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## The UK carbon price floor: how to enhance its credibility with investors

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Since CCC was established we have shared our comprehensive knowledge of the low carbon sector to help policy makers develop the most effective and efficient policies for the rapid global transition to a low carbon economy. Given the fundamental role of public policy in channelling significant amounts of capital into the solutions to climate change, it's critically important for policy makers to better understand finance and vice versa.

Many of our policy advice and thought leadership activities are centred on the CCC **ThinkTank**. This independent non-political think tank conducts research into the policies needed to successfully deploy capital into the solutions to climate change and the protection of the natural world.

## About the authors

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## Executive summary

1. The UK Government has recently proposed introducing a UK-specific carbon price floor, to complement the carbon price created via the EU Emissions Trading Scheme (EU ETS). This is intended to create a credible and visible long term carbon price signal to support low carbon investment decisions in the UK. It would be implemented through a supplementary tax on fossil fuels used in power stations, voted on annually by Parliament.
2. Taken together, the consultation on Electricity Market Reform (EMR) from the Department of Energy and Climate Change (DECC) and the HM Treasury/HM Revenue & Customs carbon price floor proposals are striving to find a balance between simplicity and completeness, and between UK and EU policies. And there is much to admire in the UK Government's current proposals to meet domestic ambitions for decarbonisation.  
  
“as it has been proposed, the current floor price policy is unlikely to command investor confidence.”
3. However, to affect investment the price floor must be credible over the long term. The carbon price will not be properly accounted for in balance sheets and investment committee spreadsheets unless investors can have confidence it will be implemented. If they are not confident, then according to a study commissioned by the Government, introducing a carbon price floor would reduce rather than increase investment in renewable power, and also reduce security of supply.
4. As it has been proposed, the current floor price policy is unlikely to command investor confidence. Investors have to hope that every Parliament will continue to vote for increasing carbon price support until 2030. From an investor perspective, the commitment needs to be embedded in a contractual obligation to have long-term credibility.
5. Such a contractual obligation could be created by the Treasury underwriting the value of the carbon price support (the difference between the carbon price floor and the EU ETS price) for fixed 'expiry' dates in the future with a Carbon Price Support Guarantee (CPSG). The CPSG would be a contract made available to investors for a nominal fee. Such a contract could create a liability for the Treasury only if it reneged on its commitment and allowed the tax-inclusive carbon price to fall below the scheduled amount. If the Government is unwilling to take on the liability implied by uncertainty over its own future actions, then it cannot expect investors to do so.
6. Creating the expectation among investors that we are determined to pursue current carbon price trajectories, in the same way that central banks manage inflation expectations, is critically important for delivering a low carbon growth path. Quite simply, for the UK Government's carbon price floor proposals to work, investors need to believe them. If they do, it would allow investors to minimise the cost of capital, increase investment in the low-carbon economy, and secure the lowest cost transition to a low-carbon Britain.

## Background

The UK Government has correctly spotted an important problem: investors in low carbon power need more certainty than current policy provides. The current price of carbon, set in the market through the European Emissions Trading Scheme (EU ETS), is said to be too low and too uncertain for the long-term decisions that need to be made.

In response, the Government has proposed to underpin the carbon price, by introducing a new tax on fossil fuels used for power generation in the UK. High carbon fuels such as coal would have a high tax, while lower-carbon fuels such as natural gas would have a proportionately lower tax, so that the tax on fuel would in effect be a tax on carbon. Its precise level would be adjusted in response to the market price of EU ETS allowances (EUAs), with the intention that the EUA price plus tax, or “tax-inclusive carbon price”, would reach a specified minimum in each year.

In effect, the new policy would introduce a floor on the tax-inclusive carbon price facing power generators in the UK. If the EUA price is above the floor, the tax would be zero; if the EUA price is below the floor, the tax would make up the difference.

### “there are particular problems with a tax mechanism”

The proposal was in the Conservative Party’s general election manifesto<sup>1</sup>, included in the Coalition Agreement<sup>2</sup> and on 16 December 2010 the Treasury launched a consultation with more details of the plan<sup>3</sup>. This suggested that the tax would work by changing the Climate Change Levy, an existing tax that levies a rate on electricity and other energy provided to non-domestic users, but currently exempts any fossil fuels used to produce the electricity to prevent double-counting. This exemption would be removed.

Different floor prices were suggested. In scenario one, the tax, referred to as “carbon price support” would start at £1/tonne in 2013, rising over the decade, and combining with the EU ETS to create a tax-inclusive carbon price of £20/tonne CO<sub>2</sub> in 2020. In scenario two, it would start at £1/tonne and rise to a combined £30/tonne in 2020. In scenario 3, it would start at £3/tonne and rise to £40/tonne in 2020. In all cases, the tax-inclusive carbon price in 2030 would be £70/tonne.

Behind the Treasury’s proposal is substantial economic literature and market commentary on the advantages and disadvantages of carbon taxes over pure “quantity” mechanisms such as cap-and-trade, hybrid approaches and the whether or not to have floor and ceiling prices<sup>4</sup>; as well as debates over the extent to which policy aimed at decarbonisation should involve multiple interventions or simply focus on pricing carbon<sup>5</sup>.

### “a policy to reduce uncertainty must itself be certain”

The carbon price floor and Electricity Market Reform proposals taken together strive to find a reasonable balance between, on the one hand, creating a value for the externality through the EU ETS and the carbon price floor; and on the other hand, providing additional support (such as Feed-in-Tariffs and the Renewables Obligation) to cover the high incremental costs of renewable energy infrastructure.

The EU ETS has to an extent co-ordinated climate change and energy policy across Europe, but also leaves a great deal of responsibility to individual member states. A UK carbon price floor would reduce UK demand for EUAs and thus can be seen as undermining the efficacy of pricing in the EU ETS.

It might also impose costs on UK industry which are not faced in other EU countries. But given the UK’s desire to lead by example, and the mandate of its own climate legislation, there is a case that the UK Government should not just wait for other Member States to agree about the need for more stringent action.

#### References:

1. Conservative Party (2010). Invitation to join the Government of Britain: The Conservative Manifesto. 2010 (London, UK).
2. HM Government (2010) The Coalition: our programme for government. (London, UK).
3. HM Treasury (2010) Carbon price floor: support and certainty for low-carbon investment. (London, UK).
4. For example: Cedric, P. (2008) International Energy Agency Information Paper: Price Caps and Price Floors in Climate Policy. A Quantitative Assessment (IEA, Paris, France); Pizer, W. A. (2003) Combining Price and Quantity Controls to Mitigate Global Climate Change. *Journal of Public Economics* 85: 409-434; Burtraw, D., Palmer, K. and Kahn, D. (2009) A Symmetric Safety Valve (Resources for the Future, Washington, DC, USA); Fell, H. and Morgenstern, R.D. (2009) Alternative Approaches to Cost Containment in a Cap-and-Trade System. (Resources for the Future, Washington, DC, USA); Helm, D. (2008) “The Case for a Carbon Tax” in McIveen, R., Helm, D. and Less, S. (ed.) Greener, Cheaper. (Policy Exchange, London, UK);
5. Stern, N. (2006) Stern Review on the Economics of Climate Change. (HM Treasury, London, UK); Fankhauser, S., Cameron, H. and Jisung, P. (2010) Combining Multiple Policy Instruments: How not to do it. *Climate Change Economics*, Vol. 1, No. 3, 209–225; Lewis, M.C. and Curien, I. (2008) Emissions in Remission? Looking at and through an EU recession (Deutsche Bank).

“there are incentives for government to renege on the deal”

It will never be possible to design an absolutely perfect system for creating assets and liabilities in the real economy which drive the desired decarbonisation outcome at the lowest cost of capital and cost to the economy. There is much to be said for avoiding an increasingly complex panoply of interventions covering different sectors and technologies, and creating a meaningful price for the externality should be a prerequisite of policy. In addition, revenues raised from a tax mechanism, as from auctioning of EUAs, could be used to reduce the distortionary impact of taxes elsewhere in the economy, including those raised to subsidise renewable energy infrastructure or clean technology R&D.

The current Government proposal gives little certainty for investors

The main intention of the policy, as the first sentence of the consultation makes clear, is to “reduce revenue uncertainty and improve the economics for investment in low-carbon generation”<sup>6</sup>. But a policy to reduce uncertainty must itself be certain. Four factors will cause investors to doubt the carbon price floor policy as it currently stands.

“during the recession of 2008 it would have been very hard indeed for governments to maintain high carbon taxes”

First, a tax mechanism requires annual votes in the Finance Bill. Long-term credibility is not a new problem in public policy (see Figure 1), and various responses have been developed to strengthen the ability of government to commit<sup>7</sup>. But there are particular problems with a tax mechanism. It is neither embedded in a legally-binding framework, nor strengthened through arms-length implementation. Experience with the ‘fuel price escalator,’ introduced in 1993 but abandoned in 1999 due to political pressure, is a commonly cited example of the risk of a tax mechanism not being durable.

Figure 1: Strategies to improve policy credibility

		Credibility		
		Low	Medium	High
Flexibility	Low		<b>Pre-determined decisions.</b> E.g., the number of allowances in the EU ETS is set in advance.	<b>Contracted decisions</b> E.g., the annual rate of increase in payments under the Feed-in-Tariffs.
	High	<b>Pre-announced decisions</b> E.g., fuel duty escalator.	<b>Externally-advised decisions</b> E.g., Committee on Climate Change advice on the level of the UK carbon budgets.	<b>Delegated decisions</b> E.g., Monetary Policy Committee of the Bank of England; Ofgem.

References:

- 6. HM Treasury (2010) Carbon price floor: support and certainty for low-carbon investment. (London, UK).
- 7. See, e.g., Helm, D., Hepburn, C., and Mash, R. (2005) ‘Credible Carbon Policy’, in Helm, D. (ed), Climate change policy. Oxford University Press, pp305-321.

Second, there are incentives for government to renege on the deal: once investors have made irreversible decisions in low-carbon generation, a future government could weaken the carbon price support, and so reduce energy costs for consumers.

**“If investors cannot bank on the floor price, the commitment will to some extent be discounted, and the effect on investment will be reduced.”**

Third, the level targeted – the extent to which a mechanism delivered through the tax system is discounted by investors will be a function of the credibility of the overall carbon price floor targeted, not just its method of delivery.

Because of the arbitrage conditions created by the ability to bank and borrow in the EU ETS, and the ETS Directive’s commitment to a post 2020 phase 4, the prices quoted in the market today for EUA spot and futures contracts reflect future price expectations in the market in 2030 of around €30. The policy options being consulted on by the Treasury scenarios all culminate in a price of £70 in 2030 for the tax-inclusive carbon price (EUA price plus carbon price support). Even taking account of the fact that market participants may be behaving inefficiently, or perhaps discounting the long-term viability of the EU ETS, there is no indication that the European-wide market foresees EUA prices at anything like the levels assumed for the carbon price floor in the Government’s scenarios in 2030.

**“The carbon price floor policy needs to be embedded in a contractual obligation to have long-term credibility.”**

Fourth, the most important decisions will need to be taken at the most difficult times. Generally the EU ETS price will be lowest when the EU economy is weak and so when the supplementary carbon price support will be needed to top it up to the floor price. It is at precisely these moments, however, that a large increase in the carbon price support may be most politically difficult. Supporters of cap and trade or quantity based approaches to carbon pricing have pointed out that during the recession of 2008 it would have been very hard indeed for governments to maintain high carbon taxes. Under the Government’s proposed hybrid

EUA plus tax approach, there would be pressure to reduce carbon price support levels.

Despite all the advantages of putting a price on the externality, the lack of credibility has a strong effect on expected outcomes. The whole purpose of the policy, as the subtitle of the consultation document makes clear, is “certainty for low carbon investment”. If investors cannot bank on the floor price, the commitment will to some extent be discounted, and the effect on investment will be reduced.

Modelling conducted for the Government on its carbon floor policy included a sensitivity test of low credibility, which assumed investors’ future view of carbon prices would revert to the prevailing EUA price beyond a five year horizon<sup>8</sup>. It suggested that carbon price support, without policy credibility, would lead to:

- No reduction in financing costs.
- No extra investment in nuclear generation.
- Reduced investment in renewables.
- Reduced security of supply in the long term.

## Enhancing the credibility of a tax mechanism: a carbon price support guarantee

As we have seen, from an investor perspective the carbon price floor policy needs to be embedded in a contractual obligation to have long-term credibility.

Such a contractual obligation could be created, and with no costs to Government if the Treasury keeps to its commitment. A Carbon Price Support Guarantee (CPSG) would involve the Treasury underwriting the value of the carbon price support (the difference between the carbon price floor and the EU ETS price) for fixed ‘expiry’ dates in the future. The CPSG could be made available for a nominal fee (akin to a small put option or insurance premium) to investors who have a demonstrable risk exposure to carbon prices.

For example, the scheduled tax-inclusive carbon price for 2020 might be £30 per tonne of CO<sub>2</sub>. The consultation document includes a scheduled tax-inclusive floor price for each year, with £30 as the central policy scenario in 2020.

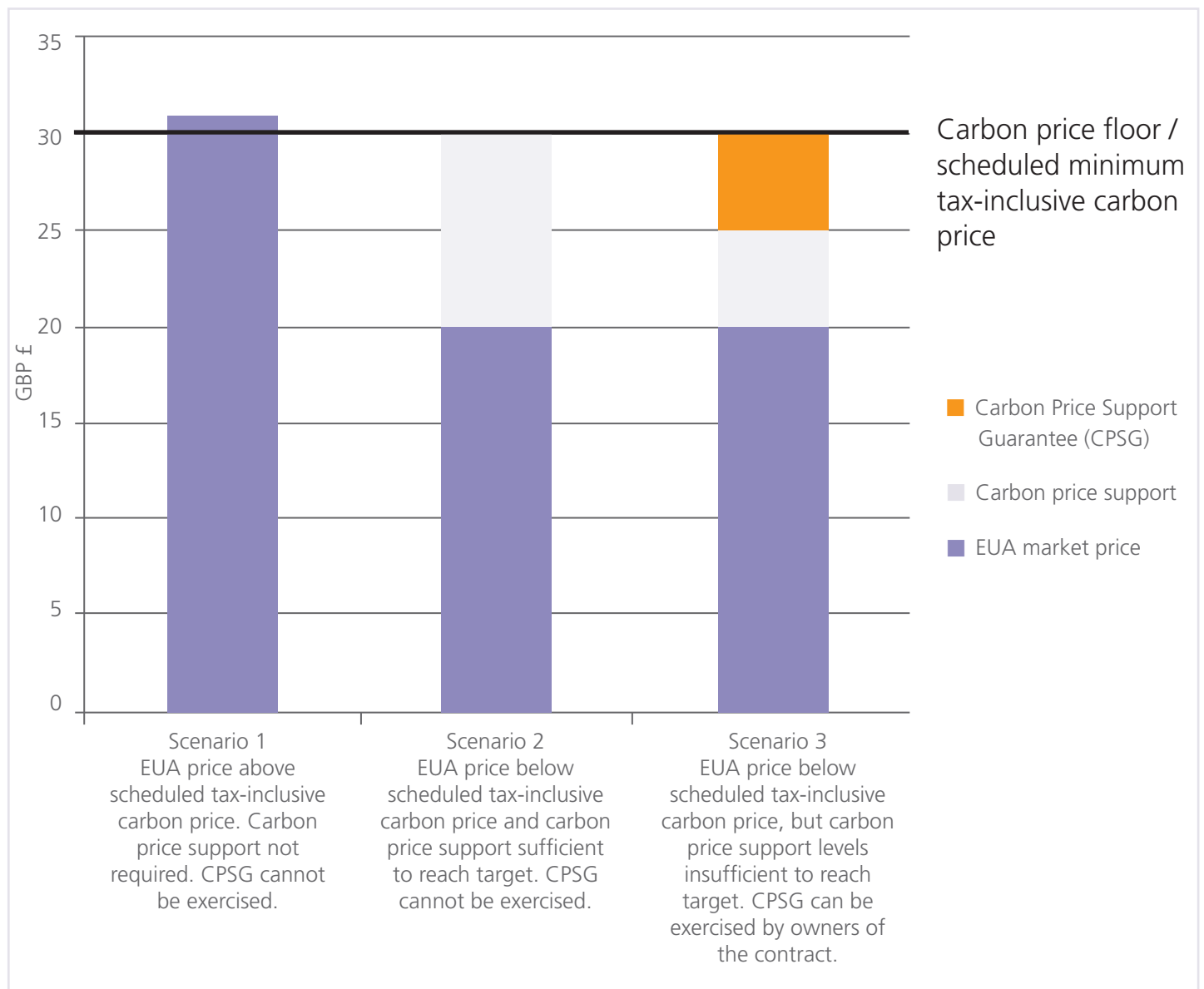
### References:

8. Redpoint Energy (2010). Electricity Market Reform: Analysis of policy proposals (London, UK).

If the market price in the EU ETS was equivalent to £31, the floor would be satisfied, the carbon price support would be zero, and the guarantee would be met without any cost. If, however, the market price was £20 and carbon price support was only £5, the guarantee would oblige the Treasury to pay the remaining £5 per tonne to all owners who exercised the CPSG.

“A Carbon Price Support Guarantee (CPSG) would involve the Treasury underwriting the value of the carbon price support.”

Figure 2: Illustration of the carbon price support guarantee



Depending on how carbon price support is determined, fixed expiry dates for the CPSG might, for example, be at every five years for 20 years into the future, with the 20 year commitment rolled forward every five years. Investors could, in effect, own a contractual 'put' option on the difference between carbon price floor and the EUA price (the latter can be hedged in the EUA forward market) for as long as 20 years. From an investor perspective the Government needs to take on a contractual obligation if investors are to account properly for real economy carbon liabilities in their balance sheets and investment committee spread sheets.

**"If Government is unwilling to take on liabilities that could be implied by the CPSG, then it cannot expect investors to do so. But if it does, the prize is great."**

The CPSG could create a liability for the Treasury – but only if its own tax level fell below the amount promised. The Treasury would be able to adjust carbon price support to the scheduled tax-inclusive carbon price (the carbon price floor) level – as the policy is intended to do – and reduce its liability to zero. And as the consultation document points out: "carbon price uncertainty is predominantly driven by wider regulatory uncertainties and the Government might therefore be better placed to manage some carbon price risk." If Government is unwilling to take on liabilities that could be implied by the CPSG, then it cannot expect investors to do so. But if it does, the prize is great. By reducing uncertainty, an underwriting mechanism would reduce the time value of a 'wait and see' approach on the part of investors, accelerating investment and allowing for a lower overall carbon price floor trajectory. It would ensure that the cost of capital in investment spreadsheets was as low as possible. This would in turn allow the Government's modelling to assume lower overall costs to the economy and would preclude the need for a series of yet more policy interventions designed to reassure investors.

## Conclusion

The Government is trying to solve an important issue: investors in low-carbon power must believe in the carbon price. Managing expectations about Europe's determination to pursue deeper emission reduction targets, much as central banks have successfully managed inflation expectations, will lower the overall costs of mitigation<sup>9</sup>. In the UK, quite simply, for the Government's carbon price floor proposals to work, investors need to believe them.

From an investor perspective, therefore, the test is whether the Treasury is prepared to guarantee the factor over which it alone has control: the tax-inclusive carbon price. Introducing a Carbon Price Support Guarantee could do this at no cost, making a policy currently lacking credibility gain it, which would then allow investors to minimise the cost of capital, increase investment in the low-carbon economy, and secure the lowest cost transition to a low-carbon Britain.

### References:

9. See: Jaeger, C. et al (2011). A New Growth Path for Europe: Generating Prosperity and Jobs in the Low-Carbon Economy. (German Federal Ministry for the Environment, Berlin, Germany)

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