regions

- Strengthen Regional Policy measures (1.2 billion € for GRW is insufficient)
- Faster expansion of digital infrastructure (Broadband, 5G mobile)
- 40-billion € government plan for lignite regions (over 20-year period)
- Additional investment plan for Germany (IW: 450 billion € in 10 years)
- Strengthen higher education (universities, colleges, research institutes)
Structural change: Make Coal Regions Great again?
Dr. Klaus-Heiner Röhl
Strukturwandel und Wettbewerb

📞 +49 (0)30 278777-130
✉️ roehl@iwkoeln.de