



REVIEWING THE EU ETS REVIEW?

REPORT OF THE CEPS TASK FORCE

ON

DOES THE ETS MARKET PRODUCE THE ‘RIGHT’ PRICE SIGNAL?

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This report is based on discussions that took place among the members of the CEPS Task Force on “Does the revised EU ETS market provide the ‘right’ price signal?”. The Task Force met several times starting at the end of October 2011. See the CEPS website for the schedule and agendas of the meetings (<http://www.ceps.eu/taskforce/does-revised-eu-ets-market-produce-right-price-signal>), including PDFs of the presentations delivered (available for free downloading).

Participants in this CEPS Task Force included senior executives and other stakeholders from a broad range of businesses and industry, business associations, academic institutions and NGOs. A full list of members and invited guests and speakers appears in Annex 1.

The members of the Task Force engaged in extensive debates in the course of several meetings and submitted comments on earlier drafts of this report. Its contents contain the general tone and direction of the discussion, but its recommendations do not necessarily reflect a full common position agreed by all members of the Task Force, nor do they necessarily represent the views of the institutions to which the members belong.

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Executive Summary

The EU has repeatedly confirmed its position that the global, annual mean surface temperature should not increase by more than 2°C above pre-industrial levels. In order to fulfil its commitment, the EU has adopted a wide range of sector-specific and cross-sectoral measures, built around the flagship EU emissions trading system (ETS). A number of Roadmaps have been worked out to develop consistent emissions reduction trajectories up to 2050.

1. Climate change is one of the most important policy fields of the EU. It aspires to lead global efforts to fight climate change but also to meet the ambitious goals of its economic growth strategy and to maintain the Union's standing globally. The EU ETS is the central pillar of a package of regulatory measures to address climate change, energy security and competitiveness, and notably to achieve the EU's 2050 GHG emissions reduction target. An efficient and effective EU ETS is the precondition for the EU to achieve its short- and long-term climate and other policy goals.
2. The 2008 Review was meant to adapt the ETS so that it could cope with the uncertainties of international climate change negotiations as well as the fluctuations of the economic cycles. Primarily due to the unprecedented recession and the accompanying decline in demand for EU allowances, the EU carbon price has fallen to substantially lower price levels than expected. Additional downward pressure on price has emerged from access to international credits and interaction with other policies. And many analysts believe the price will stay lower than was expected when the ETS review was completed. The deep recession has highlighted that unpredictable circumstances not related to the functioning of the ETS itself, such as dramatic macroeconomic changes, can affect the ETS' ability to effectively achieve its objectives. To address this 'temporary' market imbalance, on 25 July 2012, the European Commission formally proposed to 'backload' the auctioning of EU Allowances (EUAs), i.e. to stagger the release of large numbers of EUAs. This would mean that fewer EUAs are released initially and a larger number would be released at a later date towards the end of the trading period in 2020. At the same time, the European Commission initiated a discussion on the need for 'structural' measures, in particular to address the root cause of the current imbalance.
3. The stark reduction of demand for EU allowances as a result of the decline in industrial output will continue to affect the ETS beyond the current and subsequent compliance periods. In addition, it influences market expectations. This will impact companies' investment decisions. Investment in new low-carbon plant will only be made if the underlying investment is sound. These decisions are governed by sector- and company-specific economic factors, such as environmental legislation, product demand, energy prices, impact on existing plant, etc. The carbon price will only influence the type of investment by making high-carbon investments less profitable. Thus the carbon price will not drive new investment but will strongly motivate low-carbon investments when investment decisions are made.
4. Whilst there is a broad consensus in the EU that a robust carbon market is required in order to drive the carbon price necessary for low-carbon investment, stakeholders appear to have different opinions on what the EU ETS stands for. Some see it primarily as a compliance tool, i.e. to "promote reductions in a cost-effective and economically efficient manner" as mentioned in Article 1 of the Directive. Others see the ETS at the same time as a driver to shift investments towards low-carbon technologies, which has been one of the objectives of the 2008 ETS Review.
5. As long as these differences cannot be reconciled, the likelihood that some member states will implement national measures to encourage low-carbon investments will increase. While it might be possible to embed some member-state actions into an EU framework, in other instances this could mean that the EU-wide carbon price signal will increasingly be blurred, weakening an undistorted carbon price across the EU internal market, the achievement of which was one of the central objectives of the ETS. The more specific are the signals to investors, the more the

universality of the price signal suffers. This would make climate policy deliberately more costly, at a time when the EU is reflecting on a longer-term strategy after the economic recovery and a renewed international dynamism following the Durban climate change negotiations in December 2011.

6. Various stakeholders have proposed different measures. Even if there is no agreement on whether action is actually needed, there is value in assessing the relative merits of the proposed measures and especially on how they fare in the context of the arguments made in the previous paragraph. The starting point of such a reflection should always be to let the existing system work, thereby testing whether the ETS design is able to address current challenges. There is a risk the ETS will be damaged by introducing new measures. Another principle of the analysis is the requirement to find a balance between stability of a government-made and -steered market and the flexibility to incorporate new information. A final element of the reflection on whether to take measures or not should be an assessment of the risks that non-action entails.
7. In the event that EU policy-makers conclude that action should be taken, there was a strong preference within the Task Force for a systemic solution, i.e. ensuring that the ETS will be able to cope with extraordinary circumstances in the future. A precondition for any measure will be its ability to align the short and long term to create a steady carbon price signal that provides incentives in a coherent way to investors. A systemic solution does not exclude a one-off measure, e.g. to address the 'oversupply' of EU allowances as a result of the recession; the any such measure, however, would need to be consistent with the principles formulated above.

This report assesses the pros and cons of the various possible measures as well as the combinations of measures that have been put forward by different stakeholders to address the level and stability of the price of carbon. These measures are divided into four broad categories: doing nothing, one-off (re-setting) measures, automatic or 'dynamic' adjustment provisions to the economic cycle and institutional adjustments, i.e. the adaptation of existing or the creation of new organisations.

The report argues that the need for some kind of 'dynamic' adjustment provision should be considered very seriously by the European Commission, the member states, the European Parliament and other stakeholders to address the relatively inelastic supply. The report also suggests that there is a need to consider ways to improve communication of market-sensitive information for example by leaving the management of the ETS to a specialised body.

Reviewing the EU ETS Review?

Report of a CEPS Task Force

1. Introduction

For many years now, the EU has identified tackling climate change as one of the world's greatest challenges. It has repeatedly confirmed its position that an increase in the global annual mean surface temperature should not exceed 2°C above pre-industrial levels. Climate change has become a very important EU policy domain, not only with respect to EU leadership to fight climate change but also as a centrepiece to the "Europe 2020" economic growth strategy, which has identified "sustainable growth" to promote a more resource-efficient, greener and more competitive economy as one of its five pillars. Finally, climate change has been identified as an area which has strengthened the EU's standing in the world, one of the principal objectives of the Lisbon Treaty.

Both before and after the entry into force of the Kyoto Protocol, the EU adopted numerous laws to fulfil its commitments and to prepare the path for a new post-2012 agreement or at least a framework. Among them were a host of policies to support renewable energy, improve energy efficiency, decarbonise transport and a low-carbon technology deployment strategy, which led to the Climate and Energy Package adopted in late 2008. An important feature of the package was the attempt to integrate different policies, especially but not only the EU Emissions Trading System (ETS), renewables support and energy efficiency policy. The integrated character has been documented in a number of Impact Assessments that, among other things, calculated the interaction of different policies with a view to implement a least-cost policy whilst taking into consideration the political preferences of different member states and the distributional implications. In the follow-up to the adoption of the package, the European Commission published three Roadmaps – one economy-wide and two dealing with transport and energy respectively – to set out trajectories for reaching EU's 2050 targets of 80-95% GHG reductions by 2050 compared to 1990. In all these analyses, the EU emissions trading system (ETS), which started in 2005, continued and was expected to continue to occupy centre stage, partly also reflecting the political and other capital that has been invested in this tool.

After its entry into force in 2005, the ETS encountered what could be called 'teething problems', which have subsequently been addressed in steps, notably by the second National Allocation Plans (NAPs) and then by the 2007-08 ETS review that had already been scheduled in the Directive (see Ellerman et al., 2010). Experiences from phase 1 and 2 have greatly helped the European Commission to propose and adopt far-reaching changes to the EU ETS.¹ One of them is a single EU-wide cap, which will decrease annually in a linear way by 1.74% starting in 2013 and without a sunset clause.

At the time of the compromise conclusion on the ETS review for post-2012, there was a general conviction that the new ETS would be 'future-proof', i.e. able to cope with the *temporary* lack of a global climate change agreement, to address international competitiveness issues, yet able to drive decarbonisation of the EU economy. The 2008/9 economic crisis put into question that conviction by a dramatic lowering of EUA prices due to rapid and dramatic decline in economic output.² Ever since then, EUA prices have been lingering around €6-8 per tonne of CO₂ and few expect EUA prices to climb much higher than € 20 at best throughout the period up to 2020, with even that increase caused by the possibility of banking unused allowances between the second and third phase. There is a possibility that the oversupply apparent in the 3rd phase (2013-20) may continue even beyond 2020.

¹ See e.g. Ellerman et al. (2010), Skjærseth & Wettstad (2010) and Egenhofer et al. (2011) for a full overview.

² As early as the first half of 2010 the European Commission (2010b, p. 3) adjusted its projections for the 2020 carbon price from approximately €32 in its 2008 impact assessment, "in case of full implementation of the package (including renewables policies and maximum use of international credits) [...to] €16 in 2020 (including renewables policies to meet the 20% target, without necessitating international credits)".

Against this background stakeholders have called for “corrective” measures. However, there is neither a consensus on whether the lowering of the EUA price is indeed a problem, as opposed to a logical consequence of the system applying to a situation where economic recession was delivering lower emissions by itself, nor how to address it – for those who agree that there is a need to act. Many different ideas have been put forward. They include leaving the ETS as is, complementing the price signal by regulation, for example in the form of power plant CO₂ emissions standards, a set aside to retire ‘excess’ allowances, providing an additional signal of scarcity by a binding 2030 target, more in line with the EU’s long-term climate change targets, technical fixes of the ETS functioning, a managed carbon price, or supplementary measures by member states to support investment.

To address this ‘temporary’ market imbalance, on 25 July 2012, the European Commission formally proposed³ to stagger the release of EU Allowances (EUAs), a practice that is generally referred to as ‘back-loading’. Once adopted, this would mean that fewer EUAs were released for auction initially and more later, towards the end of the trading period in 2020. At the same time, the European Commission initiated a discussion on the need for ‘structural’ measures, in particular to address the root cause of the current imbalance.

Consultation on back-loading is under way with the final decision possibly being expected in the first quarter of 2013. This report does not discuss the back-loading proposal. Instead it focuses on longer-term debate issue and attempts to make an early contribution to the debate on whether there is a need for structural measures. This report reviews the arguments in this – on-going – debate, and sets out to analyse the possible implications of different options that have been put forward by different stakeholders. Options will be roughly divided into four sets of approaches; first, “doing nothing”, second, what will be called “one-off measures” that change the parameters of the market, third, “automatic adjustment provisions”, i.e. mechanisms inherent to the ETS with the objective of keeping demand and supply broadly in balance; and fourth, “institutional adjustments”, meaning the creating of bodies or institutions designed to ensure an efficient functioning of the market. Some of the instruments will address the EU level while others operate at member state level. Before undertaking this assessment in chapter 4, the preceding chapters 2 and 3 will ask about the need for and possible unintended consequences of such measures, respectively.

2. The role of the ETS price signal and its influence on investment

There are different views on what the ETS is meant for, within the EU and perhaps even within the European Commission, as between the different institutions, member states and stakeholders. There is consensus – as evidenced in Art. 1 of the Directive – that the ETS is a tool for cost-effective abatement. Yet, there is no consensus what this means in practice. Some argue that the ETS’ objective is also to “promote” (high cost) low-carbon technologies such as CCS by adding weight to the case in favour of investment; others say that only affected companies and the market can choose whether investment, at a particular time, is the most cost-effective way of achieving a given level of emissions reductions. Some stakeholders want a flow of income from auctions of ETS units at a ‘good’ price. Then there is the goal of fostering the global carbon market. Views and approaches to the current situation depend to a good degree on preferences and priorities with regard to the ETS’ purpose.

As a first step and in order to structure the debate on the future of the ETS, this report identifies a need to discuss the objectives of the ETS in view with finding a consensus. If Art. 1 of the ETS Directive to promote GHG reductions in a cost-effective and economically efficient manner is read as “to reach a given GHG emissions target in the most cost-effective way”, the ETS might not in all circumstances

³ The proposal consists of the following elements: i) A proposal to amend the EU ETS Directive and clarify the prerogative of the EC to make changes to the auctioning profile within a trading period through the Climate Change Committee; ii) An amendment to the Auctioning Regulation that does not include number, and iii) A Staff Working Document (SWD) that outlines, in some detail, the rationale behind back-loading as well as at least three different options on how to implement such action. The SWD showed, by calculations using three different models, the potential impact of back loading.

be able to create “the right incentives for forward looking low carbon investment decisions by reinforcing a clear, undistorted and long-term carbon price signal”,⁴ one of the secondary objectives. Member states may look to complementary measures to achieve these secondary objectives.

2.1 Carbon-related investment drivers

From the above, it appears that a key question is how the ETS and its price signal actually affects investment and its role in driving, or failing to drive, the transformation towards a low-carbon economy in Europe. Investment in new low-carbon plant will only be made if the underlying investment is sound. These decisions are governed by sector- and company-specific economic factors such as environmental legislation, product demand, energy prices, impact on existing plant, etc. The carbon price will only influence the type of investment by making high-carbon investments less profitable. Thus the carbon price will not drive new investment but will strongly incentivise low-carbon investments when investment decisions are made.

Companies will always finance those investments that immediately generate profits. As to the carbon price impact, under current ETS rules, this means within the current known period for which the allocation is fixed, i.e. up to 2020. The EU Allowance price is an important – although not the only – element in this calculation. Hence decisions on whether to invest in innovative low-carbon technologies depend – at least to a degree – on the number of allowances, which are allocated or inherited and the CO₂ price, which changes the cost/benefit ratio. Hence, these investments are sensitive to the CO₂ price. In addition, other parameters such as price expectations, life-cycle analysis, the total cost of ownership (TCO) and also investment-years and cash issues, including access to and the cost of capital, matter in a decision whether to invest or not.

For the long-term however, the situation is different. It is difficult for market participants to form long-term views. Despite the linear annual reduction factor of 1.74% as of 2013, the Directive foresees a revision of the cap in the case of a global climate change agreement. The current cap based on the linear reduction factor is also not in line with EU and international climate change objectives or the most common interpretation of climate science. And many businesses remain suspicious about the stability of political decisions. As a result, there are credibility problems. These could be partly resolved by the adoption of a global climate change agreement. If such an agreement is not reached, an EU strategy ‘going it alone’ in line with its long-term 2050 target is most likely not credible enough to trigger investment on its own as investors would need to consider the risk that a strong unilateral EU position might be revised.

As a conclusion, we can say that the ETS is driving profitable investment in the short-term, i.e. over the allocation period. The allowance price matters although is only one of the factors, even if an important one (see Neuhoff, 2011). However, investment decisions are not made irrespective of the long-term outlook in the form of the long-term target, market expectations but also the credibility of the projected target and resulting prices. For the longer-term, there is a high level of uncertainty, essentially associated with the current lack of a global climate change agreement, and a low current price appears to make banking on a high later one more risky. Whilst bringing current ETS design better in line with the EU long-term target, this will not be able to address uncertainty in full. In addition, there are numerous barriers to investment, related to the functioning of and regulation in the internal energy market. This is to be compared with a situation of a high level of certainty for investment in renewables.

2.2 Implications of the absence of a global agreement

One of the (implicit) assumptions when the ETS was originally designed (in 2000-03) was that there would be some sort of “legally-binding comprehensive global agreement on climate change” within a

⁴ This is the text of the second objective of the 2007-08 ETS Review that the European Commission (2008b, p.3) put forward.

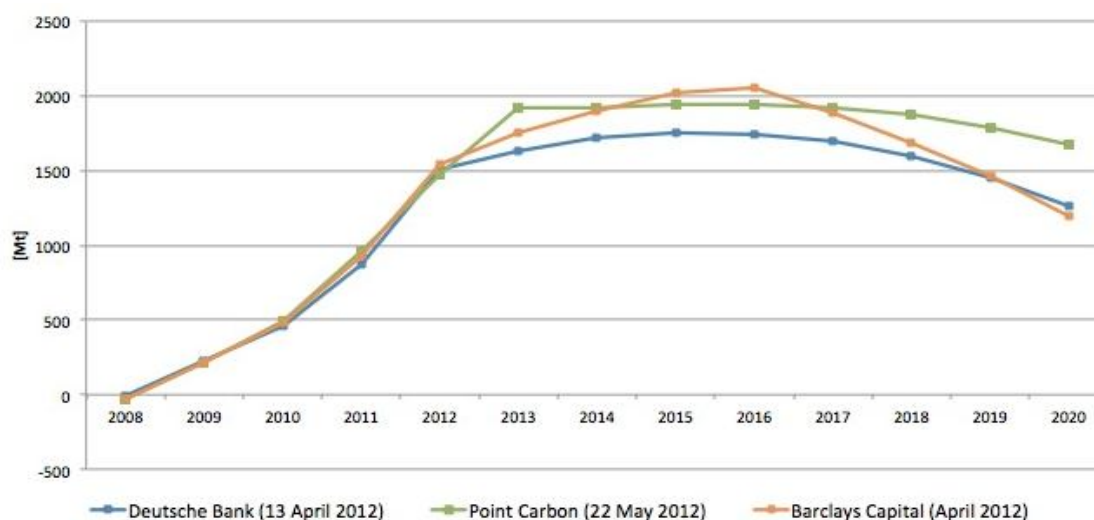
reasonable time for the post-2012 period. With the diminishing likelihood of this happening, the ETS Review (implicitly) attempted to make the ‘new’ ETS future-proof, i.e. able to cope with the *temporary* lack of a global climate change agreement. Key elements were the unilateral 20% reduction target for 2020, which imposes a legally-binding carbon constraint irrespective of a global agreement. The first ETS phase showed how difficult it is to impose a cap without a legally binding carbon constraint.

In addition, the unilateral target has been complemented by technology deployment strategies for renewables, CCS (carbon capture and storage), energy technologies through the Strategic Energy Technology (SET) Plan and transport as well as a host of other – accompanying – policies. In addition, benchmark-based free allocation provides a subsidy/compensation for the industrial sector while avoiding (in most cases) excessive windfall profits. For electricity-intensive industries, the EU will allow member states to grant state aid to compensate for a potential loss of competitiveness.

3. Is there a case for action?

The extraordinary economic circumstances of the 2008-09 crisis – a once-in-a-lifetime recession – have meant that EU ETS emissions are considerably lower than originally expected when emissions objectives were set. Lower economic activity has reduced demand for EUAs while supply is fixed. This has led to demands for intervention in the market to support the price.⁵ The opposite view holds that the EU ETS does what it was meant to do, namely “promote GHG reductions in a cost-effective and economically efficient manner” (Art. 1 of the ETS Directive), and the fact that emissions reduction targets are being achieved at lower a price is an example of its helpful counter-cyclical action and something to be thankful for and not to worry about.

Figure 3.1 Expected over-supply of EU allowances



Source: IETA.

Although the overarching objective is cost-effectiveness of a politically given target, this cannot under all circumstances be construed as a call for the lowest possible EU allowance price. While the ‘lowest possible cost argument’ can hold true in the short-term, for example to reach the 2020 targets, it masks the fact that over the long-term – 2050 and beyond – an efficient climate change policy will need to accelerate the development and diffusion of existing and new low-carbon technologies. It would be logical to assume that the EU ETS should contribute to this objective. This is for example reflected in the 2008 Commission Proposal to amend the ETS Directive, which has identified three objectives for

⁵ Other more radical views argue that the low prices show that the ETS is not working.

the Review, of which two are still relevant today: 1) “Fully exploiting the potential of the EU ETS to contribute to the EU's overall GHG reduction commitments in an economically efficient manner” and, 2) “Contributing to transforming Europe into a low greenhouse-gas-emitting economy and creating the right incentives for forward looking low carbon investment decisions by reinforcing a clear, undistorted and long-term carbon price signal” (European Commission 2008b, p. 3).⁶ Recital 13 of the revised Directive states the objective as being to provide longer-term incentives for low-carbon investment and innovation to “deliver gradual and predictable reduction of emissions over time”.

3.1.1 Inefficient use of capital

If the short-term price signal differs significantly from these objectives, the investment signal is blurred. At best, this leads to investment deferral; at worst to ‘stranded assets’. Power generators have complained about a lack of clear investment signals, which make them defer investment. Reasons for this are broader than the ETS and include barriers within the internal energy market (see below). The fact of investment deferral does not necessarily extend to all technologies. In addition, other instruments than the ETS may be needed to provide support for these long-lived assets, such as regulation or technology support policies (see CDC 2012). Low carbon prices fail to spur innovation, making technology learning curves in the future too high, again raising overall compliance costs. Another frequent argument frequently for ‘price stabilisation’ is that in the face of the low carbon price companies may continue investing in carbon-intensive capital stock. The high sunk costs of these investments would then make these investments “stranded”, making target achievement more costly from an economy-wide perspective. However, investment levels in a recession are generally very low. In addition, as we have seen in 2.1, there are other investment drivers than carbon, many of which favour more efficient technologies. .

3.1.2 Volatility is a barrier to investment

In many markets, there are concerns about price volatility. This is particularly true for a relatively new market and one that is purely regulatory, i.e. created and designed by governments. Price volatility can function as an additional barrier to investment. Volatility is closely linked to the level of liquidity. High liquidity dampens it.

Consistently low EUA prices are likely to lead to the exit of many liquidity players, resulting in a much less liquid market than would otherwise be the case, thereby potentially increasing volatility. Also, markets where either supply or demand is relatively inelastic, tend to be volatile⁷. ETS *supply* is particularly inelastic, in fact unchangeable because set by the cap, which is in turn is fixed very long term (see e.g. Grubb, 2012). Borrowing between the phases is not allowed. At the same time, ETS, *demand* can change significantly, depending to a large extent on the level of economic activity and commodity prices (i.e. coal/gas spreads) and availability of fuels (to address security of supply). This is at least the case as long as arbitrage between fuels is not driven by CO₂ prices but by commodity prices. While the once-in-a-lifetime recession might be over soon, a possible second recession following one or several sovereign debt defaults is possible. Similarly, development of shale gas in the EU could dramatically alter emissions. Other ‘shocks’ are plausible, theoretically resulting in price volatility. Some argue that back loading would increase volatility (e.g. Verdonk & Vollebergh, 2012).

3.2 Things are happening on the ground

This longer-term perspective is why in response to the observed fall in prices, some stakeholders began openly arguing that the carbon price is “too low” and therefore insufficient to incentivise low-

⁶ The third, “refining and improving the EU ETS in the light of experience gathered” has been accomplished and has lost its relevance for our discussions.

⁷ Commodity markets typically exhibit “price volatility” because either supply or demand is rigid, or as in some cases, both (e.g. crude oil, natural gas).

carbon investment, especially on a longer-term perspective⁸. Theoretically, incentives for low-carbon investment could be achieved by complementary measures, e.g. regulation or taxes or via ‘re-setting’ the ETS.

If a quantity-based instrument is chosen, however, the result is always that the cap of the carbon market determines the carbon price. The market will find the price that emitters must pay to stay under the cap. It is somewhat contradictory then to criticize the ETS on the grounds that the carbon price is “too low”. If the objective is determined in terms of quantity, the price is only the transmitter of the costs by which that objective is achieved. Hence, the question is whether the ETS – its principal merit being least-cost abatement – is the right instrument. Larsson & Lönnroth (2010) for example have proposed adjusting the ETS – by issuing or withholding emissions rights – more frequently to stabilise the ETS price along a pre-determined trajectory, which is thought to be high enough to trigger innovation and investment thereby creating a positive climate investment framework. The UK government has proposed introducing a carbon floor price via a tax (see below). The idea of an auction reserve price aims in the same direction (see section 4.2 and also Grubb, 2012).

DG Climate Action, supported by some member states and stakeholders (see e.g. UK Parliament, 2011 for the memorandum by Shell), has raised the idea of a set-aside (of allowances). Such a set-aside was formally proposed on 20 December 2011 by the European Parliament as an additional amendment to the proposal for an Energy Efficiency Directive. The European Parliament Environment Committee proposed to withdraw 1.4 billion allowances from the market during Phase 3. The stated justification was “to compensate for the implementation of [the Energy Efficiency] Directive” and “to restore the price mechanism to levels envisaged in the impact assessment”. The proposal was supported by the European Parliament, including by the Industry, Research and Energy Committee (ITRE⁹); but despite the removal of the specific allowance quantity from the text, a majority was not found during the negotiations between Council and the EP. However, in response to the proposal, the market initially surged – with EUA prices rising 30% the day of the announcement, only to fall again later.

Concerned by the low carbon price and the absence of a prospect for immediate action, the UK government has introduced a price floor that also covers EU ETS sectors, starting in 2013 (for details and analysis, see section 4.2 below). The law makes suppliers of fossil fuels for power generation liable either to the UK Climate Change Levy or a fuel duty (see HM Treasury 2010, 2011; MacKenzie, 2011).

The government of Poland proposes to concentrate on longer-term and more structural changes to the ETS to address a real or perceived lack of incentive. They include the coverage of additional sectors such as international and inland transport modes, enlarging the ETS to the countries of the European Energy Community or in accordance with the Neighbourhood policy¹⁰, as well as changing the allocation methodologies to better align security of energy supply and competitiveness objectives with the ETS and thereby, ultimately, create better incentives for low-carbon development (Bolesta, 2012).¹¹

⁸On 15 December 2011, a number of European companies wrote in a letter to Commission President Barroso that the EU must strengthen its emissions trading system to help carbon prices recover from a four-year low and encourage investment in low-carbon green technologies.

⁹ See European Parliament (2012), *Energy savings: committee backs binding national targets and CO2 set aside plan*, retrieved on 18 October 2012 from <http://www.europarl.europa.eu/news/en/pressroom/content/20120227IPR39335/html/Energy-savings-committee-backs-binding-national-targets-and-CO2-set-aside-plan>

¹⁰ European Neighbourhood Policy describes the framework that governs the relationship between the EU and most of its neighbouring countries.

¹¹ See presentation by Krzysztof Bolesta, Ministry of Environment, Poland at the ETS TF meeting in Warsaw, 4 July.

Throughout the discussions on possible action, energy and electricity-intensive industry has remained concerned about possible impacts on competitiveness and how they will be addressed.

Box 3.1 The Energy Efficiency Directive: main provisions and relevance to the EU ETS

Spearheaded by DG Energy, the new Energy Efficiency Directive¹² stipulates a number of measures by member states to contribute¹³ to the EU target of 20% primary energy savings in 2020 compared to projected levels. The main provisions of the Directive require each member state to set an indicative national energy efficiency target, to ensure energy companies achieve on average by 2020 1.5% annual savings in energy sales volumes to final customers, to reach a renovation rate of 3% annually for public buildings owned by the central government, and to draw up a long-term strategy for encouraging the energy-saving renovation of the national stock of all residential and commercial buildings (Council of the EU, 2012). Other provisions include for example those on energy audits and energy management for large firms, on metering, on billing information, on district heating and cooling, on public procurement, on energy transformation, transmission and distribution, on energy services etc.

These measures also affect the ETS sectors, because of the regulatory tools they add on top of the ETS incentives. In spite of the proposal for a set-aside not going through, a provision that the Commission must “monitor” the interaction effects between the two policies has been retained: “In the implementation of the 20 % energy efficiency target, the Commission will have to monitor the impact of new measures on Directive 2003/87/EC establishing the Union's emissions trading scheme (ETS) in order to maintain the incentives in the emissions trading system rewarding low carbon investments and preparing the ETS sectors for the innovations needed in the future” (European Parliament and Council of the EU 2012, p.28).

3.3 Interactions between different climate and other policies

Downward pressure on carbon prices is reinforced by the interaction of climate and other policies at EU and non-EU level. The EU’s Climate and Energy Package of 2009 set a target not only to reduce emissions by 20% relative to 1990 levels, but also to have 20% of energy consumption sourced from renewables and to improve energy efficiency by 20%, all by 2020. In contrast to the two former targets, the energy efficiency goal is not binding.

The three policies were aimed at different objectives, yet created interactions. In the first impact assessment of the binding targets on emission reduction and renewables in 2008, the Commission had already stressed the importance of assessing the interaction between policy instruments in the two fields.¹⁴ But since design of the policies was uncertain – e.g. it was unclear whether the energy efficiency ‘target’ became legally binding or not – a strict quantification proved difficult.

By trying to quantify the possible complementarity of the targets to reduce GHG emissions by 20% and to achieve a 20% share of renewable energy consumption (see table 3.1), the Impact Assessment shows that implementing policies which are only oriented towards one of the two targets will not be sufficient to achieve both of them. In addition, the effect of meeting only the renewables commitment on total GHG reduction is more pronounced than vice-versa (change from -1.5% to -9.3% vs. change from 12.5% to 15.8%). However, policies such as supporting renewables or energy efficiency which

¹² For the final text of the Energy Efficiency Directive, see European Parliament and Council of the EU (2012). For the Impact Assessment, see European Commission

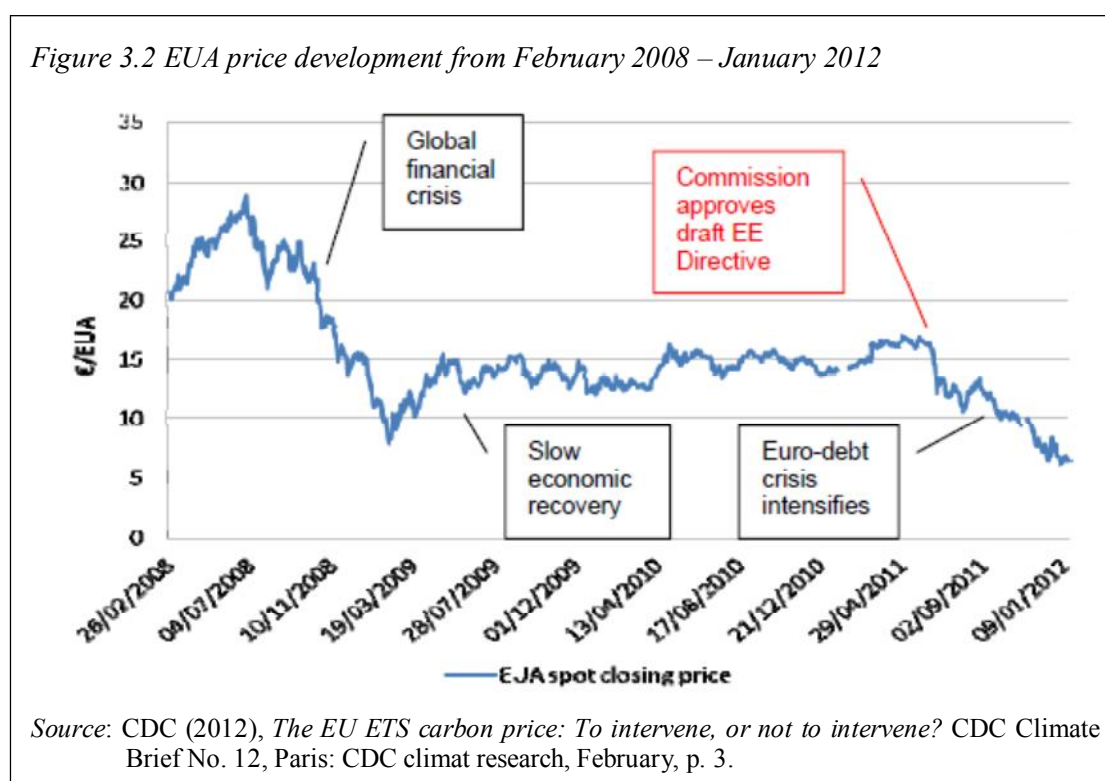
¹³ It is expected that the provisions of the Directive in its final version will result in a 17 % improvement in energy efficiency by 2020, while other measures will complement it to reach the 20 % target (Council of the EU, 2012). In 2014 the Commission will review the overall progress towards the 20% target and will propose mandatory national energy efficiency targets, if it is insufficient (European Commission 2011a).

¹⁴ European Commission (2008), *Annex to the Impact Assessment: Document Accompanying the Package of Implementation Measures for the EU's Objectives on Climate Change and Renewable Energy for 2020*, SEC(2008) 85, vol. II, Brussels, February, p. 20.

directly or indirectly interact with an ETS will not contribute to overall emission reductions since they will simply ‘free-up’ allowances, which may be used by other participants”.¹⁵

Promoting renewables and energy efficiency in parallel to the ETS has and can be justified to overcome market failures.¹⁶ At the same time, this establishes a structural interaction between these policies and the ETS.¹⁷ For example after approval of the Energy Efficiency Directive, the EUA price fell significantly (see Figure 3.2).

Additional downward pressure on carbon prices emerges from access to international credits, created by the Kyoto Protocol (JI/CDM). In its 2008 impact assessment, the Commission had estimated the CO₂ price to fall by 13.2 €/t CO₂ if up to a quarter of the emission reduction effort was derived from JI/CDM credits.¹⁸ The economic crisis, though also increased energy efficiency measures, has led to a banking of both ETS allowances and international credits, as pointed out by the Commission in its 2010 communication¹⁹ (see Figure 3.3).



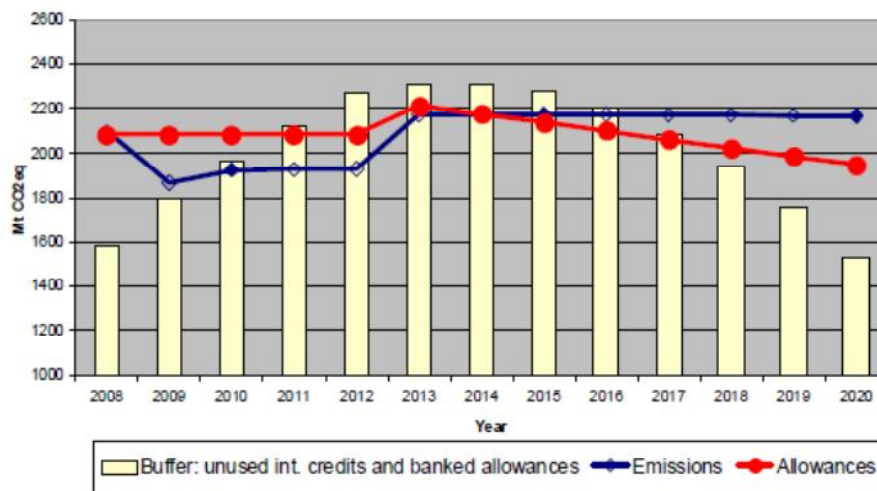
¹⁵ *Ibid.*, p. 134.

¹⁶ S. Sorrell (ed., 2003), *Interaction in EU Climate Policy: Final Report*, SPRU - Science and Technology Policy Research, retrieved 1 October 2012, <http://www.sussex.ac.uk/sussexenergygroup/research/projectarchive/projarch12>, p. 84.

¹⁷ The analysis focuses on the price issue since other interactions are much less clear-cut (but see NERA (2005), *Interactions of the EU ETS with Green and White Certificate Schemes: Summary Report for Policy Makers*, November, retrieved 1 October 2012, <http://www.sussex.ac.uk/sussexenergygroup/research/projectarchive/projarch12>). According to the European Commission (2008), *Annex to the Impact Assessment*, *op. cit.*, p. 35, meeting the GHG commitment without renewable policies would require a carbon price of 49 €/t CO₂, which would drop to 39 €/t CO₂ if the renewables target was reached as well.

¹⁸ European Commission (2008), *Annex to the Impact Assessment*, *op. cit.*, p. 71.

Figure 3.3 Emissions and allowances/credits in the Commission's baseline scenario



Source: European Commission (2010), *Commission Staff Working Document Accompanying the Communication, op. cit.*, p. 31.

In 2010, the European Commission indicated that compared to the 2009 baseline, banking of allowances and international credits in the Commission's reference scenario would continue until 2016 and have a lasting effect if the climate and energy package was fully implemented, i.e. all targets achieved (see Figure 3.3). As a consequence, even in 2030 the carbon price would still be only around €20.²⁰

Other policies at EU, member state or even at international level can create interactions. They include for example EU directives such as the Large Combustion Plant Directive, the Mercury Convention or the Community projects (under Art. 24a of the ETS Directive²¹).

This short analysis has shown that many interactions between policies exist. Successful policies to promote renewable energy sources and energy efficiency are especially lowering the EUA price. However, it is difficult to predict or even to project the exact influence. Predictability somewhat increases the more EU policies on renewables and energy efficiency are harmonised and legally binding. Still, it will be difficult or next to impossible to project interactions. This gives support to the idea of having some sort of adjustment mechanism, able to deal with changes in demand, at least as long as there are other targets or policies than the ETS that affect carbon prices. Even if the EU refrains from renewable or energy efficiency targets, as long as the policies in these areas exist interactions will continue to exist as well. The same is true with other non-climate policies that have been mentioned above.

3.4 Predictability and Regulatory Stability

A critical element of the ETS is predictability and stability. This also holds true if changes are called for, because circumstances differ. Changes in design or policy are required to allow governments to repeatedly incorporate new information and to increase or reduce the pace of the transition over several decades to a low-carbon economy. This will need to respect the (legal) procedures that have been set out *ex ante*, and to follow certain rules related to lead-time or to avoid *ex-post* changes that

²⁰ *Ibid.*, p. 34.

²¹ For more details, see e.g. Climate Strategies 2012.

would undermine credibility with market participants and stability, and therefore undermine the visibility of the price signal, the core of the ETS. The ETS foresees such changes only by way of reviews (specified in the Directive) or by political decisions, with the most important being an increase of the level of ambition in the case of a global climate change agreement being struck. However, these changes are infrequent or exceptional.

Also interaction of member states' policies with the ETS can undermine predictability and stability. This is particularly so where member states' policies counteract ETS incentives.

'Ad-hoc' intervention in the ETS, whether for reasons of price support or other purposes, risks undermining predictability and regulatory stability and therefore can make matters worse. Opinions differ widely on what kind of "action" could jeopardise the objective of stability and predictability. This is partly so because stakeholders' views strongly depend on their sector, i.e. industrial, power, refining or financial services. For those sectors which will require urgent investment, e.g. power, the answer is likely to be different than for those sectors that do not foresee such investment. The financial sector tends to attach a lot of importance to stability and predictability of the market. Some feel that the potential tools to address the current low ETS price (see below) could not meet the conditions of 'stability/predictability' as laid out above, while others feel that market 'action now' is needed to allow the ETS to deliver on its (secondary) objectives such as driving decarbonisation etc.

4. What measures if any?

The following section assesses the relative merits of different tools in addressing the problem of currently low ETS prices. It reviews the various instruments that have been put forward for discussion. A distinction will be made between

- Doing nothing,
- One-off measures,
- Dynamic or automatic adjustment, and
- Institutional adjustments.

This will include a review of instruments that can operate at either EU or member state level or both. Preference will be given to those instruments that offer "systemic" solutions as opposed to *ad hoc* remedies, although systemic solutions are expected to take longer to implement.

The proposed back-loading in this report is considered as a measure to address the "temporary imbalance between supply and demand in the ETS market"

4.1 Doing nothing

The objective of the ETS is to "promote GHG reductions in a cost-effective and economically efficient manner" (Art. 1 of the ETS Directive). Hence, the over-arching objective is cost-effectiveness of a politically given target. The fact that emissions reduction targets are being achieved at a lower than expected price is seen as an example of its helpful counter-cyclical action in times when companies face difficult economic conditions. Those supporting the 'do-nothing' option are backed by those, who fear that government intervention would undermine efficacy, i.e. "make matters worse". One-off intervention may create a precedent for continuous interference, thereby making the ETS subject to changing political preferences. Others argue that action is needed to enable the ETS to ensure delivery of secondary objectives, notably decarbonisation.

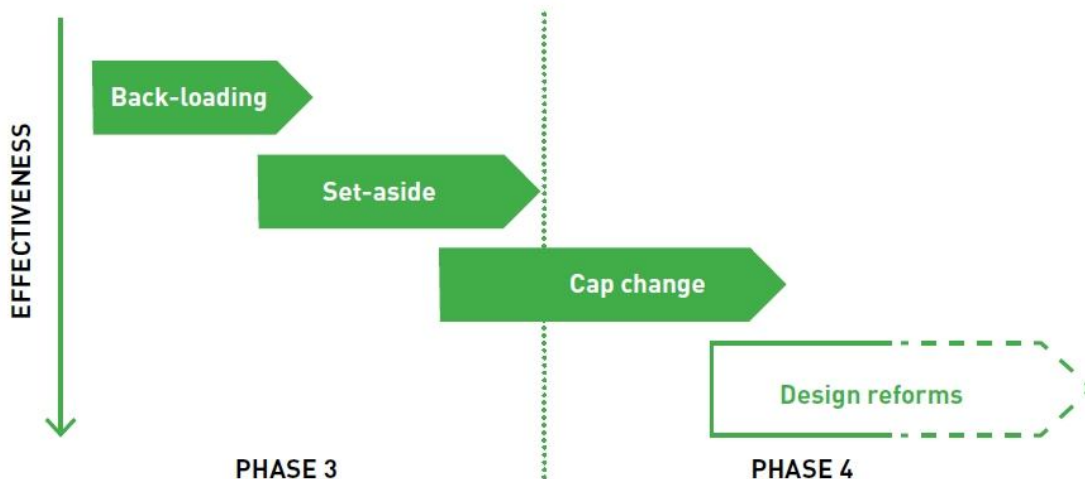
4.2 One-off (re-setting) measures

One-off "re-fixes" describe measures that change the parameters of the market by a one-off decision, meaning that the system in the future functions under these new parameters. This includes increasing the EU 2020 unilateral target, a set-aside (i.e. a one-off withdrawal of allowances from the ETS) and an agreement on a legally binding unilateral 2030 EU reduction target.

4.2.1 Increasing the EU 2020 unilateral target

One obvious answer to the low carbon price is to increase the unilateral EU target of 20% reduction by 2020 compared to 1990 to a higher figure such as 30%. This would require a legislative process via co-decision. To date, politically, the likelihood of this happening is very slim, for economic reasons and because there is no clear international agreement to trigger the increase. Even if the target were increased, most likely changes would only take effect by 2015 at best, assuming that the EU decision-making process would at least require 2 years from the proposal to the final decision (see also Figure 4.1). This would also almost certainly mean an opening and re-negotiation of the current Directive, which many might wish to avoid. Such a re-negotiation might trigger a new debate on cost differences between EU member states and potential redistributive fixes. It would still not address the overhang of allowances. The need for withdrawing EUAs by means of a set-aside (see below), for example, would therefore remain (see IETA 2012, Grubb 2012).

Figure 4.1 Effectiveness of reforms and possible timing: even if more effective, cap and design changes would take longer to implement



Source: Adapted from IETA 2012, p. 37.

4.2.2 Set-aside

The Set-aside constitutes a supply-side baseline change to impose a new level of ambition, thereby accommodating a macro-economic change that is unrelated to the ETS. This would mean removing the current allowance surplus of around 1 billion or more allowances from the system, as suggested by the EP Environment Committee (see also Neuhoff et al 2012). Practically this could be done by withholding allowances from the auctions in Phase III, 2013–20. This has been under discussion in the context of the proposed Energy Efficiency Directive when it was before the European Parliament and the Council of Ministers.

Using an ongoing legislative process such as the introduction of the Energy Efficiency Directive or the Comitology Procedure under the ETS Directive²² would mean that there was no need to change the ETS Directive itself (see Grubb 2012 and Ruiz 2012). CDC (2012) also argued that “by framing the move in terms of re-aligning complementary policies, and increasing the stringency of the ETS despite, it signals policy-makers’ desire to reinforce the credibility and effectiveness of the EU ETS as a policy”; essentially, a set-aside is expected to restore confidence in the EU ETS by providing a

²² This regulatory procedure allows the Commission to add predefined implementation details to existing legislation. It is faster than the co-decision procedure because the Council of the EU and the European Parliament cannot amend the proposal, but retain the right to block its final version.

strong price signal for the market, simultaneously contributing to the secondary objectives of providing revenues for climate finance and of supporting international mitigation efforts.

Estimates have shown that the withdrawal of the 1.4 billion tCO_{2e} surplus without returning it by the end of Phase III could increase the allowance price to €20 per tonne of CO_{2e} and thus generate annual auction revenues of around €1 billion in Greece and €2 billion in Spain and Italy (Grubb 2012). On the other hand, the allowance price range of the estimates is still too wide, between €10 and €30, showing the difficulty in eliminating strategic uncertainties through a set-aside.

The downside is that the move could be interpreted as a way to circumvent the steps set out by the revised EUETS Directive and might be seen as a precedent for future market intervention, which is not provided for in the Directive. Thus it raises issues of stability and predictability. CDC (2012) also argue that it could be criticized on the basis of a lack of transparency or a consensus on accepted principles for this or any correction. This criticism could be overcome if the final decisions can credibly ensure that underlying causes that gave rise to the measures are addressed in the future. This would point to a longer-term fix in due course. Grubb (2012) argues that the risks of bringing about additional regulatory uncertainty could be reduced if there is enough clarity about the basis for the set-aside, such as the interaction with energy efficiency measures, about the basis for calculating the necessary quantity, about the circumstances under which it may be repeated, and about the conditions under which allowances might be returned to the EU ETS.

It cannot be ruled out that major demand reductions will occur again, for example as a result of a prolonged sovereign debt crisis or shale gas production or consumption. Therefore a number of stakeholders suggest combining the set-aside with long-term (beyond 2020) tightening of the emissions reduction trajectory, or with new ETS design provisions that have more direct impact on stabilizing carbon prices (see UK Parliament 2011), or with both (see IETA 2012, Grubb 2012). These further options are outlined in the sections below.

4.2.3 A legally binding unilateral 2030 reduction target

Some stakeholders argue that the EU should set a legally binding 2030 absolute reduction commitment – as has been done in 2007 for 2020 – in line with the EU's 2050 target. Such a move would over the longer term provide a more credible target, which eventually would also require the adjustment of the EU ETS cap.

Although the revised ETS has set a legally binding cap in the form of a linear reduction factor, investors still have concerns with predictability. While one aspect of a lack of predictability is the uncertainty around international negotiations, another is the inconsistency between the current EU linear reduction factor and the actual EU 2050 target of 80-95% GHG emissions reductions compared to 1990, meaning almost total decarbonisation of the power sector. With reference to individual ETS sectors, the 2050 Low-carbon Roadmap suggests that power sector emissions should be 93-99% below 1990 levels by 2050 and industry emissions should be down by 83-87%, if only to achieve the lower end of the full EU ambition at -79% to -82% (European Commission 2011, p.7).

To bring the linear reduction factor into line with the EU 2050 targets, the current 1.74% annual reduction would need to increase significantly. Some offer a factor of 2.5% for the above-mentioned decarbonisation (e.g. Van den Plas, 2011), while the European Parliament Environment Committee officially proposed 2.25% as part of the negotiations on the new Energy Efficiency Directive. However, recent analysis by Öko-Institut (2012) suggests that with a factor of 2.25% without additional measures, the effect on the price in 2013 would be very low (+€1 per tCO_{2e}) and only slightly higher in 2020 (+€2 to +€3 per tCO_{2e}). If 1.4 billion tCO_{2e} are set-aside in addition to this increase in the factor, and reintroduced between 2023 and 2026, the price effect in 2013 would be +€4.50 per tCO_{2e} for 2013 and about +€15 per tCO_{2e} for 2020.

The advantage of setting a 2030 cap instead of adjusting the 2020 one is that 2020 is now so near that a change most likely will have almost no impact on new investments, while increasing costs of compliance, and doing little to address the overhang of EUAs. A 2030 target might also be easier to

agree upon. In order to avoid one-off adjustments in the future, they could be combined with rolling emissions caps, which are applied for example in the UK and Australia (see below).

Many agree that although essential, a timely negotiation of a 2030 target together with an increase of the ETS linear reduction factor is insufficient on its own (Grubb 2012, IETA 2012, Öko-Institut 2012), especially considering its insignificant impact on the allowance price in the near-term. Therefore a set-aside in the short-term has often been mentioned as necessary to complement any tightening of the cap (Grubb 2012, Öko-Institut 2012). This is because any revision to the cap requires a time-consuming legislative procedure including reopening the ETS Directive and it does not immediately remove the surplus allowances (see Grubb 2012). Figure 4.2 illustrates this by showing that a 2.25% factor without a set-aside would have little effect on the time it takes to eliminate the surplus.

4.3 Dynamic or automatic adjustment provisions

While the measures in the previous section have dealt with one-off ‘re-setting’ measures, this section will deal with longer-term fixes in the form of automatic stabilisers. Dynamic or automatic adjustment provisions describe structural or system solutions, which apply mechanisms that are inherent to the ETS design. They can be combined with re-fixes. This section will analyse different mechanisms of floor prices including an auction reserve price, the UK carbon price floor and option contracts. It will also present the “rolling emission caps” approach.

4.3.1 Economic adjustments: Price Floors and Options contracts

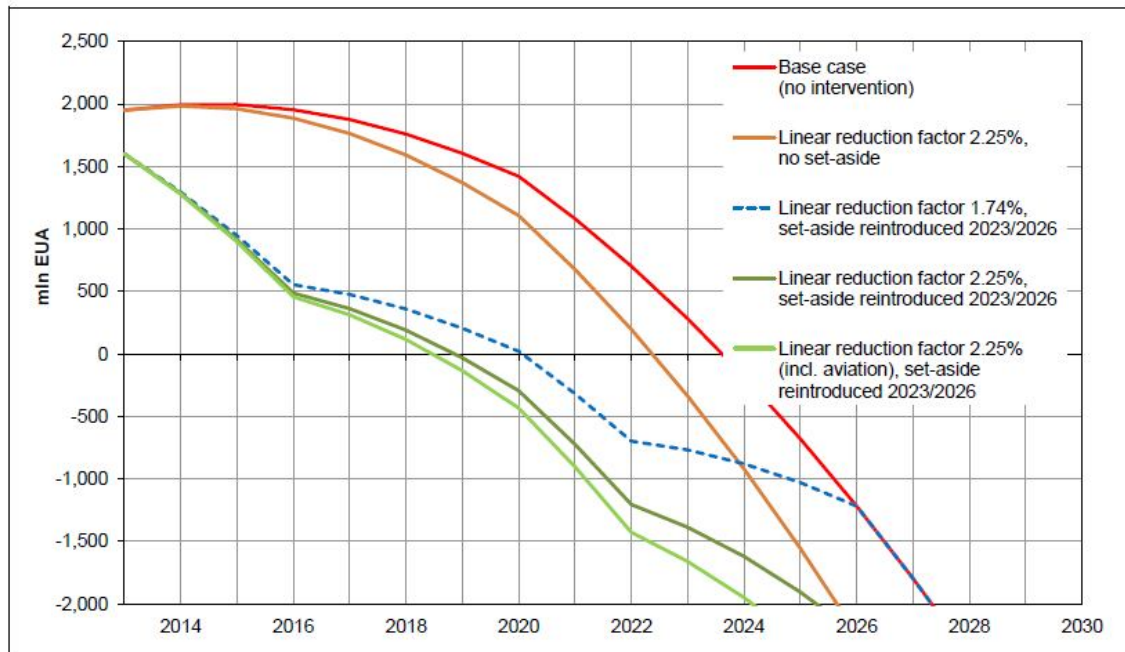
To better stabilise the amount and cost of efforts associated with meeting a target through times of economic change, a body of literature argues in favour of combining certain features of both price-based and quantity-based instruments, to create so-called hybrid policies (see Weitzmann, 1974; Pizer, 1997 for climate change). Under these policies, minimum prices for emissions allowances can be established, generally known as price floors²³. Two approaches relevant to the current debate on the EU ETS are examined below: an EU-wide auction reserve price and unilateral member state carbon price floors, such as in the UK. Options contracts are presented as a third approach that provides an alternative for ensuring prices remain above certain levels.

4.3.1.1 Auction reserve price (EU)

The auction reserve price proposal (see for example the proposal by Shell in UK Parliament 2011) suggests setting a minimum reserve price below which allowances are not auctioned (see also Hepburn 2006). Practically, an auction reserve price could be established for Phase 4 or already for Phase 3 thereby giving a long-term carbon price signal and providing companies more certainty over the return on investment in abatement technologies (see Fankhauser et al., 2011). This could also meet policy objectives such as limiting the downside risk of low-carbon investments, and protecting auction revenues. Furthermore, this could ameliorate interaction issues between the ETS and complementary energy policies and could eliminate the need for further set-aside of allowances (Grubb, 2012). If introduced now at a level above the current market price, it would mean a temporary reduction in the supply of allowances, as auctions at which the reserve price was not bid for some allowances would see the corresponding EUAs set aside over time for resale at a later date.

²³ Price ceilings, where maximum allowance prices are established to avoid too high costs of reaching stringent mitigation targets, are also part of hybrid policies but are not the subject of this report.

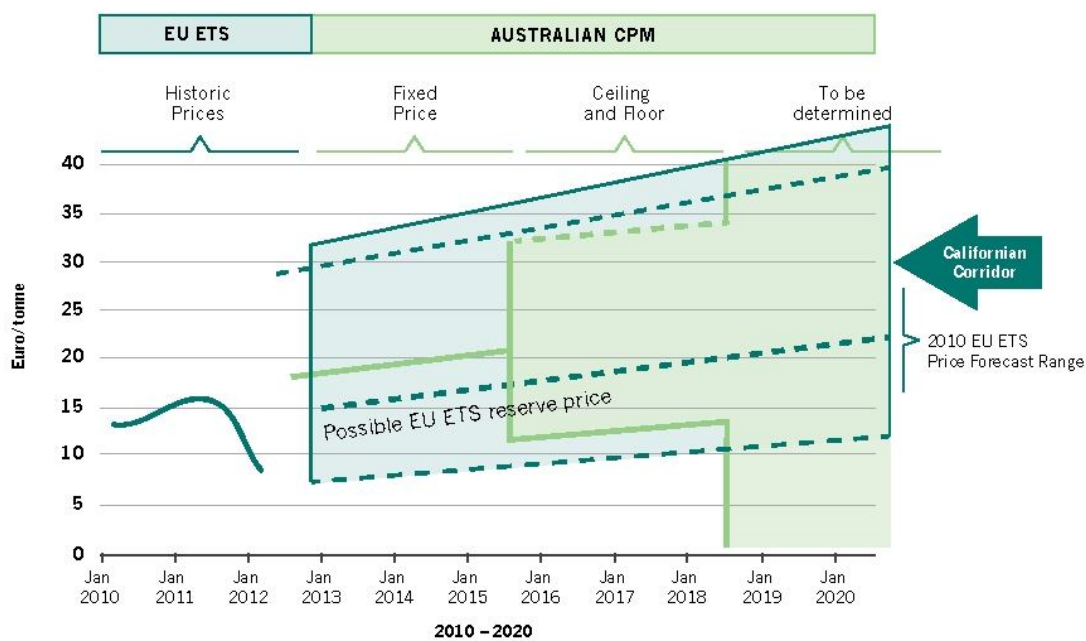
Figure 4.2 Comparison of the effects of options to implement an increased linear reduction factor on the surplus in the EU ETS, 2013 to 2030



Source: Adapted from Öko-Institut 2012, p. 49.

Carbon price floors and ceilings have already been established in Australia and California (see also Box 4.1). Figure 4.3 illustrates how recent developments and post-recession projections made in 2010 for the ETS allowance price would compare to the price “corridors” (combined floors and ceilings) in Australia (light colour lines) and California (dark colour lines).

Figure 4.3 EU ETS Prices compared against Australian and Californian ETS price corridors

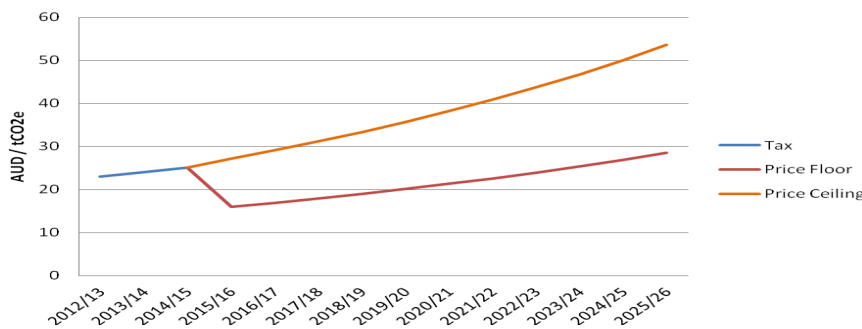


Source: Adapted from Grubb 2012, p. 7.

Box 4.1 Price floors under the Australian and the Californian emissions trading programmes

Australia: As part of the price floor arrangements for the first three years (subject to review for the years afterwards) of the flexible price period under the Australian cap-and-trade system, a minimum auction reserve has been set for the financial years 2015-16, 2016-17 and 2017-18 (respectively 15, 16 and 17.05 Australian dollars). However, this price floor is going to be removed after a recent agreement for linking with the EU ETS. Figure 4.4 shows the development of the price floor until 2018 plus a forecast extension beyond that period (in the three years up to the cap-and-trade period starting 2015 there is a fixed emissions charge in the form of a carbon tax).

Figure 4.4 Australian carbon tax and price control forecast (2012/13-2025)

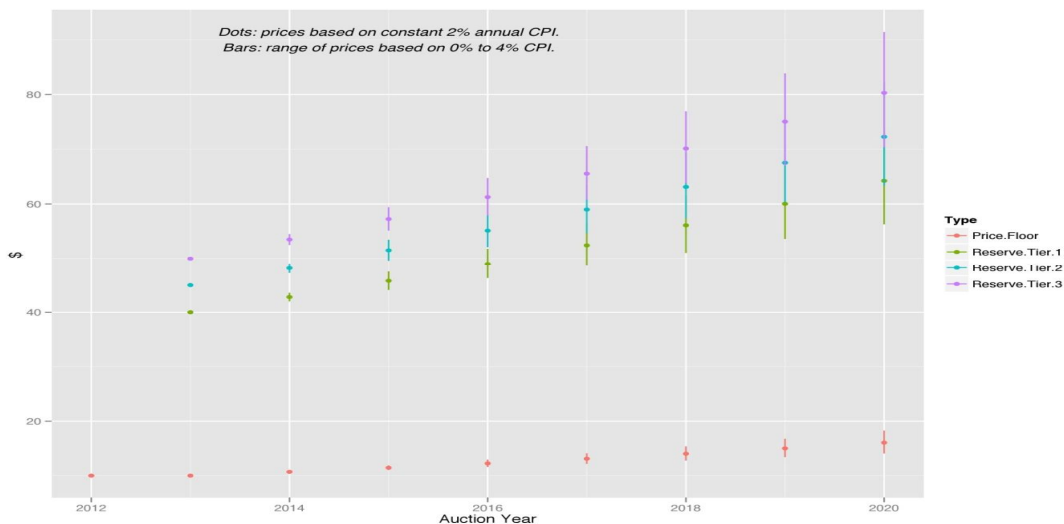


Note: Assumes inflation of 2% p.a.; takes current secondary CER futures price for 2015 delivery as a basis for the international unit price upon which the price ceiling is determined.

Source: Adapted from Patay & Sartor (2012, p.6).

California: The auction reserve price under the California programme is set at US\$10 for 2013 allowances²⁴ (indexed annually by 5% plus the rate of inflation, which is calculated by the Consumer Price Index). In Figure 4.4, this is denoted by “price floor”, while the reserve price tiers refer to price ceilings.

Figure 4.4 Estimated Auction Price Floor and Reserve Price Tiers, by Year



Source: Adapted from Horowitz et al. 2012, p. 4.

²⁴ California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms, CAL. CODE REGS. § 95911(b)(6).

While technically speaking an auction reserve price appears fairly simple to implement, and is being used elsewhere in the world), there are a number of issues that would need to be settled (see e.g. CDC 2012). They essentially relate to the level of the ‘right’ price, the effectiveness of this instrument for the problem at hand, the respective appropriate timing of introduction, and what to do with the allowances that have not been auctioned. The latter problem is similar to that of allowances withdrawn by a set-aside, analysed above. In addition, it would require a change of the ETS Directive.

The principal question is whether the continued existence of a reserve price would be more credible to investors than the current system. What is the “fair” reserve price on which stakeholders and member states could agree, and why should a pre-agreed level be preferred to the market’s assessment? Introducing an auction reserve price may also put downward pressure on future price expectations and it would keep prices at or close to the level of the reserve price for longer than otherwise would be the case.

Caution is called for in the case where a price floor is proposed not only to address the risk of a very low carbon price, but to compensate for an insufficiently stringent emission trajectory (Neuhoff 2011). This would undermine the long-term link between the carbon price and the emission target. Grubb (2012) explains why and points out that in particular the auction reserve price design of a price floor in the EU ETS, under current conditions, should not be implemented on its own without a set-aside in the short term and a tightened long-term cap. Due to the accumulated surplus, few would purchase new allowances at the reserve price, but also few would want to trade what they have and would rather wait until the market catches up with the floor price years into the future. This would reduce auction revenues and would fix the price rather than allow demand to drive it through emissions trading.

If a price floor is brought to the table as part of the negotiations for the 2030 targets and Phase IV caps, it may bring a signal for stability even before coming into force. It is also important that once introduced, a reserve price could secure additional reductions where successful renewable energy or energy efficiency policies affect ETS sectors – if such policies drive carbon prices down, fewer allowances would be bought at auctions and thus not enter the system (Grubb 2012).

In addition, a general floor price is a rather inflexible tool. If future carbon reduction potential turns out to be much cheaper than anticipated (e.g. because of new technologies or lower economic growth) a high floor price could result in carbon reductions becoming needlessly expensive. Such a price adjustment could undermine the primary objective of achieving a certain quantity of abatement at least cost (IETA 2012).

A price floor would be subject to lobbying from different stakeholders. A price floor ultimately is a ‘political’ price, subject to political interference and change and hence raises credibility issues (e.g. Zachmann, 2012). There is also a major question of whether EU governments could agree on the level of a floor price.

Another problem with a price floor in the EU ETS is the considerable complexity it would create for linking with other cap-and-trade systems, especially because the initial calculations for establishing it normally reflect the economic dynamics of the region for which they are established (Fankhauser & Hepburn, 2009). The recent agreement for removal of price floors in the Australian ETS in order to link with the EU ETS²⁵ supports this, showing that avoiding it completely has been more politically preferable than negotiating a common price floor.

4.3.1.2 Unilateral member state price floors

An advantage of an EU ETS auction reserve price is that it would remove the actual or perceived need for EU member states to act unilaterally in this direction, such as recently done by the UK with its introduction of a carbon price floor.

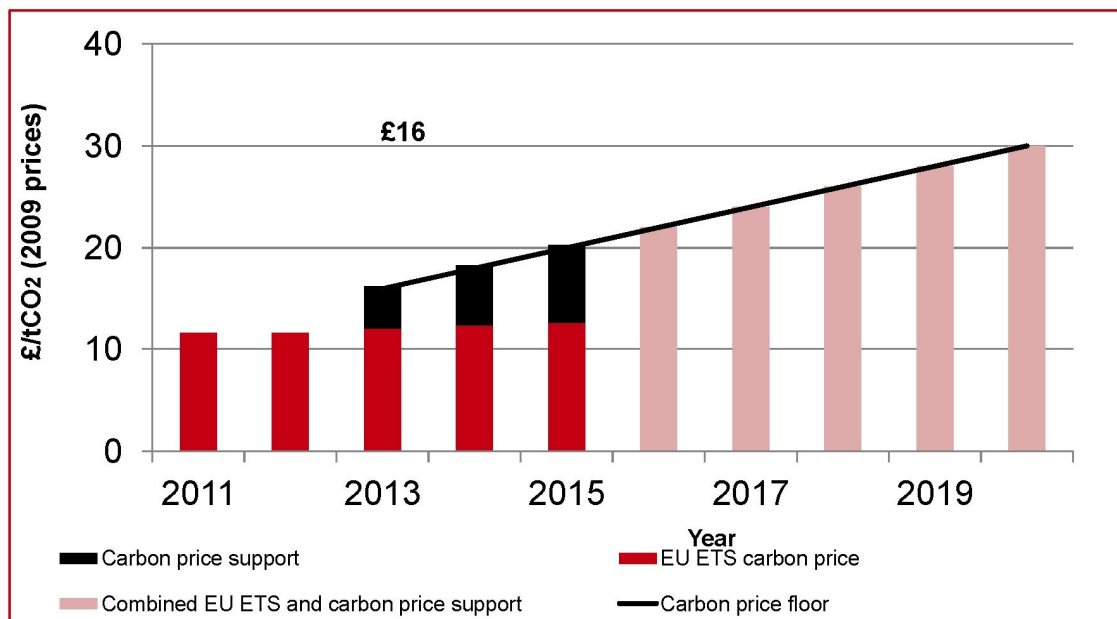
²⁵ See Australian Minister for Climate Change and Energy Efficiency (2012), *Australia And European Commission Agree On Pathway Towards Fully Linking Emissions Trading Systems*, Media Release, August

The UK carbon price floor proposal is a regulatory/taxation policy that is intended to complement the ETS. Starting in April 2013, it will make suppliers of fossil fuels that generate power liable either to the UK Climate Change Levy or a fuel duty (see HM Treasury, 2010; Mackenzie, 2011). The carbon price support rates²⁶ for the UK Climate Change Levy and the fuel duty reflect the differential between the future market price of carbon and a specified floor price (see Figure 4.5). While essentially a tax, it has the effect of supporting the carbon price, although only in the UK.

This means that there will be different carbon prices under the ETS across the EU, with UK companies paying higher rates than their neighbours, raising intra-EU competitiveness issues for the private sector. Such a unilateral move further reduces the carbon price for the other member states, thereby reducing their auction revenues and compromising least-cost abatement in the UK (Sartor & Berghmans, 2011). As the difference between the ETS price and the UK floor price is collected by the national government as revenue, the 12% redistribution to eastern European countries required from EU ETS auctions is foregone for that difference (Grubb 2012).

Another criticism is that the carbon floor price overlaps with aspects of the contracts-for-difference provisions, a type of the option contracts discussed below, also introduced as market-stabilising aspects of the UK's electricity market reform. Price floors are a way of hedging the government against financial liability in option contracts, but the options themselves could be sold, generating revenue upfront for the government (Pizer 2011). Also competitiveness and distributional issues remain (see next section). Trying to "fix" these, such as the attempt by the UK government to compensate energy-intensive sectors, might complicate matters further (Grubb 2012).

Figure 4.5 UK Carbon price floor illustration (in real 2009 prices and calendar years)



Source: HM Treasury 2011, p. 16.

On the other hand, the member state floor price is easy and fast to implement and can be geared towards the needs and preferences of particular member states, which can have different emphases within EU policy. With the EU (Lisbon) Treaty leaving the responsibility for the national energy mix in the hands of member states (Art. 194) as well as long-term national reduction commitments, there is some rationality in providing member states with tools to influence investment in the energy sector.

²⁶ Carbon price support rate will be applied to fossil fuels based on their carbon content. The rate will be determined by the average carbon content of each fossil fuel.

4.3.1.3 Options Contracts

Options contracts are seen as addressing some of the issues that arise through a floor price. Options contracts describe the establishment of bilateral option contracts between public institutions and investors in low-carbon solutions. The public institutions would guarantee a certain carbon price to an investor through such a contract (see Ismer & Neuhoff, 2006). In case the realised carbon price is below the guaranteed price, the public institution (the option writer) would pay the difference to the investor (the option holder). Hence, in case of a low carbon price, potentially detrimental to the competitiveness of low-carbon investments, the investor gets some compensation and reduces his risk. At the same time, if the public institution issues a large volume of option contracts, it creates an incentive for policymakers not to water down climate policies in the future. On the other hand, option contracts may create a conflict of interest for governments who are responsible for the policy that affects their financial liability. Policies that reduce the carbon price will have a direct budget impact through increasing the value of the outstanding options. This would increase the long-term credibility of the ETS (Zachmann, 2012). However, it would also mean that governments take on potentially financial liability through the options contracts, though the options themselves could be sold, generating revenue upfront for the government (Pizer 2011). In the case of falling carbon prices, the cost of buying allowances at the option price would thus be transferred to the taxpayer and might bring about distributional issues if allowances have been freely allocated to firms in the first place (see Fankhauser and Hepburn, 2009).

A possible drawback is that – most likely – options contracts would be issued by member states. But different levels of options or contracts for different member states will – as is the case for the (UK) carbon price floor – signify that there are different carbon prices across the EU, unless all member states agree to coordinate and fix one EU-wide price (see Grubb 2012).

4.3.2 A rolling emissions cap

Another approach is to offer the possibility of flexibility – under defined rules – in target setting as has been done in Australia and the UK. For example, the Australian ETS now being introduced is built upon a *fixed* 5-year emissions cap, which is annually updated 5 years in advance for each subsequent year, but is always consistent with a longer-term reduction target already fixed by the Parliament. This feature of the Australian scheme attempts to combine a lagged flexibility to respond to unforeseen events by supply-side adjustment with some kind of predictability and credibility about the emissions pathway.

Before 1 July 2015, the beginning of the Australian emissions trading scheme, the emissions caps for the first five years will be set. By the end of each year, the cap for the 5th year into the future will be decided. Thus the first extension for the financial year beginning 1 July 2020 should be adopted before 1 July 2016. The cap is approved by Parliament based on the advice of an independent Climate Change Authority. If the Parliament fails to make the necessary Regulation in time, a default cap will automatically be set at 12 million tCO₂e below the previous year's cap (The Parliament of Australia 2011). The default reduction trajectory for the annual caps is consistent with Australia's 2020 legally-binding target of reducing GHG emissions to 5 per cent below 2000 levels, but continues indefinitely beyond 2020. In making its recommendation, the Climate Change Authority must take into account a range of relevant factors (see Parliament of Australia 2011), such as progress in reducing emissions domestically, international action, emissions credit supply, economic and social implications including those related to the carbon price etc.

In the UK, rolling caps in the form of three 5-year “carbon budgets” for at least 15 years ahead have been adopted in order to meet the long term goal of reducing the country's GHG emissions by at least 80% below 1990 levels by 2050 (see e.g. UK Government, 2011a). These caps are at the national level

and will affect primarily the non-ETS sectors of the UK economy²⁷. Although legally binding for the country as a whole, these caps do not require the submission of allowances by individual entities, nor do they involve trading. Instead, the carbon budgets are broken down by individual sectors, for each of which the government creates programs and policies that should ensure the meeting of the target. The main lesson from the UK example is the potential benefit of creating 15-year visibility and predictability of mitigation efforts as a whole and among sectors, while maintaining regulatory flexibility in adjusting each subsequent 5-year budget by reference to the changing prospects for economic development, available technology and mitigation ambition.

Table 4.1 Carbon Budgets in the UK

	First carbon budget (2008–12)	Second carbon budget (2013–17)	Third carbon budget (2018–22)	Fourth carbon budget (2023–27)
Carbon budget level (million tonnes carbon dioxide equivalent (MtCO ₂ e))	3,018	2,782	2,544	1,950
Percentage reduction below base year levels	23%	29%	35%	50%

Source: Adapted from UK Government (2011b, p. 3).

As there is no experience to date, it remains to be seen how well this approach will balance the competing demands of long-term visibility and medium-term flexibility in Australia and in the UK. There is a difficult balance to strike between the clarity and simplicity of a single long-term fixed target and the ability to adjust a rolling target so that it always points in the same direction, taking into account changes in the external environment. Another challenge is the credibility of the newly-established Australian Climate Change Authority in managing the market's medium-to-long-term allowance scarcity expectations (Patay and Sartor, 2012). For the EU the rolling caps approach also raises issues of governance, particularly on how an institutional structure can be designed to allow the EU to reach consensus quickly on a regular basis, especially if annual updates to the cap are contemplated. Nevertheless, the central idea of a five year forward rolling target could be discussed by the EU, and could be a way to address the issues with the linear reduction factor mentioned in the sections above.

4.4 Institutional adjustment

The fourth category of measures consists of creating regulatory bodies or new institutions, i.e. non-automatic adjustment mechanisms that deal with the 'management' of the ETS. Two functionalities can be distinguished; one is the efficient functioning or management of the ETS whilst the other is to adjust the supply to demand. A new body could deal with either function or both. In the following sections, we will briefly examine both functionalities.

Institutional adjustment will also require institutional adaptation in the EU and thus represent a longer-term solution. However, it could be seen as a complement to some of the other proposals discussed above. This will be discussed in part 3 of this section.

4.4.1 A management body for the ETS

In the context of the internal European Commission discussions on the back loading proposal, different Directorates-General provided somewhat different information; some leaked internal documents that proved to be market-sensitive. As a result, at one stage the market was moved by

²⁷ Because the emissions of the EU ETS sectors of the UK economy do not fall under direct control at national level and are therefore accounted for without state intervention (see UK Government, 2011a)

around 10% based on information which appeared to have been leaked by a Directorate General of the European Commission. This happened after the European Commission had put into operation rules and practices on how to communicate market sensitive information, after similar incidents occurred in the early stages of the ETS operation. This has brought back on the agenda the question of how to improve management and communication of market sensitive information by the Commission and whether there is a case to delegate some operational activities to a separate body, if not an agency.

More far-reaching is a proposal to delegate powers to a new or existing institution to manage the supply of allowances (e.g. Lewis & Curien, 2009; Curien & Lewis, 2012; de Perthuis & Trotignon, 2012). Such an organisation would be tasked with taking account of developments outside the system in managing supply, for example by a price target. This could also include management of auctioning, including front- or back-loading. Developments outside the ETS could include the progress of international climate negotiations, supply and prices of credits, or the impact of other climate and non-climate policies on supply.

As long as this body's mandate is restricted to ensure functioning 'under the cap', competencies of member states to decide on the cap are not touched. It would be a different matter if this body is adjusting the cap. This is dealt with in the next section.

4.4.2 An independent (regulatory) agency or a Carbon Central Bank

The most far-reaching idea is the establishment of an independent regulatory authority or a Carbon Bank with the objective of increasing long-term predictability and the 'smooth' functioning of the market including a continuous carbon price signal. This would include a mechanism to cope with EUA demand fluctuations by adjusting the supply, and possibly adjusting the cap. It has been suggested that an independent regulatory authority could control the supply of allowances similarly to the way the Federal Reserve Bank or the European Central Bank control the money supply in the US money market (de Perthuis 2011, Curien 2011, CDC 2012, de Perthuis and Trotignon 2012). Like automatic adjustment measures, this approach seeks to respond to a situation where the EU ETS does not have a short term supply-side adjustment mechanism, which in the view of some creates price volatility in response to demand shocks.

While this approach has advantages in theory, and while there appears to be merit in centralising the various information-gathering authorities that will be monitoring the EU ETS from Phase 3, it also has its drawbacks. If it is to be a price-managing authority, this effectively requires centralising a large amount of control over the carbon market's emissions trajectory and prices in the hands of an independent bureaucracy. The Bank would need to be equipped with enough capital to give it the power to intervene and to protect it against attempts to break it. There are many in the market who would also caution against introducing a powerful source of intervention and potential inefficiency and political uncertainty. In addition, the current demand shock, for example, would require a significant *ex-post* change in the EU ETS emissions cap trajectory to restore the market to an allowance deficit (e.g. de Perthuis 2011). It would also require an agreement on the 'right' price.

Most importantly, the establishment of a Carbon Bank or a similar institution raises numerous EU institutional issues, notably what the legal and political conditions for it would be. This in turn will have important bearings on the design. As this is a complicated legal matter, the following section will only briefly touch upon these conditions.

4.4.3 Institutional feasibility and preconditions

Assuming that both the EU institutions and member states accept the delegation of the management or even cap-setting to an independent body, the next question is about the institutional feasibility of an adjustment mechanism while ensuring that it has sufficient legal and political independence.

Agencies are a common feature of the EU institutional landscape. However most fall into the categories of so-called 'ordinary agencies' with little or no powers, or 'pre-decision agencies' that provide the European Commission with non-binding opinions. Only a few are decision-making

agencies that can take binding decisions, but even these can hardly be compared with ‘true’ regulatory agencies. If they have decision-making power, they usually have very limited competencies of a clearly defined technical nature. Examples are the Office of Harmonisation for the Internal Market (OHIM), the European Union Air Safety Agency (EASA) or the European Chemical Agency (ECHA)²⁸. They are governed under EU public law with their own legal personality and are established by secondary legislation in order to accomplish a very specific technical, scientific or managerial task. One standard feature of the agencies is that they cannot adopt binding decisions with regard to private actors.

This structure is not a question of political choice. It is rather based on EU case law, centred on the so-called *Meroni* doctrine. According to this doctrine, delegation of powers to independent agencies must be limited to implementing powers clearly defined and entirely supervised by the delegating institution on the basis of specific and objective criteria. Put differently, this means that delegation cannot concern discretionary powers involving a margin of political judgement.²⁹ While the Lisbon Treaty post-dates this jurisprudence, it does not contain provisions that would defeat application of the doctrine *per se*.

Hence, as long as the work of a possible “economic adjustment body” remains technical in nature, leaving political discretion in the hands of the EU institutions, there are possibilities within the EU Treaty to establish such a body, for example by changing the ETS Directive.

The recently (2011) established Agency for the Coordination of Energy Regulators (ACER) in Ljubljana possibly can give an indication on the possible remit of an “economic adjustment body”. ACER’s mandate is to “complement and coordinate the work of the National Regulatory Agencies (NRAs), at EU level”. Its competences include preparing Framework Guidelines which will form the basis of EU-wide network codes (drafted by the European Network bodies); taking binding individual decisions on terms and conditions for access and operational security for cross border infrastructure if NRAs cannot agree; giving advice on various energy-related issues to the European institutions; and monitoring and reporting to the European Parliament and the Council.³⁰

The role of a body like ACER as part of the “economic adjustment mechanism” could be to undertake technical analysis on the need or lack of need to adjust the cap, for example; laying the ground for the Climate Change Committee or some other body in the European Union’s decision-making structure to take the actual decision. To guarantee the authority of the body, it would need to be clearly independent. In the case of ACER, its independence is firmly backed up in legal terms and was enhanced by making it accountable to both the European Commission and the European Parliament.

However an “economic adjustment body” in this form falls short of an independent regulatory authority (IRA) that has far-reaching powers to either manage the ETS ‘under the cap’ or even to adjust the cap. The creation of such an ‘independent regulatory authority’ or a Central Carbon Bank under EU law would always require a revision of the EU Treaty. This would require agreement and

²⁸ The Office of Harmonization for the Internal Market (OHIM) registers the Community Trade Mark in the European Union. The European Union Air Safety Agency (EASA) implements and monitors safety rules, including inspections in the Member States, provides type-certification of aircraft and components, as well as the approval of organisations involved in the design, manufacture and maintenance of aeronautical products and authorises third-country (non EU) operators. The European Chemicals Agency (ECHA) focusing on the implementation of the EU’s chemicals legislation.

²⁹ The *Meroni* doctrine goes back to a 1958 European Court of Justice judgement and has been applied ever since also by the European Commission and is supported by all the memoranda from the Commission’s Legal Service and also by the main literature on Community law.

³⁰ ACER is made up of a) a Board of Regulators comprising of senior representative and one alternate of the EU Member States’ 27 national regulatory authorities (NRAs) and one non-voting Commission representative; b) an Administrative Board comprising 9 members and one alternate for each, of which 2 members (and their alternates) are appointed by the European Commission, 2 (and their alternates) by the European Parliament and 5 (and their alternates) by the Council; c) a Director; and d) a Board of Appeal.

ultimately ratification by all member states, and in some cases possibly a referendum. Not only are such changes lengthy procedures but they also require a high-level political will and consensus among member states and the EU institutions. At the moment it is not clear whether this political will exists. Some member states, even they if they were to agree on the usefulness of such a new institution, could still be opposed to any sovereignty transfer. Some member states may oppose the creation of a Carbon Central Bank or an equivalent organisation for reasons of principle.

A second option is to establish the carbon bank via intergovernmental agreement among the Member States. The bank could be incorporated under the laws of a Member State (e.g. Luxembourg) with member states as shareholders with back office support provided by the European Investment Bank, as is the case with the European Financial Stability Mechanism (EFSM). As the operation of such a bank is to facilitate the functioning of the ETS, such an arrangement would satisfy the loyalty clause contained in Article 4(3) TEU for extra-EU agreements among Member States. It still would need the consent by all member states but politically it might be easier to achieve. On the other hand, it will raise issues of independence and accountability.

Thus, whilst the creation of a Carbon Central Bank or an equivalent organisation does not raise fundamental institutional questions, the main challenge is about political feasibility. To date, there is little likelihood that member states would find agreement on the creation of an independent regulatory authority or carbon bank.

5. Concluding remarks

This report has first dealt with the question on whether the ETS is achieving its objectives. While there is no doubt that it promotes ‘reductions in a cost-effective and economically efficient manner’, opinions differ on whether and if so, how the EU ETS could become a driver to shift investments towards low carbon technologies. Irrespective of this disagreement, which will have to be decided politically, this CEPS Task Force Report offers a review of the many options to adjust either the design or the management of the ETS that numerous stakeholders have identified. It does so by thinking through the pros and cons of each option so as to leave the reader with the decision on preferable solutions.

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