



Background Document: A carbon price floor for the EU Emissions Trading Scheme (EU ETS)

Introduction

The European Union Emissions Trading Scheme (EU ETS) is an EU-wide cap-and-trade scheme designed to reduce emissions from electricity generation and industry. Co-ordinating EU climate change efforts through a well-functioning EU-wide system is an efficient approach as the cheapest way to meet any emission target is to set the marginal cost of emission equal for every source¹. This involves establishing a uniform price for emissions from all sources^{2,3}. While the EU ETS is limited to electricity generation and industry, it establishes an EU-wide uniform price. A well-functioning EU ETS thus achieves climate change ambitions at a lower cost than multiple national policies. A well-functioning EU ETS is thus of utmost importance in achieving Ireland's climate change ambitions in a manner that minimises negative societal impact.

To date, operation of the EU ETS has not encouraged adequate decarbonisation of electricity generation and industry. In particular, prices for EU ETS emissions allowances (EUAs) have been too low. There is evidence to suggest that remedial measures recently announced by the EU Commission may be insufficient to address this problem⁴ and that further action may be required^{5,6}. A carbon price floor could correct the current deficiencies. This item may be discussed at an EU level and this document recommends Irish support for proposals incorporating this feature.

¹ Baumol W.J., Oates, W.E. (1971). 'The Use of Standards and Prices for the Protection of the Environment', *Scandinavian Journal of Economics*, 73(1), 42-54.

² Baumol, W.J. (1972). 'On Taxation and the Control of Externalities', *American Economic Review*, 62, (3), 307-322.

³ Pearce, D.W. (1991). 'The Role of Carbon Taxes in Adjusting to Global Warming', *Economic Journal*, 101, 938-948.

⁴ Kollenberg, S. Taschini, L. (2016). *Dynamic supply adjustment and banking under uncertainty: the Market Stability Reserve*, Grantham Research Institute on Climate Change and the Environment Working Paper No. 195, March 2016.

⁵ Knopf, B., Koch N., Grosjean G., Fuss S., Flachsland C., Pahle M., Jacob M., Edenhofer O. (2014): *The European Emissions Trading System (EU ETS): Ex-Post Analysis, the Market Stability Reserve and Options for a Comprehensive Reform*, FEEM Working Paper 79.2014.

⁶ Koch, N., Grosjean, G., Fuss, S., Edenhofer, O. (2016). 'Politics matters: Regulatory events as catalysts for price formation under cap-and-trade', *Journal of Environmental Economics and Management*, 78, 121-139.



EU ETS overview and principles of successful operation

The EU ETS operates by setting a cap on emissions. Emissions are constrained to a level less than that which would otherwise occur, requiring decarbonisation by participants. Such decarbonisation takes the form of a technological shift towards less carbon-intensive fuels, production processes or electricity generation technologies. EUAs are traded amongst participants and the market price provides a signal for each participant to either invest in decarbonisation or pay for emissions such that the effort is allocated efficiently. If this scheme is to be successful, EU ETS participants must believe that present and future caps will constrain emissions to levels less than that which would otherwise occur. This allows participants to commit to the required long-term decarbonisation investments. Furthermore, the EU ETS must also provide reasonable certainty that the price of permits will rise reflecting the true cost to society of greenhouse gas emissions.

These principles have not been upheld.

To date, EU ETS caps have not constrained emissions below levels that would otherwise occur and a technological shift has not been incentivised. Furthermore, participants may not believe that future emissions caps will require a decarbonisation effort in line with stated targets.

The EU ETS cap has not required decarbonisation effort to date.

Since 2008, there has been a surplus of EUAs as the economic downturn reduced demand. In this situation, perception regarding the stringency of the long-term cap is the dominant influence on price-setting in the market⁷. EUA prices have been persistently low since then, suggesting that market participants' lack confidence in the political support for a stringent long-term cap.

Corrective measures are thus required to guide decarbonisation effort towards that enshrined in long-term emissions reduction targets. The currently proposed 'Market Stability Reserve' (MSR) hopes to achieve this by feeding part of the permit surplus into a reserve, temporarily reducing future emissions caps. This will only be effective if participants believe that the change in the timing of the cap schedule will require decarbonisation effort, allowing participants to commit to long-term decarbonisation investments. Whether this will be

⁷Koch, N., Grosjean, G., Fuss, S., Edenhofer, O. (2016). 'Politics matters: Regulatory events as catalysts for price formation under cap-and-trade', *Journal of Environmental Economics and Management*, 78, 121-139.

effective is uncertain, especially when one notes that a certain surplus of EUAs is required to facilitate efficient allocation of emissions reduction between time periods. If an EUA surplus exerts a downward pressure on the EUA price, effectively identifying the balance of EUA surplus that facilitates an efficient allocation over time, whilst incentivising decarbonisation, is likely to be difficult and a minimum EUA price may be more appropriate in this context.

Participants may not believe future caps will require decarbonisation effort.

There is evidence to suggest that EU ETS participants have not adjusted fully towards a path of decarbonisation since recent corrective measures, such as the MSR, were announced⁸. This suggests that participants do not believe that future caps will require considerable decarbonisation effort and they may not commit to long-term investment as a result. There are a number of potential reasons for this.

- a) To date, many policy announcements have been accompanied by pending, not implemented, legislation.
- b) Achieving political consensus on a cap is difficult⁹. The agreed-upon cap may not require much decarbonisation as a result.
- c) Participants are short-sighted and even if they believed future caps required decarbonisation investment, they may not take this fully into account in present-day decisions.

Overcoming these deficiencies

Given this evidence, further remedial efforts are required. These measures must stabilise expectations towards a clear and stringent commitment to decarbonisation, both in the present and future. A minimum price for EUAs can achieve this. A minimum price would provide a clear cost of emissions for participants, incentivising them to decarbonise. As participants are immediately required to pay the minimum price, issues regarding the excessive size of current emissions caps would be immediately overcome.

Beliefs regarding future commitment can affect current prices under the present EU ETS¹⁰. This cannot occur when a minimum EUA price is in place as, even if market participants

⁸ Ibid.

⁹ Each Member State has a different priority regarding the setting of a cap, largely depending on distributional implications.

speculate on a future change in the minimum price, current abatement decisions are still bound by the prevailing minimum EUA price. However, future beliefs may affect long-term investment behaviour. It is thus important that a carbon price floor is accompanied by a long-term commitment that the price will rise through time to reflect the cost of emission to society.

Such a price floor would also allow Member States to adopt unilateral policies (e.g. renewable support schemes or efficiency standards) that could contribute to an overall emissions reduction at the EU level. Under the current EU ETS design, national policies do not achieve additional emission reductions as they reduce the EUA price and reallocate carbon emissions to other Member States.

It should be noted that the minimum EUA price is not a replacement for the MSR, nor does it necessitate a reversal of recently approved parliamentary decisions in support of the MSR. Indeed, a minimum EUA price could be integrated with the MSR proposal by altering the MSR's rule on when to reserve EUAs from a quantity-based rule (surplus higher than 833 million allowances) to a price-based rule (i.e. an auction reserve price). This would imply that EUAs are only auctioned when the auction price is beyond a pre-defined minimum price. For reasons of political feasibility, the agreement on a minimum price may require transfers from rich to poor Member States (via permit allocation and redistribution of auction revenues).

Competitiveness implications

A price floor may increase costs for electricity generators and industry but, when considering whether to offer support, Irish representatives should not be unduly concerned with potential competitiveness implications due to increased electricity prices. This is because any resulting increase in electricity prices will be proportional to the influence carbon-intensive fuels have on the market price. Given Ireland's relatively low carbon-intensive generation portfolio, an increased EUA price could improve Ireland's competitiveness relative to many EU Member States.

An increase in the EU ETS price is likely to have greatest impact on electricity prices in countries where carbon-intensive coal generation influences the market price to a greater extent than in Ireland. Coal generation in Ireland has baseload status (i.e. rarely sets the

¹⁰ Koch, N., Grosjean, G., Fuss, S., Edenhofer, O. (2016). 'Politics matters: Regulatory events as catalysts for price formation under cap-and-trade', *Journal of Environmental Economics and Management*, 78, 121-139.

price)¹¹. Gas is the dominant influence on mid-merit and peaking supply while oil is limited to use during peak hours^{12,13}. Given this market structure, coal prices do not affect Irish electricity prices in any significant way¹⁴. Gas and oil are the primary determinants and changes in gas prices have 5 times the effect on electricity prices than changes in oil prices¹⁵. Thus, carbon intensive generating sources have a low or negligible influence on Irish electricity prices.

In contrast, coal is the dominant source of electricity generation in Germany, Poland, Greece and the Czech Republic¹⁶. 88% of all Polish electricity was generated by coal in 2011¹⁷. In the Czech Republic, 54.7% of electricity came from coal in 2010, 32.7% from nuclear and only 4.9% from gas^{18,19}. Coal also has had a greater influence on electricity prices in the UK and Spain than in Ireland. In 2012, around 40% of UK electricity was coal-based due to high gas prices and relatively low generation costs for coal-fired plants²⁰. While gas prices have declined in recent times, leading to an increasing influence of gas on price formation in the UK, coal still has a greater capacity and thus a greater propensity for influence on UK electricity prices than in Ireland. In Spain, coal's weight in price formation in the daily wholesale market was around 65% in 2012²¹, compared to 30% for gas.

A number of countries are dominated by gas generation in a way similar to Ireland, including the Netherlands and Italy, with increased EUA prices thus likely to have a similar effect to that in Ireland. Hydro is dominant in Austria and Switzerland (in addition to Nuclear) and Nuclear is dominant in France, with changes in EUA prices thus likely to have a lesser impact in these markets²².

¹¹ Devitt, C., & Valeri, L. M. (2011). 'The Effect of REFIT on Irish Wholesale Electricity Prices', *The Economic and Social Review*, 42.

¹² Ibid.

¹³ O'Mahoney, A., & Denny, E. (2011). 'The merit order effect of wind generation in the Irish electricity market', MPRA Paper, 56043.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ OECD & IEA, (2014). *The Impact of Global Coal Supply on Worldwide Electricity Prices*, Report by the IEA Coal Industry Advisory Board. Paris: IEA

¹⁷ Wietze, L., Sijm, J., & Hobbs. B.F. (2010) 'The impact of the EU ETS on prices, profits and emissions in the power sector: simulation results with the COMPETES EU20 model', *Environmental and Resource Economics*, 47(1), 23-44.

¹⁸ Ibid.

¹⁹ Sivek, M., Kavina, P., Jirásek, J., Malečková, V. (2012). 'Factors influencing the selection of the past and future strategies for electricity generation in the Czech Republic,' *Energy policy* 48, 650-656.

²⁰ OECD & IEA, (2014). *The Impact of Global Coal Supply on Worldwide Electricity Prices*, Report by the IEA Coal Industry Advisory Board. Paris: IEA

²¹ Ibid.

²² Ibid.



As a result, an increased carbon price would be likely to have a lesser effect on Ireland's electricity price than that of many other EU Member States. Concerns regarding competitiveness should not be an obstacle in recommending a minimum EUA price. Indeed, an increased EUA price could improve Ireland's competitiveness relative to many EU Member States.

Recommendations of the Climate Change Advisory Council

Given the preceding evidence, the Council recommends that Ireland should support efforts to impose a minimum EUA price. In particular, this issue may be raised at upcoming EU discussions, particularly at the EU Commission's Working Party on the Environment²³ and the EU Environment Council²⁴. Should this item feature by itself or as a component of a future proposal, support from EU Member States is important to receive adequate consideration at an EU level. When supporting a minimum EUA price, one should be aware that an appropriate price level should be consistent with the goals of the Paris Agreement and should rise over time to drive decarbonisation across the EU.

²³ The European Council Working Party on the Environment negotiates issues in the area of climate change and EU environmental policies and legislation.

²⁴ The EU Environment Council is responsible for EU environment policy, including environmental protection, prudent use of resources and the protection of human health. It also deals with international environmental issues, especially in the area of climate change.