Stranded Assets in the Chinese Coal-Fired Power Sector

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Pressure on the coal-fired power sector in China

- Recent investment boom, structural slowing demand growth, & hence overcapacity
- Carbon market & electricity market reform
- Continued rapid growth of RE to meet climate, energy & environment goals

Source: Authors, based on data from Enerdata, GlobalData, & company reports
Objectives and structure of the study

- Model the revenues & profitability of the entire coal-fired power sector in China since 2005.

- The model was built on a plant-by-plant basis.

- Three scenarios were modelled, out to 2050:
  - 2°C Scenario
  - Managed 2°C Scenario
  - NDC-Style Scenario
Key Finding #1: The status quo for the sector is distinctly negative

- In the NDC style-scenario, persistent low load factors (45% by 2030), and carbon market & electricity market reforms put significant pressure on coal-power profitability.

- Using the study’s central discount rate of 6.5%, the net present value of the ½ trillion USD invested in coal power since 2005 is estimated at negative 14.2 billion USD.
Key Finding #2: A managed transition in line with 2°C would improve on the status quo

- In the Managed 2°C Scenario:
  - Moratorium on new coal
  - Retirement of old coal
  - New revenue sources for flexibility in a high RE system

- This scenario improves on the NDC-Style Scenario, raising the NPV of the coal fleet to **negative 2.3 billion USD**
Key Finding #3: The banking sector can handle the disruption of 2°C

- Banking sector exposure to coal sector stranded assets is estimated at **negative 33.0 billion** USD in the Managed 2°C Scenario at 6.5% discount rate.

- Prudential loan-loss provisions of the Chinese banking sector are estimated at **ca. 370 billion USD**.
Digression #1: the importance of the ownership structure of the fleet
Key Finding #4: SOEs are both a risk and an opportunity for coal transition

*Figure 8. Cumulative amortized capacity under different discount rates, Managed 2°C Scenario*

Source: authors’ calculations. N.B. sample size is 421 GW
Key Finding #4 (II): SOEs are both a risk and an opportunity for coal transition
Conclusions

- There are already significant stranded assets in the coal fired power sector, particularly when compared to market costs of capital.

- A well-designed acceleration of power sector transition can improve on the situation & would not lead to financial disruption.

- SOE reform is crucial to transition:
  - Old coal assets should be put in a coal sector ‘bad bank’ & amortized & retired as fast as possible.