

## Coal, Climate Change mitigation and Populism

Jan Christoph Steckel

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### ... a timely topic

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Climate change: Warm concentrations at new By Matt McGrath Environment correspondent	The World Needs to Coal. Why Is It So
© 22 November 2018	Troubling signs for the future of
Cal fired plants such as this one in Arizona are a signi	Australia's giant coal industry  An uncertain future



#### Outline

- Coal and climate change Where do we stand?
- Why do countries invest in coal?
  - Wrong incentives
  - Financing costs
  - Vested interests
- Where to go: Some steps forward



#### The climate problem at a glance



Source: Bauer et al. (2014); Jakob/Hilaire (2015)

Resources and reserves to remain underground until 2100 (median values compared to BAU, AR5 Database)

Until 2100	With CCS [%]	No CCS [%]
Coal	70	89
Oil	35	63
Gas	32	64

70 – 90% of available coal reserves and resources will need to stay in the ground if climate targets are to be achieved.

#### **General Structure of Deep Mitigation Pathways**







#### Scenarios: Coal needs to be phased out urgently



Between 2020 and 2030 coal (depending on the scenario and the ambition of the climate target) needs to be phased out by between **~30% - 70% compared to 2020 levels.** 

B1400: Medium Probability for remaining below 2°C warming in 2100 B800: High Probability for remaining below 2°C warming in 2100 B200: High Pobability for reminaing below 1.5° warming in 2100

Ambition of climate change mitigation



# The good news: technological progress is faster than expected



Actual PV installation rates have constantly exeeded projections in the past.

Costs have fallen much faster than expected.



#### **But: Emissions are rising!**



Source: Global Carbon Project, Jackson et al. 2018



### **Coal consumes the CO<sub>2</sub>-Budget**

#### Coal eating up carbon budget





#### Who builds coal?

Many countries still invest heavily in coal; building all coal-fired plants that are currently in the pipeline would put the 2°C target out of reach.



MCC

#### Who invests in coal?



Source: MCC calculations based on Urgewald and Banktracker



#### Why do countries invest in coal?

- Social costs of coal are not reflected in the prices.
- Financing costs for energy related investments are significantly higher, which makes investments into capital-intensive alternatives difficult
- Vested (and conflicting) interests are often making a case for coal in national policy contexts



#### Most emissions are not covered by a price





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#### **Coal is cheap – When capital costs are high**





### High capital costs vs. carbon pricing

When capital costs are high, even high levels of carbon pricing will not lead to a phase out of coal!





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#### **Steps forward**

- Internationally: A sequence of phase outs
- A coal transition should be embedded in a broader climate policy including carbong prices.
- A coal transition needs political guidance



#### A sequential plan of action

Energy generation from coal	When coal plants were built	When coal plants were built	

Source: Steckel, Jakob et al., in prep.



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#### **CO<sub>2</sub> taxes lead to significant revenues**



# Impacts on Households: Global assessment with coherent data set



- Based on household expenditure data from World Bank Consumption Database
  - 87 countries, 106 household consumption categories
  - Four income groups, lowest < USD 2.97 daily per capita consumtion
- Combined with carbon intensity data from an environmentally-extended multiregional input-output (MRIO) model → household specific carbon footprints
- Calculate immediate, short term distributional incidence of a carbon tax



#### ... but they still hurt the poor.



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#### How to use carbon pricing revenues?

#### Table 1 | Recycling m equity and acceptab **Recycling mechanism** Labour tax (initial syste non-optimal) Labour tax (initial syste optimal) Capital/corporate tax (initial system non-opti Capital/corporate tax (initial system optimal) Fraction of public SDG needs covered by carbon pricing Directed transfers Uniform transfers (initia share of public finance in total needs > median < median system non-optimal) < 10% 10-20% 20-30% Uniform transfers (initia 30-60% 60-100% system optimal) > 100%

Equity and efficiency are detern

on the other alcoon applicing it evenues fican betweed to icovertia large part of public investment needs on public economics. Plus (+) and minus (-) signs indicate positive and negative evaluations. TOT THE SDUS respectively, whereas 0 indicates a neutral evaluation.

no data



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## Managing the transition

- Despite positive global welfare implications, some stakeholders might lose from phasing out coal, holding the power to veto necessary reforms. They might need to receive targeted support:
- Workers: Social protection, social dialogue, economic diversification can ensure just transitions
- Coal owners and industry: Compensation (e.g., by a fraction of the carbon rent), coal phase out agreements



- **Energy users:** Compensatory redistributive policies, including cash transfers, providing public goods (e.g. infrastructure), or tax reductions
- Communication is found to be key regarding the success of past reforms



#### Learning from trade: Not caring might give you the next Trump





#### **The German Coal Commission**

Currently: Recommendation to the government by expert commission from different fields, including people from affected regions

#### **Results:**

- Phase out all coal until 2038
- Establish a timetable, with 12.5 GW to be shut down until 2022
- Invest > USD 40 bln in affected areas
- Relocate (federal) government jobs (up to 5,000) to affected areas
- Reducing domestic power bills
- Compensate energy-intensive industry for loss of cheap power
- Avoid clearance of 'Hambach forest' in the western parts of Germany

Which political steps / instruments  $\rightarrow$  still to be seen



#### Summary

- There is not much time left to phasing out coal if climate targets are to be achieved
- To phase out coal, there is no "one-size fits all strategy", but tailor-made and country-specific strategy needed
- Without getting the prices right phasing out coal remains an up-hill battle
- Managing the transition is key, transfers can make a transition socially just and equitable.
- Transfers should account for identity questions



hanks to Svein T veitdal@Twitter



Global Commons and Climate Change gGmbH

## Thank you!

#### Wrong incentives



Prices are not at all reflecting social costs of carbon

- Only a few countries tax carbon explicitly
- Fuel subsidies for fossil fuels are high, IMF estimates USD 5 trl in 2013 (~6% of global GDP)
- Globally on average CO<sub>2</sub> is subsidized by USD 150 per tonne (including externalities)

#### Global subsidies for fossil fuels





#### How to finance the transition?



The climate rent would be more than sufficient to compensate fossil fuel owners