WHAT CAN WE LEARN FROM EXPERIENCE, PAST AND PRESENT?

International Roundtable on the Future of Coal:

The International Thermal Coal Sector at a Crossroads

27 February 2019, Cape Town, South Africa

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COALEXIT

Technische Universität Berlin

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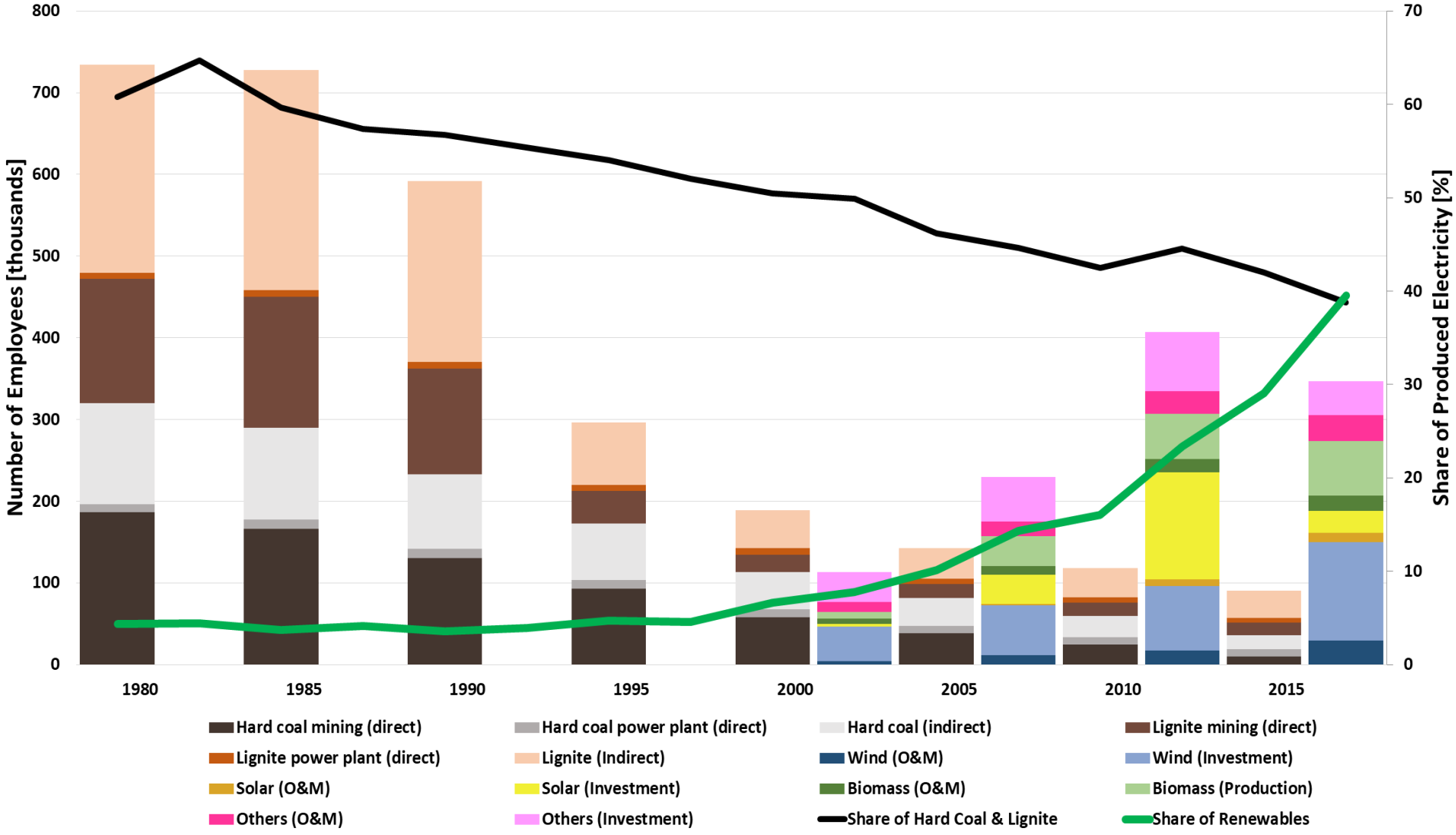
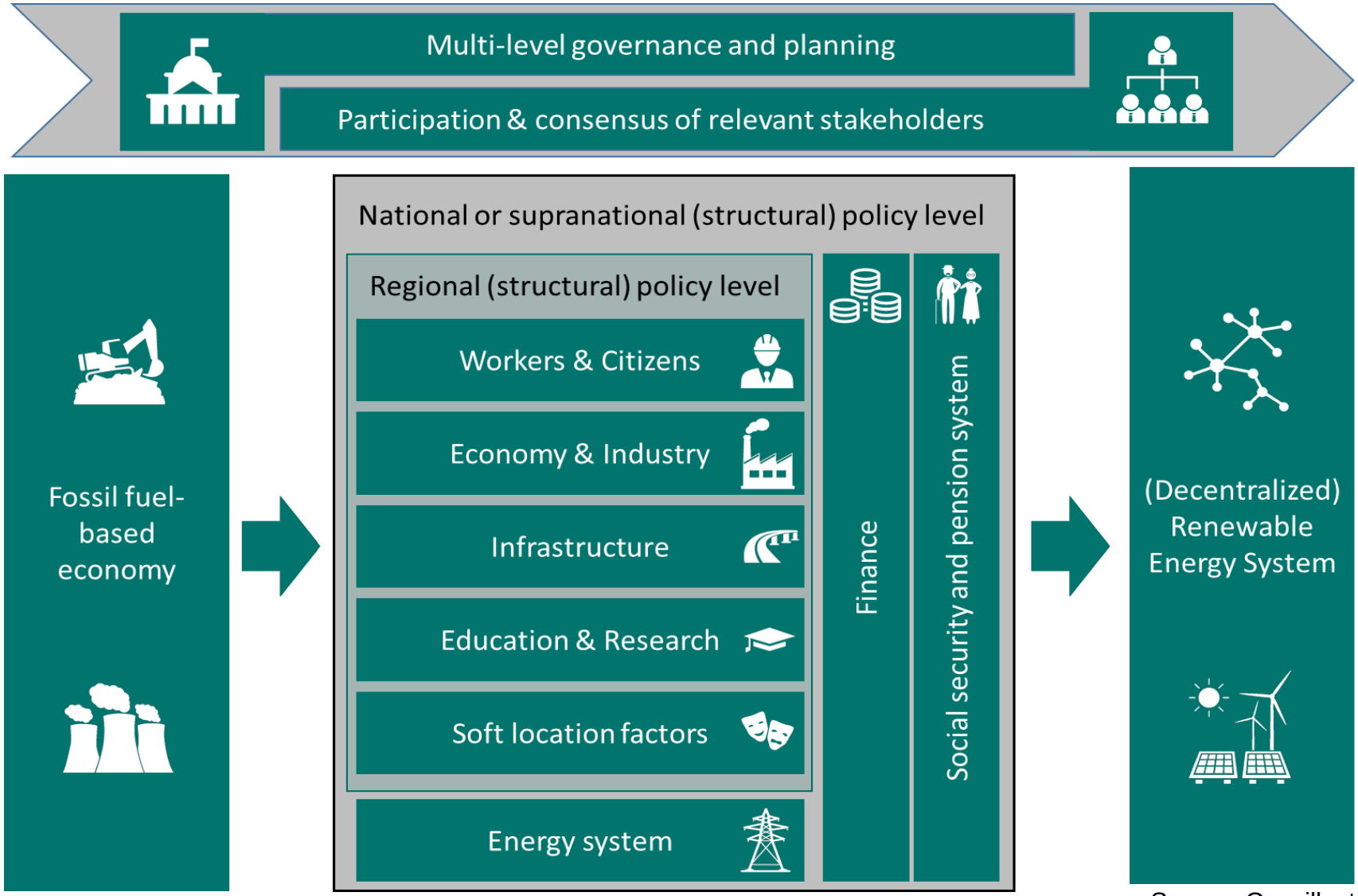
Bundesministerium für Bildung und Forschung

Development of coal and renewables: Employment and electricity share in Germany from 1980-2018



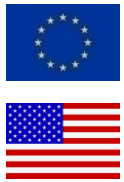
Source: Own calculations and illustration based on DIW et al (2018)..

Managing a ‘just transition’



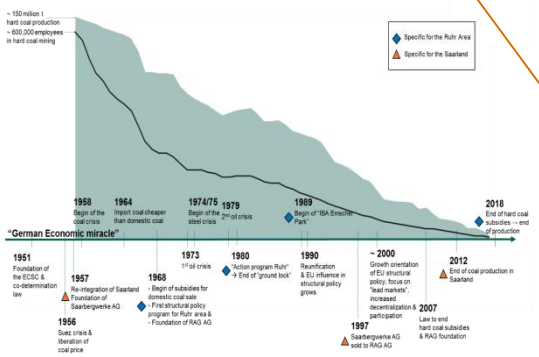
Source: Own illustration.

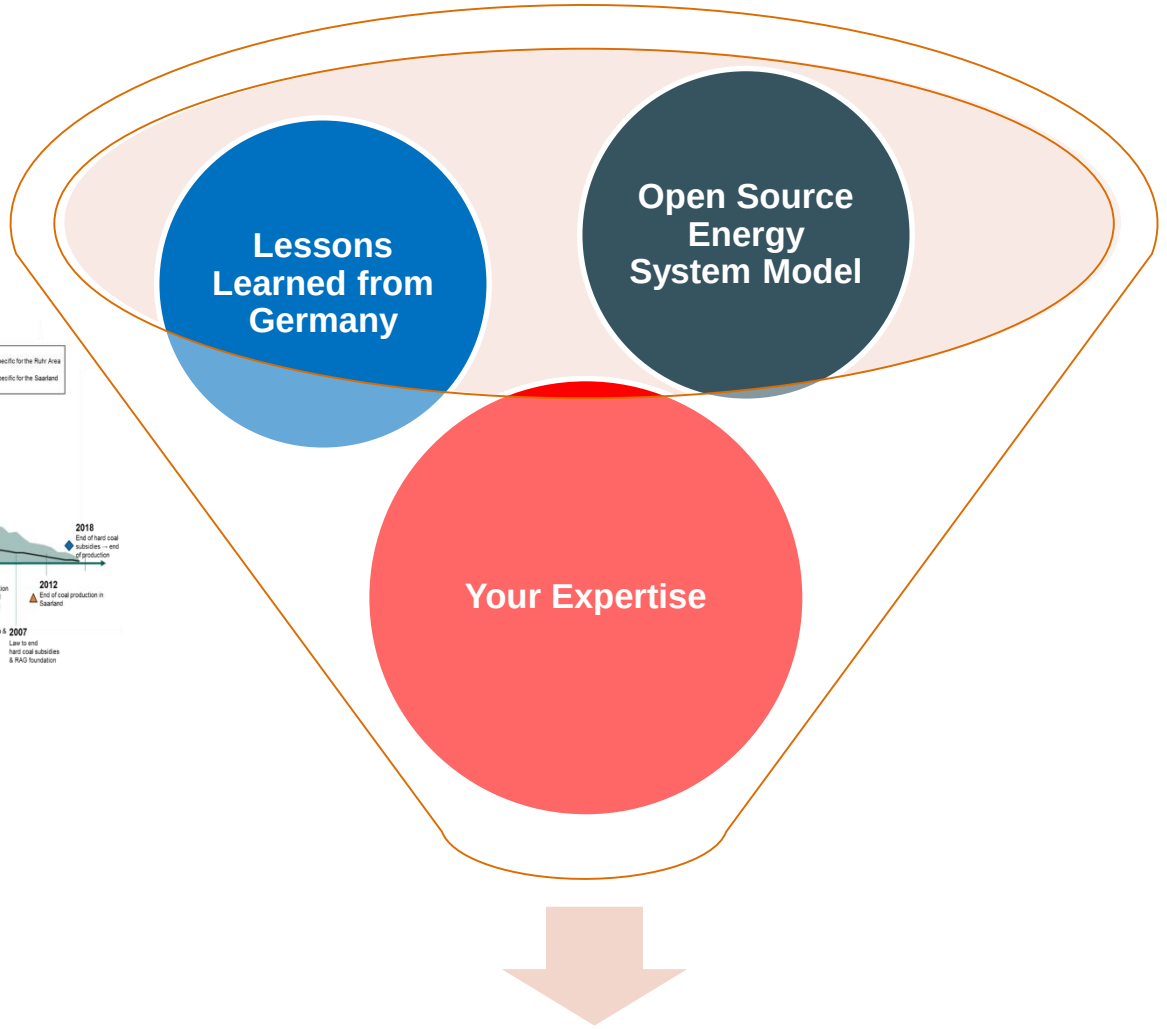
Possible Effect on Exporting Countries (e.g. South-Africa)

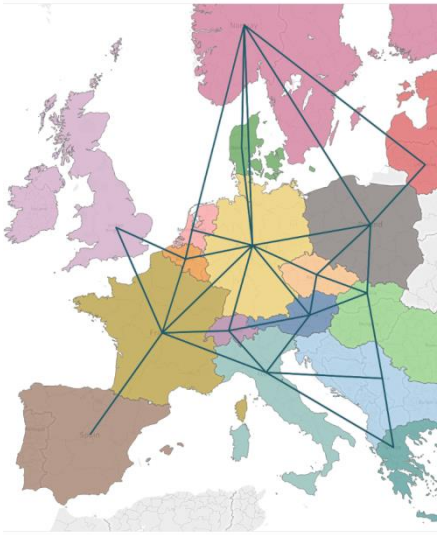


Demand for Coal is shrinking fast in Europe and the US.

Looking for cooperation and joint research for the next 3 years







GENeSYS GLOBAL ENERGY SYSTEM MODEL

Enabling a coal transition in South-Africa

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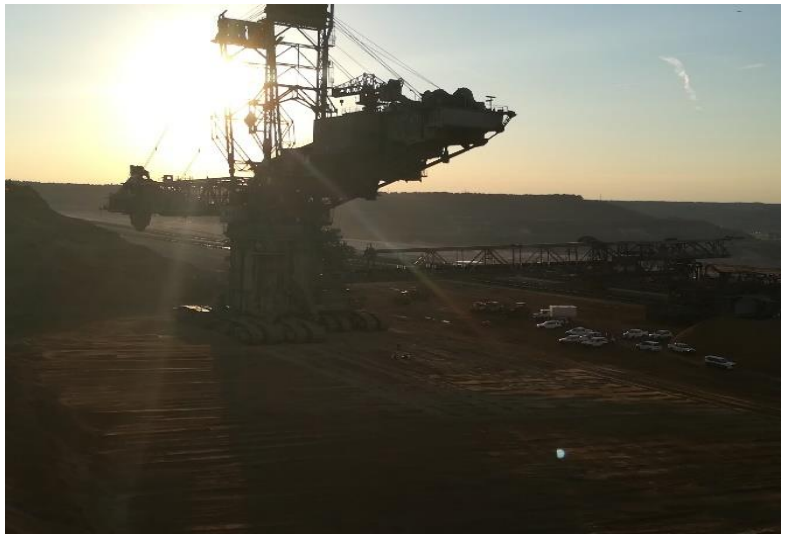

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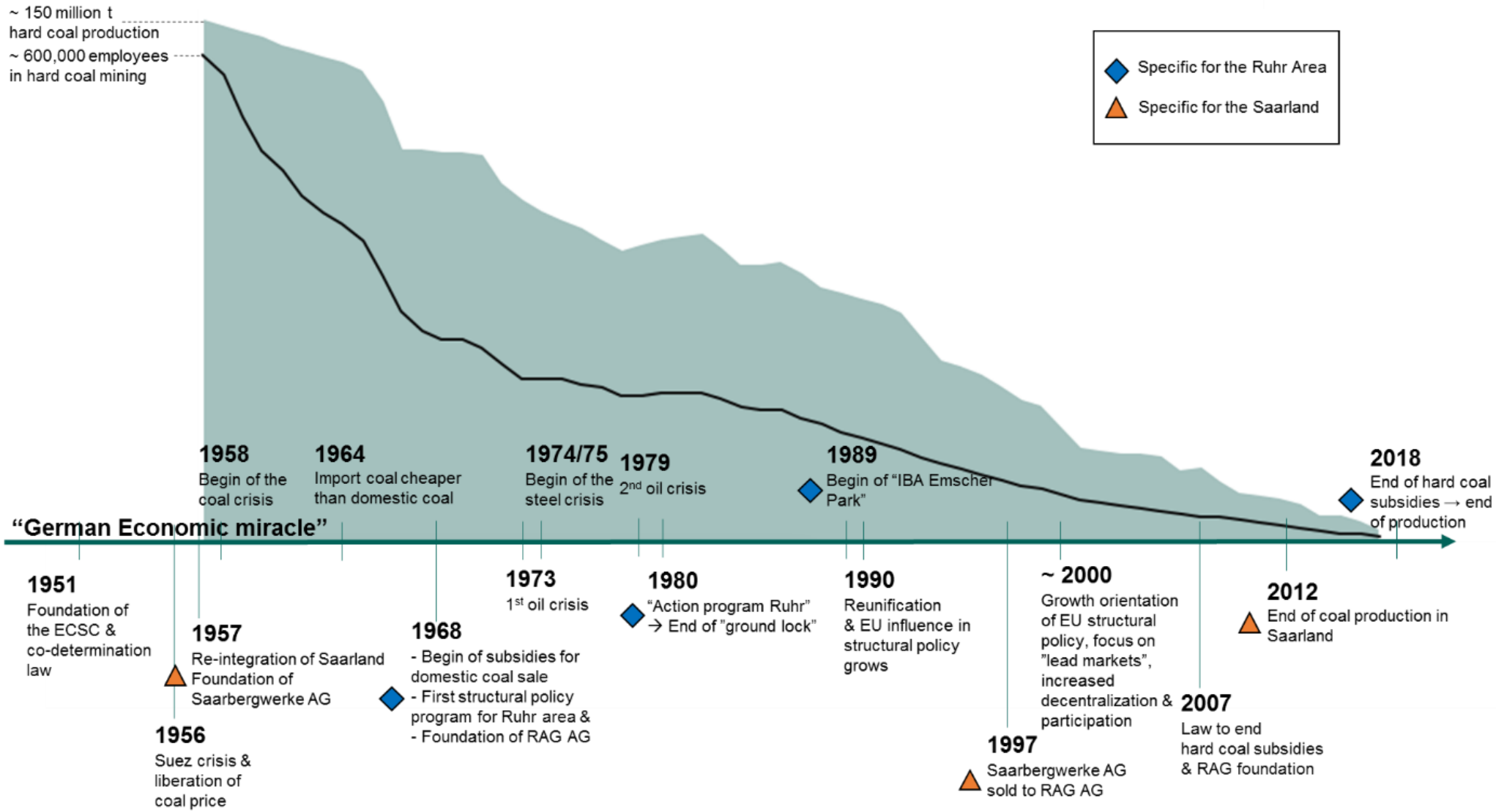
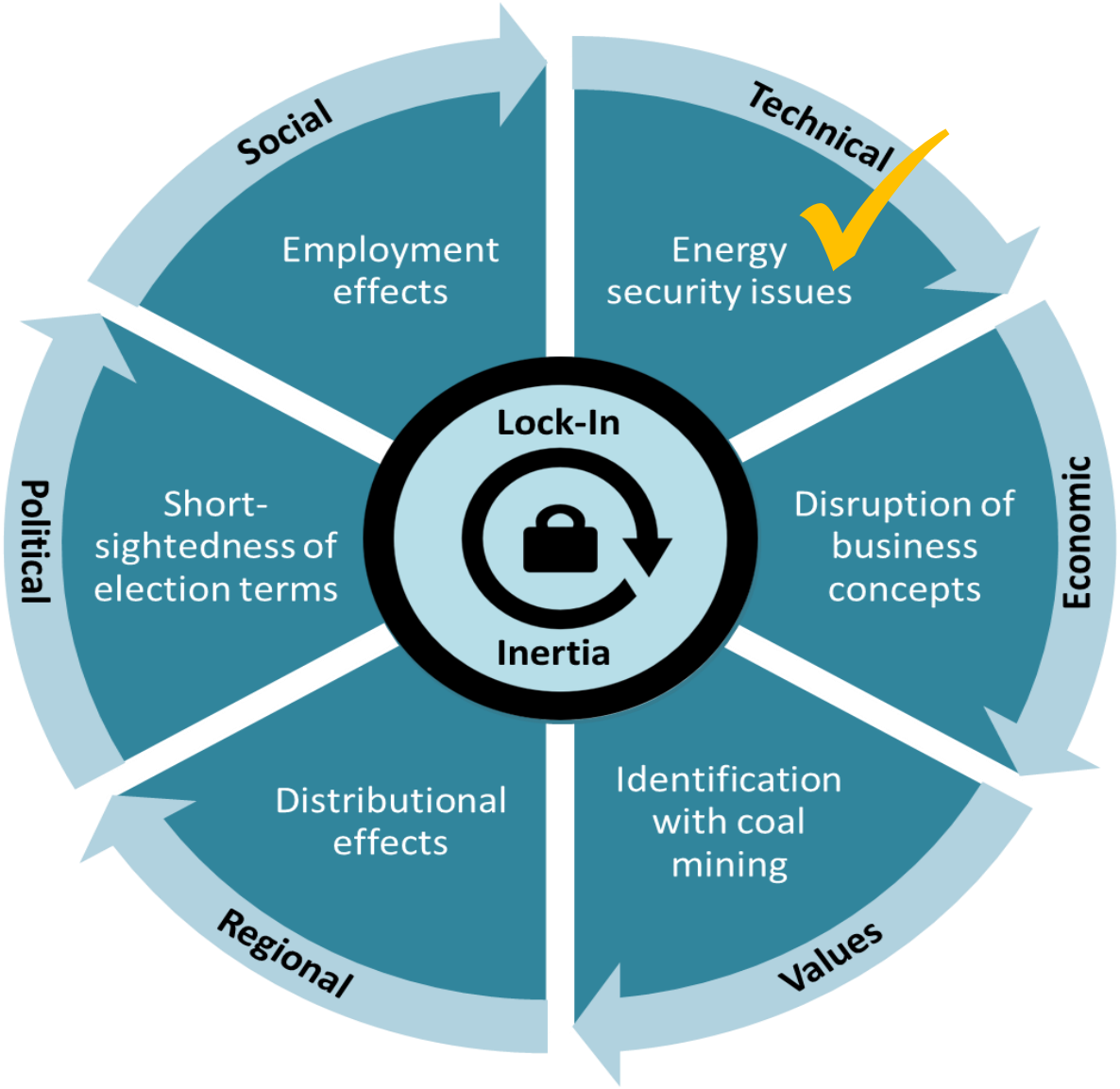
Long history starting with the European Coal and Steel Community in 1951 and coming to an end in 2018



The carbon lock-in of coal regions and actors originates from various sources



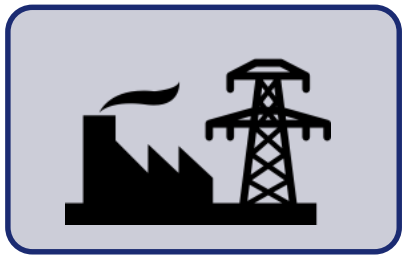
Source: Own illustration.

The upcoming coal phase out effects countries differently and therefore needs a combination of various political instruments

Need to differentiate between countries:

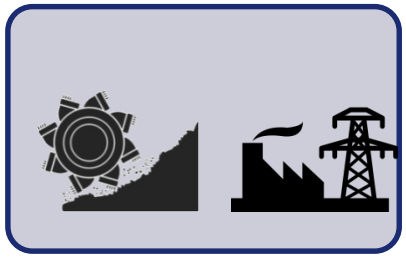
that only mine coal (e.g. Colombia)

- employment
- income from exports



those burning coal (e.g. UK and many countries in Europe)

- energy security
- (employment)



those doing both (e.g. US, China, India, South-Africa, Germany)

- energy security
- employment
- (income from exports)

Energy transition needs to incorporate different regional aspects

e.g. Colombia	e.g. Europe or US / South-Africa	e.g. China or India
Financial payments as compensation for a moratorium on new mines	Moratorium on new mines	Moratorium on new mines; maybe linked with compensations
----------	**Existing coal power plant fleets need to be closed**	**Moratorium for new plants to prevent (stranded) assets**
Support for RES to meet rising energy demand, enable energy access & create jobs	Support for RES to replace fossil capacities & create jobs	Support for RES to meet rising energy demand, enable energy access & create jobs
Active & passive labour market instruments to enable a just transition	Active & passive labour market instruments to enable a just transition	**Active labour market instruments to create new jobs**

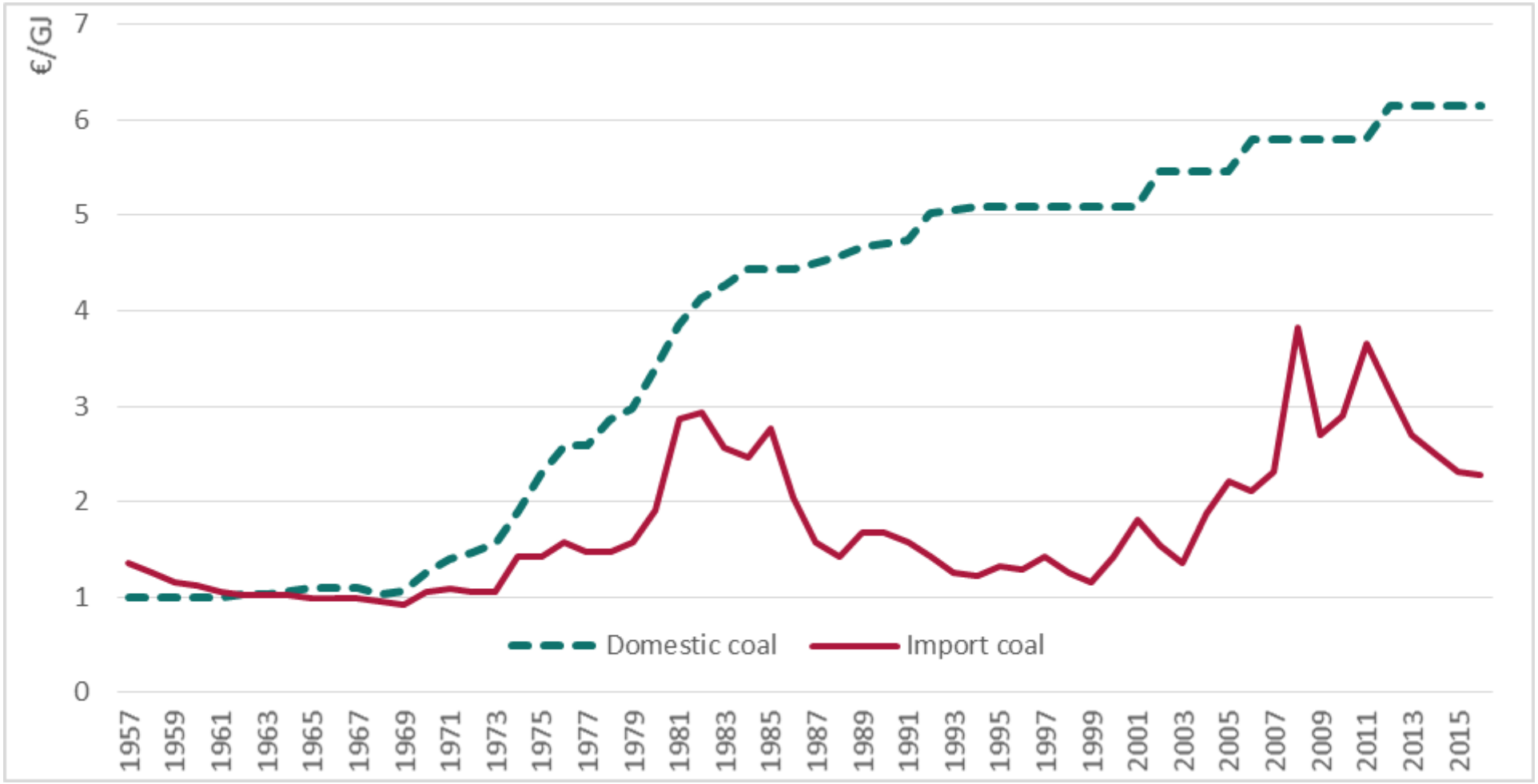
Research outline and methodology

Starting point Analysis	Germany can look back on a decline of **over 60 years in hard coal production** with accompanying policies. Besides the hard coal mining phase-out, Germany experienced a **significant reduction** in its **lignite sector** after the Reunification.
Research Questions	**Which policies** were **implemented** and **helped** to address the **challenges** created by the reduction in the coal sector? **Which** was the **right level** of **governance** that **enabled** a **effective implementation** of the **policy measures** and **instruments?**
Approach	A **historic meta analysis** of the two biggest hard coal regions in Germany: **Ruhr and Saarland** from 1950 to 2018. The analysis of the hard facts is extended by a **literature research** regarding the **implemented policies**.
Results	

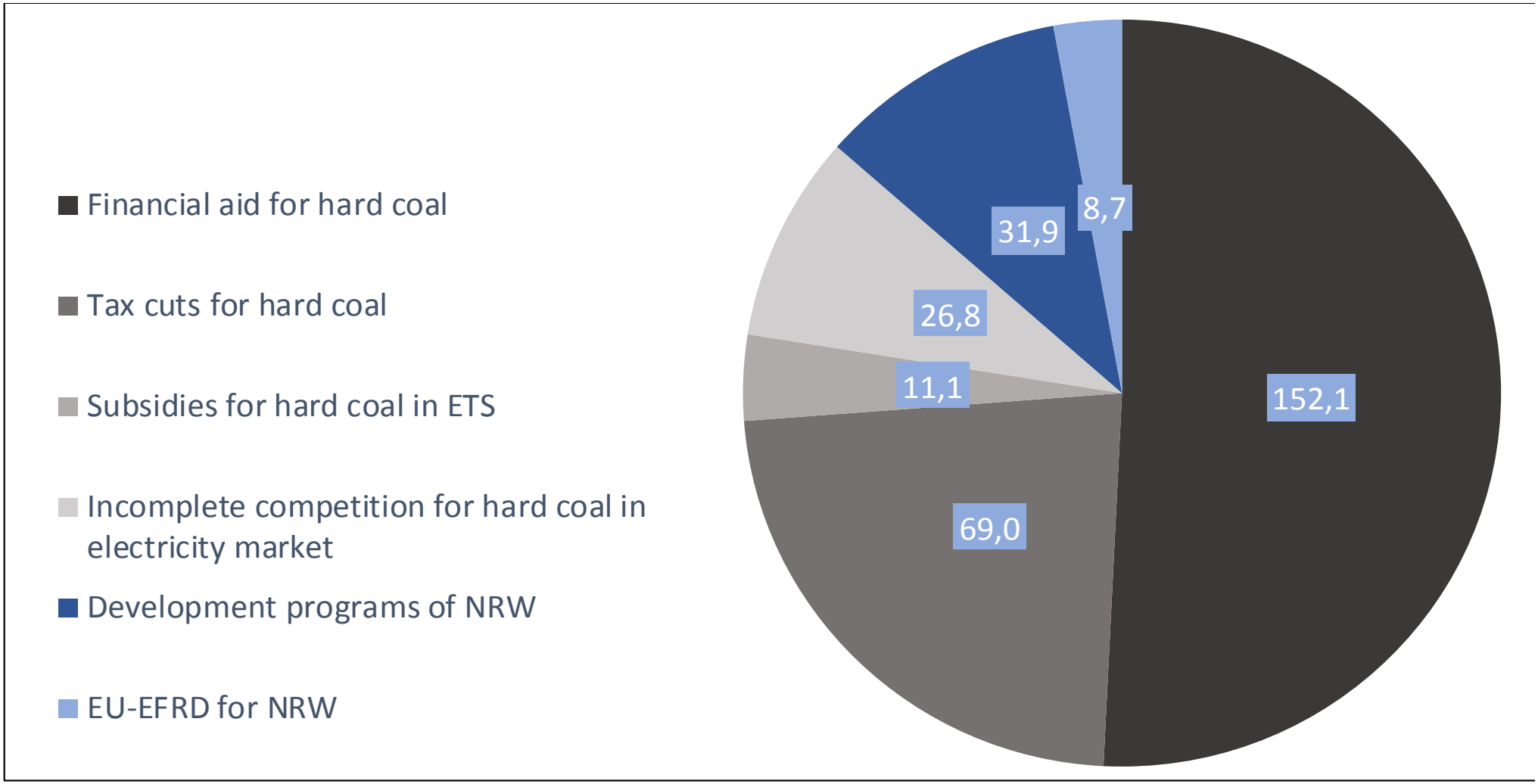
Comparison of the two hard-coal regions

	Ruhr area (in North-Rhine-Westfalia)	Saarland (next to France & Luxemburg)
Population	Most densely populated area in Germany, >5 million people	~1 million people
Employment in mining	1957: ~500,000 1967: ~230,000 1977: ~150,000 2017: ~4,500	1957: ~65,000 1967: ~32,500 1977: ~22,000 2017: ~139
Phase-out date	2018	2012
Ownership of the coal production	Private	Public
Regional resistance against transition	Protests against coal reduction in the mining regions; strong connection and identification with jobs in hard coal production; resistance of coal corporations to give land to new ones"	Less resistance; measures to provide land for new corporations; security concerns due to earthquakes
Competition in the region	Strong intra-regional competition of the cities in the Ruhr area	Early realization to connect with other cities across the border in France and Luxemburg to overcome the fringe status

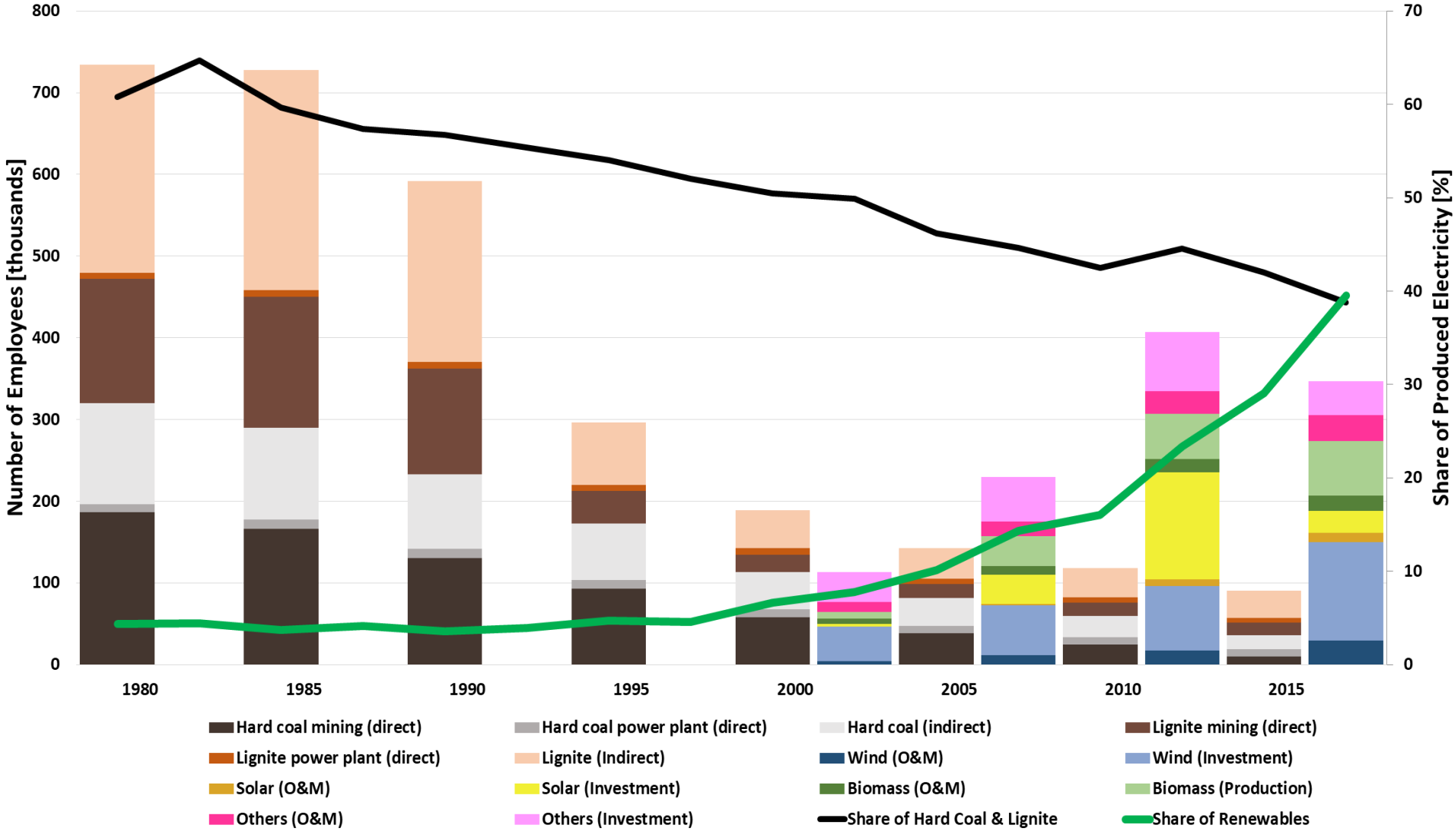
Hard coal phase-out was economically driven and replaced by cheaper imported hard coal



Nominal values in billion € for measures implemented for conservation of hard coal and economic reorientation in NRW



Only Increasing Renewables is not sufficient - Development of coal and RES employment and electricity share in Germany



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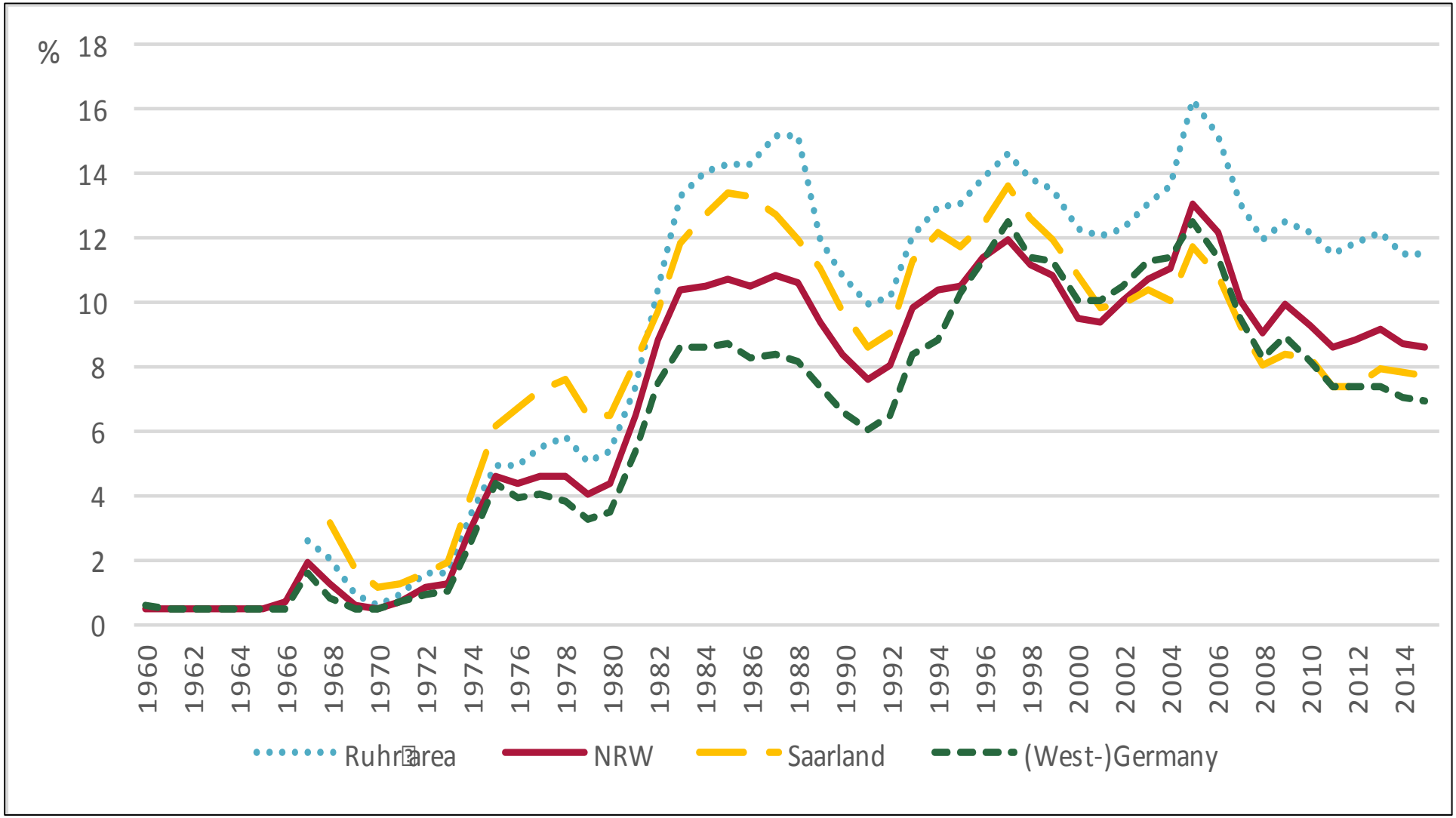
Development of umemployment rates



Coal crisis 1958 and the first structural policy program in NRW


1957: 150 million
1970: 110 million


1957: 19 million
1970: 10 million


1957: 607,349
1970: 252,742


1957: 0.5%*
1970: 0.6% (0.5*)


1960 – 1970:
- 202,693

Events	Challenges	Measures	Effect
• 1956 End of Suez crisis; Liberation of coal price • 1958 start of coal crisis • Economic miracle until approximately mid-60s	• Uncontrolled job losses (over 300.000; most of them in the Ruhr area) • High sectoral dependency • Low mobility of citizens due to mining and steel orientated infrastructure (limited interconnections between cities)	• Former miners shift into metal industry • Early retirement • Coal mining united in one company and subsidies for coal sale • Infrastructure programs to enhance mobility • Foundation of university • Federal attempts to settle large new enterprises	• Stabilization of decline in coal sector • Infrastructural programs lead to highway system • First university • Settlement of new enterprises failed due to the resistance network of the mining and steel companies, politicians and unions (*ground lock*)

*Data not available for Ruhr area; Figure for North Rhine-Westphalia

Oil crisis 1973 and re-&neo-industrialization of the Ruhr area


1971: 110 million
1985: 80 million


1971: 8 million
1985: 11 million


1971: 244,388
1985: 166,225


1971: 0.9%
1985: 14.2%


1971 – 1985:
- 251,550

Events	Challenges	Measures	Effect
• Economic miracle ended • Oil crises 1973 and 1979 • Steel crisis mid-1970s	• Job losses & increasing unemployment • Regional resistance against structural change by powerful network of companies, unions and politicians (ground lock) • Missing soft location factors • Migration • High sectoral dependency	• Modernization programs of *existing* industry (coal, steel, energy) • Innovation and technology support • Implementation of a property fund to buy and restore former mining sites	• Creation of several technology centres • But no substantial diversification of the economy since large sums still went into the preservation of the mining and steel industry • End of the ground lock due to the property fund

Regionalization of the structural policy since the mid-1980s


1986: 80 million
1999: 40 million


1986: 11 million
1999: 25 million


1986: 164,073
1999: 66,414


1986: 14.2%
1999: 13.5%


1986 – 1999:
+ 231,271

Events	Challenges	Measures	Effect
• 2nd oil crisis 1979 • Reunion of Germany 1990	• Further job losses & increasing unemployment (tripled) • Failure of previous attempts to attract companies into the region • Environmental problems and missing soft location factors (e.g. cultural activities) • Migration	• Regionalization of the structural policy and participation and consensus of local stakeholders in the process • Innovation and technology funding, education of workers and infrastructure • *IBA Emscher Park:* 120 small projects to improve soft location factors and employment	• Image change in the Ruhr area beyond the perception as a mining and steel region • Stabilizing the migration (even positive for short time) • Helped creating several universities and research institutions

Increasing EU influence and end of subsidies for domestic hard coal production

2000: 33 million
2017: 4 million

2000: 25 million
2017: 40 million

2000: 58,082
2017: 5.711

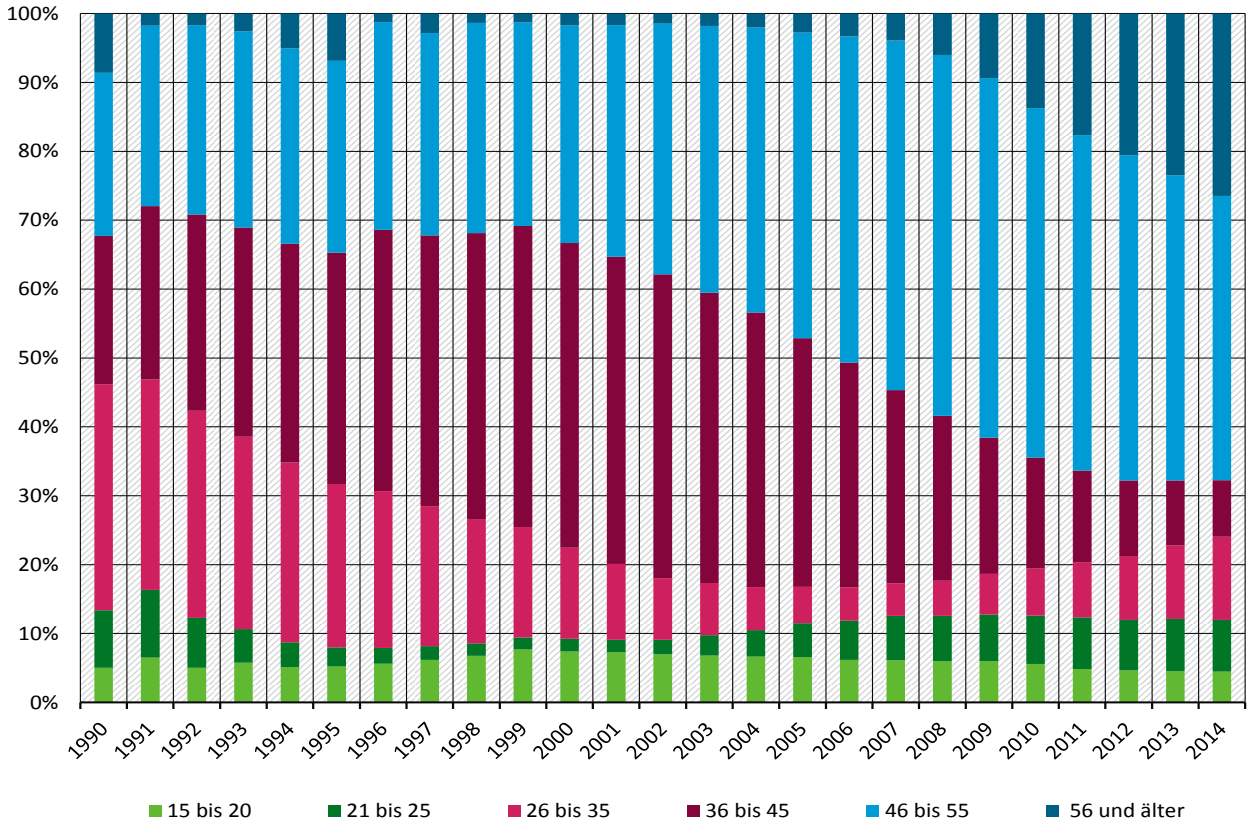
2000: 12.2%
2015: 11.5%

2000 – 2014:
+ 42,194

Events	Challenges	Measures	Effect
• Increasing environmental concerns • Introduction of the Euro • EU expansion • Deployment of competitive renewable energy technologies	• EU´s competition legislations forbids substitutions of the coal sector (estimated subsidies from 1950 to 2007 around €300 billion) • *Socially compatible* hard coal mining phase-out • Polluter-pays principle of eternity costs in hard coal mining	*Law for financing hard coal* (2007) (Law to phase-out hard coal mining): • Phase-out date at 2018 • Each worker above the age of 42 was secured against unemployment • RAG foundation to finance the eternity costs	• No worker became unemployed during the phase-out process • Higher total costs for the late phase-out (2018) compared to proposals from different institutes during the phase-out process (e.g. 2012) • There still exists the risk of not applying the polluter-pays principle

Transfer to coal phase-out in Germany

- **Age structure in lignite mining sector**
  - → Decline of employment along the age structure



Transfer to coal phase-out in Germany

- **Largest part is over**