

Carbon price instruments for the Power Sector

Comparing the German proposal to the UK

31-March 2015

This paper explains the UK Carbon Price Support mechanism, why unilateral action was taken, how it impacts on the EU ETS, and how it compares to the proposed German policy.

In summary, the German policy is looking to achieve the same objective in broadly the same way as the UK policy is – i.e. reducing the carbon intensity of the power sector through a carbon price instrument, in order to meet ambitious domestic GHG targets. However, Germany's proposal would achieve this with a much lower impact on electricity prices.

Introduction

Last week a policy proposal drawn up by Sigmar Gabriel in the Energy Ministry was leaked, ahead of cross Department negotiations. It is designed to save an additional 22mt of CO₂ in order to enable Germany to meet its self-imposed 2020 target of a 40% cut in emissions relative to 1990.

The draft proposal is especially relevant to the UK for two reasons:

- **It complements the UK's strong domestic GHG commitments.** The German proposal commits Germany to achieve a similar domestic ambition as to the UK. This is particularly important as Germany is leading G7 discussions this summer, in the build up to the Paris climate talks in December.
- **Germany's proposal brings its carbon prices in the power sector closer to UK levels.** This is important, because the UK is looking to build new interconnectors with mainland Europe, and the proposal helps prevent the importing of high-carbon German lignite power into the UK. On 01-April, the UK carbon tax will almost double from £9.54 to £18.08 per tonne of CO₂, which puts a large differential between UK and mainland Europe electricity prices.

About the UK's Carbon Price Support policy

The UK has strong domestic GHG targets, under the UK Climate Change Act, which legislates an emissions trajectory, meaning emissions must be at least 80% below 1990 emissions by 2050¹.

The Carbon Price Support (CPS) was brought in to help decarbonise the electricity sector. It was set up to create “an early and credible long-term signal to investors that the Government is serious about encouraging investment in low-carbon electricity generation”².

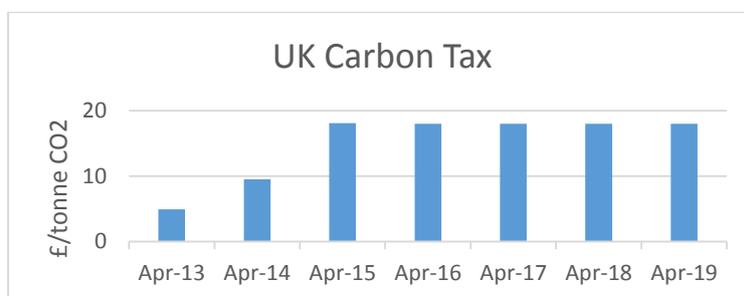
It was first announced in the autumn 2011, and was implemented from April 2013.

The concept is that the Carbon Price Support sets a trajectory for a total carbon price for UK power sector participants. This means that there is a carbon tax on top of the EU ETS price to create a pre-defined total carbon price. The carbon tax is set 3 years in advance depending on the EU ETS price at that point. This means that the power companies know the carbon price that must be paid when they begin selling their power station output; however, the EU ETS will inevitably change in those 3 years, so the total carbon price paid will never be exactly the pre-defined total carbon price.

The Carbon Price Support was set at an ambitious level – originally a total carbon price of £30/tonne by 2020 and rising to £70/tonne by 2030 (in 2009 real prices). This is substantially above the EU ETS price, meaning that the UK will face a substantially higher carbon price than Europe.

On 1-April 2015, the carbon tax is due to almost double from £9.54 to £18.08/tonne, about €25/tonne. This is additional to the EU ETS price, meaning the total carbon cost for UK power stations is now about €32/t.

There was a mini-reform of the Carbon Price Support in March 2014³. This capped the carbon tax at £18/tonne until March 2020, which has effectively reduced the carbon price trajectory. The carbon tax would fall below £18 only if EU ETS rise substantially.



The Carbon Price Support resulted in a large switch from coal generation to gas generation last summer, which reduced UK emissions (by comparison, there was no switching on mainland Europe last summer; the effect was caused by the UK carbon tax alone).

The UK Government models that the Carbon Price Support will result in the closure of all UK coal power stations by 2025 (or 2021 in a low price scenario⁴). This is because the Carbon Price Support reduces profitability to mean that plant upgrades to meet EU air quality standards are not profitable, forcing the power stations to close, rather than comply with the new legislation.

¹ <http://www.theccc.org.uk/tackling-climate-change/the-legal-landscape/global-action-on-climate-change/>

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48129/2176-emr-white-paper.pdf

³ See <https://www.gov.uk/government/publications/carbon-price-floor-reform>

⁴ More explanation at <http://www.sandbag.org.uk/blog/2015/mar/2/could-uk-be-coal-free-2022/>

About the German proposal

A leaked strategy paper by the German Economics and Energy Ministry lays out **how the power sector will have to contribute to the delivery of Germany's -40% emissions target by 2020**. At the moment, there is a gap of 6 to 8%. As part of the Government's Climate Action Plan, agreed on 3 December last year, **the electricity sector will have to deliver a reduction of 22Mt of CO₂/eq. by 2020** (compared to 2014). In 2014, emissions in the power sector were 349Mt of CO₂/eq., 329 of which are covered by the ETS. By 2020 this will have to decrease to 290Mt. The suggested measures are supposed to achieve this target.

The proposed new law for the power sector will introduce a **"climate contribution"** that will by definition hit the most inefficient coal/lignite plants. The measures will take effect from 2017 and be **"phased in" until 2020**.

This is how it will work:

- The new measures **apply to power plants that are older than 20 years**. Each power plant will, depending on its age (20 to 40+ years), receive an allowance of 7m to 3m tons of CO₂ per GW (only the ETS will apply here). If they exceed the assigned threshold this will cost additional CO₂ allowances which are then removed from the system. Above this threshold, **additional certificates have to be purchased equal to a value of €18-20 per tonne of CO₂**. Thus, the fine is not coupled to EUA prices. It is not clear yet at what level it will start in 2017.
- The new measures will only **affect 10% of German fossil generation from plants** that are older than 20 years. This effectively means lignite.
- To give an **example**, a 40-year old power station with a capacity of 1000 MW would be allowed to emit 3Mt of CO₂. In reality, however, given average capacity utilisation, this kind of power plant would be emitting a good 8Mt of CO₂ per year. 5Mt of additional emissions would therefore cost up to €100 million. The alternative would be to decommission the plant or reduce power production. The decision is up to the utility that owns the plant.
- The electricity price would increase by a maximum of €2 per MWh or €0.2c per kWh, according to BMWi modelling.

Comparison of UK policy versus German proposed policy

	UK “Carbon Price Support”	Germany “Climate Contribution” proposal
<i>Overall rationale</i>	To meet ambitious domestic GHG targets. <ul style="list-style-type: none"> • 2018-2022 = -35% versus 1990⁵ • 2023-2027 = -50% versus 1990 	To meet ambitious domestic GHG targets. <ul style="list-style-type: none"> • 2020 = -40% versus 1990
<i>Start date</i>	April 2013	January 2017
<i>CO2 price</i>	Apr-15 to Mar-20 = €25/t (£18). Currently legislated to rise substantially after 2020, although this may be changed.	2017-2019 = not yet published; 2020 = €18-20/tonne proposed
<i>Applies to</i>	All power sector emissions.	Only power sector emissions above a prescribed plant threshold.
<i>Impact on wholesale electricity prices</i>	We estimate €10-€22.50/MWh across 2015 to 2020. <ul style="list-style-type: none"> • Because the carbon tax is payable on <u>all</u> fossil generation, the carbon tax is fed into every hour of UK electricity price. • For hours where gas sets the price the impact is €10/MWh (€25/t x 0.4t/MWh), for coal the impact is €22.50/MWh (€25/t x 0.9t/MWh). 	Maximum €2/MWh , according to BMWi modelling. <ul style="list-style-type: none"> • By comparison to the UK, the German climate contribution does not feed into every hour of power price. • This is because German power stations can broadly generate enough electricity to meet demand without needing to pay the climate contribution.
<i>Impact on EU ETS (explained in more detail later)</i>	Cuts emissions; does not change supply.	Cuts emissions; does not change supply if emissions are in line with thresholds. <ul style="list-style-type: none"> • If emissions are greater than thresholds, then EUA’s are cancelled, and EU ETS supply tightens to ensure emissions don’t happen elsewhere.

Why are UK and Germany introducing these policies?

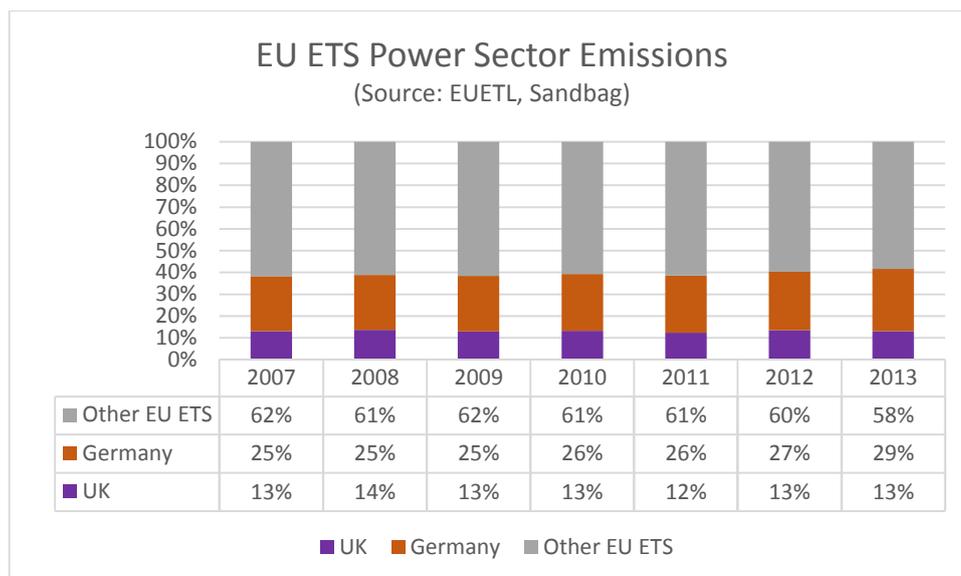
The UK and Germany both have strong domestic GHG targets that are beyond the overall ambition of the EU, and want to show strong climate leadership.

However, both countries have an over-reliance on coal generation. Therefore, it is not possible to deal with domestic emissions without dealing with power stations in the EU ETS.

The UK and German accounted for a massive 42% of all EU ETS power sector emissions in 2013 (up from 38% in 2007, see graph). In Sandbag’s report last year, “Europe’s Failure to Tackle Coal”⁶, we described how the ETS surplus built up through the recession, to a level that ambition is too weak, and the EU ETS is not constraining coal as policy-makers had envisaged.

⁵ See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47614/3751-carbon-plan-executive-summary-dec-2011.pdf

⁶ http://www.sandbag.org.uk/site_media/pdfs/reports/Europes_failure_to_tackle_coal.pdf



How do these policies interact with the EU ETS?

When the UK implemented the Carbon Price Support, it did not make a proposal to reduce the EU ETS supply. Similarly the German proposal does not reduce EU ETS supply if domestic emissions cuts are met; EU ETS supply only reduces if companies generate beyond the threshold, and pay the climate contribution, ensuring that these emissions don't happen elsewhere.

Sandbag, which has its roots in EU ETS reform, believes that this would not result in other EU ETS countries increasing their emissions as a result in the medium term. That is because there is such large structural oversupply, and price is so low, that the German and UK proposals will not change market price sufficiently to influence emissions in other countries. An early MSR would also mean more of the surplus is withdrawn from the market in the medium term.

However, in the longer term, Sandbag believes that Germany and the UK need to press for increased EU ambition in line with their unilateral action to ensure other countries do not free-ride from a resulting lower long-term carbon price. This could be done through increasing the 2030 target beyond a 40% cut, or through cancellation of EUA's (either at a European level, or at a national level).

Conclusion

The UK and Germany both want to show climate leadership through ambitious domestic GHG targets. However, both countries have high reliance on coal generation, so it is necessary to bring in policies to specifically reduce power sector emissions.

The German proposal is important to the UK, as it puts UK and Germany side-by-side as climate leaders in a critical year in the build up to the Paris climate talks; it is also important, because it helps prevent the UK importing high-carbon lignite generation from Germany, as the UK seeks to increase interconnection to mainland Europe.

The German policy is looking to achieve the same objective in broadly the same way as the UK policy is – i.e. reducing the carbon intensity of the power sector through a carbon price instrument, in order to meet ambitious domestic GHG targets. However, Germany is achieving it with a much lower impact on electricity prices.

About this briefing

Full information on Sandbag and our funding is available on our website (www.sandbag.org.uk).

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EU Transparency Number: 94944179052-82.

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