

Just transition pathways in major coal economies

Insights from the Coal Transitions research project

Jesse Burton



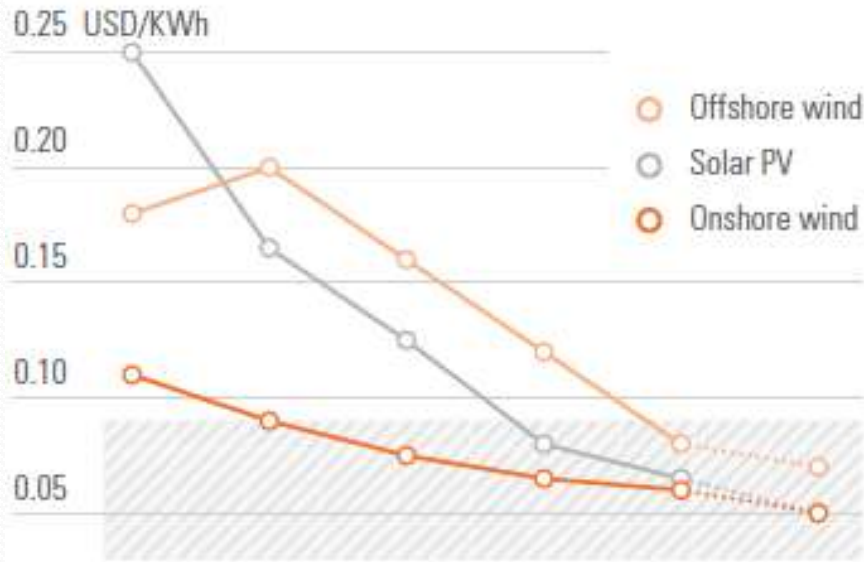
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COAL TRANSITIONS

www.coaltransitions.org

Coal transitions are already happening



Coal dependent regions are not always prepared for the pace and scale of change that they face

Not having transition support is also a policy choice

Protecting livelihoods and creating decent work



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Building inclusive & resilient economies



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What is needed?

- Support for national and sub-national entities to engage in social dialogue and to design institutions to explore context-specific vulnerabilities and economic resilience opportunities in coal dependent areas
- Macroeconomic analysis of the effects of climate policies needs to be supplemented by sector-specific and microeconomic assessments of local impacts on workers and communities and new possibilities
- Political and economic analysis of who bears the costs and benefits of the transition, contextual factors defining potential interventions, and the role of finance in mitigating the impacts of a disorderly transition are important areas of further research
- Reallocation of resources (eg from fossil fuel subsidy reform)



Fossil fuel subsidy reform and investment in social protection – lessons for a Just Transition

Laura Merrill
3rd December 2018
Katowice
lmerrill@iisd.org



**Global Subsidies
Initiative**



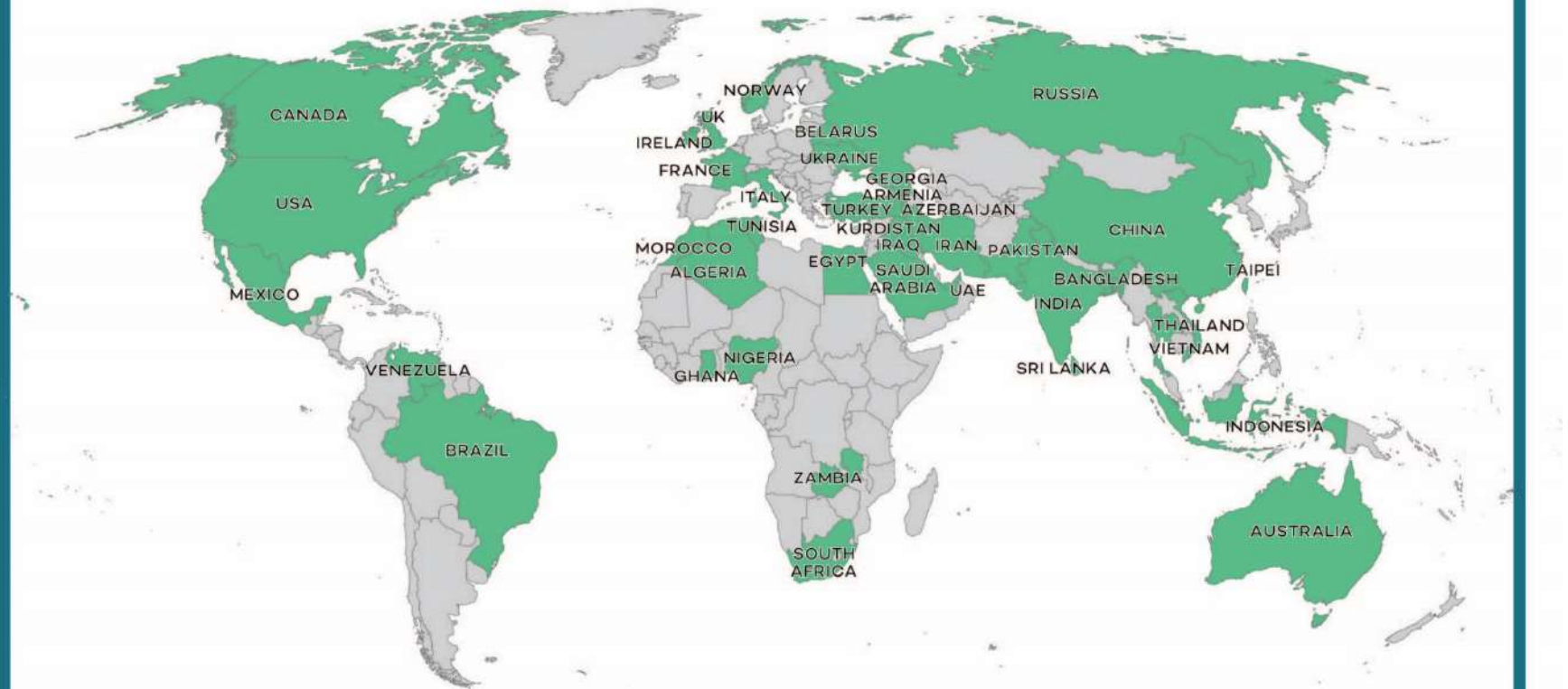
IISD

International Institute for
Sustainable Development

Countries where GSI works

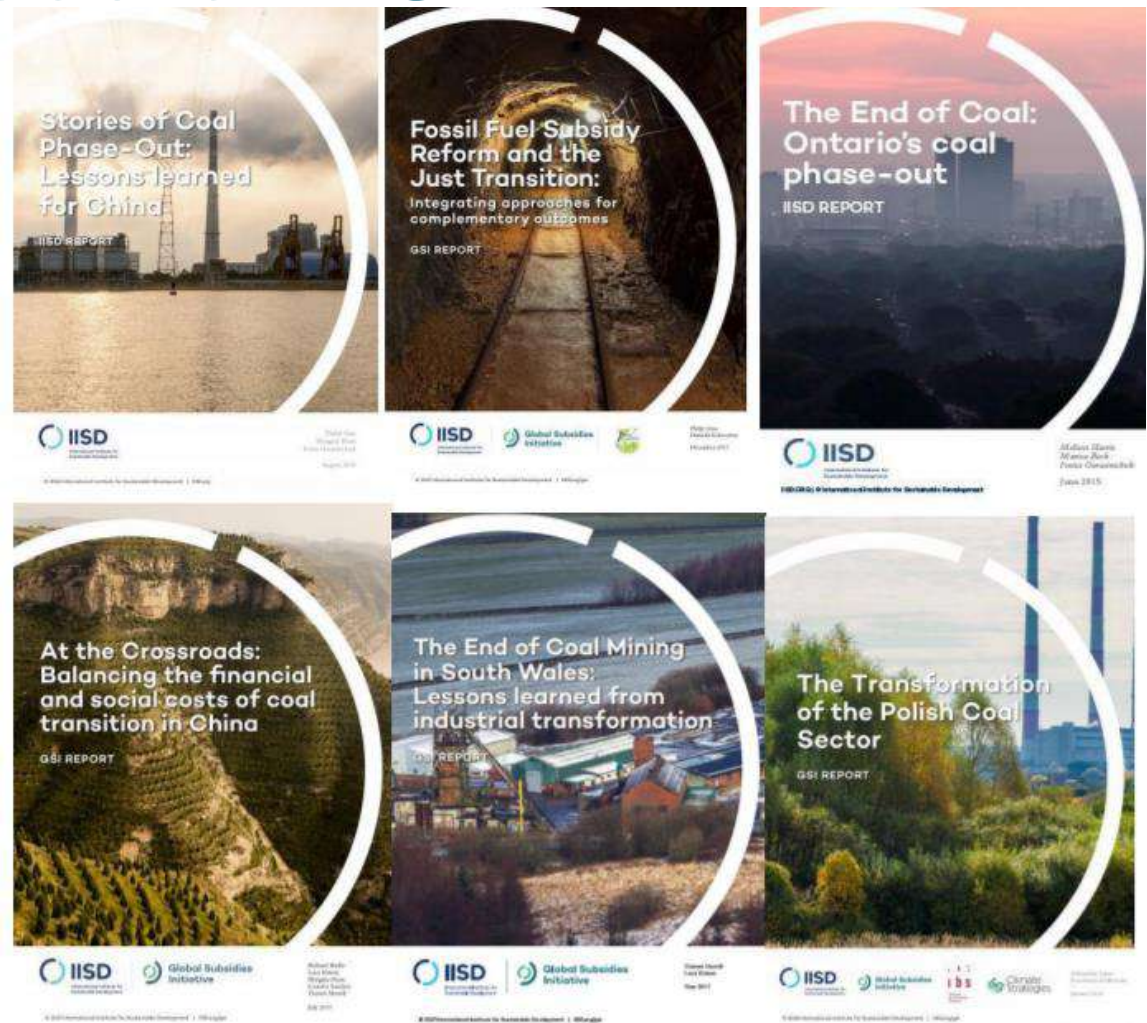


Countries where GSI has worked 2015-2017



Global Subsidies
Initiative

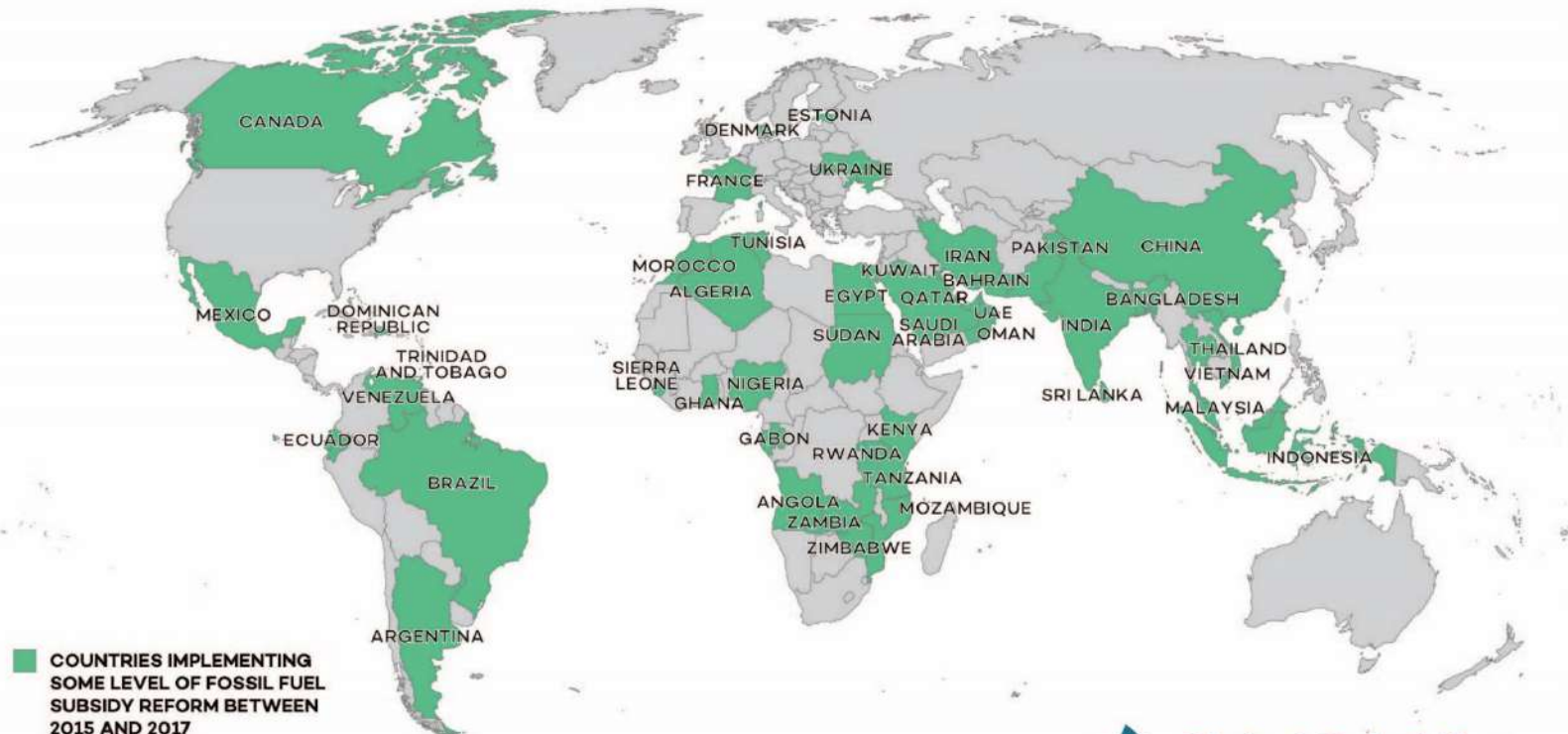
Case studies from transition in the coal sector IISD



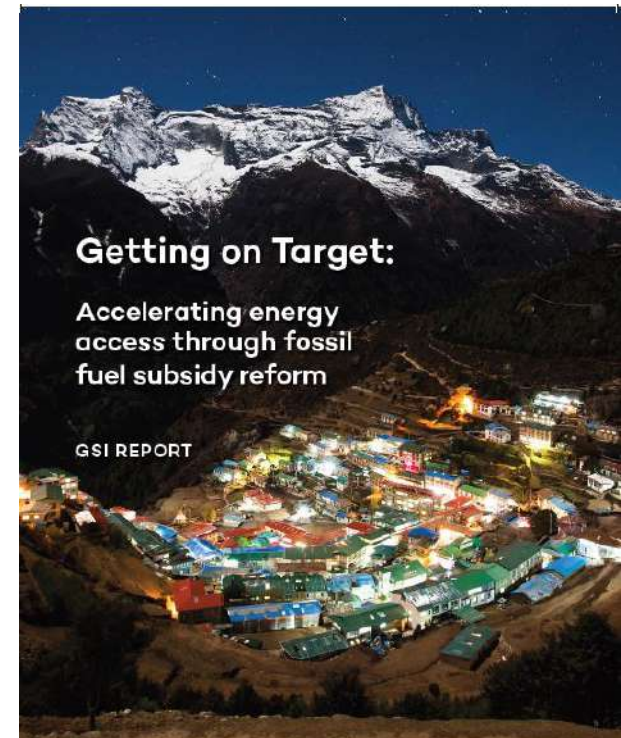
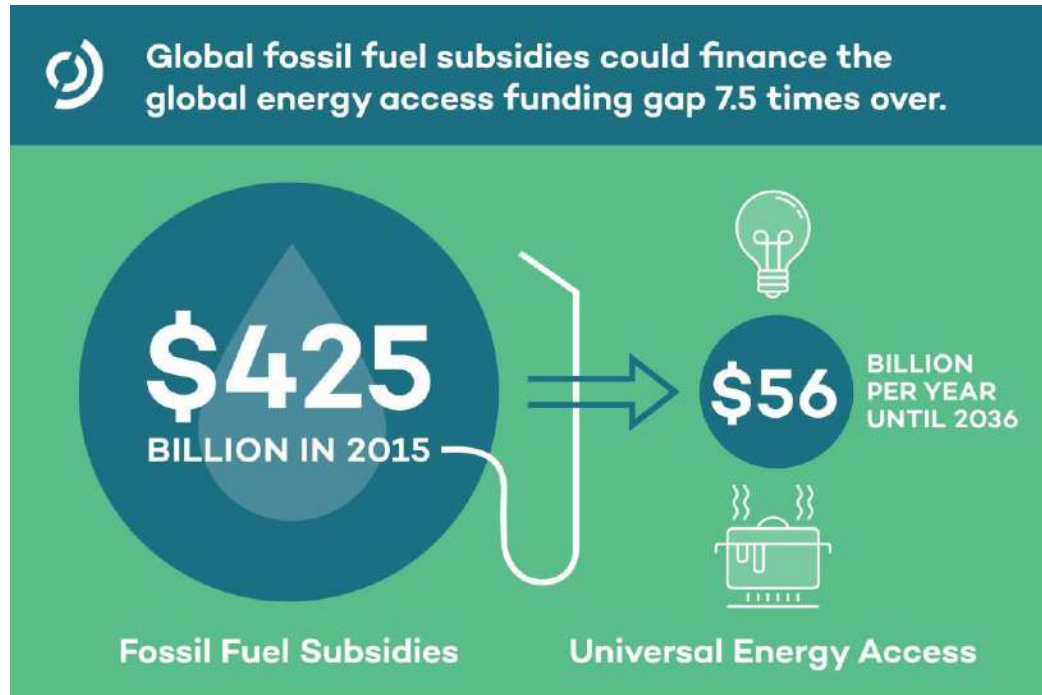
Countries where there have been reforms



In 2015-2017, at least 40 countries undertook some level of fossil fuel subsidy reform



FFSR and SDGs



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Alex Zerkow
Leyla Sanchez
Shuai Shao
Chris Berra
Lynn Merrill

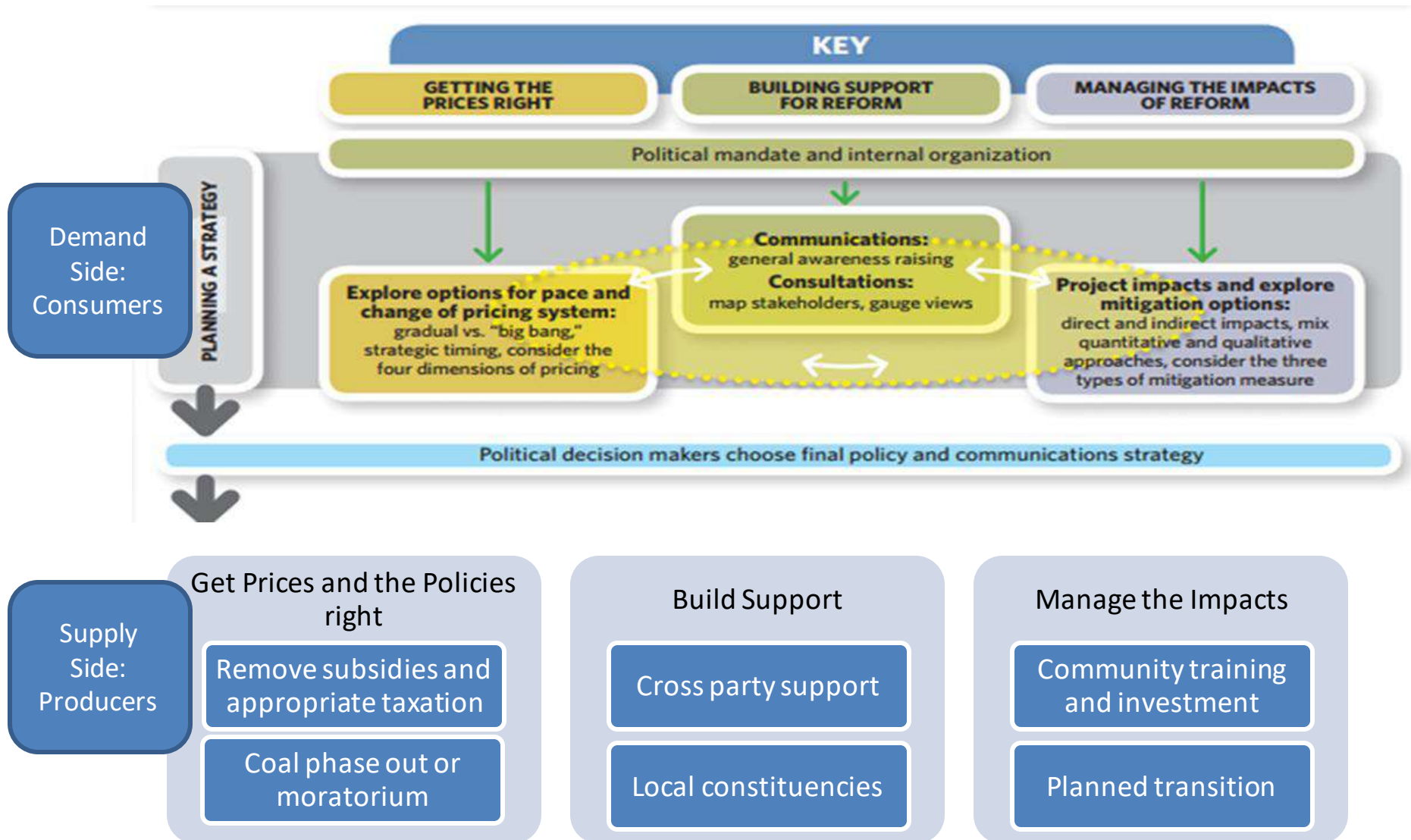
July 2018

Indonesia fossil fuel subsidy reform

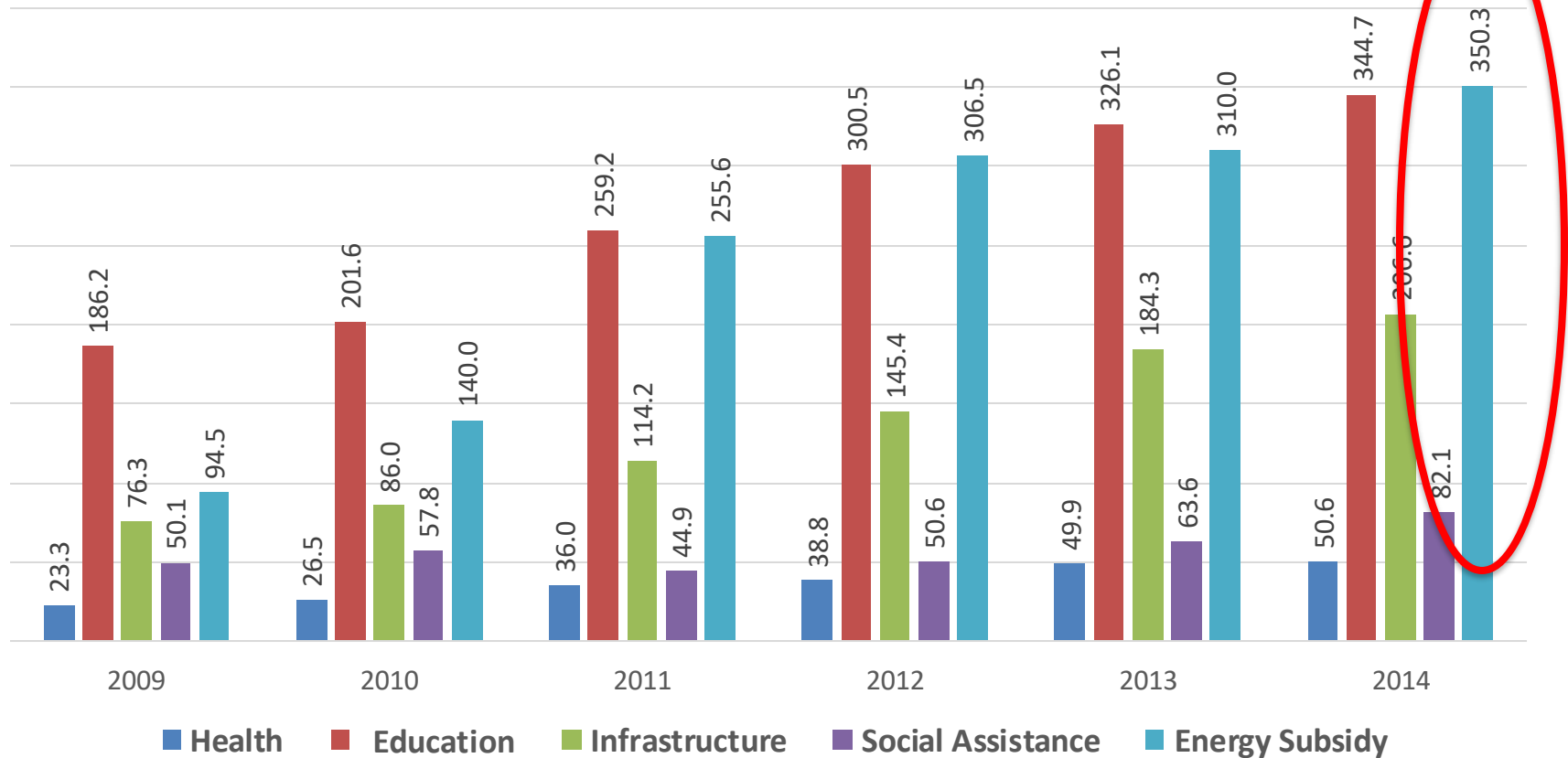


- Subsidy size and scale
- Process of reform
- Mitigation of price increase measures
- Reinvestment of savings measures
- Climate co-benefits of FFSR

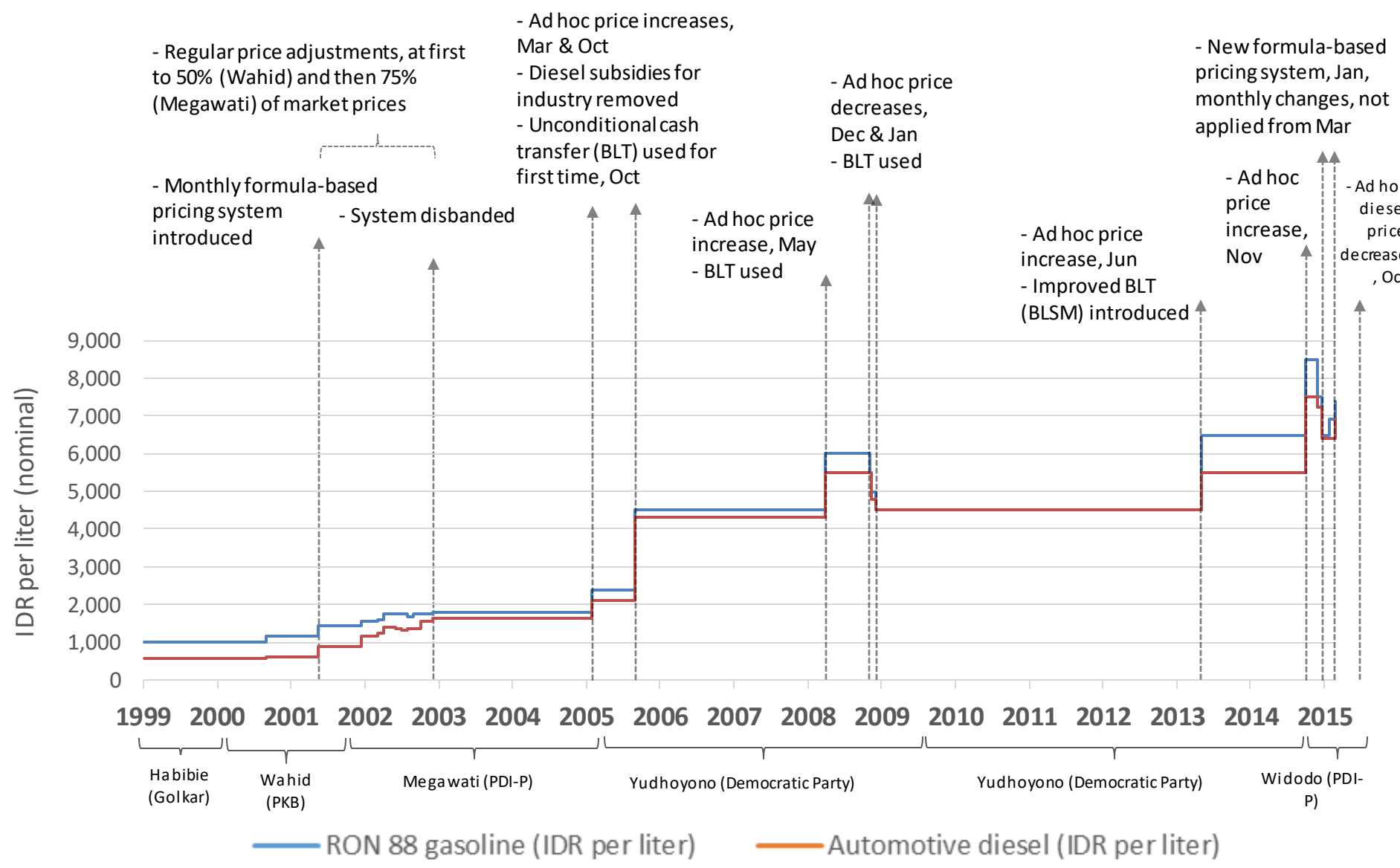
Strategy for reform and phase out



Indonesia: subsidies compared to social spending

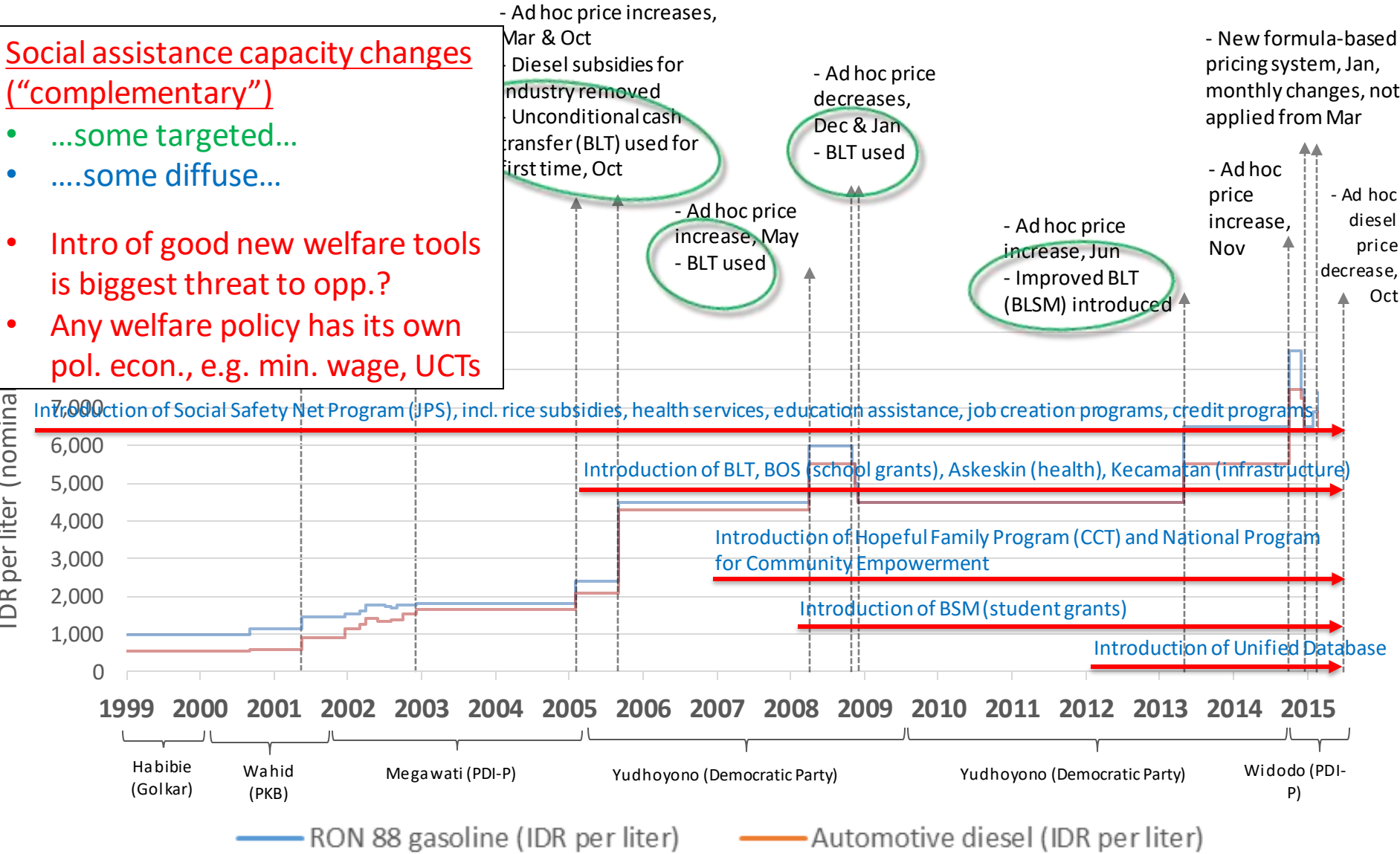


Energy (Fuel & Electricity), Health and Education Subsidies (IDR trillion) Source: Friends Network Webinar September 2018, presentation from Elan Satriawan, Head of Policy Working Group, TNP2K, Indonesia slides available at <http://fffsr.org/webinars/>



Social assistance capacity changes (“complementary”)

- ...some targeted...
-some diffuse...
- Intro of good new welfare tools is biggest threat to opp.?
- Any welfare policy has its own pol. econ., e.g. min. wage, UCTs



Indonesia: Reforms, with targeting and poverty reduction



POVERTY IMPACT

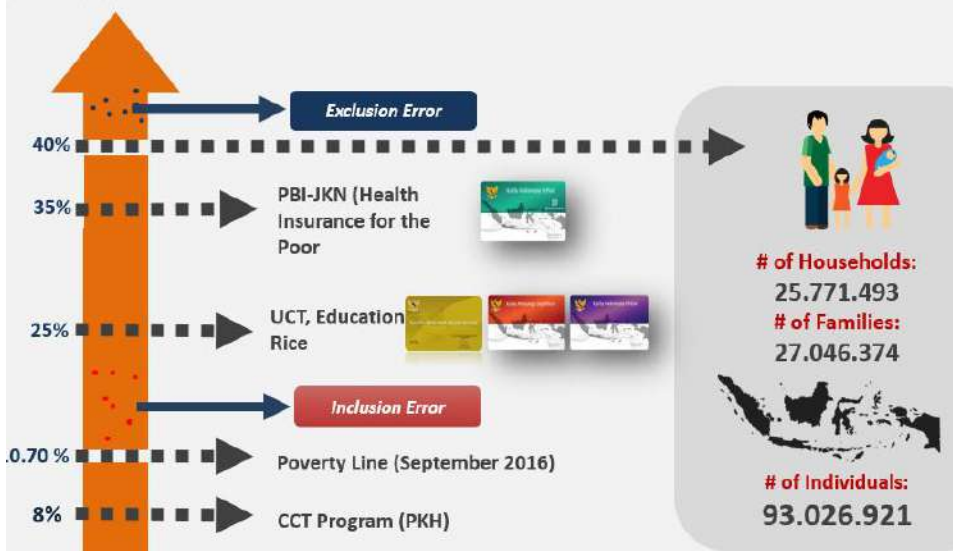


The number of poor decreased **4.8 million** in **5 years**

One of episodes with most dramatic decrease in number of poor since 1998 Asian Financial Crisis

Number of poor (million)
Poverty rate (%)

UDB include names and addresses of bottom 40% of Indonesian population (~96 million individuals)



JUNE 2013

June 21, 2013 the price of gasoline rose from Rp.4,500 to Rp.6,500 while the diesel from Rp.4,500 to Rp.5,500.

NOVEMBER 2014

November 2014 premium gasoline price rose from 6,500 into Rp.8,500 while diesel from Rp.5,500 to Rp.7,500.

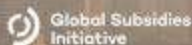
Savings from fuel subsidies Indonesia, 2015



FINANCING DEVELOPMENT WITH FOSSIL FUEL SUBSIDIES:

THE REALLOCATION OF INDONESIA'S GASOLINE AND DIESEL SUBSIDIES IN 2015

Ranawati Pradipto
Akbar Susanto
Abraham Wirotomo
Alvin Adigemito
Christopher Beaton
May 2016



Fuel subsidy savings in 2015 allowed to major investments in social welfare and infrastructure through increased budgets for ministries, state-owned enterprises and transfers for regions and villages.

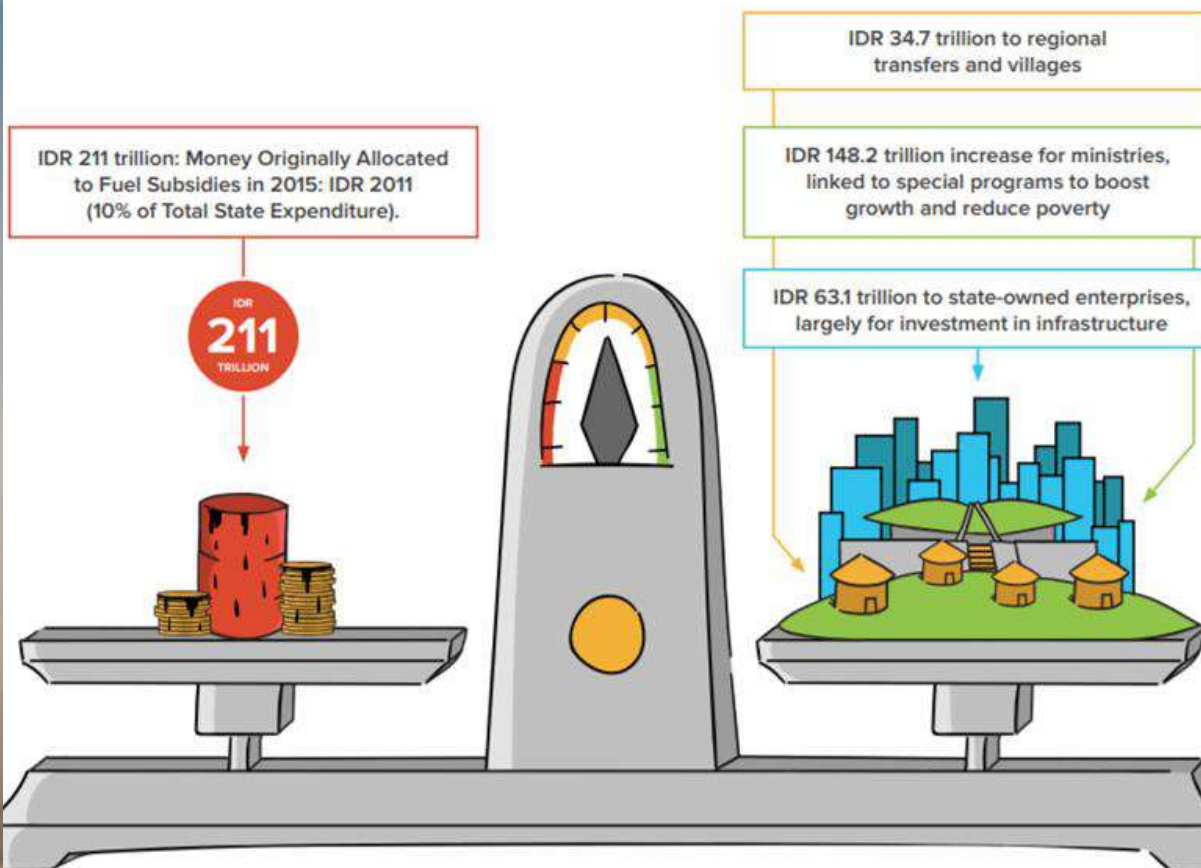


Figure ES1. Fuel Subsidy Savings and Major Increases in Expenditure in Revised State Budget 2015

Source: Authors, based on data from State Budget documents (various), Bank Indonesia^a and IMF.^b

Source: Pradipto, R., Susanto, A., Wirotomo, A., Adisasmita, A. & Beaton, C. (2015). Financing development with fossil fuel subsidies: The reallocation of Indonesia's gasoline and diesel subsidies in 2015. Winnipeg/Geneva: IISD-GSI. <https://www.iisd.org/sites/default/files/publications/financing-development-with-fossil-fuel-subsidies-indonesia.pdf>



Coal Phase Out: UK

In the UK, **inward investment** promoted job creation in other industries



**Coal
workers**

250,000
in 1976



2,000
in 2015



**Coal
production**

124 M
tonnes in 1976



4 M
tonnes in 2015

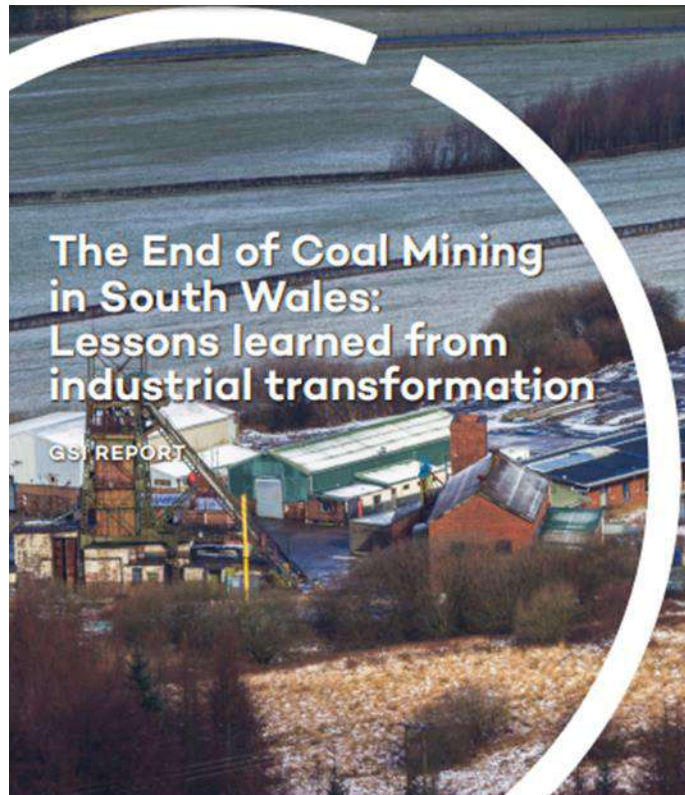
UK Department for Business, Energy & Industrial Strategy, Coal statistics



**Global Subsidies
Initiative**



Coal Phase Out: UK, South Wales



Towers Merrill
Lucy Knows
May 2017

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Strengthen local economy

- Focus communities + local suppliers
- Diversification
- Local entrepreneurs
- Retraining
- Higher education + business

Improve physical infrastructure

- Prioritize infrastructure needs
- Recognize opportunities from landscape as an asset for tourism and outdoor activities
- Improve and manage housing stock

Community cohesion

- Welfare
- Cultural identity
- Strategic government support

Good institutional support

- Long term
- Clear institutions for inward investment
- Specialist body for regional investment
- Right people



Lessons learned: Be prepared



- Planning
- Compensation, safety nets and an organised package of mitigation measures
- Long term regional investments into poverty reduction and infrastructure
- Retraining
- Communication

Challenge One: Different Motivations, Different Conceptions

Motivation

Political	Ethical
Gain support from those harmed by transition	People harmed by CC policy should be compensated

Concept of Just Transition

Transitional	Transformative
Economic system is unchanged; only energy source changes	Economic transformation along with changes in how energy is produced and used
FF workers should be compensated and retrained	Not just workers but also fenceline communities are part of this: Equity is a top concern
More narrow strategy, focuses on FF workers and FF-centered communities	Broad strategy, coalitions of EJ, social justice, economic justice
JT brings allies on board for CC action	CC action is embedded in larger movement for justice



Challenge Two: Who to include within the JT boundaries?

1. Fossil Fuel (FF) workers (direct workers)
2. Supply chain workers (indirect workers)
3. Communities built or centered around a FF industry
4. FF workers in other countries or outside of the policy zone
5. “Fenceline communities” who are currently suffering from pollution and other harms from a FF-based economy

→ Who gets included in policy is related to whether model is “transition” or “transformation”

→ If policy research and implementation does not explicitly identify the boundaries, they will implicitly be decided.

Challenge Three:

Organized labor can be support or opposition

- In U.S., some industries (e.g. Steelworkers) support JT, while other industries (e.g. United Mine Workers) are opposed to all CC action
- Even within supportive unions, support varies. Four relevant factors:

	Age	Skill	Compensation	Union Leadership
More Support	Closer to retirement	Transferrable skills (e.g. machinists, metal workers) can more easily find new jobs	Those earning lower wages in FF industries now, less likely to be opposed	Pro-environment leadership; Also leadership who sees transition as inevitable and wants to protect workers
Less Support	Younger workers may need to retrain/relocated	Industry-specific skills (e.g. oil rig operators) make it harder to find new job	Higher-wage workers may find it hard to find similar well-paying job	More conservative union leaders who want to block all CC action

Examples and Strategies for Success

Transitional Program, based on successful examples (e.g. nuclear decommissioning) and avoiding the mistakes of unsuccessful experiences (e.g. Trade Adjustment Assistance)

1. Pension guarantees
2. Job guarantees (in Clean Energy, other industries, or gov't as employer of last resort)
3. Generous income support, retraining/education and relocation support
4. Support for communities (who rely on FF worker spending and/or tax base)

Two Transformative Examples:

“Reinvest in Our Power”

Collaboration of groups, including CJA, addresses inequity and democratizes wealth. Divests from FF companies; invests in a democratically-governed and cooperatively owned financial institution that makes loans to advance ecological restoration and community ownership.

“NY Renews,” a coalition of over 100 groups, working to advance legislation in NY State that would charge a “polluter fee” and use the revenues to invest in clean energy in disadvantaged communities and to support funding for FF workers and communities impacted by the clean energy transition.

REGIONAL DISTRIBUTION EFFECTS OF THE ENERGY TRANSITION IN GERMANY

Dr. Ulrike Lehr, Philip Ulrich, Institute of Economic Structures Research

Regional distribution – why does it matter?

- ▶ Identify „winners and losers“
- ▶ Tailor policies and strategies accordingly
- ▶ Enhance acceptance

Our contribution: Regional distribution of gross effects of renewable energy deployment and net effects of the energy transition

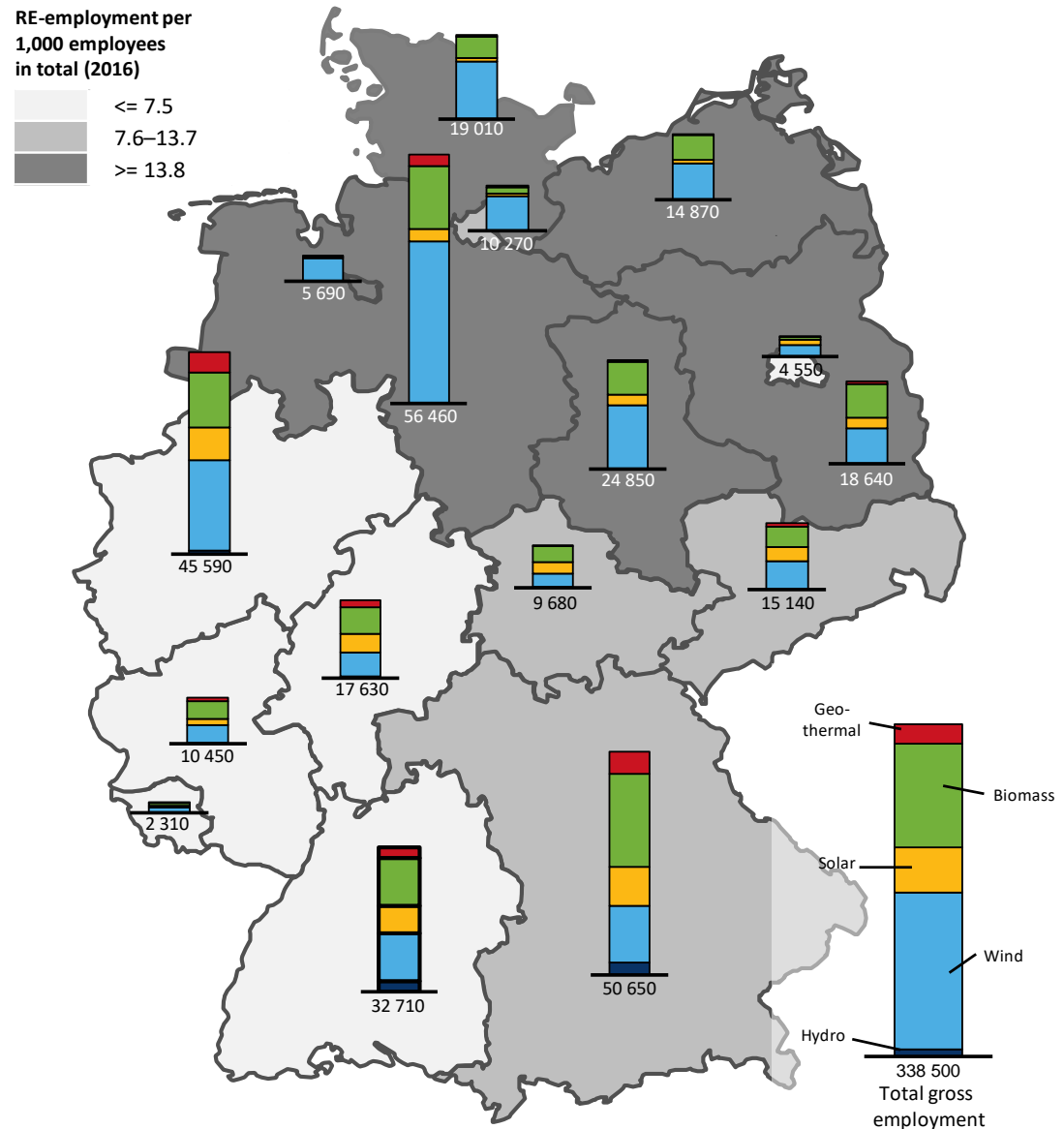
Where are new job opportunities?

Who bears the burden of new installations?

Where are jobs lost?

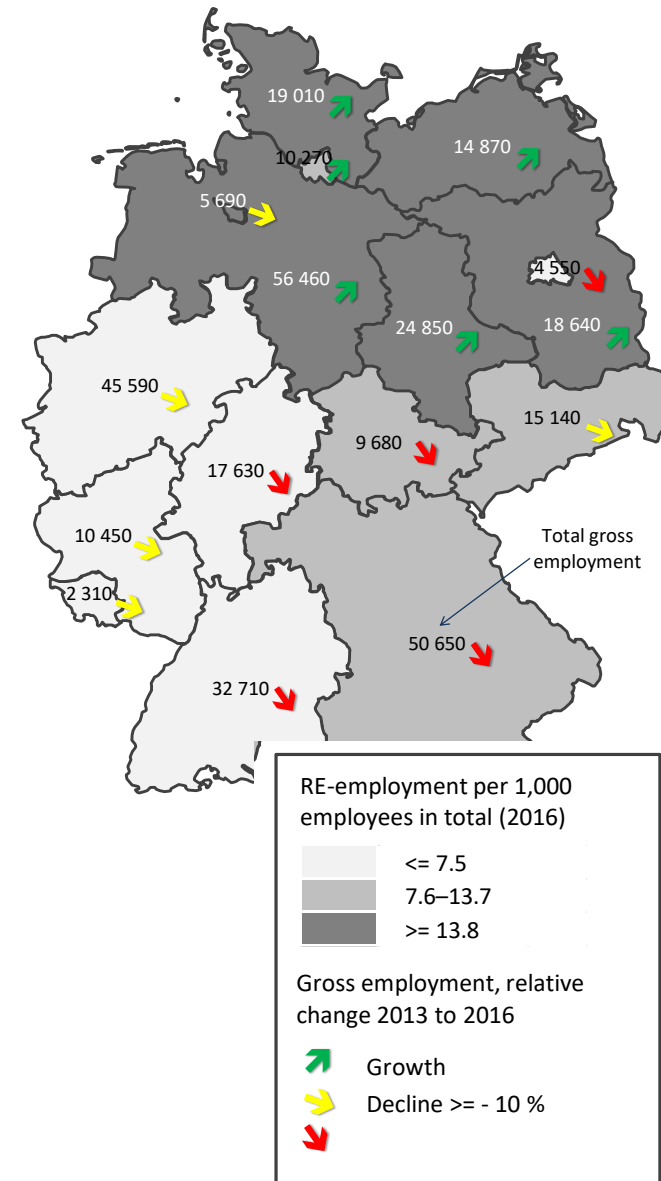
Gross effect in the federal states

- ▶ There is gross employment in all federal states for all energy sources and technologies.
- ▶ Relative to the size of the federal states, there is a strong concentration in the north and east.
- ▶ Wind energy is the most important pillar in almost all federal states, followed by bioenergy.



Gross effect in the federal states

- ▶ Since 2014, RE employment has developed positively, especially in those federal states,
 - ⇒ where wind industry sites are present and stable
 - ⇒ where PV industry was scarce in 2014
 - ⇒ where strong deployment has taken place (most recently mainly wind turbines)
- ▶ Operation & maintenance is playing an increasingly important role, so federal states that already have a high per capita RE shares can expect a relatively stable development.



Net regional effects of the energy transition

- ▶ Which dimension of the cause-and-effect relationship is regionally differentiated and which can be mapped?
 - ⇒ Economic structures and structural change
 - ⇒ Distribution of energy sources in power generation
 - ⇒ Investment stimuli
 - ⇒ Region-specific multipliers (domestic shares and intermediate inputs, induced effects)
- ▶ Region-specific reactions to prices or savings?
 - ⇒ Different behavioral equations
- ▶ Regionalization of net effects requires integrated modelling

Results and conclusions 1/2

- ▶ The scenario comparison shows positive effects on value added and employment in all federal states at different levels.
- ▶ Structural differences in economic development in the federal states interact with effects at the national level.
- ▶ Structurally weak federal states with a high share of renewable energy experience stronger positive effects, while city states show slightly less positive effects
- ▶ Construction sector profits from energy efficient buildings mainly in:
 - ⇒ regions with high relevance of the construction sector and
 - ⇒ regions with labor-intensive construction sector and
 - ⇒ regions with a high price level in construction

Results and conclusions 2/2

- ▶ Scenarios consider the whole set of measures for energy transition – renewable energy deployment AND energy efficiency
- ▶ Counterbalancing effects
- ▶ BUT: people who loose jobs in coal mining not necessarily find jobs in energy efficiency
- ▶ Transition programs, training, structural change support is necessary.

Thank you for your attention.



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Regional distribution effects of the energy transition in Germany

Dr. Ulrike Lehr, Philip Ulrich, Institute of Economic Structures Research

1: Regional distribution – why does it matter?

The transition to a sustainable energy system is often discussed on the national level and overall economic effects are determined. The underlying pattern of regions or federal states or any other subunit is quite often neglected. For the acceptance of the transition in the population, the consideration of regional aspects, however, is essential. The due consideration requires measurement and modeling to have a quantitative, science-based decision-making background. Thus, analyzing the regional distribution helps to

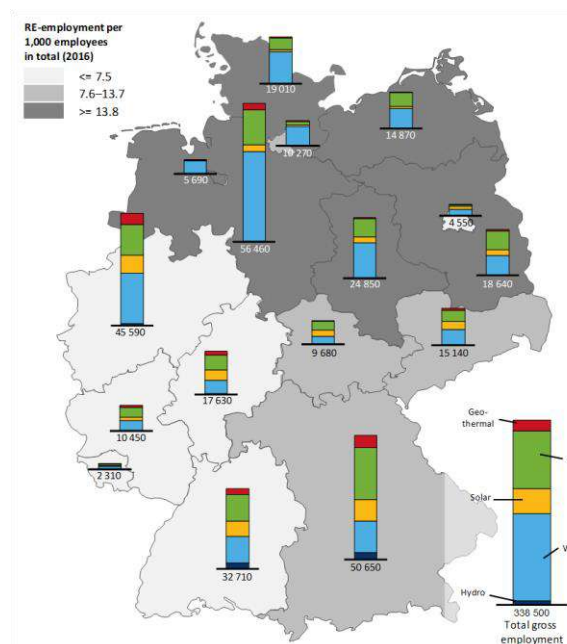
- Identify „winners and losers “
- Tailor policies and strategies accordingly
- Enhance acceptance

Our contribution to this discussion are here: Regional distribution of gross effects of renewable energy deployment and net effects of the energy transition. With this, we are aiming at answering the following questions:

- Where are new job opportunities?
- Who bears the burden of new installations?
- Where are jobs lost?

The Analysis consists of two parts: a model of gross regional effects of renewable energy (RE) deployment in Germany and an analysis of net economic regional effects of the whole Energiewende, the German energy transition.

2: Gross effects from RE deployment



There is gross employment in all federal

states for all energy sources and technologies. The distribution follows the strengths of the respective federal state. It considers the whole value chain, including direct and indirect employment effects. Installation and manufacturing of the RE system is analyzed separately from operation and maintenance. The former lead to employment, if the sub-state has a producer of systems or components or installs new systems each year. The latter employment derives from systems already installed and in operation. The permanency in employment from the latter is higher. Relative to the size of the federal states, there is a strong concentration of employment in the north and east. Wind energy is the most important pillar in almost all federal states, followed by bioenergy.

Since 2014, RE employment has developed positively, especially in those federal states, where wind industry sites are present and stable, where PV industry was scarce in 2014 or where strong deployment has taken place (most recently mainly wind turbines)

The analysis of gross effects helps to compare the status of different federal states, but a net analysis has to be carried out to complete the picture. Regional net effects are methodologically challenging, in particular need the following questions to be answered:

Which of the following dimensions matter and can be mapped

- a. economic structures and structural change
- b. distribution of energy sources in power generation
- c. investment stimuli
- d. region-specific multipliers (domestic shares and intermediate inputs, induced effects)
- e. region-specific reactions to prices or savings?

A first attempt at this challenge regarding the energy transition in Germany has been successfully completed. With the developed modeling framework, a scenario comparison can be carried out, comparing the energy transition (RE and energy efficiency) with a contrafactual scenario without any particular investment in neither RE nor energy efficiency.

The results are as follows: The scenario comparison shows positive effects on value added and employment in all federal states at different levels. Structural differences in economic development in the federal states interact with effects at the national level. Structurally weak federal states with a high share of renewable energy experience stronger positive effects, while city states show slightly fewer positive effects. The Construction sector profits from energy efficient buildings mainly in regions with high relevance of the construction sector and regions with labor-intensive construction sector and regions with a high price level in construction.

The scenarios consider the whole set of measures for energy transition and therefore positive and negative effects counterbalance, so that the overall effect on employment is positive or negligible. However, people who lose jobs in coal mining not necessarily find jobs in energy efficiency. Energy transition strategies therefore need the respective transition programs, training, structural change support is necessary. In Germany, the Coal Commission will publish suggestions early 2019.

5 LESSONS FOR A SUCCESSFUL TRANSITION TO A LOW CARBON ECONOMY

LUCY STONE | Agulhas Applied Knowledge

1 | Job retraining and skill development

2 | Financial compensation (e.g. early pension) who workers cannot retrain or relocate

Former oil workers
retrained in offshore wind |
Scotland



Former coal miners learning
to code |
Appalachia, United States

3 | Regional support schemes for developing alternative sectors, and state creation of new public sector jobs



Heavy industry
to high tech |
Shenyang City,
China



Lignite Mining to Tourism |
Lausitz, Germany

4 | Infrastructure investment, new cultural identities created

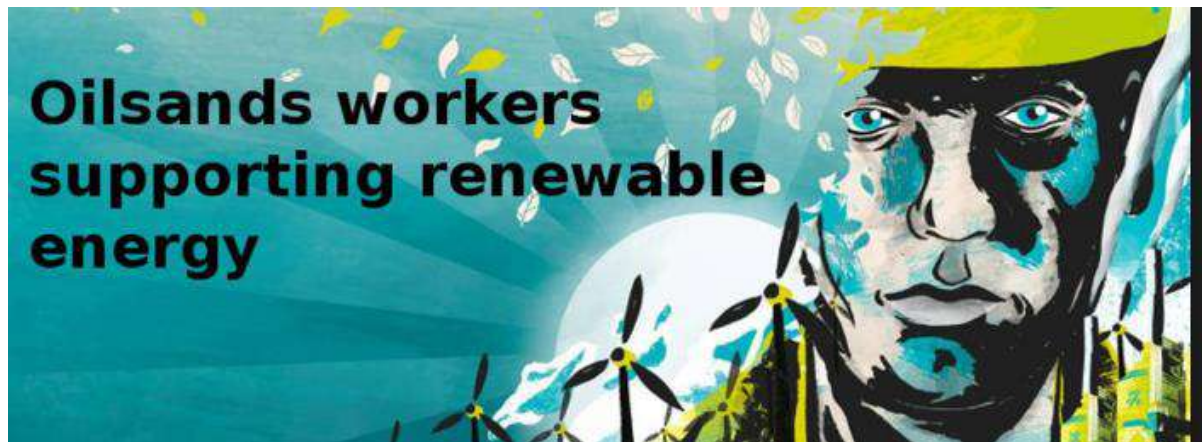


Post-industrial
city in decline, to
iconic Museum
as popular
tourist
destination |
Bilbao, Spain

5: Stakeholder participation, dialogue and co-creation



Coal dependent
community to
solar industry
| Port Augusta,
Australia



Oil sands
workers
formed Iron &
Earth
organisation
| Alberta,
Canada



Greening with jobs

World Employment and Social Outlook 2018

Catherine Saget

Just Transition for All, COP 24 Side event

www.ilo.org/weso-greening

3 December 2018

24 million jobs created from the energy transition



Employment in 2030 associated with energy sustainability, compared with the business-as-usual scenario (millions)

Sector	Jobs created	Sector	Jobs lost
Construction	6.5	Petroleum refinery	-1.6
Manufacture of electrical machinery and apparatus	2.5	Extraction of crude petroleum and services related to crude oil extraction	-1.4
Mining of copper ores and concentrates	1.2	Production of electricity by coal	-0.8
Production of electricity by hydro	0.8	Mining of coal and lignite; extraction of peat	-0.7
Cultivation of vegetables, fruit, nuts	0.8	Private households with employed persons	-0.5
Production of electricity by solar photovoltaic	0.8	Manufacture of gas ; distribution of gaseous fuels through mains	-0.3
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	0.7	Extraction of natural gas and services related to natural gas extraction, excluding surveying	-0.2

Source: ILO calculations based on Exiobase v3.

For a transition to be just, regulatory frameworks and social dialogue are vital



International labour standards:

- Facilitate the green transition;
- Protect the most vulnerable (workers affected by the transition, in green sectors, and displaced by climate change);
- Ensure equity and inclusion, incl. through social dialogue; and
- Protect the environment.

A key role for national legislation is to reconcile economic, social and environmental objectives:

- Examples: legislation in *Brazil, France, Mexico, Philippines*, etc.;
- A visible trend to include labour issues in climate legislation and policy.

Social dialogue:

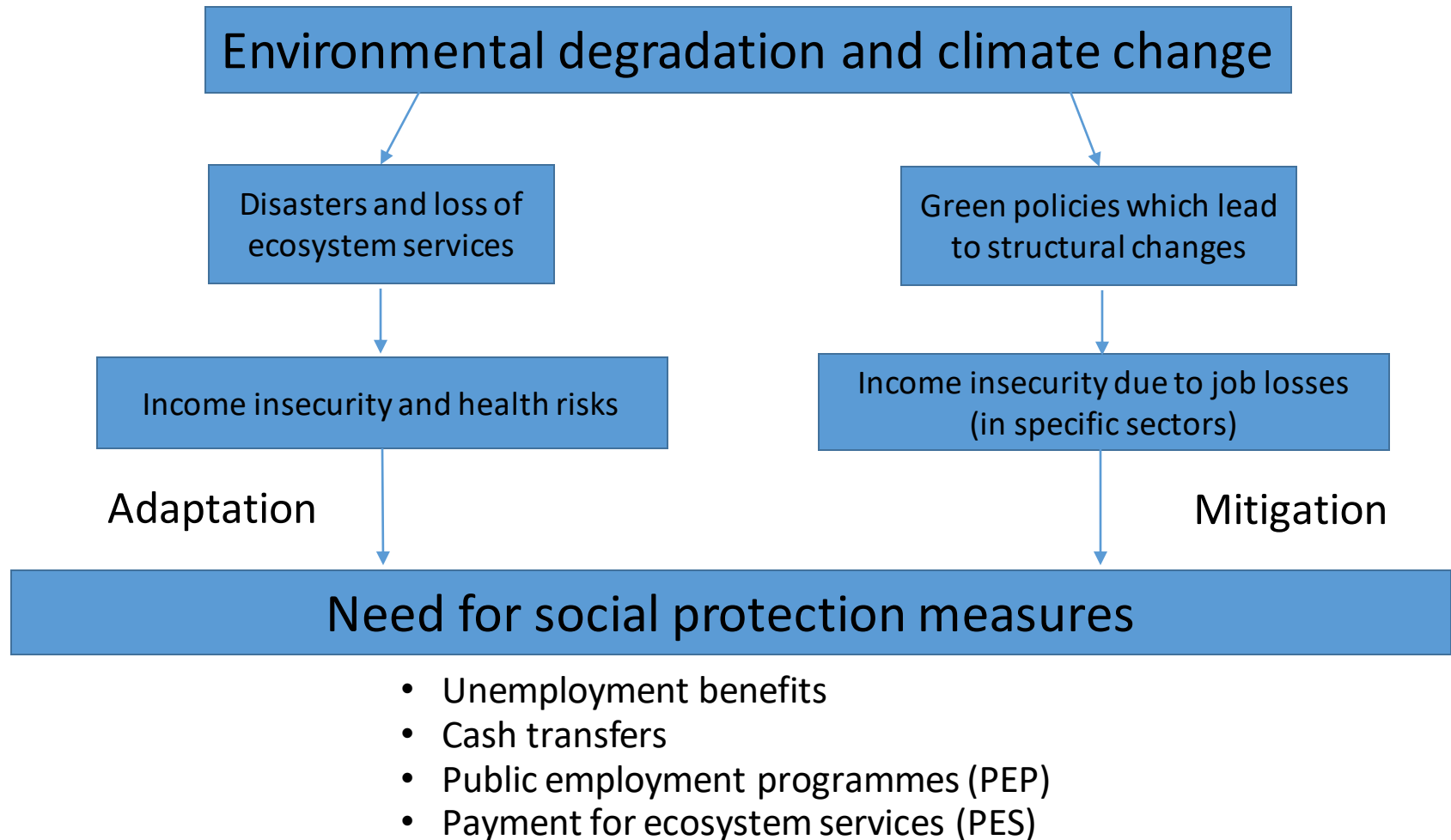
Both workers and employers are increasingly recognized as “*climate actors*”.

Social dialogue can help to put into action environmental policies, plans and actions within an enterprise.

Social dialogue can prevent and reduce the environmental impact of enterprises.

More and more negotiated agreements include environmental clauses.

Social protection supports mitigation and adaptation efforts



Without skills development there will be no just transition



Case study: Energy sector

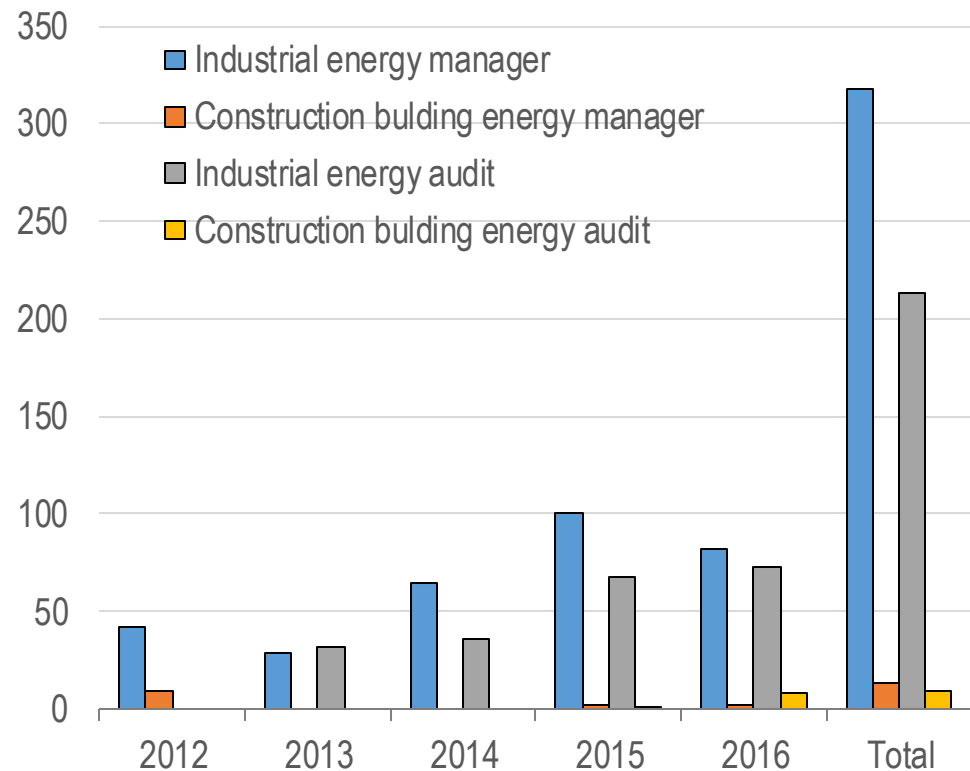
Benefits:

- ✓ Fundamental driver of green transition
- ✓ Productive employment and decent work
- ✓ Virtuous cycle of innovation, investment and competitiveness

Challenges:

- ❑ Lack of systematic skills needs identification for green transition
- ❑ Unsuccessful policy coordination
- ❑ Participation of social partners

Indonesia: Number of graduates certified as energy managers and auditors, 2012-16



Source: LSP HAKE, 2017.



Assessing Ambition and Inclusiveness of Different Just Transition Approaches

Just Transition for All – Solid Research Evidence and Implementation Pathways



UNRISD

United Nations Research Institute for Social Development



UNIVERSITY
OF LONDON

INSTITUTE
IN PARIS

Dunja Krause

Katowice, 03 December 2018

Just Transition Research Collaborative

Qualitative mapping of Just Transition, its history and different approaches

- Report:
<http://www.unrisd.org/jtrc-report2018>
- Online Forum:
medium.com/just-transitions



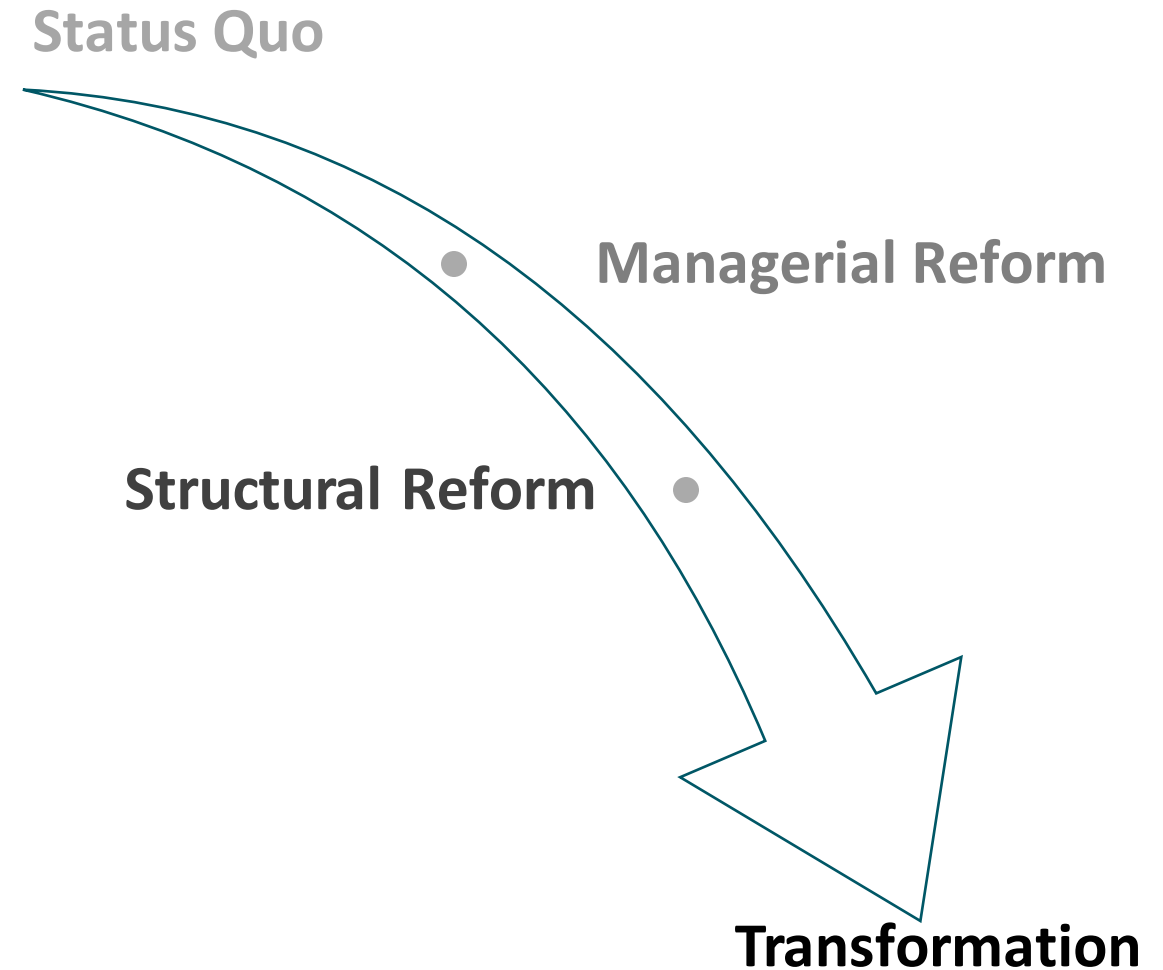
RESEARCH REPORT



A REPORT OF THE JUST TRANSITION RESEARCH COLLABORATIVE

Differing Levels of Ambition

- Narrowly defined compensation of affected workers
- Enhancing workers' rights, social protection, distribution of benefits and costs
- Addressing inclusive/equitable decision making, procedural justice
- Fundamental overhaul of existing economic and political system for eco-social justice



Who Deserves a Just Transition?



Outlook

- Meanings of justice are not trivial – requires bargaining and contestation
- Rapid decarbonization needs supportive and ambitious policy framework and recognizing impacts of response measures
- Silesia Declaration – important step for tackling justice implications of transition





Thank you for your
kind attention!



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Side Event tonight: 18:30 – 20:00, Room Vienna at EU Pavilion
The Price to Pay for Lignite and How To Take Just Transition to The Next Level

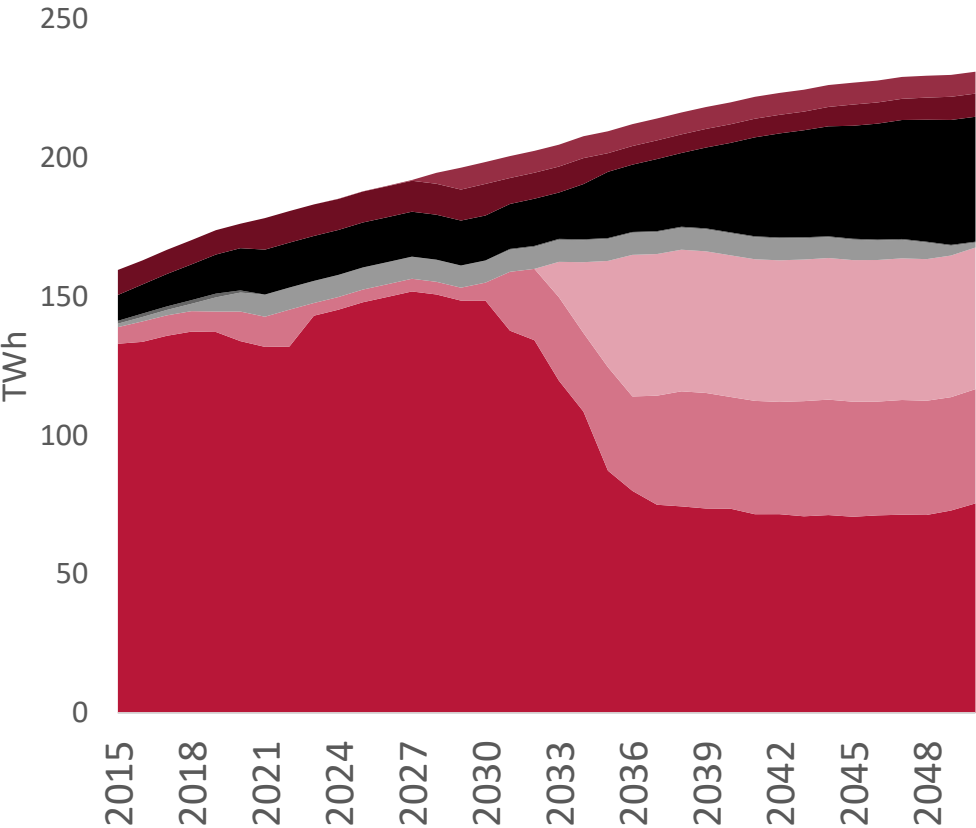
SOCIAL AND ECONOMIC RISKS OF ENERGY TRANSITION IN POLAND

Jan Witajewski-Baltvilks

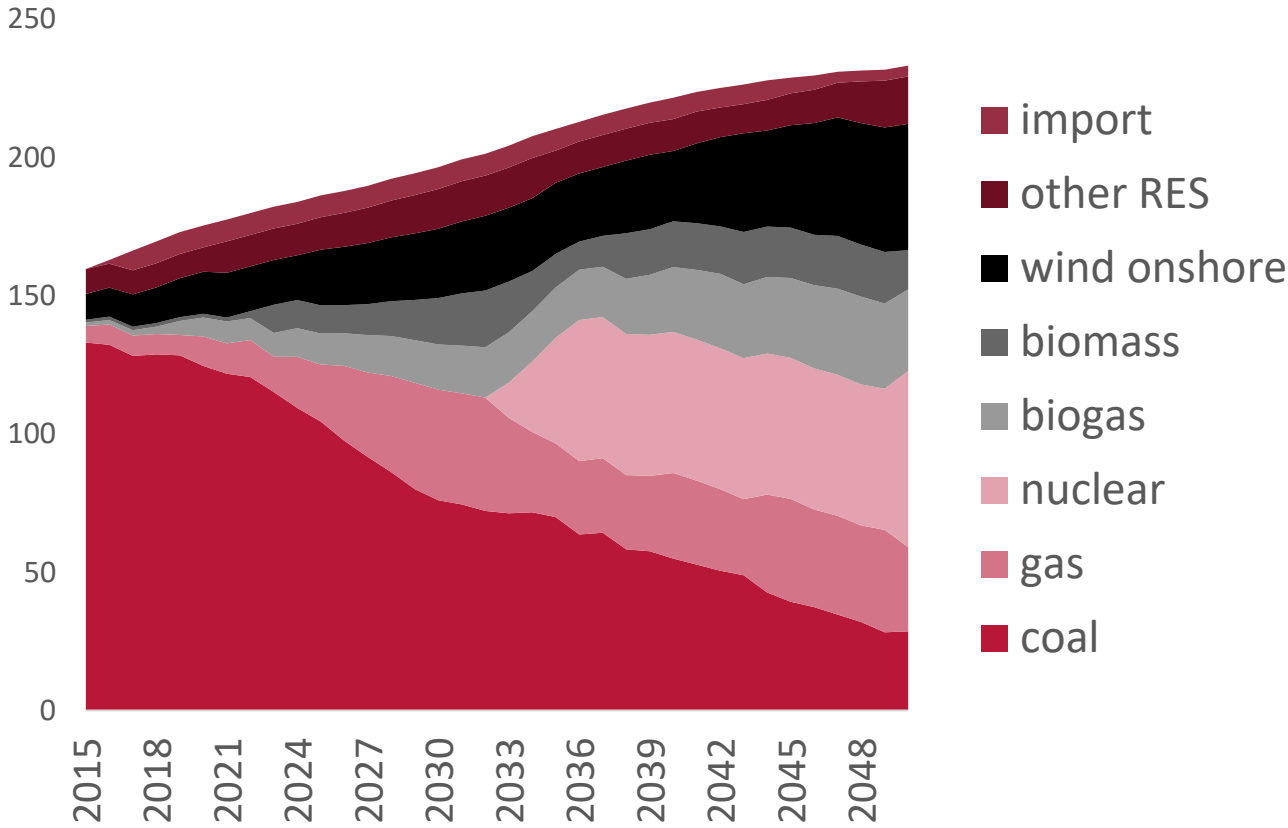
Consumption of coal expected to drop



Electricity mix minimizing the cost of generation

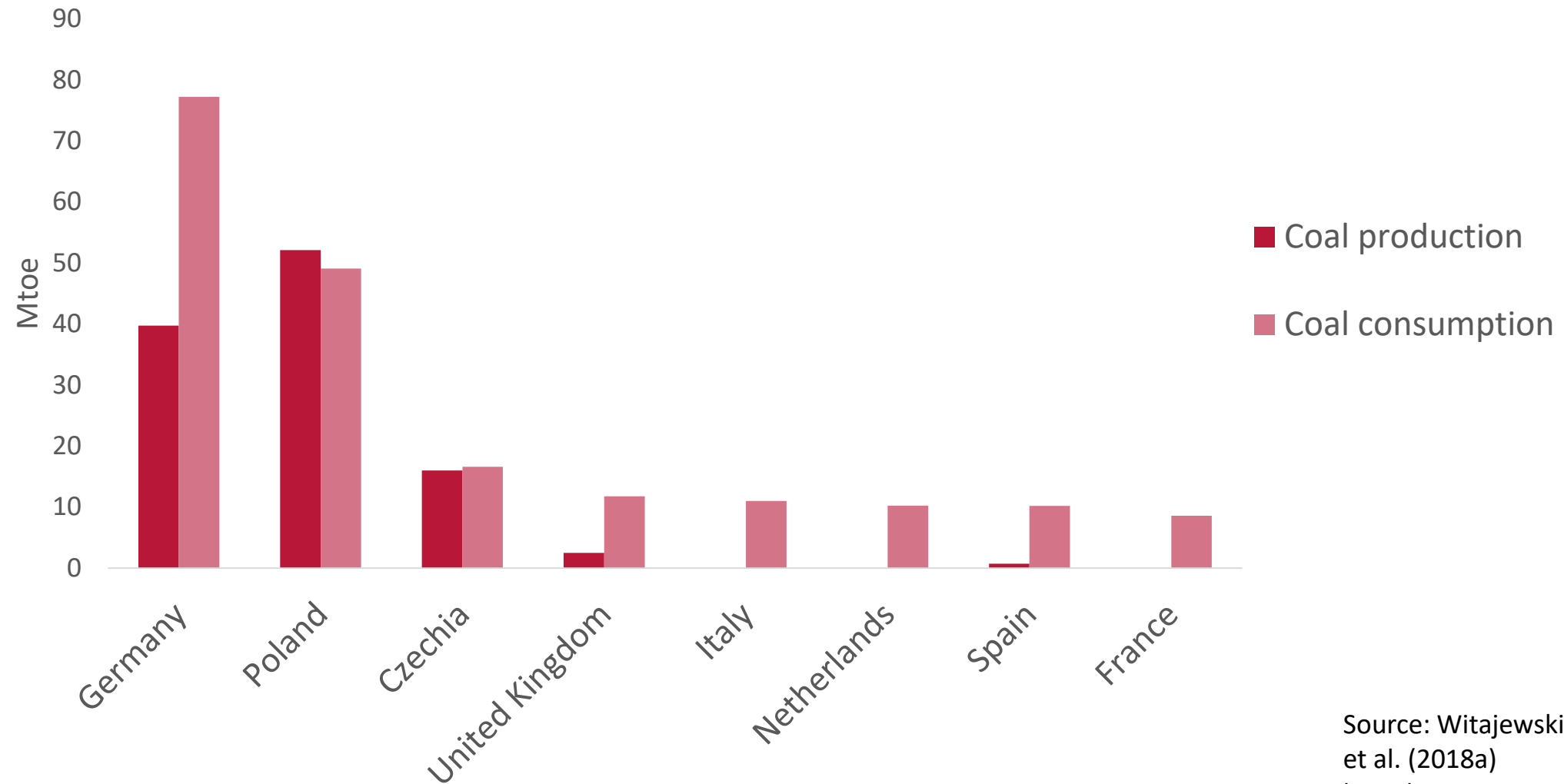


Electricity mix permitting a 3-fold reduction in CO2 emissions



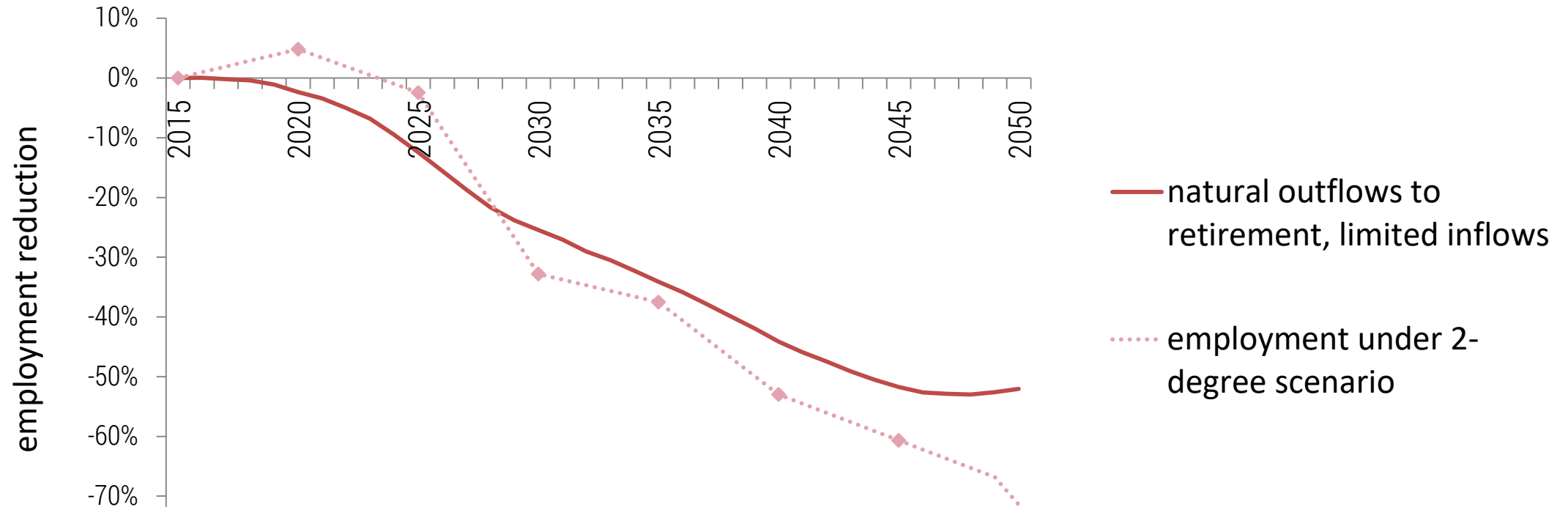
Source: Witajewski-Baltvilks et al. (2018a)

Drop in consumption implies phase-down of coal sector, unlike in most EU countries



Source: Witajewski-Baltvilks et al. (2018a) based on Eurostat. Data for 2016.

Coal phase-down will take 30 years – no massive lay-offs expected



Source: Witajewski-Baltvilks et al. (2018b)

Cushion for the regional economy



- Educational policy: direct new cohorts to growing sectors
- Help laid-off workers to find new jobs
 - 10,000 additional jobs in Silesia may be created with ambitious retrofitting programmes
 - individual skill diagnoses will ensure that workers receive tailor-made retraining
- unconditional cash transfers should be offered only to workers close to retirement age

Thank you

For more details, consult

- Witajewski-Baltvilks et al. (2018a). Risks associated with decarbonising the Polish power sector. *IBS research report 05/2018*
- Witajewski-Baltvilks et al. (2018b). Managing coal sector transition under the ambitious emission reduction scenario in Poland. *IBS research report 03/2018*

Email address:

Jan.witajewski@ibs.org.pl



Systems approach towards Just Transition:

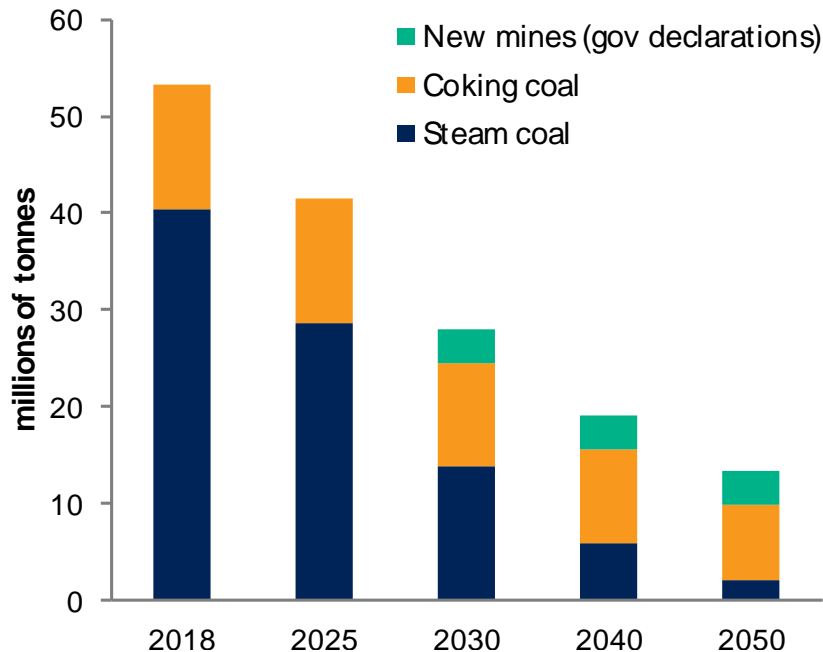
the case of Upper Silesia

Maciej Bukowski, President of WiseEuropa Institute

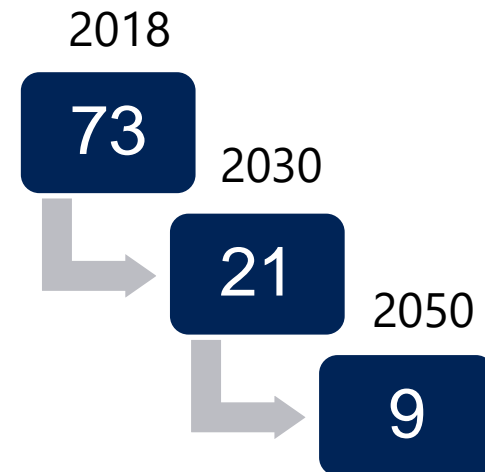
Katowice, 03/12/2018

Long-term outlook for Silesian mining

Coal extraction



Employment, thousands of people

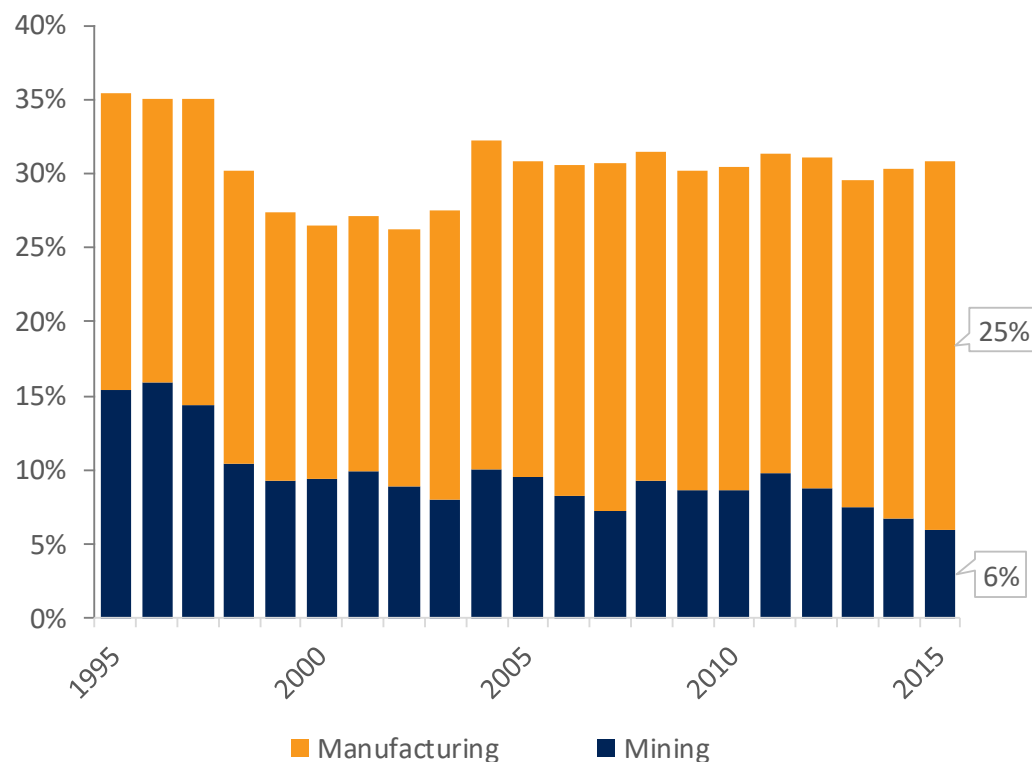


Source: WiseEuropa – own projections

- **Stagnating extraction productivity**, growing wage pressure and NIMBYism → **further decline of mining, even without ambitious climate policy**
- **Double challenge**: mid-term worker surplus vs long-term labour shortage

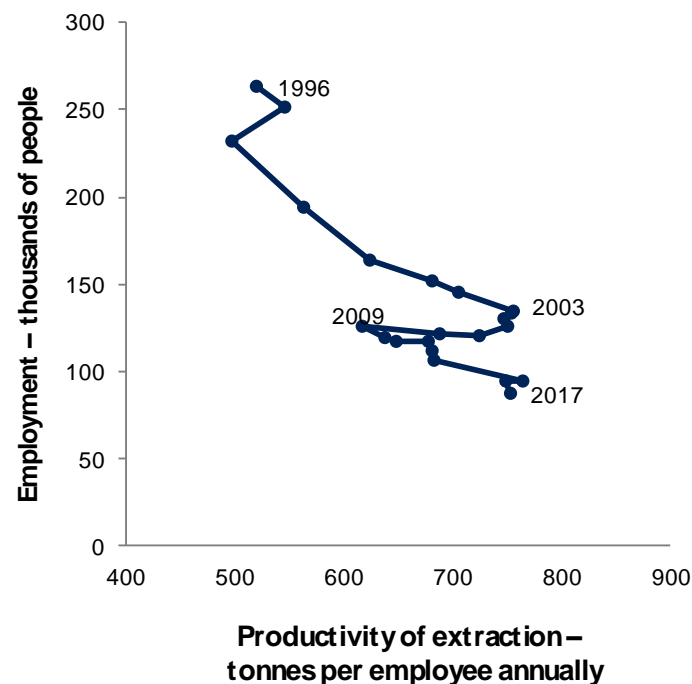
Mining and industrialisation in Silesia

Share of mining and manufacturing in gross value added in Silesia



Source: WiseEuropa based on Local Data Bank – Central Statistical Office

Efficiency of hard coal extraction

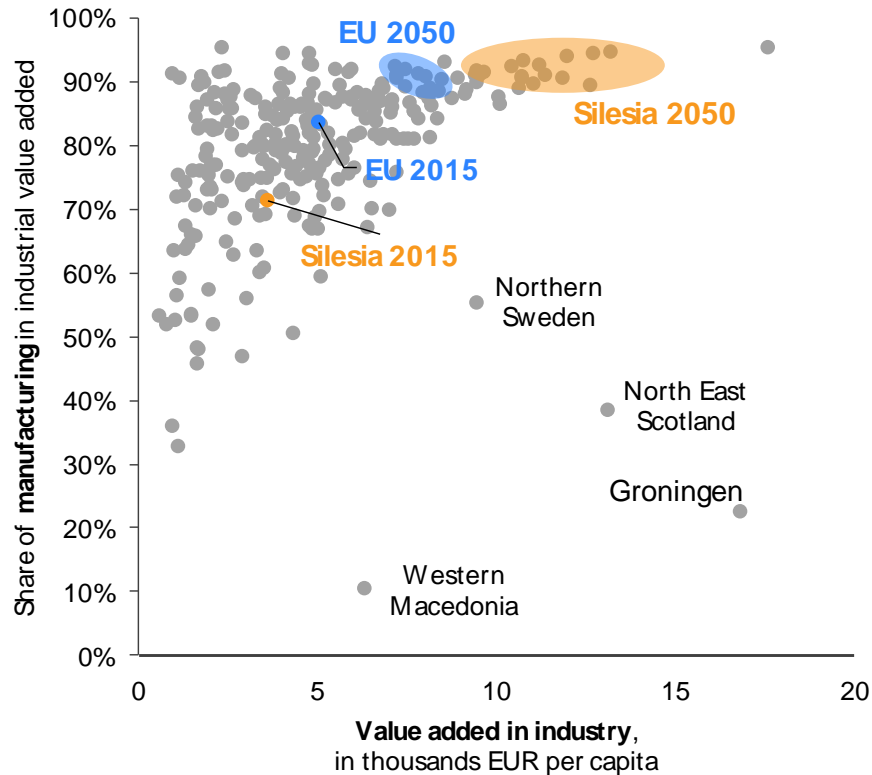


Source: WiseEuropa based on Eurostat data

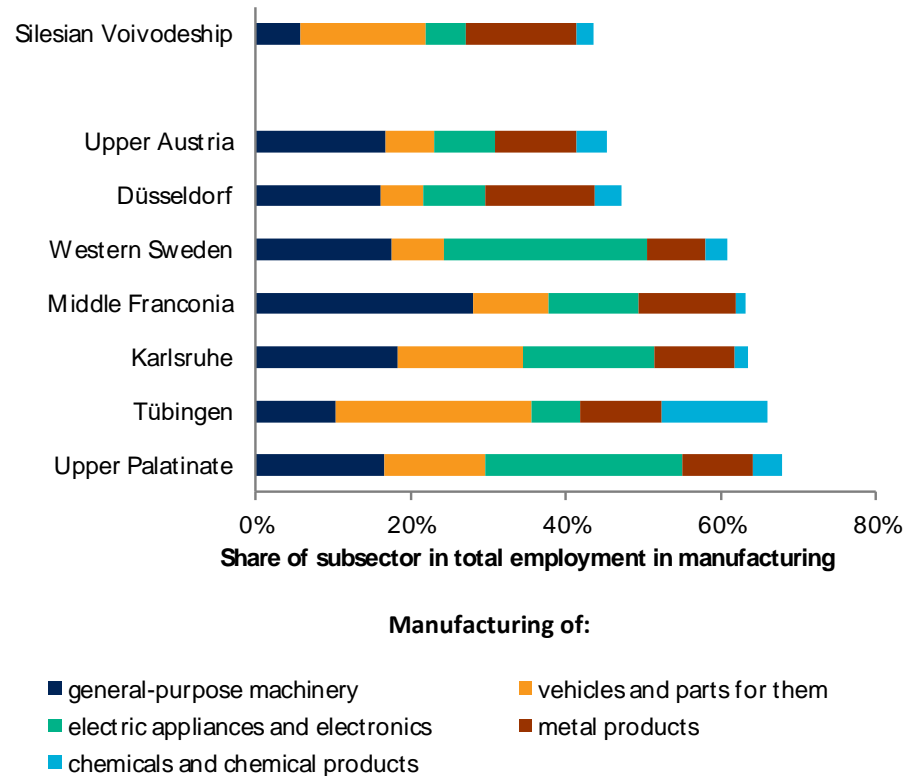
- **Decline of mining activities did not translate into deindustrialisation of Silesia**

What drives industrialisation in European regions?

Industrialisation vs manufacturing share in total industry in the EU regions



Share of key subsectors in manufacturing employment

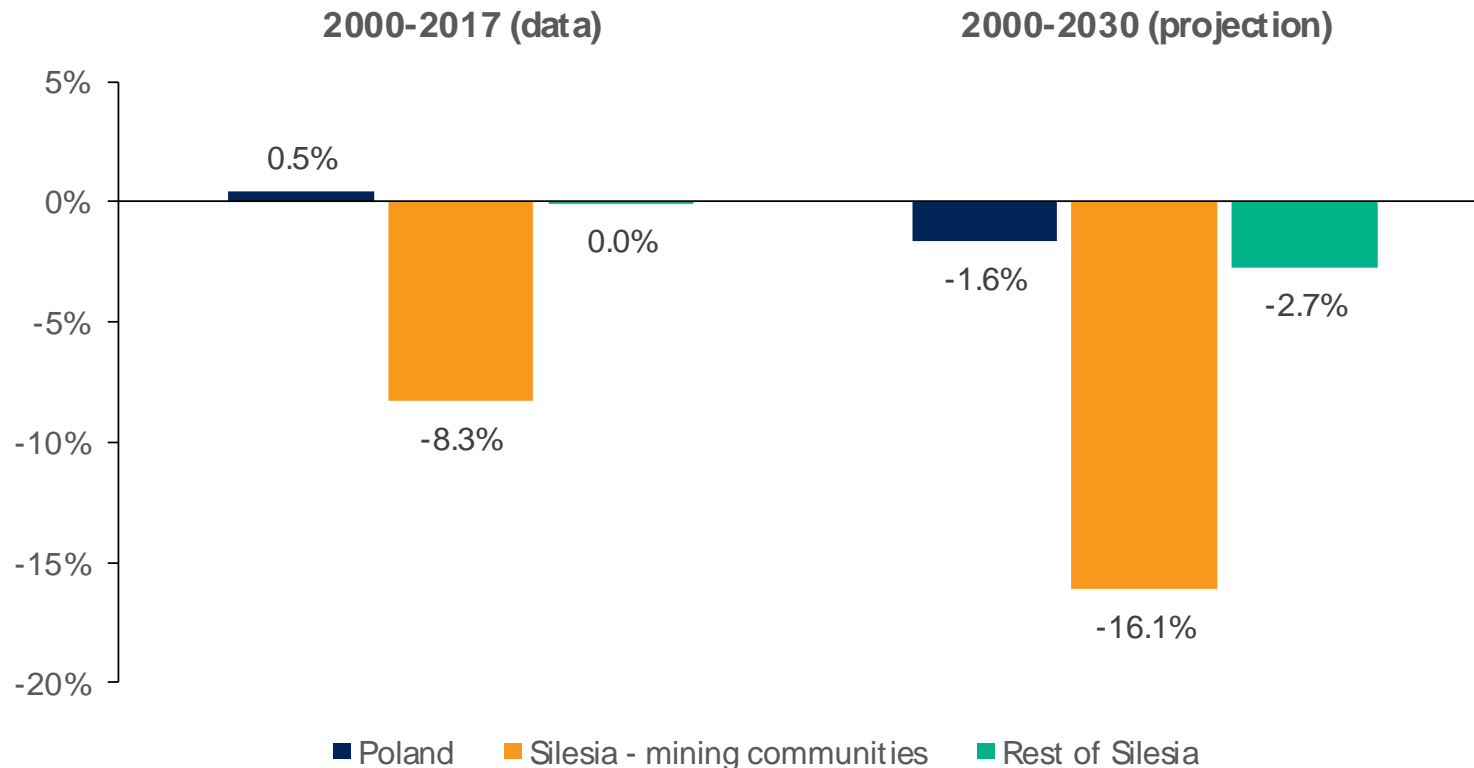


Source: WiseEuropa based on Eurostat data

➤ **High industrialisation is driven by manufacturing, not resource extraction**

Risk factor: demographic decline in mining communities

Change in total population in Poland and Silesia



Source: WiseEuropa based on Local Data Bank and Central Statistical Office projections.

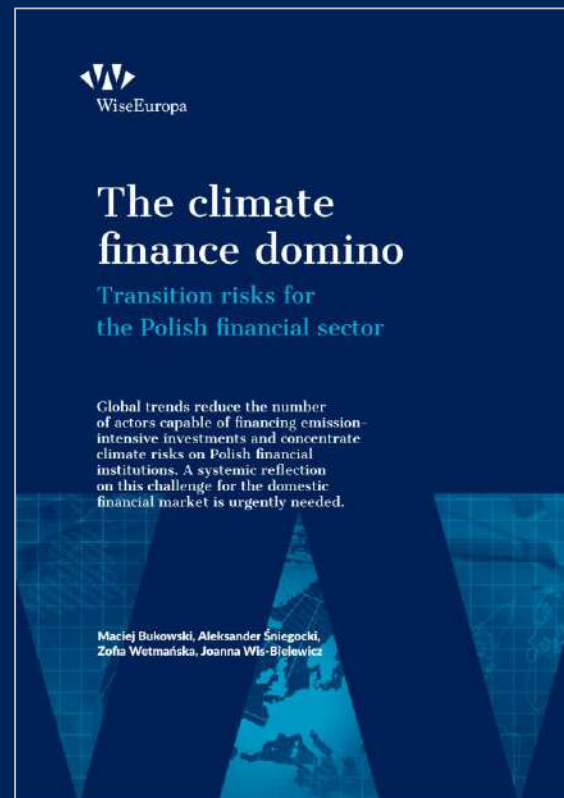
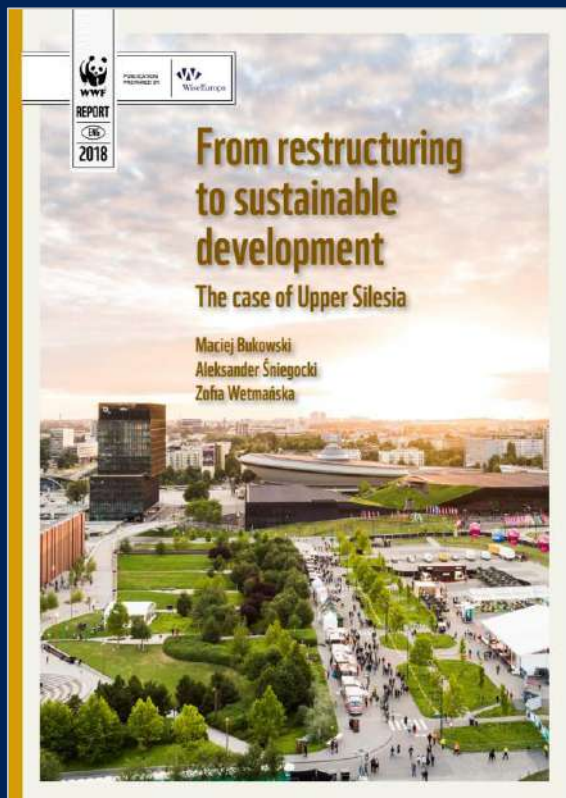
- **Half of the Silesian population lives in mining communities**
- **Demographic trends worsen the risks associated with “stranded” workers**
- **Focus on attracting and retaining inhabitants – complex revitalisation, mitigating air pollution**



WiseEuropa

Thank you for your attention

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Decarbonisation pathways and just transition

3 Dec 2018 – COP 24 Katowice



80%

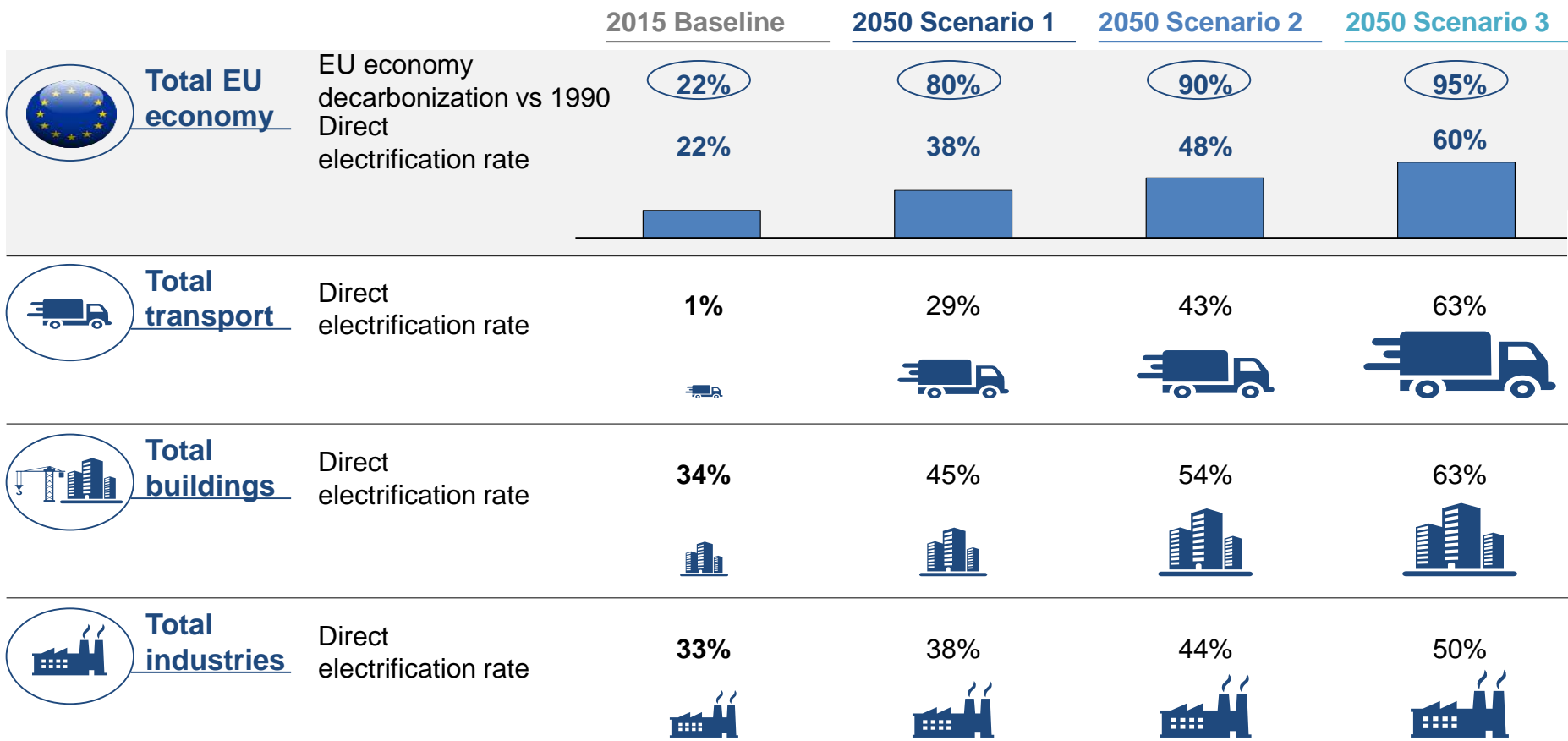


90%



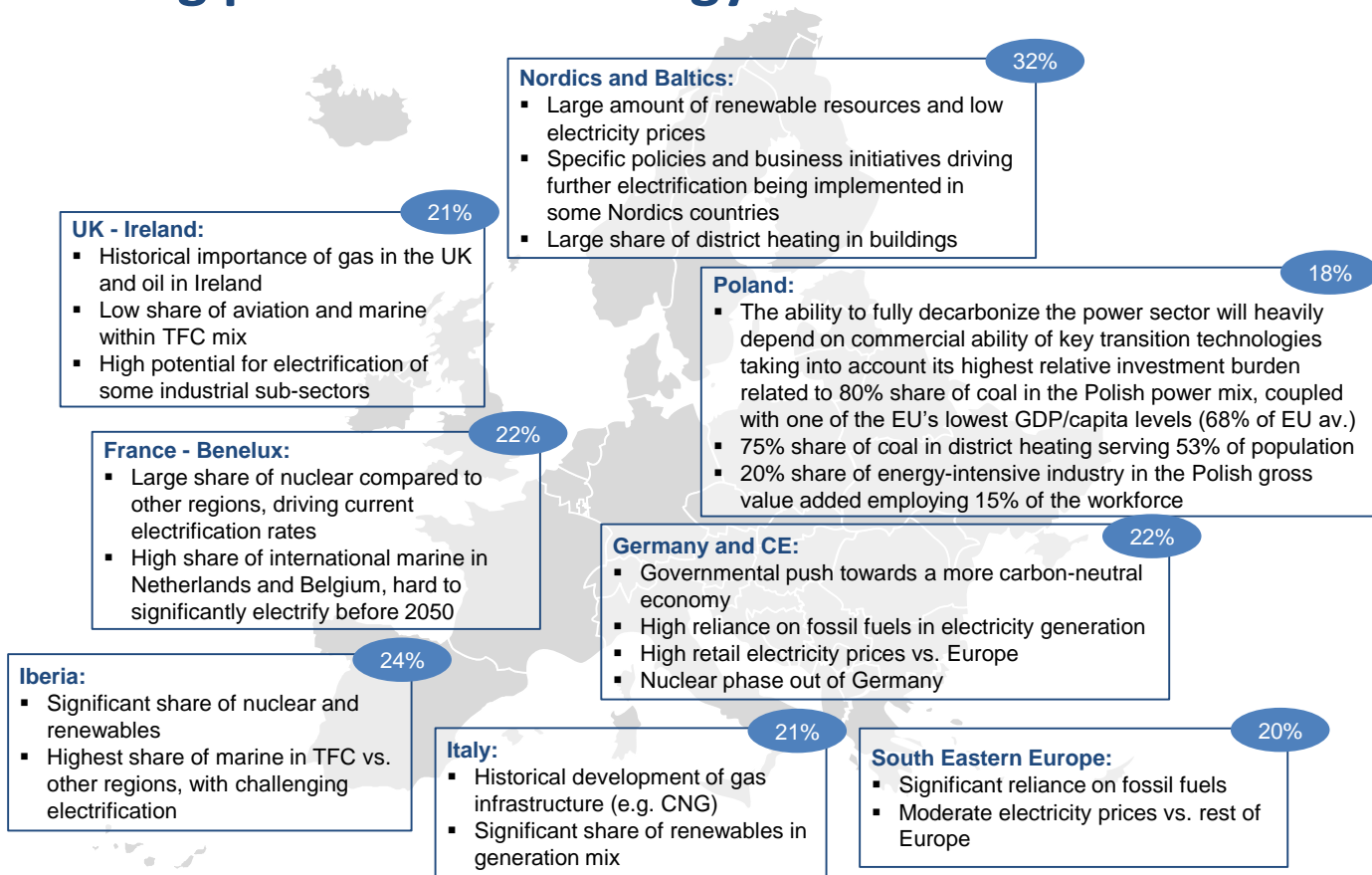
95%

Direct electrification results by scenario



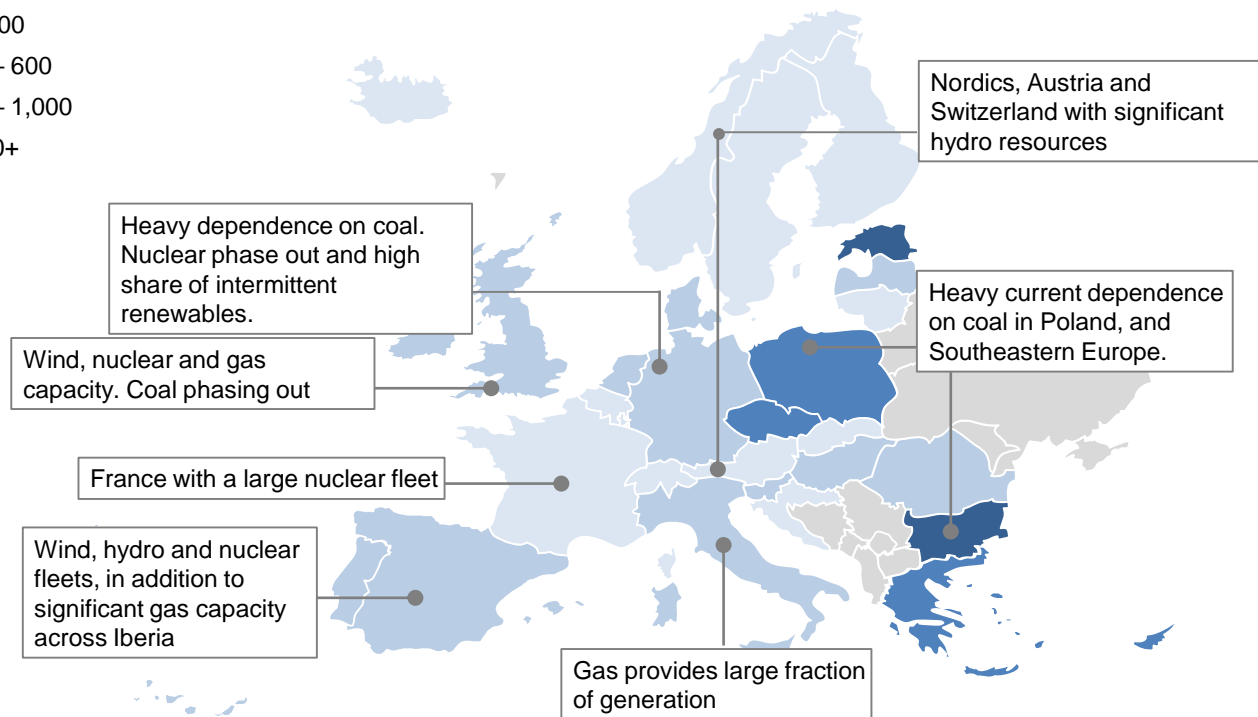
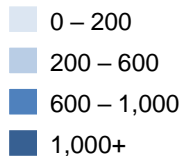
Different starting points in the energy transition

2015 baseline –
direct electrification rate



European countries have different starting points in the energy transition

2015 carbon intensity of electricity¹, kg CO₂/MWh



¹ Refers to carbon intensity of domestic electricity production, i.e. does not take into account the carbon intensity of electricity mix consumed

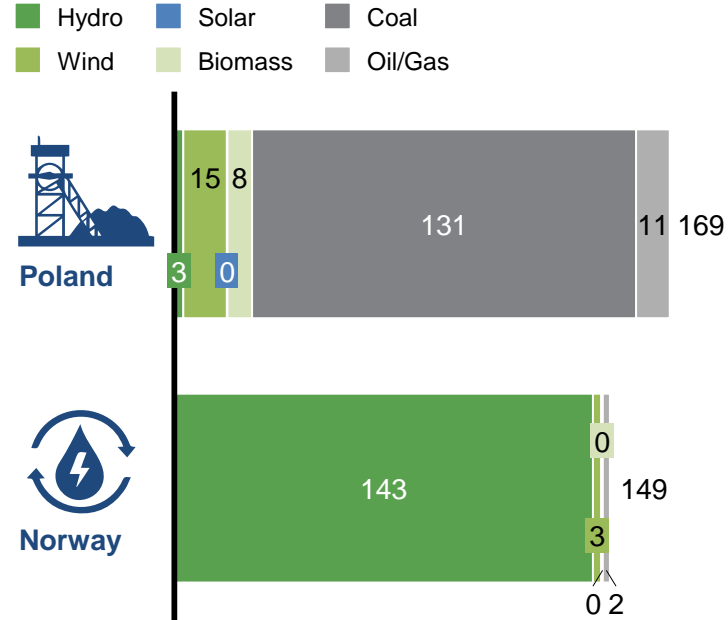
SOURCE: Eurostat and national statistics

Norway's power sector is already decarbonized while Poland relies on coal for ~80% of its electricity supply

Different starting points

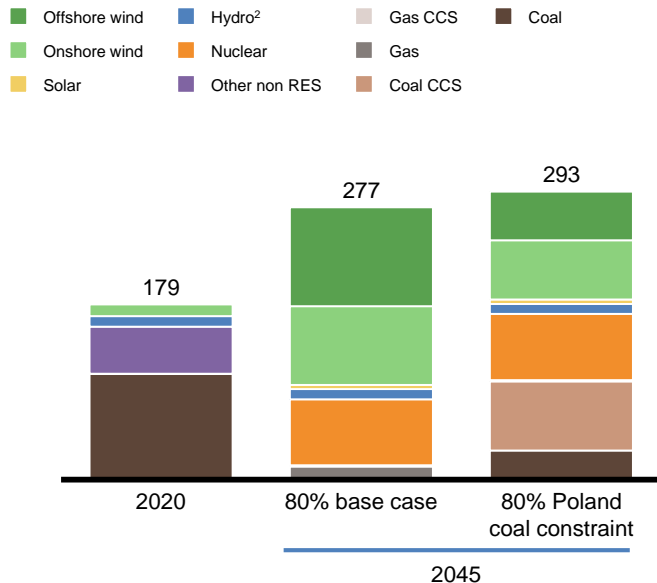
- European countries have **very different starting points in the transition towards a carbon neutral power sector**
- At one end of the scale, **Norway has practically already decarbonized its power sector** and has high potential to expand its renewable capacity due to untapped wind potentials and still some hydropower resources
- At the other end of the scale, **Poland currently relies on coal for ~80% of its electricity supply** and face a more disruptive transition to achieve carbon neutrality
- Countries' starting points imply large **differences in cost and the effort and pace of transition required**

2017 generation by fuel type, TWh

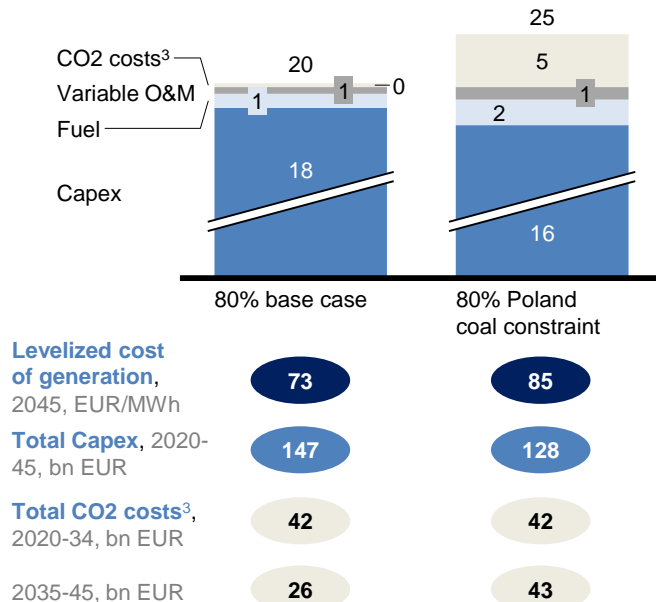


Poland's intension to keep 40% coal in the electricity mix implies lower renewables build and higher generation cost

Generation by fuel type, TWh



Annualized cost of generation¹, 2045, bn EUR



Poland is currently discussing a policy to maintain 40% of coal in the energy mix by 2040. We have tested the implication of this policy through a sensitivity analysis that comply with this policy

¹ Does not include storage nor transmission & distribution cost

³ Estimated as the marginal cost of abatement multiplied by Poland positive emissions (over the periods); the actual CO2 cost will be highly dependent on the future market design and whether Poland can buy emissions allowances from other countries or if it needs to comply internally

² Includes also small amounts of geothermal, biomass and biogas



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