

A Global Coal-Phase-Out and the International Coal Market – similarities and differences between China, India and Europe

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Overview

The sustainable development goals (SDG) adopted at the United Nations Sustainable Development Summit in September 2015 include tackling climate change as one of its key targets (UN 2015a). International climate policy has succeeded in achieving global consensus on the urgent need to combat anthropogenic climate change at the Conference of the Parties (COP) 21 in Paris (UN 2015b) and at the COP 22 in Marrakesh. Estimates of fossil fuels that have to remain in the ground to achieve the 2°C target and to prevent irreversible atmospheric changes see the heaviest burden on coal (Meinshausen et al. 2009). 82% to 88% of current coal reserves are considered “unburnable”, compared to 33%-35% of oil and 49%-52% of gas reserves (McGlade and Ekins 2015).

Despite some non-believers who claim that the world cannot do without coal (Umbach 2015) the industry is starting to feel the fading perspective for coal. Steam coal production declined by around 20% between 2005 and 2013 (though preliminary data for 2014 shows a very slight increase in production, of around 1%) (IEA 2015b, IV.424). While coal phase-out plans are developed in many European countries the future of coal will be decided in the Pacific region. In this paper, we take a look on the future of coal in Europe as well as in the two largest producers and consumers of coal: China, and India, that will decide whether a global coal phase-out is about to commence. They both followed the paradigm of western economies where economic growth is built on an industrialization driven by the massive use of coal for electricity and heat generation. But times are beginning to change.

Methods

We perform thorough policy analysis for the international coal market as a whole, and for Europe and the two focal countries in particular. This paper summarizes the current market development in the most important coal producing and consuming countries. This includes a qualitative assessment of potential winners and losers of the current development and critically examines future prospects for the global steam coal market. The paper focuses on business and economic considerations and aspects of climate policy, leaving other environmental and social issues of (a continuation of) coal extraction aside. Based on this, we discuss various demand-side and supply-side policy instruments. The policies will have a direct effect on the local production and consumption patterns but also on the international market, both in the short and in the long-term. We evaluate these effects also with respect to their distributional implications.

Results

China:

China is seeing a massive deployment of renewables and also has introduced a moratorium on new coal power plants and mines (The State Council of the People’s Republic of China 2016). It’s future steam coal demand will be shaped by the magnitude and sectoral composition of its economic growth, reductions in energy-intensity and environmental policies. Additional critical factors will be local pollution and water shortage at mining and electricity production sites (Cheng et al. 2016). Burke and Liao (2015) find that China’s coal price elasticity of demand is increasing which supports the effectiveness of a national emissions trading scheme as a mechanism for reducing coal consumption and associated emissions. In its New Policies Scenario (NPS), the IEA World Energy Outlook (WEO) predicts that China’s coal demand will stay constant over the next 25 years (IEA 2015a, Table 7.2). However, there are strong indications that the peak of coal use for power generation may already be starting to occur. Preliminary data for 2014 shows that steam coal consumption was 3.5 per cent lower than in 2013 (IEA 2015b, III.21) despite increased power demand, suggesting that its share in the fuel mix has dropped. This view is confirmed by figures published by the Chinese National Bureau of Statistics suggesting a 1.9% drop in energy-related carbon emissions, which mainly originate from a drop in annual coal consumption of 3.7% (Slater 2016; Yeo 2016). While the WEO discusses the possibility of a decline of coal consumption in China, and warn against negative effect on the global coal industry (IEA 2015a, 291), it excludes this trend from its central scenario. Against the background of continued policy interventions further reducing future coal demand and supply are very likely.

India:

The situation in India is different: On the one hand, an ambitious plan to rapidly extend the renewable generation fleet is the central element of the INDC submitted to COP21 by India. On the other hand, the central government's plan also includes a massive extension of domestic coal production. Future coal demand will be shaped by India's economic growth, increased electrification to overcome high levels of energy poverty (IEA 2015a, 448), and to some extent, environmental policies. In its "intended nationally determined contribution" (INDC) India has committed to reduce the carbon-intensity of GDP by 33 to 35% from 2005 levels by 2030 and, conditionally, to increase the share of non-fossil fuels in power generation capacity to 40% by 2030 (Government of India 2015a). Moreover, it targets to increase solar generation capacity to 100 GW and total renewables capacity to 175 GW by 2022 (Government of India 2015c). As an additional policy measure India has introduced a tax on imported coal of 0.8 USD in 2010, and has twice doubled the tax to 3.2 USD for 2015-2016 (Mittal 2014; Ministry of Finance 2015). A key question in relation to India's future steam coal demand is the extent to which it will continue to be met by imports. In the short term, it is likely that imports will continue to increase. In the longer term, the Indian government is aiming to reduce import dependency – possibly to the extent of becoming self-sufficient in steam coal (*Reuters India* 2015). A strong domestic production targets of 1500 Mt/a for 2020 is in place, but its success will depend on whether present constraints on production can be overcome (EIA 2015a). Coal quality is a further consideration. A majority of 85% of the young Indian coal-fired generation fleet is designed for Indian coal and cannot easily take other coal types (IEA 2015a, 440). Only new generation of power plants is suitable for imported coal (Carl 2015, 129). At the same time the Indian government has announced that the Thirteenth Five Year Plan (which commences in 2017) will require all new coal-fired generation capacity to use supercritical technology (Government of India 2015b). However these would induce an ongoing need to import coal (Commonwealth of Australia 2015a, 82–83).

Europe:

Future coal demand in the EU has two parallel storylines which more or less follow an east-west divide: Against all efforts of climate change mitigation the Eastern European states (most notably Poland, and Czech Republic) pursue a course of supporting coal-fired electricity generation by backing up their domestic coal industry: As a consequence, coal mining companies being under economic pressure due to the plummeted global coal prices were given state subsidies or were renationalized. The second storyline is the one of the Western European countries which have embarked on a coal phase-out path in the medium-term. Seven smaller countries in the EU are already coal-free: Belgium, Cyprus, Luxembourg, Malta, and the Baltic countries. Portugal is planning to phase-out in 2020, followed by Finland in the 2020s. The UK has announced to phase-out coal until 2025, the same is true for Denmark and Austria (CAN 2016c; Jacobsen 2014). Germany's less advanced coal phase-out is currently being discussed for the 2040s, but there is a general consensus that it is necessary to achieve legally binding CO₂ reduction targets. Other Western and Southern European countries (France, Spain, Italy etc.) are also embarking on a similar pathway with declining coal demand in the medium term. As a consequence the role of the Netherlands as the European hub for coal imports is also likely to decline.

Conclusions

While a coal phase-out has begun in some European countries, China and India will decide whether a global coal-phase out will be successful. Supply-side measures can be an effective climate policy as they come with the additional benefit of raising prices due to scarcity rents which induce additional demand reductions. However, such policies should not be considered as an isolated measure but as part of an integrated climate policy package. Otherwise, there is a risk that it will be deemed a temporal industry support policy that protects current incumbents without any long-term effect on reducing CO₂ emissions.

Selected References

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