

United Nations Conference on Trade and Development

**MULTI-YEAR EXPERT MEETING ON COMMODITIES AND DEVELOPMENT**

**21-22 April 2016, Geneva**

**Spillover effects of restricting coal consumption and  
impacts on development**

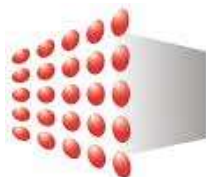
By

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**8th Multi-year Expert Meeting on Commodities and Development**  
*21 – 22 April 2016, Geneva, Palais des Nations*

# Spillover effects of restricting coal consumption and its impacts on development



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# COP21 and Climate Change

- Limitations on coal usage is expected in long run
  - 30% total supply vs 45% total emissions
- Although non binding, National initiatives may mushroom or be accelerated (China's ETS in 2017)
- Sentiment changes immediately

'Coal lobby boss says industry 'will be hated like slave-traders' after COP21' The Guardian, Dec 2015

'Traders and industry insiders agree on no rebound anytime soon' Bloomberg, 21 Jan 2016

- Many investors have moved away from coal

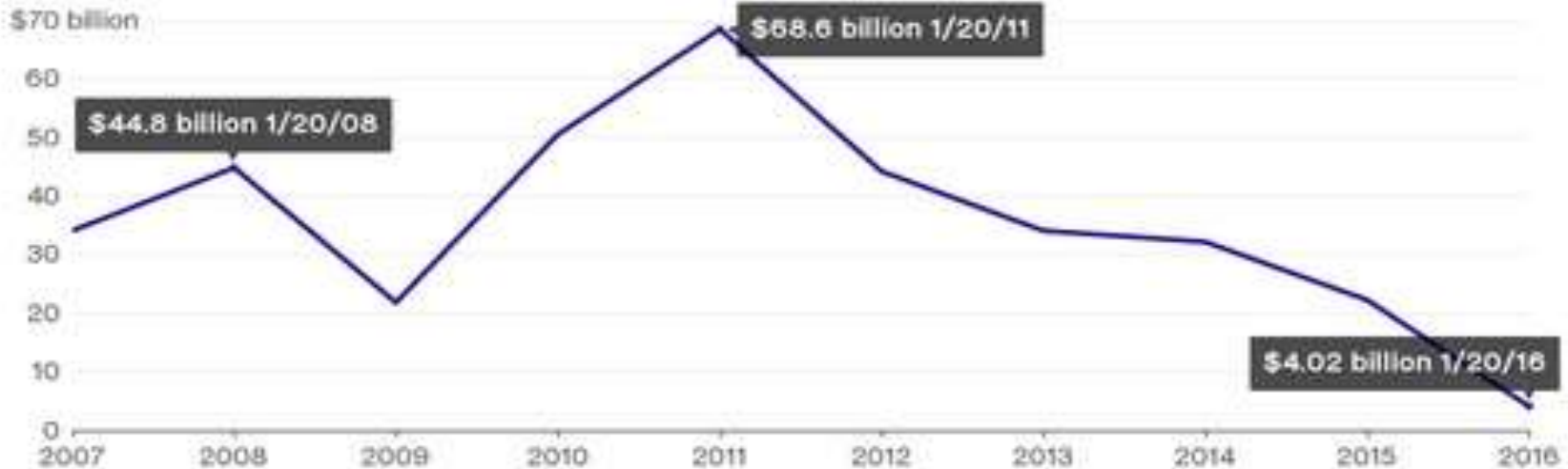
# Price slump

## Asset value disruption

- Share prices drop (Switch to gas and RES)
- On a permanent downward shift
- More companies bankrupted: Peabody, Arch Coal (2<sup>nd</sup>), Patriot Coal, Walter Energy, Alpha Natural Resources

### Plunging Coal

The combined market cap of publicly traded U.S. coal miners has cratered since 2011.



Source: Data compiled by Bloomberg

Bloomberg

<http://www.bloomberg.com/news/articles/2016-01-21/the-coal-miner-on-everybody-s-list-as-next-bankruptcy-victim>

# Restrictions on coal consumption

Necessary but complicated

Interdependency and connection: **Spillover effects**



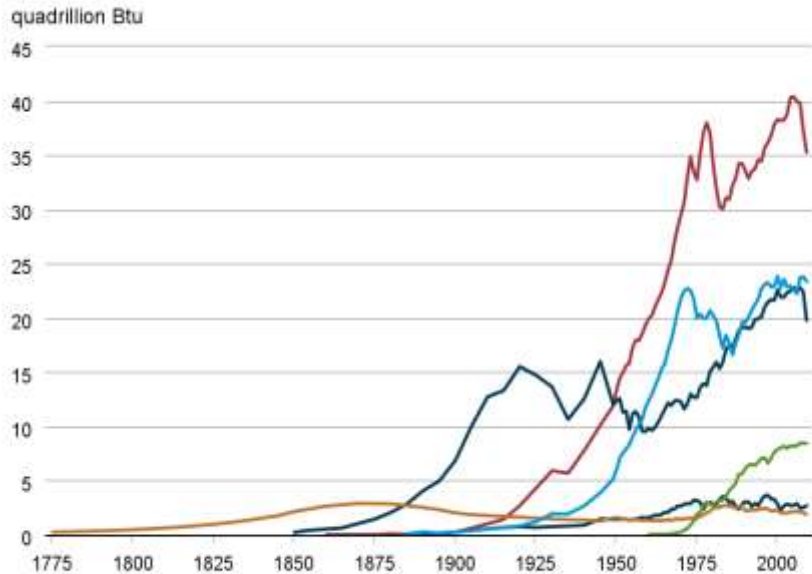
1.2 B (17%) No  
Electricity Access  
2.7 B (38%) Cooking



# Spillover (1): Poverty eradication and Development

E4ALL vs. CC, which is only a part of SDGs

History of energy consumption in the United States, 1775-2009

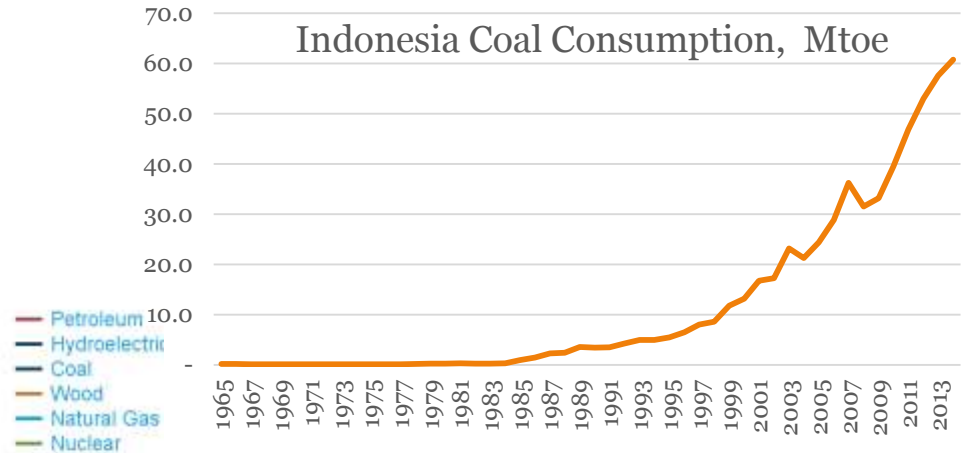


Source: U.S. Energy Information Administration - Annual Energy Review 2009

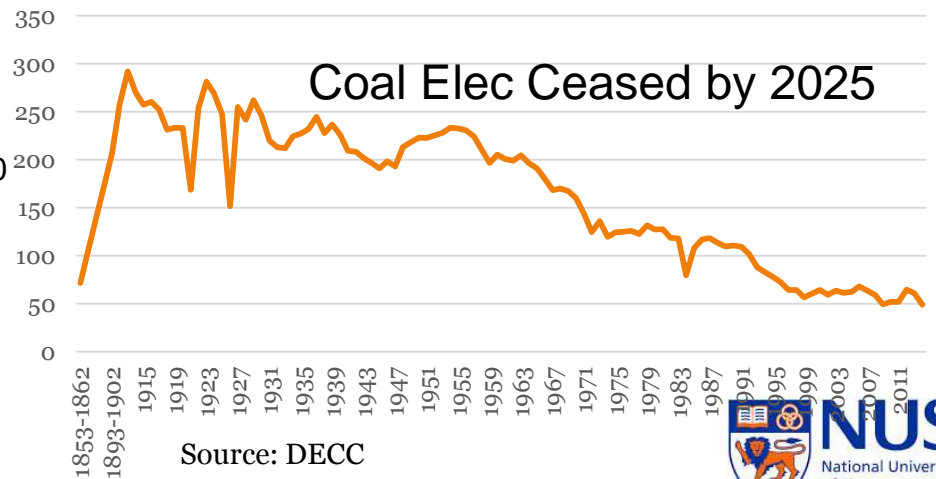
Source: <https://www.eia.gov/todayinenergy/detail.cfm?id=10>

‘social and economic development and poverty eradication are the first and overriding priorities’, Copenhagen Accord (2009)

Indonesia Coal Consumption, Mtoe



Historical Coal Consumption, UK, 1853-2014



Source: DECC



# Spillover (2):Environment

## Land reclamation

- Reclamation was often not planned in the past
- Bankrupt companies will have to leave them alone

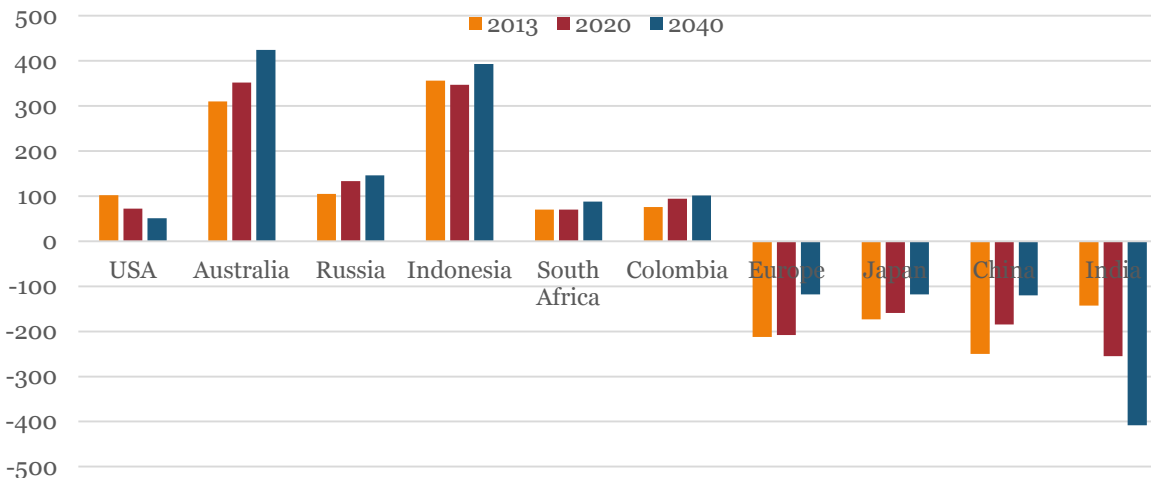


# Spillover (3): Price and Trade

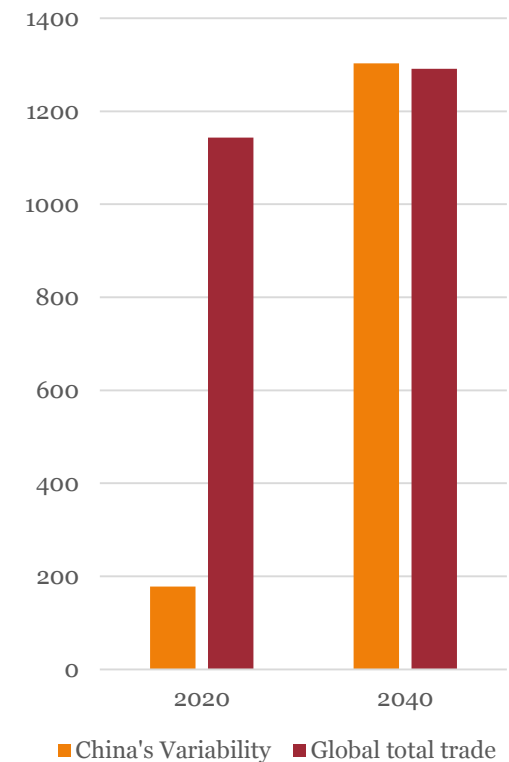
## International trading sector will lose

Price slump, Trade diminished  
Producers suffer, particular CDDCs

Coal trade by region, NPS (IEA 2015)



China's variability vs Global trade

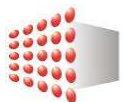
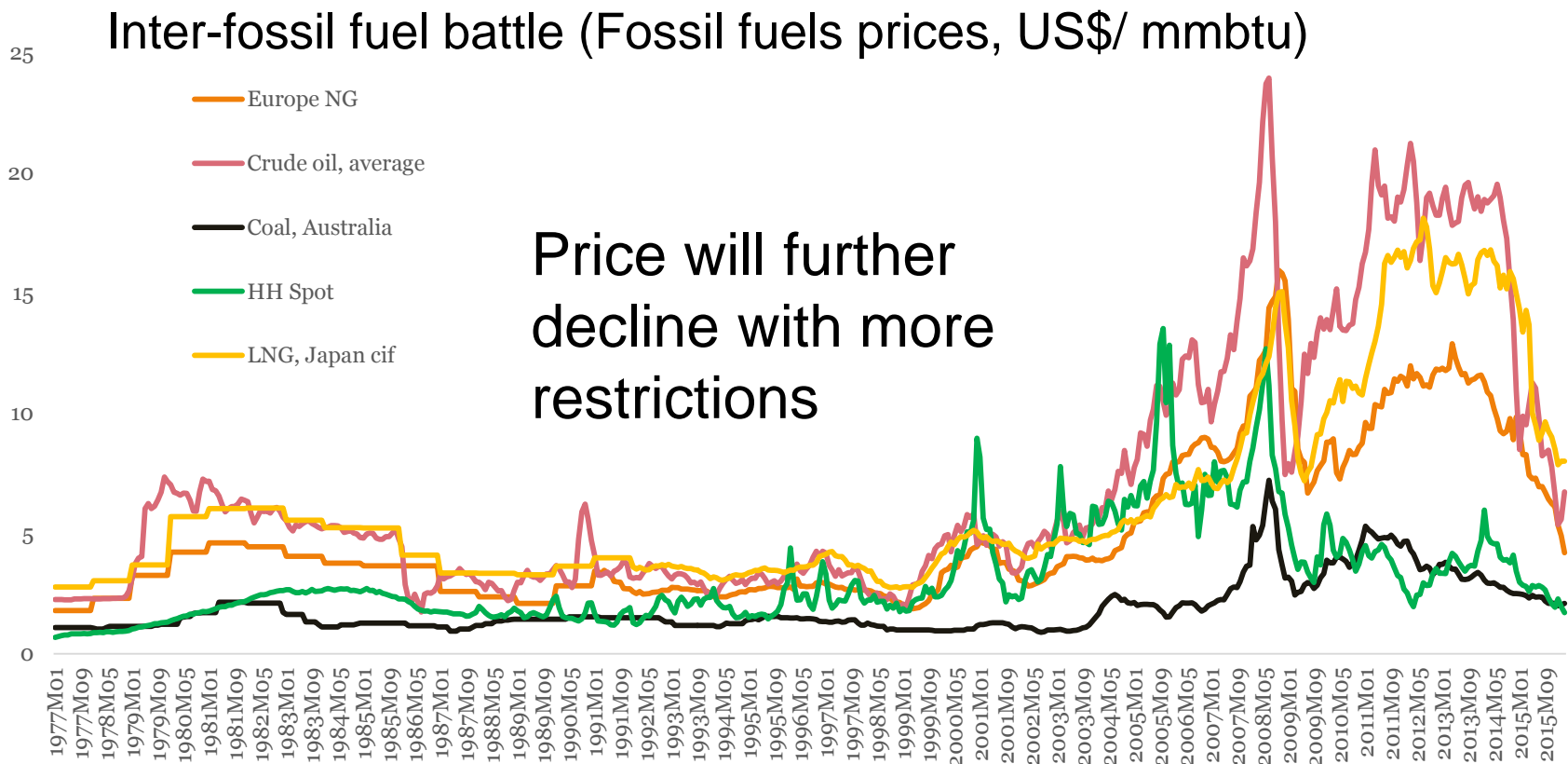


China's demand variability in 2040 is  
equivalent to global trade



# Spillover (4): Energy transition

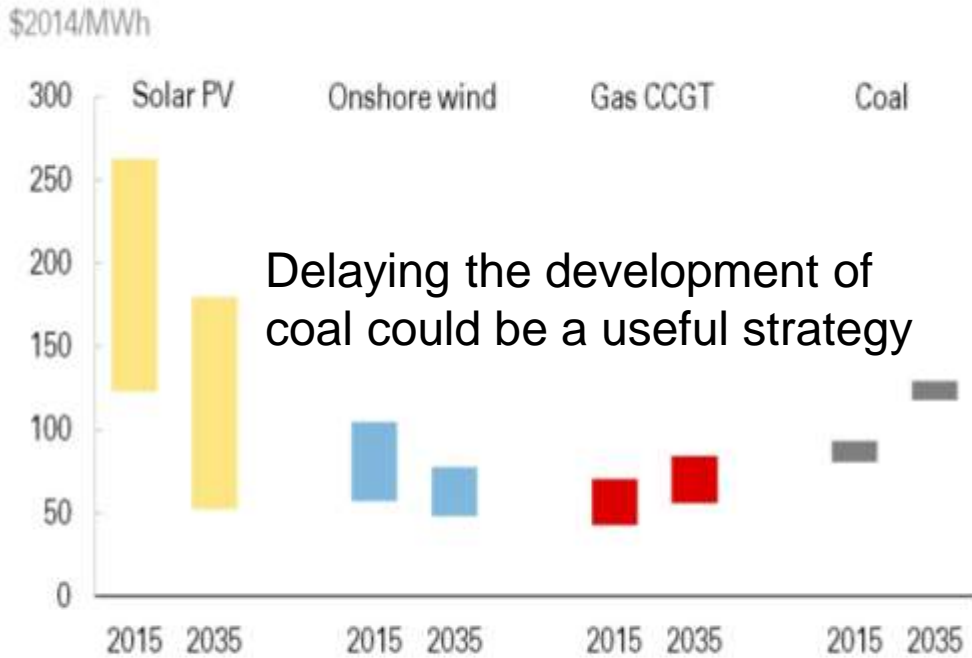
Coal's narrowing competitiveness gap with gas and oil



# Spillover (4): Energy transition

## Coal's competitiveness surges but decline against RE

Cost\* of new grid-scale power generation, North America example

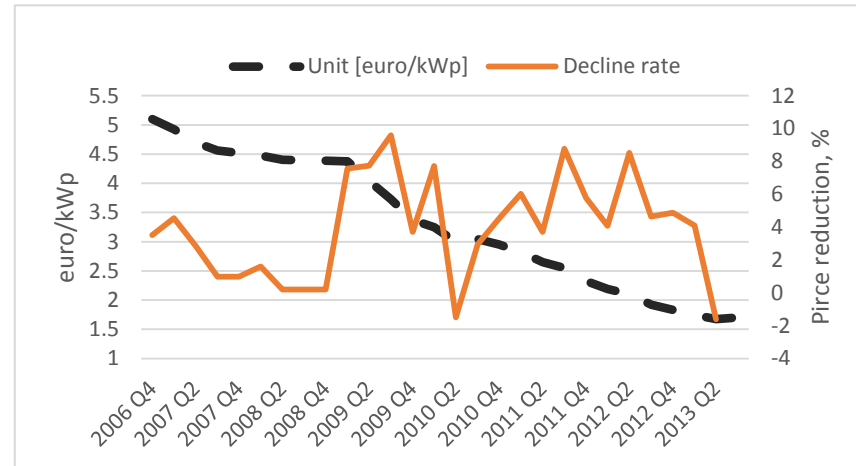


Delaying the development of coal could be a useful strategy

\* Levelized cost per MWh of building and operating a plant over its lifetime. Solar and wind costs exclude the cost of grid integration, and exclude any subsidies or tax incentives. Gas and coal costs in 2035 include the cost of carbon at an assumed price of \$40/tonne.

- Subsidy removal
- RES support policies
- Economic development

Average installation costs for rooftop installations ( $\leq 10$  kWp) in Germany



# Spillover (5): Consumption shift (leakage)

Strict controls in one country could crowd out coal to other regions

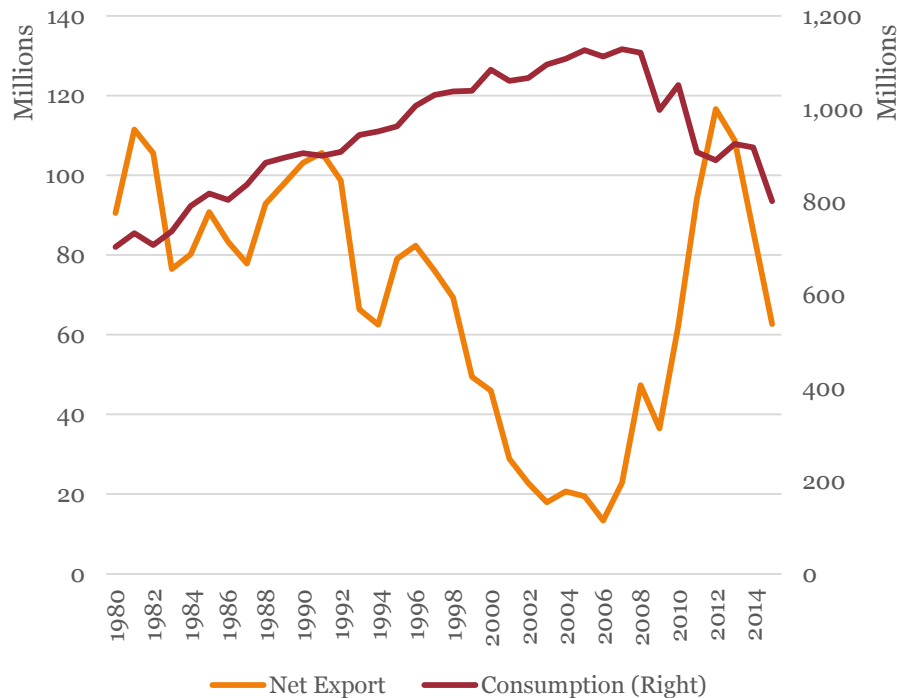


Figure: US Consumption and Net Export

Global policy coordination is needed

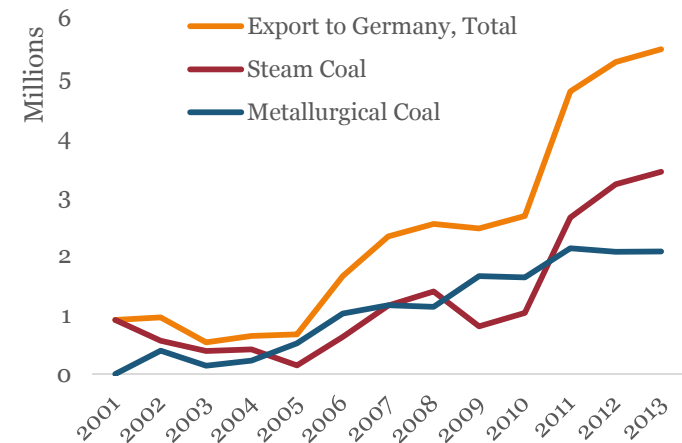


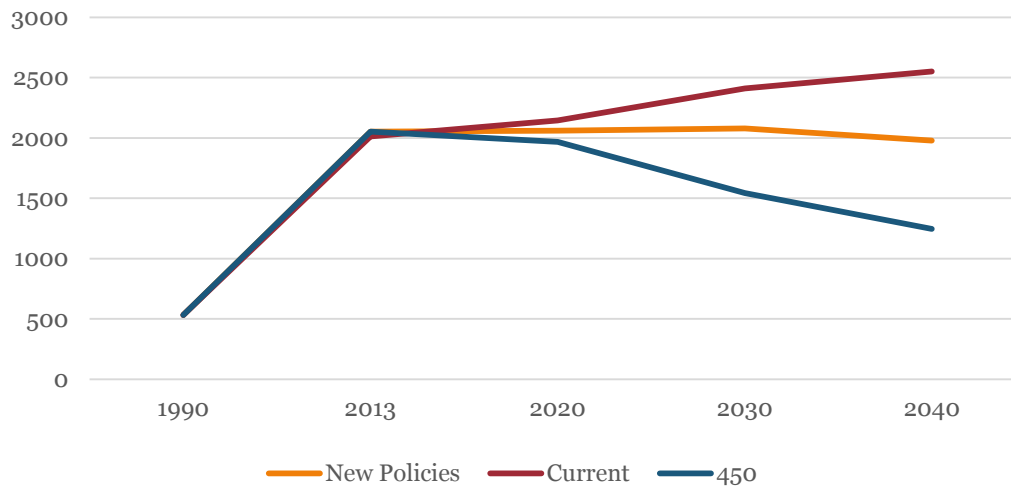
Figure: US Export to Germany

Source: EIA. <http://www.eia.gov/coal/data.cfm#summary>

# Spillover (6): Industry restructuring

## Local government, SMEs

China's Coal Demand, various scenarios



|  | 2020 | 2040  |
|--|------|-------|
| Total production                             | 1959 | 2430  |
| Difference between 450 and Current Scenarios | 178  | 1303  |
| Percentage                                   | 9.1% | 53.6% |

Source: IEA, 2015

Companies: 90% losing money (2015) (<http://energy.people.com.cn/n1/2016/0224/c71661-28145328.html>)

Employment: 6.1 Million (2013) ([http://www.stats.gov.cn/tjsj/zxfb/201412/t20141216\\_653695.html](http://www.stats.gov.cn/tjsj/zxfb/201412/t20141216_653695.html)), **more serious in coal mining communities**

Fiscal revenue: Taxes and fees from coal/Total >70%

# Implications (1)

## Sectoral strategies: 3Rs

- **Retreat:** the leading coal consumers
- **Refrain:** those have under-developed resources will not develop
  - Delayed development is useful for cost comparison
- **Retrofit:** cleaner, although not clean





# Implications (2)

## Integrated solutions

- Holistic planning
- Coordinated actions
- Coordination among trade, energy and environmental policies within and among nations
  - Commercialization of RES (R&D for lower costs)
  - RE trade facilitation (**anti-dumping** of REs)
  - Inclusive, equitable and practical policies
- Cost competitiveness rebalance
  - Subsidy (600B) removal, carbon taxes/ETS, green finance

# Implications (3)

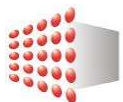
## World's local actions

- National government ownership and leadership
- Capacity building
  - International transfer of cleaner coal technologies
  - Knowledge sharing
  - Resource pooling



# Key messages

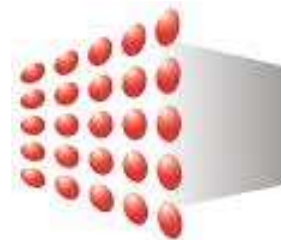
- **Restrictions on coal consumption are expected**
- **But restriction has significant spillover effects**
  - Development; Environment; Trade; Energy transition; Consumption shift; Industry restructure
- **Multidimensional policy**
- **Sectoral strategies: retreat, refrain, retrofit (3Rs)**
  - Delaying coal development could be a good strategy
- **Integrated solution**
  - Holistic planning and coordinated global actions
  - RE products paradox: **higher costs** vs **anti-dumping**
- **World's local actions: National ownership and leadership**
  - Policy coordination; Cost comparativeness rebalance; Technology transfer; knowledge sharing and resource pooling



# Thank you!

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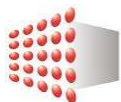
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### References:

Shi, X., 2016. The Future of ASEAN Energy Mix: A SWOT Analysis. *Renewable & Sustainable Energy Reviews*, 53:672-680.

Shi X, 2013. China's Small Coal Mine Policy in the 2000s: A Case Study of Trusteeship and Consolidation. *Resources Policy*, 38(4): 598-604.



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