

Why Has China Overinvested in Coal Power?

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While the Chinese government has sponsored a historically unprecedented expansion of renewable energy since 2005, China has, at the very same time, been investing heavily in coal power. From 2010 to 2015, China's coal power capacity increased from 660 to 884 GW, and China approved nearly 200 GW of new coal power capacity in 2015 alone, raising serious concerns of overcapacity in coal power and further crowding-out of renewable energy.

In order to understand why China engaged in such a massive expansion of coal power investment in the mid-2010s, we investigated key industry policies that have effectively subsidized and (over)incentivized coal power investment. We found that the rules under which China's coal power industry has historically operated made excessive investment extremely likely unless the central government served as a "gatekeeper," slowing and limiting investment in the face of incentives for socially excessive entry. However, this "gate" was lifted when coal-power project approval authority was decentralized from the central government to local governments at the end of 2014, which shortened approval time significantly and allowed investment to flood into the market.

We construct a simple economic model that captures key features of the policy regime influencing coal power investment, and then examine the model's predictions using coal-power project approval records from June 2013 to March 2016. We further hypothesize that provinces that already had a relatively large coal mining industry may be even more likely to permit the construction of new plants, because this could stimulate demand another important local industry, boosting measures of economic growth and increasing local officials' likelihood of promotion.

We find the approval rate of coal power is about 3 times higher after approval authority is decentralized, and provinces with larger coal industries tend to approve more coal power. We estimate that the presence of local coal production explains an additional 54GW of approved coal power in 2015 (other things equal), which is about 1/4 of total approved capacity in that year. While the central government has since taken measures to contain the coal overcapacity crisis, keeping the supply and demand of coal power balance in equilibrium will require more than a few *ad hoc* administrative orders. When it comes to the development of renewable energy and reform of the electricity sector, China is viewed as having very diverse development goals that often conflict with one another – including energy security, economic development, and environmental protection. Effective reconciliation of these conflicting goals will be a necessary but difficult step on the way toward a more socially efficient energy system.

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