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The next steps - the future of the EU ETS

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Introduction

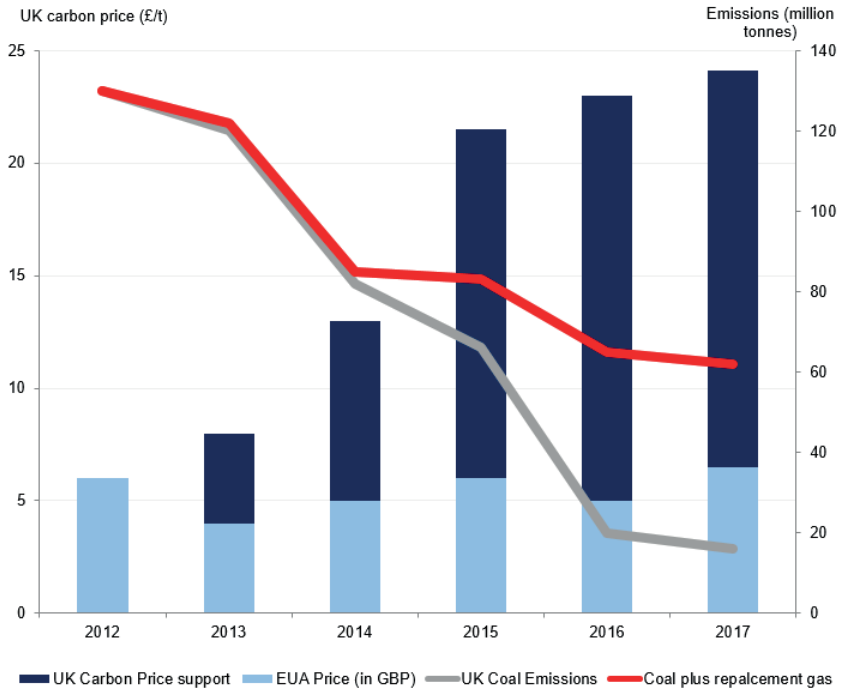
The most recent wave of scientific consensus suggests that we have a mere 12 years to reduce global greenhouse gas (GHG) emissions in order that we don't pass the tipping point in the earth's climate. Environmental politics has a long history (many scholars bookmark Rachel Carson's 1962 work 'Silent Spring' as the birth of the environmentally conscious revolution) and this history is filled with a distinct lack-of-conviction, yet over the last decade or so, there appears to have been a significant shift in the global environmental outlook. Nicholas Stern's (2006) famous assertion that climate change is likely the greatest example of market failure the world has ever seen necessarily implies that economics and market mechanisms can be deployed to solve the crisis, hence the birth of emissions trading schemes and other regulatory policies such as carbon taxes.

The European Union Emissions Trading Scheme (EU EUTS) was officially launched in 2005 and remains the largest emissions trading scheme in the world. Its concept is simple; set an overall quota of the amount of emissions the Eurozone can emit and divide this up into permits, distributing these permits amongst businesses and actors which emit high volumes of GHGs. The quota is then theoretically reduced at regular periods, and actors are encouraged to reduce their emissions further so that they may sell their extra permits on the market for a profit. The point of ETSs and carbon taxes is to make the price of activities which are carbon intensive accurately reflect the true social and environmental costs of the carbon. As of now, the reason why fossil fuels and carbon intensive activities are cheap is because their true social and environmental costs are externalised onto society as a whole and not internalised into their price (Helm 2015). The idea is therefore that if the price of emitting carbon dioxide accurately reflects all these costs, it will become too expensive and economically un-competitive to use, encouraging a shift towards cleaner energies.

Cap and trade systems have been known to be successful in the past; the US Acid Rain Program has been credited with successfully reducing sulphur dioxide levels to negligible levels, and some authors and analysts have argued that there has been a strong correlation between the price of carbon and the level of carbon dioxide emissions. As Figure 1 shows, as the carbon price increased between 2014-2017, coal emissions gave way to gas emissions, potentially owing to coal's greater carbon intensity, making it less financially viable with the introduction of emissions permits. Some authors, such as Whitmore (2019), suggest that this increase in carbon price provided the main catalyst for this, although it is more likely that this reduction occurred due to a wide range of policy measures, only supplemented by an increasing carbon price as opposed to being fundamentally driven by it.

Having established a brief history as well as explanation of ETSs, the report will firstly explore the initial set up of the EU ETS and the problems it has traditionally encountered. Secondly, it will discuss how the new stage the program is about to enter, Phase 4, will alter the scheme so as, to attempt to make it more effective. The report will then progress to discuss the potential implications of Brexit on the EU ETS and the UK's climate change policy, followed up by a brief discussion of other ETSs around the world and what the global future of ETSs might look like.

Figure 1: Carbon prices and Emissions in the UK power sector



Source: Whitmore (2019)

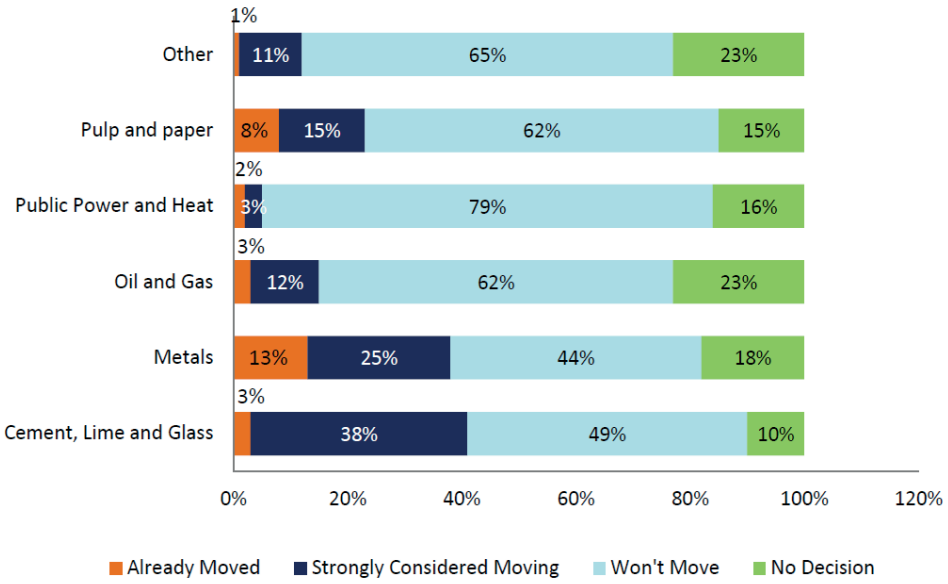
Initial Set Up and Problems

One of the fundamental structural issues with the EU ETS over the last 15 years has been the surplus of credits in the system. Sandbag (2017) estimate that by the end of the current Phase in 2020, there will be 3.8 billion surplus allowances – 2 billion in the Market Stability Reserve and 1.8 billion available to the market. This is equivalent to two whole years-worth of emissions which are saturating the market. The issue with this is that the bountiful supply of permits means that the price is excessively low, so firms can simply afford to buy lots of permits and continue emitting highly without bearing a significant economic cost. The reasons for these surpluses are varied, but four of the main ones are 'grandfathering', fears over carbon leakage, lower economic output on the back of lower demand during and after the financial crisis and heavy industries outsourcing polluting production to their subsidiaries in certain Asian countries.

The former reason describes the action whereby permits were freely allocated to participants in the scheme based on historical emissions which resulted in un-ambitious targets because firms were simply allowed to emit as much as they historically had. One of the reasons for this was the political world of corporate lobbying (Giddens 2009), which resulted in firms being granted far more permits than was environmentally sustainable. Secondly, due to fears over 'carbon leakage', a phenomenon whereby firms which face regulation in one geographic area simply relocate to another area with less stringent regulation, firms which were deemed at risk of packing up and leaving were allocated all their permits for free in order to keep business on European soil (see Figure 2). The allocation of excess permits for

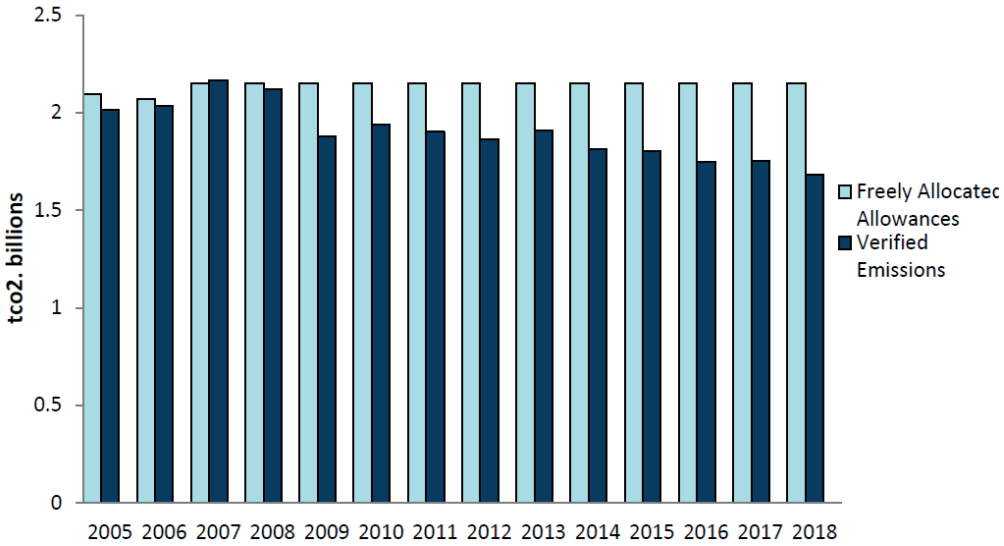
free is reflected in Figure 3, which shows that in all years apart from 2007, freely allocated allowances have been enough to cover the emissions of participants of the scheme. Thirdly, the financial crisis of 2007-2008 hit hard the real economy in EU28 which resulted in lower economic output at times of record emission credit creation. Lats but not least, polluting industries did leave EU in the decade preceding the financial crisis for countries with lighter regulation and lower running costs.

Figure 2: Leakage of sectors covered by EUETS



Source: González-Eguino et al. (2012)

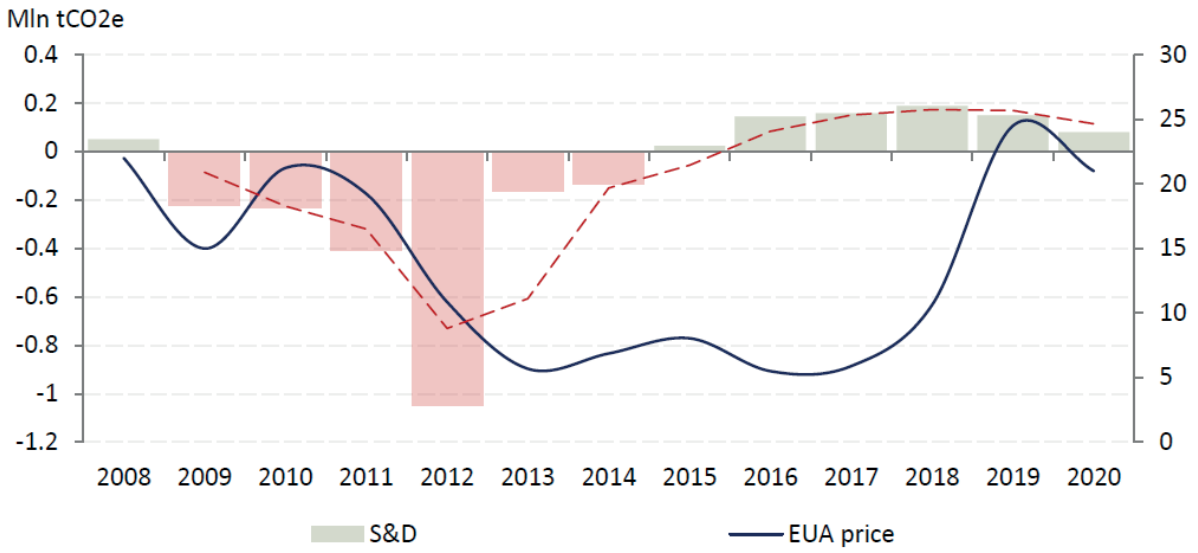
Figure 3: Amount of historical emissions covered by free allowances



Source: European Environmental Agency

The outcome was a considerable surplus of credits. In order to address the structural imbalance between the supply and demand of allowances, a Market Stability Reserve (MSR) was launched in 2015. The purpose of the initiative is to render the auction supply of emission allowances more flexible. Figure 3 begs the question as to why the legislators have been so slow to react to this evident problem with the system since the problem has been well documented for years, so it is surprising that only during Phase 4 will there be an exerted effort to remove some of the excess permits within the system. Our proprietary ETS S&D model is displayed on Figure 3a. The process of gradual tightening started in 2015 but the market only priced it in properly in late 2017-early 2018.

Figure 3a: Proprietary EU ETS S&D model



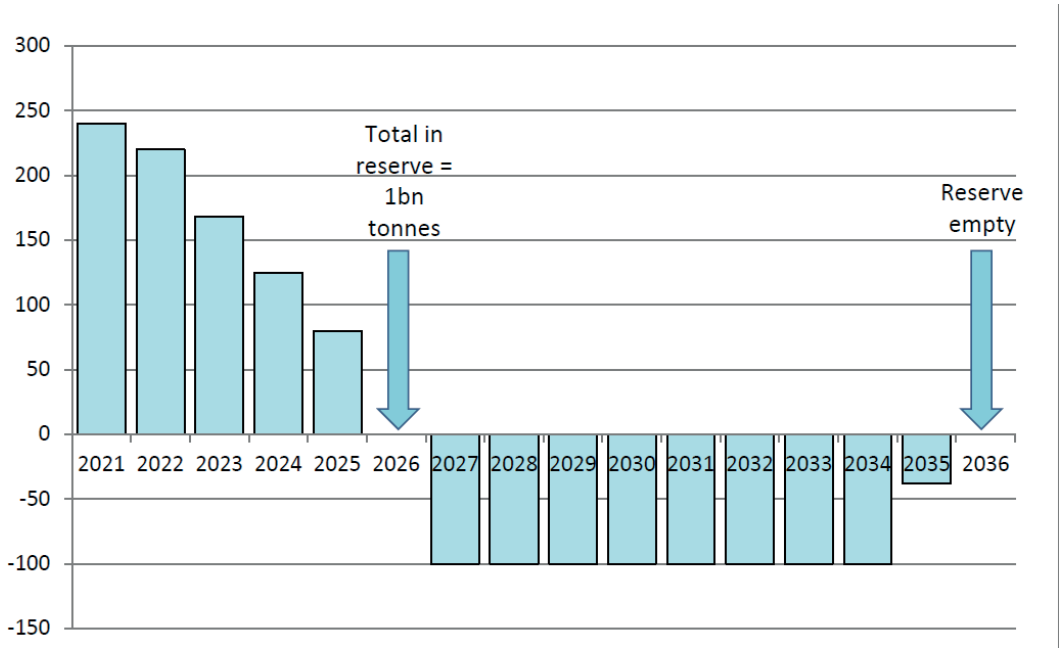
Source: Marex Spectron Institute

Phase 4 of the EU ETS and the Market Stability Reserve

Phase 4 of the scheme looks to make strong strides into reducing Europe-wide emissions, with the cap for the total number of emissions allowed being decreased from 1834mt in 2020 to 1372mt in 2030. Furthermore, one of the key mechanisms to be expanded on in Phase 4 is the market stability reserve, a mechanism introduced in January 2019. The point of the reserve is that it is theoretically able to mop up surplus credits in the market and then re-auction these credits in the event of scarcity (as shown between 2027 and 2035 in Figure 4) in order to improve market stability. The MSR will remove permits when there is an excess of 833 million tonnes and return them when the surplus falls below 400 million. Its main function in the short term however is to reduce the glut of permits currently on the market. Between 2019 and 2023, the amount of allowances put in the reserve will double to 24% of the allowances in circulation, with the rate expected to return to 12% after 2024. This should reduce the surplus of permits in the system in order to elevate the price. Furthermore, permits mopped up by the MSR are not only able to be re-auctioned

at a later date, but cancelled entirely. The movement of permits in and out of the MSR over the next 15 or so years is mapped out in Figure 4.

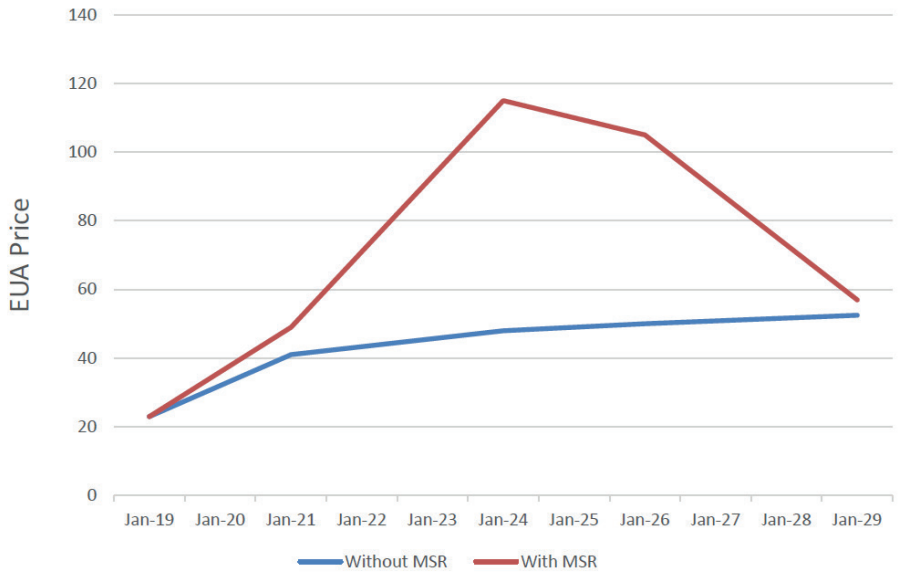
Figure 4: Hypothesised flow of EUAs into Market Reserve



Source: European Roundtable on Climate Change and Sustainable Transition

Chaton et al. (2018) suggest that the introduction of the MSR will indeed increase the price of the permits through correcting excess supply, meaning that the excessive price fluctuations which have characterised the last decade or so of the scheme may well become a thing of the past. Richsetin et al. (2015) further note how rescheduling part of the auctioning volumes, what is known as 'backloading', may further complement the MSR in its efforts to maintain a high carbon price. Backloading occurs when the European Commission believes there are too many permits in circulation, thereby withholding the auctioning of future permits in order that the surplus is not compounded. Both the concept of backloading and the MSR theoretically should combine to combat the surplus of permits of the market, thus resulting in a higher price over the next decade or so (see Figure 5).

Figure 5: Hypothesised effect of MSR on EUA price



Source: Richstein et al. (2015)

Whilst the MSR appears as though it might be able to positively combat the surplus permits pushing down the price of allowances, there are some indications that the trend of loose regulation and weak political will may continue. Firms deemed at high risk of carbon leakage will still receive all of their allowances for free during Phase 4, once again calling into question the ambitions of the scheme if they are still not willing to make these firms pay their way. This idea is certainly a prominent one in the commentary on the MSR – Mathews et al. (2014) further suggest that the MSR will not successfully address the excess supply until 2028, by which we would have progressed significantly towards dangerous changes to the earth's climate. In this way, the introduction of the MSR does not necessarily entail an increase of the carbon price; it may well do, but strong regulation will be needed. See Table 1 in the Appendix for a more comprehensive review of the changes that Phase 4 will make to the scheme.

Changing fuel mix in the power generation process

Another concern worth mentioning is the changing fuel composition in the power generation stack. The share of thermal coal continues to decline at the expense of gas. This means that significantly less credits will be needed to offset the growing natural gas burn in the power generation process.

Brexit

There are various permutations of what might happen with regards to Britain, its environmental policy

and relationship with the EUETS following Brexit. The main reason for this is the current uncertainty surrounding the state of the withdrawal; a no deal Brexit and a deal will have markedly different implications. However, what is important to note is that the UK's emissions trajectory will be largely driving by the Climate Change Act as opposed to its involvement with the EUETS, and it is not right to simply assume that Brexit will suddenly result in British firms being able to pollute how they want in the months and years following the event. Some various scenarios are listed below.

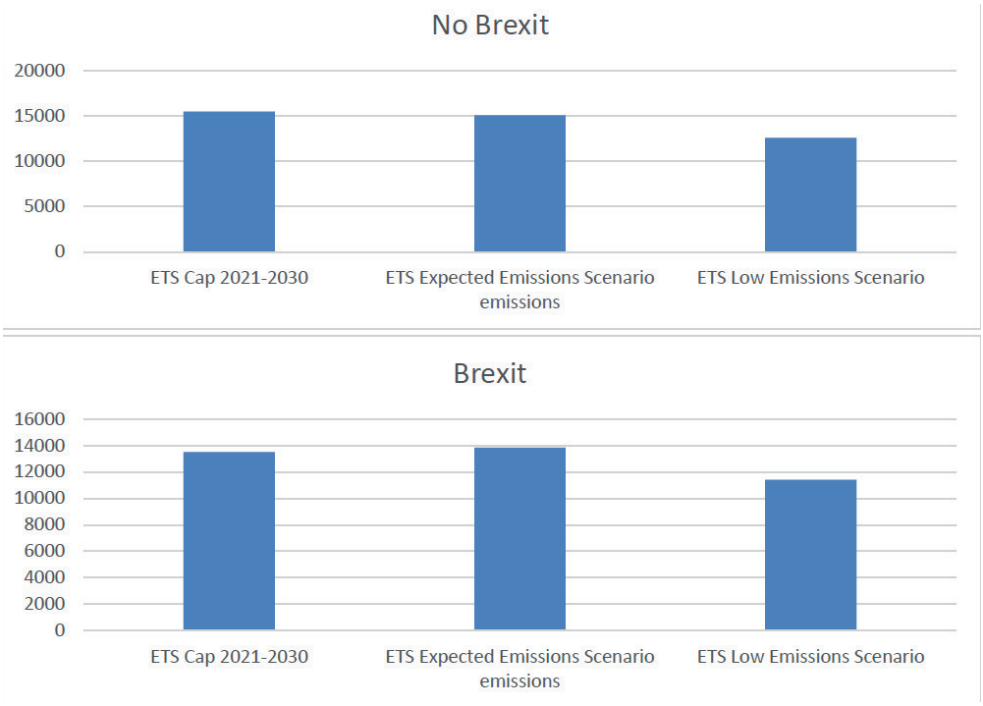
Scenario 1 - A No deal Brexit

The result of this scenario on the EUA permit price is difficult to predict, although one school of thought argues that if there is a no deal Brexit, the UK's allocation of permits will simply remain in the system whilst the overall demand within the system would decrease (as the UK is no longer a participant). This would result in oversupply and subsequently lower price of permits, thus potentially reversing, or at least negating the impact of the MSR.

Scenario 2 - A controlled Brexit (Deal)

Conversely, some reports suggest that if a deal is managed with the EU, then the removal of Britain from the EUETS will actually remove excess permits from the system, thus resulting in an elevated price of permits (see Figure 6).

Figure 6: BREXIT Scenarios



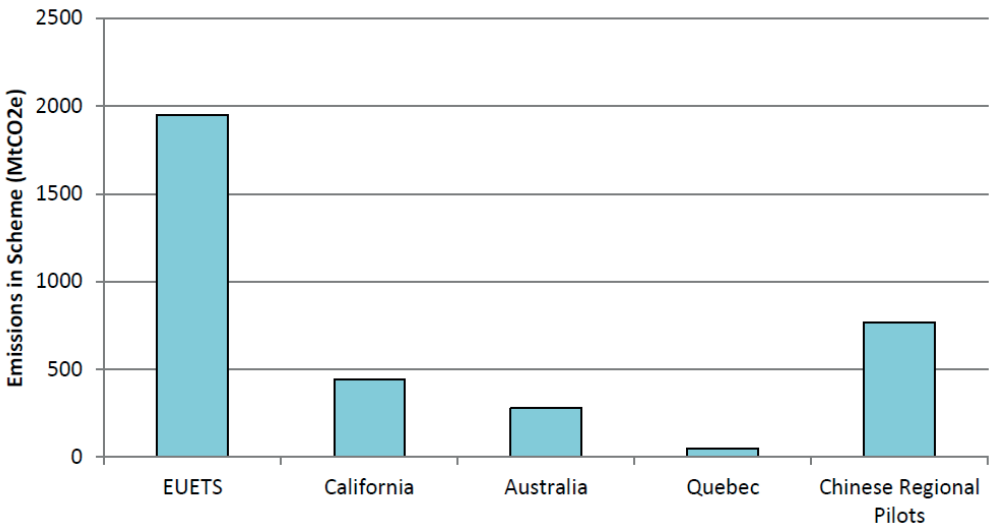
Source: Sandbag

What Figure 6 shows is that if the UK remains part of the EU ETS, the cumulative emissions for Phase 4 are likely to be 423 million tonnes shy of the cap (in a standard emissions scenario), meaning that the number of permits in the system comfortably covers the total emissions, once again exacerbating the trend by which there are too many permits in the system to encourage sufficient price elevation. However, in a controlled Brexit whereby there is a managed agreement with the EU, Sandbag (2017) argue that the UK's allocation of permits won't simply be redistributed to other participants, but will be cancelled altogether. Furthermore, there is the possibility that the expected UK emissions during Phase 4 will amount to less than the reduction of the cap due to the UK leaving, meaning more permits are cancelled than the UK would have actually used, resulting in the demand for permits in the EUETS actually exceeding supply (note how the base emissions Brexit scenario exceeds the Brexit cap). It is plausible to assume that this would result in an elevated price of EUAs, as the demand exceeds the supply.

Scenario 3 - Two-way linkage and the growth of global carbon markets

Another potential scenario is a linkage system between the UK and the EU. This scenario would arise if the UK left the EUETS and simultaneously launched its own cap and trade system, where the EU accepted these permits and the UK accepted the EUA/CER permits. This notion of various ETSs linking is not a foreign one; California, Quebec and Ontario joined their emissions trading schemes in January 18, meaning that all participants encompassed by the schemes can buy and sell permits to anyone across the three schemes. Figure 7 shows a size comparison of the largest global ETSs in the world, although it is hypothesised that when China's ETS is in its established phase, it will surpass the EU in terms of amount of emissions covered by the scheme. Other global ETSs include the Tokyo Metropolitan Government Emissions Trading System, the Korean ETS and the New Zealand Emissions ETS.

Figure 7: Size Comparison of Top Global ETSs



Source: Parliament of Australia

Not only does a larger market improve liquidity and lower transaction costs, but linking multiple schemes can help to create a consistent carbon price, thus reducing carbon leakage which, as previously discussed, may happen if a certain scheme has a lower carbon price or maybe even no price at all. Sterk and Kruger (2009) further suggest that linking carbon markets should allow the schemes to reach their overall reduction target at a lower abatement costs, as there are more reduction options available in a larger trading scheme. Due to the more recent success of the EUETS and the aforementioned US Acid Rain Program, carbon markets and ETSs are being adopted on a global scale, resulting in more and more of global emissions being covered by these schemes.

Concluding Thoughts

The EU Emissions Trading Scheme has encountered a rocky road leading up to its current state. The 2008 financial crisis, combined with the grandfathering of permits and the free allocation of permits due to fears over carbon leakage all resulted in large surplus of credits in the market which consistently depressed the price for several years. Phase 4 of the scheme promises to address some of these issues. The introduction of the Market Stability Reserve, combined with the ability to backload permits in order that they be auctioned at a later date creates the potential to remove this inherent slack in the system, thus resulting in an increased carbon price over the next decade or so. This is, however, not necessarily a given; the previous issues with the scheme imply poor governance and a lack of political will to date. If these trends are to continue, Phase 4 may well succumb to the same problems as its predecessors.

The implications of Brexit on the EUETS are varied. A no-deal Brexit threatens to dump the UK's permit allowance on the European market, further contributing to the surplus problems already witnessed. However, a deal-based scenario may result in a more controlled removal of the UK from the scheme, resulting in the removal of the UK's permits and a further tightening of the cap which may successfully help to elevate the carbon price. The permutations are numerous and highly dependent on policy. It is therefore difficult to make an accurate prediction of the carbon price for the next stage of the scheme. One possibility is the production of a UK ETS which may or may not be compatible with the EUETS in that each schemes' permits are accepted within both schemes. This would follow an increasing global trend of new ETSs as well as the cross-compatibility of permits amongst these various schemes.

Parameter	Phase 3	Phase 4
End of year cap	1834mt in 2020	1372mt in 2030
Flexibility of Auction Share	/	Reduction of 3% of the share of allowances to be auctioned.
Backloading	Auction of 900m allowances postponed (400m in 2014, 300m in 2015 and 200m in 2016)	900 million allowances backloaded 2014-2016 will be transferred to the MSR rather than auctioned in 2019-2020, and consequently up for invalidation in 2023.
Invalidation of allowances	/	From 23, yearly invalidation of allowances above the number of allowances auctioned the year before
Voluntary cancellation of allowanced by Member States	/	Option for Member States to cancel allowances from their auction share to counteract the impact of closing down electricity generation capacity, up to the average verified emissions over the last five years preceding the closure.
Benchmark rates	Ex-ante decided, as calculated by the Commission (fixed)	Will reflect actual intensity changes in the sector (annual reduction rates capped at 0.2% minimum and 1.6% maximum) as calculated by the Commission. Benchmark values will be updated twice for P4.
Adjustment of free allocation based on change in production levels	Only reduced when production levels decrease by a significant amount (50%, 75% and 90%)	Reflect actual changes in production level on the basis of a rolling average of 2 years. Changes above a 15% threshold with respect to the baseline period should be reflected in the amount of free allowances allocated.
Free allocation to sectors not deemed at risk (including for district heating)	80%, linearly decreasing to 30% by 2020, with a view to reach 0% in 2027 (30% for district heating).	30% until 2026, linearly decreasing to 0% by 2030 (30% for district heating).
Indirect costs compensation	To be decided by Member States in accordance with State Aid guidelines.	To be decided by Member States in accordance with State Aid guidelines, but a non-binding limit of 25% if auction revenues, including obligation to report reasons to go over this limit-enhanced transparency rules for use of auction reserves.
Carbon Market Report	Functioning of the carbon market (including auctions, liquidity and the volumes traded)	Explicitly states that the Commission shall report on 'other relevant climate and energy policies'.

Appendix

Table 1: Changes in the EUETS between Phase 3 and Phase 4

Source: Marex Spectron Research

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