



CARBON PRICES AND THEIR IMPACT ON COAL POWER

OVERVIEW

As of 2020, there are 61 carbon prices in operation globally, comprised of 31 emissions trading systems and 30 carbon taxes. These systems currently cover about 22% of total global GHG emissions. Many more nations are considering the use of carbon prices in order to meet their Nationally Determined Contributions (NDCs) to the Paris Agreement. Carbon pricing is also a method that is being considered for achieving the UN Sustainable Development Goals (SDGs), including SDG 7 – Affordable and Clean Energy, SDG 13 – Climate Action, and others. Some of the most prominent systems are located in the European Union, China, Australia, South Africa, Japan, and regions like the Northeast United States and Central Canada. All of these places also use coal for electricity generation.

Considering the increasing prevalence of carbon pricing, and the nearly universal inclusion of the power sector in such schemes, it is critical for the coal sector to understand how carbon prices function. This report examines the EU Emissions Trading System (ETS), the US Regional Greenhouse Gas Initiative (RGGI), the Chinese ETS, and a number of smaller systems to illustrate the variety of carbon price designs that have been used. Then, it evaluates the effects on and outlook for coal under such schemes.

BARRIERS TO A WELL FUNCTIONING CARBON PRICE

- The market is imperfect – Real energy markets do not resemble the models used in economics. Large providers dominate many electricity markets, and some are heavily regulated. Thus, it is difficult to predict the cost of abatement – and the right level for a carbon price.
- Political factors – The political process has many opportunities for lobbying and advocacy, and groups that expect to be impacted by a carbon price will try to take advantage of the process to secure more favourable conditions.
- Company investment policies – Investors can be reticent to act, and future discounting may be higher than expected. Innovation is key for future decarbonisation, but so far companies have not been as enthusiastic as expected about transforming their business processes with new technology.
- Interaction of policies – Other policies can interact with a carbon price. Fossil fuel subsidies, renewable energy supports, and other climate policies can lead to actions that may not have been chosen under only market-based incentives like a carbon price.

EFFECTS ON COAL

- Coal use has continued under carbon pricing – Coal is still widely used for electricity generation around the world, including in areas with carbon prices. Some carbon prices have been designed to limit the burden of abatement on the coal sector. Many countries also have concerns about energy security and prefer to use domestic coal supplies to ensure reliability in their power systems.
- Coal to gas switching – Fuel switching is a major strategy for emissions reductions under a carbon price. A carbon price affects the variable costs of operating power plants, and it can change the

dispatch order of sources on the grid. Fuel switching depends on both the carbon price and the input costs of fuel. There has been a significant switch from coal- to gas-fired power plants in the EU after the allowance price rose in 2019. About half of the lost generation was replaced by gas, while renewables accounted for the other half. The UK had already experienced this switch after it introduced the Carbon Price Support tax in 2013 – especially after the price increased in 2015.

- Asset stranding – Stranded assets due to a lack of policy clarity and planning could have huge economic consequences. In Europe, losses due to the energy transition could be in the range of €50–200 billion.
- Adoption of new technology in the power sector – Carbon price revenue could be used to support innovation. For example, carbon capture and storage (CCS) could greatly benefit from a carbon price, both by making the economic case for its widespread use, and through revenue recycling to support the capital cost of such projects. Carbon pricing has proved critical for CCUS in the past, such as the carbon tax in Norway which incentivised the Sleipner and Snøhvit CCS projects.
- Fossil fuel dependence and the just transition – Revenue from carbon prices can be used to bolster public support and alleviate the burden of abatement on carbon-intensive industries. British Columbia has excelled in this area, returning all of the revenue from its carbon tax to consumers and businesses, with special programmes dedicated to fossil fuel reliant communities.

RELEVANCE TO UN SUSTAINABLE DEVELOPMENT GOALS (SDGS)

Carbon pricing contributes to multiple SDGs, but it is most obviously linked to SDG 13 – Climate Action. The United Nations Development Programme (UNDP) itself has recognised the important role carbon pricing can play in a comprehensive climate change mitigation strategy, both in developed and developing nations.

KEY TAKEAWAYS

The impact of carbon prices on the power sector, and coal specifically, depends massively on the broader climate and economic goals of the government that has crafted the carbon pricing system. If a country has already decided to phase out coal power, the carbon price will most likely hasten this transition. In some places, such as the EU, carbon pricing is being used to complement the region’s broader climate policy goals. Regulators hope to maintain a high allowance price that will incentivise fuel switching from coal to gas and investment into renewable energy. Comparatively, China has designed its ETS to minimise the burden on coal power producers, as it considers coal essential to its continued economic development. These examples highlight the inconsistency in carbon price design and outcomes for coal; it is unwise to assume that fossil fuels will always suffer under a carbon price.

Ultimately, the most important takeaway from the current experience with carbon pricing is that a stable and appropriately high carbon price with a predictable future can provide the most clarity for all actors involved in the system, including the coal power sector. A low and unstable price is more likely to be confusing and ineffective, with companies unsure of how to plan for future investments. It may also indicate a lack of commitment to climate change mitigation on the part of policymakers, which could be contradictory to the stated national and global goals of the Paris Agreement.

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Each executive summary is based on a detailed study which is available separately from www.iea-coal.org. This is a summary of the report: Carbon prices and their impact on coal power by Stephanie Metzger, CCC/308, ISBN 978-92-9029-631-7, 90 pp, September 2020.