sandbag

Why does the UK Carbon Price Support matter?

November **2016**

The UK Carbon Price Support is making remarkable progress in decarbonising the UK's electricity.

By charging fossil fuel plants £18 per tonne of CO2 to cover some of the external costs of the carbon dioxide they emit, the Carbon Price Support is driving coal off the UK energy system.

We estimate coal generation will fall by 66% this year alone. Coal emissions will have fallen by over 80% since 2012, reducing *total* UK CO2 emissions by 18% in just four years.

The Carbon Price Support is a key element of delivering the Government's commitment to a 2025 coal phase-out. Removing the Carbon Price Support will not only halt this move towards decarbonisation of electricity, but it would unwind it, as existing coal power plants would run 24/7 again, and invest to extend their lives.

The rest of the world is realising the "quick win" to reduce CO_2 emissions is tackling coal power, and the UK is showing how quickly, and cheaply, this can be done.

About Sandbag

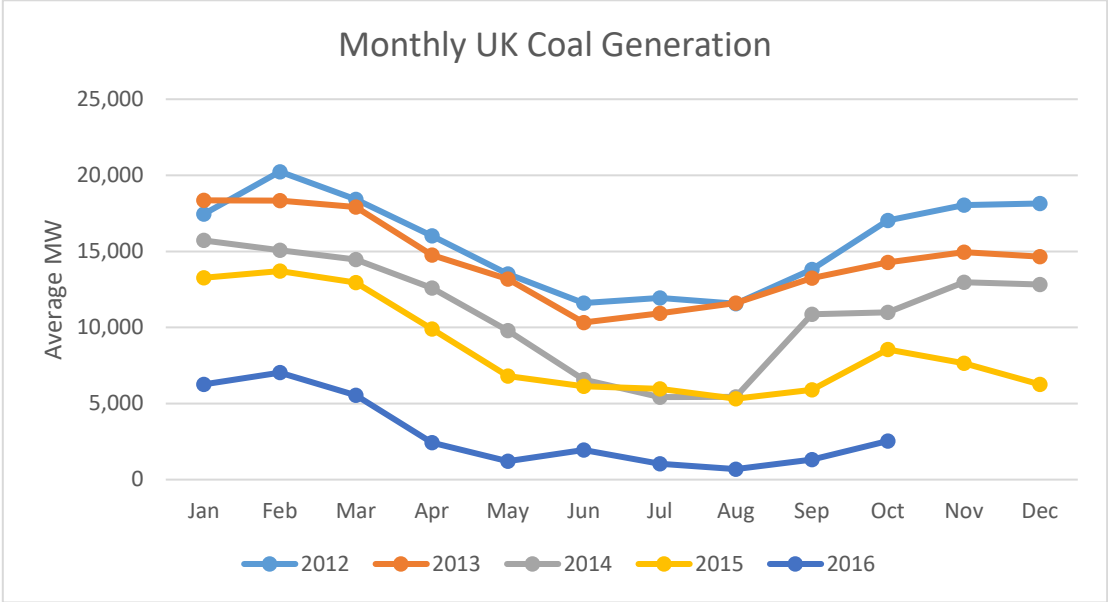
Sandbag is a London and Brussels-based not-for-profit think tank conducting research and campaigning for environmentally effective climate policies.

Our research focus includes reforming the EU Emissions Trading System and the Effort Sharing Decision; accelerating the phase-out of old coal in Europe; deep decarbonisation of industry through technologies including Carbon Capture & Storage.

For more information, visit sandbag.org.uk or email us at info@sandbag.org.uk

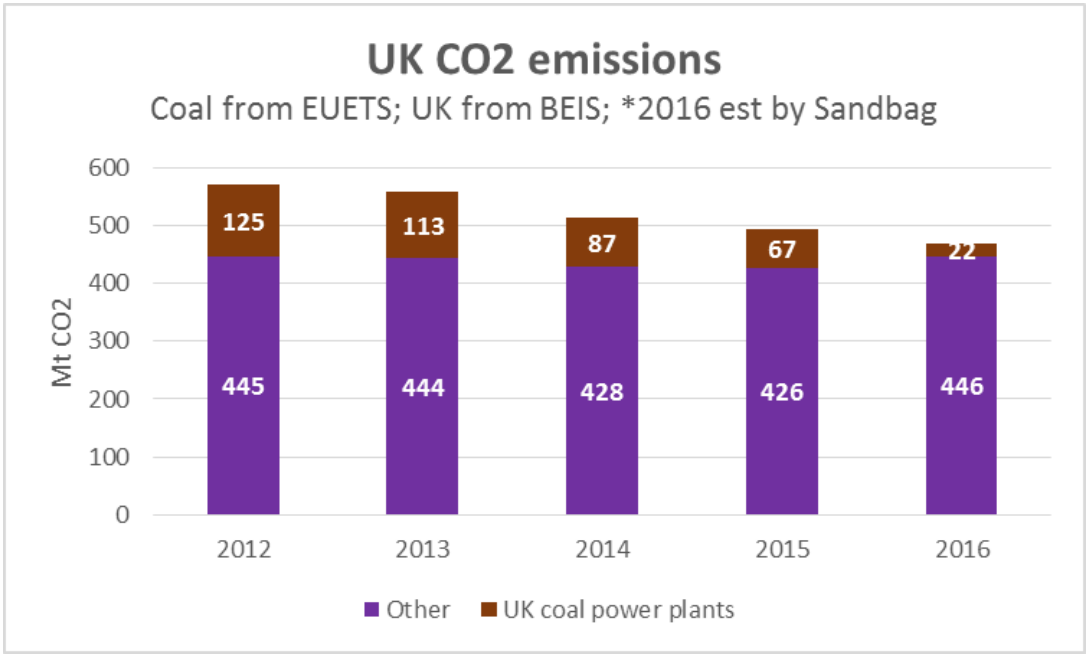
Reducing coal power is the "quick win" for CO_2 reductions

Sandbag estimates coal generation will fall by 66% this year. The Carbon Price Support doubled last April, but its full impact on coal burn was not felt until this year. The reason why coal burn did not respond last year was the higher gas prices, and over-stocking of coal which needed to be burnt despite it being uneconomic.



From 2012 to 2016, the UK's total CO_2 emission will have fallen by 18% - this is entirely due to coal for electricity generation collapsing by over 80%. The total CO_2 emissions from all other sectors are unchanged, taking into account an increase in gas generation (see graphic below).

CO_2 emissions from coal power will have fallen by about 82% in just four years – from 125Mt in 2012, to an estimated 22Mt in 2016. In 2012, coal power plants emitted 22% of all the UK's CO_2, and this year we estimate it will be just 5%.



Source: Sandbag and Gridwatch data

As a result, the UK's air will be significantly cleaner. In 2012, 51% of all the UK's SO_2 emissions and 22% of NO_X emissions were from coal power plants. The emissions from SO_2 and NO_X will have fallen even faster than CO_2, as the dirtiest coal power plants have closed first, resulting in huge health benefits for the general public.[1]

The biggest falls happened this year, as Jan-Sep 2015 coal generation fell by 66%, year-on-year. For the six months over this summer, solar generation was higher than coal generation, and for 5% of the time there was no coal generation whatsoever.[2]

This shows that the UK power system can successfully operate without high load factors for coal generation. Coal power plants can temporarily fulfil a useful but more targeted role as providers of capacity for winter peak electricity generation, as we discuss below.

What is the role of the Carbon Price Support in falling coal emissions?

The Carbon Price Support and the Capacity Market are designed to work together to ensure falling emissions and security of supply. Emissions are kept to a minimum because the Carbon Price Support makes coal more expensive than gas. The capacity mechanism gives generous financial support to coal plants to mostly cover their fixed costs, so they stay open and keep the lights on when needed.

The Carbon Price Support came into effect in April 2013, and had been rising annually, so that in April 2015, it doubled from about £9/tonne of CO_2 to £18/tonne.[3] It is currently frozen at that level.

The Carbon Price Support is having three major impacts on coal generation:

Gas cheaper than coal

First, the Carbon Price Support (in combination with cheaper gas prices) has resulted in gas generation being cheaper than coal. This results in coal no longer running 24/7, and instead generating during times of high electricity demand and gaps when there is no wind or solar generation. **If the Carbon Price Support is removed, coal will run baseload, and gas pushed to margin, say Cornwall Energy** (see their report *"What's to be done with the Carbon Price Support?"*[4]). **Undoubtedly, in such a case, some UK coal power stations would also invest to stay open in the medium term. This not only increases emissions before the 2025 coal phase-out date, but makes the 2025 coal phase-out much harder to deliver**.

Less profit for coal

Second, coal power stations become less profitable – not just because they run less, but because every hour they do run is less profitable.

However, that does not mean they will close. From October 2017, the capacity mechanism will pay to keep them open. That auction has yet to happen, but for the 12 months from October 2018, coal plants will be paid £173m, and from October 2019 £139m. The auction clearing price of around £18/KW covers most of their fixed costs.

[1] Europe's Dark Cloud: How coal burning countries are making their neighbours sick (Sandbag, July 2016) https://sandbag.org.uk/reports/europes-dark-cloud-how-coal-burning-countries-make-their-neighbours-sick/
[2] Analysis: UK solar beats coal over half a year (CarbonBrief, October 2016) https://www.carbonbrief.org/analysis-uk-solar-beats-coal-over-half-year
[3] Carbon Price Floor: Reform (HMRC, March 2014) https://www.gov.uk/government/publications/carbon-price-floor-reform
[4] What's to be done with the Carbon Price Support? (Cornwall Energy, September 2016) http://www.cornwallenergy.com/cms/data/files/Downloads/160930_Chaart-of-the-week.pdf

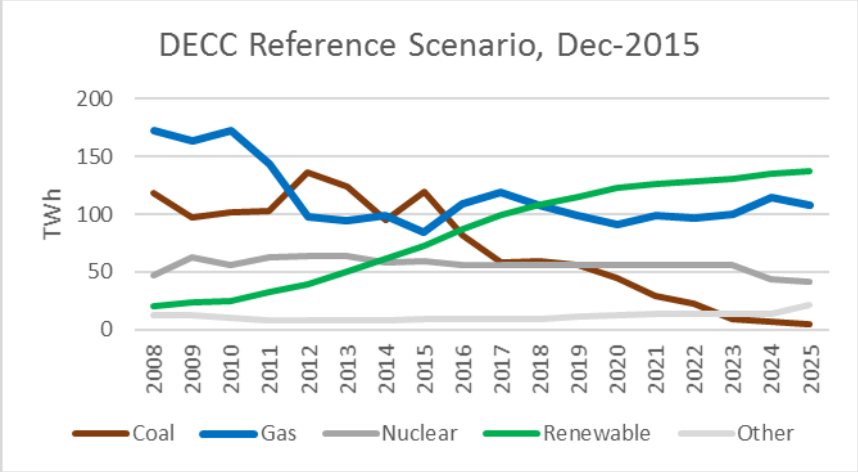
The coal power stations that considered to close this year – Eggborough and Fiddlers Ferry – have since changed their minds because of generous pay-outs from the SBR (Supplemental Balancing Reserve) this winter, an "emergency" capacity market auction for 2017, higher electricity prices, and increased ancillary service revenues especially for black start and warming contracts.

Renewables competing without subsidies

Third, the Carbon Price Support raises the price of electricity from fossil fuels, which levels the playing field, meaning renewables will more quickly be able to be compete without subsidies, and to encourage energy efficiency. **The intention of the Carbon Price Support in the long-term is to replace coal with renewables, without increasing gas generation**. This is exactly the DECC reference scenario from December 2015[5] – see graphic below – that by 2025, coal generation would be zero, and renewables would continue to increase, so that there is no long-term increase in gas generation.

Specifically, the Carbon Price Support:

- Provides market incentives for new and expanded onshore wind, the cheapest form of low carbon generation, for which policy does not provide any subsidy.
- Helps incentivise other renewables, reducing payments under CfDs, and thus easing the pressure on future financing of low carbon generation, and
- Helps incentivise energy efficiency and demand side response.



While the level of Carbon Price Support is well above prices in the EU Emissions Trading System (EUETS) at present, it remains moderate against relevant markers. For example, it is below central estimates used in US policy making of the cost of damage from emissions. It is below carbon taxes in other jurisdictions. It is also below the level of €30/t that the European Commission's Impact assessments expected the EUETS to already have reached by now. In October, the Canadian Prime Minister promised an ambitious national Carbon Price Support, rising to C$50 (£31/tonne) by 2022.[6]

The often repeated argument that Carbon Price Support does nothing to reduce total emissions because that is set by the cap does not provide good grounds for inaction. Recent analysis[7] shows that emissions reductions due to measures like Carbon Price Support will be very largely retained, especially given the surplus under the EUETS, which is likely to persist into the late 2020s.

[5] Energy and Emissions projections (Department for Energy and Climate Change, December 2015) https://www.gov.uk/government/collections/energy-and-emissions-projections
[6] Trudeau unveils carbon price as Canada acts on Paris (Bloomberg, October 2016) http://www.bloomberg.com/news/articles/2016-10-03/trudeau-unveils-carbon-pricing-as-canada-acts-on-paris-pledge
[7] Puncturing the waterbed myth (Sandbag, October 2016) https://sandbag.org.uk/reports/puncturing-waterbed-myth/

Why the world is looking to the UK

The world is acting on coal now. Global coal emissions will fall about 5% this year, with US coal burn falling by 18% and China also falling for the third year in a row. A structural shift away from coal is beginning to accelerate, and the UK is well placed to manage this transition and gain competitive advantage.

But the world needs to act faster. To keep to within 2 degrees, the IEA say global coal power emissions must begin falling this decade, and then accelerate to fall by 7% per year globally next decade (see graphic below).[8]

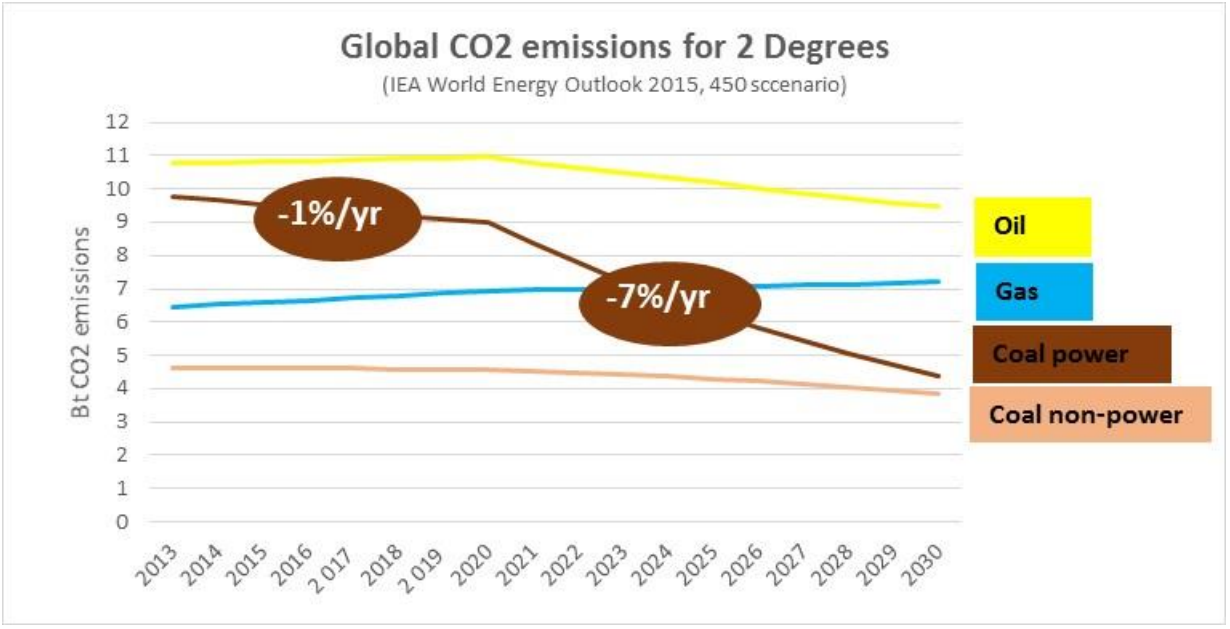
7% per year, every year. Globally. For all coal power emissions. The curve needs to be bent. The UK's decline of coal of 66% in one year has proved that the curve can be bent.

The world is paying attention to the UK experience. The Canadian Province of Alberta and New York state have already followed the UK's lead, while a growing number of countries, regions and utility companies are taking similar steps. In Europe, too, countries are looking to phase-out coal:

- Belgium's last coal plant stopped generating last year.
- France is expected to imminently announce measures to phase out its coal fleet by 2022.
- Netherlands, which has mostly only brand new coal plants, is considering a 2020 phase-out.
- Germany's Economics and Energy Minister, Sigmar Gabriel, is initiating a national dialogue process this year on how to phase-out coal.
- Denmark and Finland have also pledged to phase-out coal in the next decade.

The Carbon Price Support is a key element of delivering the UK's 2025 coal phase-out.

If the UK backtracked on its progress, it would undermine its international standing and the credibility of its energy and climate policy framework. Instead, the UK should persist with its CPS approach until at least the mid-2020s. This will help the UK secure investment in low-carbon generation and confirm its international influence at a time when the phase-out of coal generation is set to become a global priority.



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[8] IEA World Energy Outlook http://www.worldenergyoutlook.org/

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