

CARBON MARKET ANALYST

California Dreaming: Implications of an EU ETS Price Floor

TO THE POINT

A new debate has bubbled up on whether the recent structural reforms of the EU ETS are sufficient to ensure the carbon market fulfills the role that the European Council envisioned for it – as the “main European instrument” to achieve EU’s 2030 climate target. This has been partly sparked by the unexpected CO2 price crash in January 2016, as well as by a growing recognition that the Market Stability Reserve does not guarantee CO2 price stability in the face of macroeconomic fluctuations and complementary climate policies. A persistently low carbon price gives the ETS a non-primary role in climate policy, contrary to what European leaders have stipulated, resulting in a patchwork of national policies rather than a coherent policy approach at the European level.

In this context, France has proposed a CO2 price collar for the EU ETS. Our analysis, which focused on the implications for the CO2 price, abatement, and government revenues, finds that the proposal will increase all three of these significantly. While attractive on many accounts, the idea seems very unlikely to receive sufficient support from European policy makers at this stage. Much political capital has been tapped during the earlier reforms of the EU ETS - backloading and Market Stability Reserve. European leaders have demonstrated little appetite to further strengthen the policy framework by recently backing the Commission’s recommendation for a focus on implementation rather than on reform of the 2030 climate and energy framework.

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Introduction

In a non-paper dated February 2016, France introduces a proposal for a soft price collar for the European carbon market. The basic idea is to establish a price corridor for EUAs, where a price floor and a price ceiling would replace the volume-based triggers of the Market Stability Reserve (MSR). If EUA prices are below a certain pre-defined price floor, auctions would be cancelled and the allowances would be transferred to the Market Stability Reserve. The paper indicates a price floor gradually increasing from around €11 in 2017 to €30 in 2030.

In the context of the plummeting carbon prices this year and “strong uncertainties regarding carbon price evolution”, France is concerned that the design of the EU ETS is not sufficient to trigger the investments needed for a cost-effective transition towards a low carbon economy. The aim of the proposal is to develop a European carbon market which is “less volatile, more predictable, and more able to trigger the low-carbon investment which the European Union needs”.

Being a non-paper, the proposal is aimed at generating discussion among member states and seeking support from others before a more formal proposal may be put forward. The proposal is now being discussed in more detail between member states officials as part of the phase 4 ETS review.

In this analysis we outline the context for the proposal and its main features. We further present our initial assessment on the effects of introducing a price corridor for the EU ETS as outlined in the non-paper. We look at how prices would evolve towards 2030, and estimate the effect of a price floor on the level of abatement in the ETS sectors and on member state auctioning revenues. Finally, we discuss the political feasibility of such a proposal – what are the chances of survival in the policy-making process?

Why a price collar?

The underlying context for the French proposal is the concern that the EU ETS will not play its intended role as the main vehicle in Europe’s transition to a low carbon economy. The paper points to the current design of the EU ETS and the effects of complementary policies in the EU climate and energy framework as reasons why the price signal does not provide a reliable basis for investments. The consequences of the current low prices and uncertainty over future price levels are many, according to the non-paper, including loss of attractiveness for renewable and energy efficiency investments and weak government revenues from auctions which are meant to fund the energy transition. In a letter to her EU colleagues, environment minister Segolene Royal also points to the fact that low carbon prices encourage the implementation of alternative, costly, national support mechanisms for renewable energy.

A price band would create the necessary predictability to

trigger investment decisions for a transition to a low carbon economy, according to the non-paper. It would reduce the risk for investments due to increased predictability over future prices, creating certainty that prices would not collapse in the future but stay at least as high as the level of the price floor.

Another message that comes through in the non-paper and Royal’s letter is that Europe’s credibility in international climate leadership post-Paris is at stake. France holds the Presidency of COP21 until the next summit in Morocco in November, and the proposed price corridor in the EU ETS is part of a larger package of initiatives outlined by Royal in the letter to her European colleagues. This includes incentivizing carbon pricing around the world through i.a connecting carbon markets, integrating national carbon taxes on the sectors outside the ETS and better targeting free allocation to address carbon leakage concerns.

How would it work?

The price corridor would be established based on trajectories for a price floor and a price ceiling.

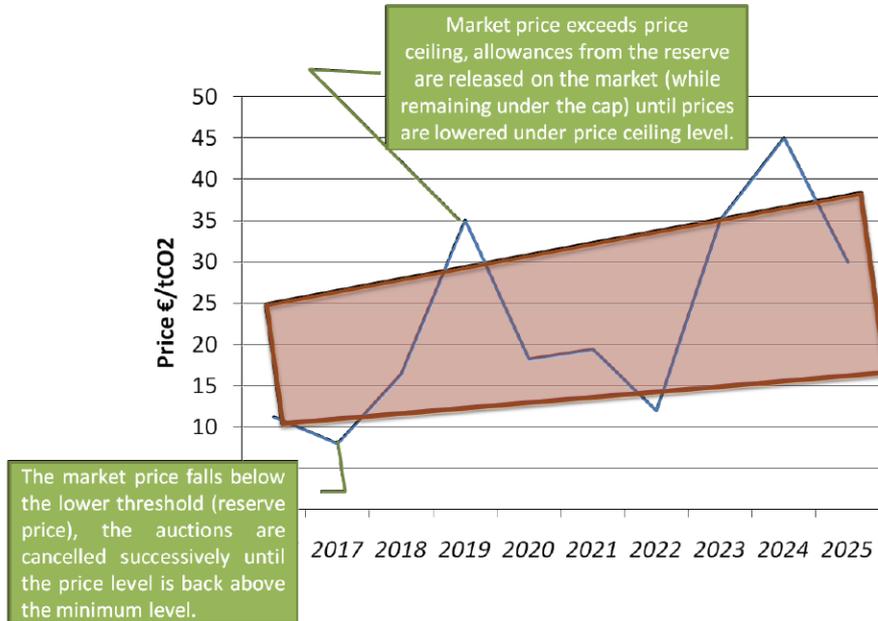
The price floor, or “auction reserve price”, would be implemented during auctions, which would be cancelled (with the corresponding allowances going into the Market Stability Reserve - MSR) as long as the auction price is below the determined price floor. Auctions will be cancelled until the market price is back at or above the price floor.

Similarly, if market prices exceed the predefined price ceiling, allowances would be released from the MSR. This “soft” price ceiling would function as a “safety valve”, as the release of allowances on the market would help ease a bullish price trend, but not prevent allowances from trading above the ceiling. The mechanism is thus based on the existing MSR. However it introduces price based triggers as a replacement for the volume based triggers, which activate the MSR based on the level of the oversupply (also referred to as allowances in circulation). Figure 1 illustrates how the MSR would work under the French proposal.

While the figure gives an indication on the levels of the price corridor that the French government consider appropriate, the non-paper states that price levels need to be discussed at the European level. It suggests three ways of establishing the price corridor:

- Based on price projections following the MSR decision. The source for this would be analyst projections of carbon price after the MSR was adopted.
- Based on a “desired average carbon price” of €25 from 2021 and 2030. The source is the Commission impact assessment of the MSR.
- Based on a historical price level (2013-2015), increasing by a certain percentage every year, suggested at 11%. This would be a similar approach to e.g RGGI and WCI in North America.

Figure 1: Illustration from French non-paper of the functioning of a soft price collar (minimum price and safety valve price)



The non-paper does not explicitly address what would be an appropriate level for the price ceiling, but points to the North American levels fixed at around three to six times the level of the auction reserve price. The volume of allowances to be released if the price hits the ceiling is not addressed in the non-paper.

Impacts of a price floor

An EU carbon allowance is currently worth around €5/t, far below the price floor level suggested in the French non-paper. We would expect that once market participants begin to factor in the possibility of a price floor, the carbon price will begin to rise. And once the price floor takes effect, the cancellation of auctioning supply will drive up the secondary market price higher until it reaches the price floor.

How long will this process take? Carbon market participants currently carry a significant accumulated surplus of allowances. We estimate the surplus at around 1.7 billion tons in 2015 and around 1.5 billion tons in 2017, when the price floor should be implemented according to the proposal. Even in the absence of auctioning, this surplus could theoretically be used to meet the compliance needs of EU ETS companies for a period of time. Of particular importance are industrial companies which hold around half of the surplus, and their willingness to sell allowances below the price floor. The other half of the surplus is held mainly by utilities, which need the allowances to cover their near term compliance needs.

Industry willingness to sell its surplus allowances below the price floor

An argument can be made that, once there is a price floor, industrial companies will refrain from selling any surplus allowances, knowing that the carbon price is nearly certain to rise

in the future. If a company refrains from selling in a given year, it could sell its allowances at a higher price later. It could also keep them to avoid EU ETS costs in the future when it may be short of allowances. However, industrial companies have a limited appetite for holding carbon allowances, which they see as risky commodities.

Many large companies have a risk management policy to periodically sell surplus allowances. Our 2014 carbon market survey found that such risk management strategies are practiced in 19 percent of companies with annual emissions greater than 10 Mt and 41 percent of companies with annual emissions between 10 Mt and 1 Mt (out of a total sample of 126 companies). Historical selling data confirms companies' willingness to sell allowances at levels below the price floor suggested by France. For example, based on financial reports, we estimate that Lafarge, Heidelberg Cement, Holcim and ArcelorMittal sold around 13 Mt, 10 Mt, 7 Mt, and 23 Mt respectively in 2012, at an average price of €7.5/t.

So how many allowances will industrials supply to the market below the price floor? It is impossible to know with a high degree of confidence. This is why we provide a range to describe the possible outcomes (with a "high" and a "low" projection for industry selling).

We begin to answer the question by looking at historical selling behavior. In our carbon market survey referred to above, we asked surplus holders whether they had sold banked allowances and found that large companies (with annual emissions larger than 5 Mt per year) had sold around 30 percent of their surplus. Based on historical data from the EU ETS, we estimate that the accumulated surplus in the industrial sector was around 1.5 Gt by the end of 2013. From this, we infer that industrial companies sold around 500 Mt of their surplus up to 2013. We also presume that little selling occurred in 2008 as industrial companies were uncertain on whether they would be long or short at that point. Thus, we conclude that the 500 Mt of sold allowances mean an

average of 100 Mt of allowances sold per year in the five year period from 2009 to 2013.

While history is a poor predictor of the future, it is safe to say that the introduction of the price floor will only decrease the willingness of industrials to sell in any given year. Therefore, we believe that 100 Mt represents the higher end of the possible amount of allowances that industrials may sell per year below the price floor (the "high" scenario). If that were the case, we would further assume that industrials will be willing to sell allowances until 2019. By that point their surplus will, according to our projections, fall to around 400 Mt, which we think will quite likely discourage them from selling further. A 2015 survey by Energy Aspects found that industrial companies want to hold around 350-400 million allowances in excess of their annual compliance needs. While the survey respondents were mainly small companies, we assume survey findings hold for large industrials as well.

The lower end of the spectrum is the possibility that industrials will not sell any banked allowances (the "low" scenario). This would be the most rational approach in theory because industrials will know they will one day run out of allowances and they will know with certainty that the carbon price will rise along the price floor trajectory (if not further above the price floor).

How many auctions will be cancelled?

Figure 2 displays the supply and demand in the EU ETS that we would expect in the presence of the proposed price floor. The main source of demand in the EU ETS is the power sector where utilities buy carbon allowances as they sell power (hedging – orange line). The power sector receives a small amount of free allowances, which mainly is given out to Eastern European

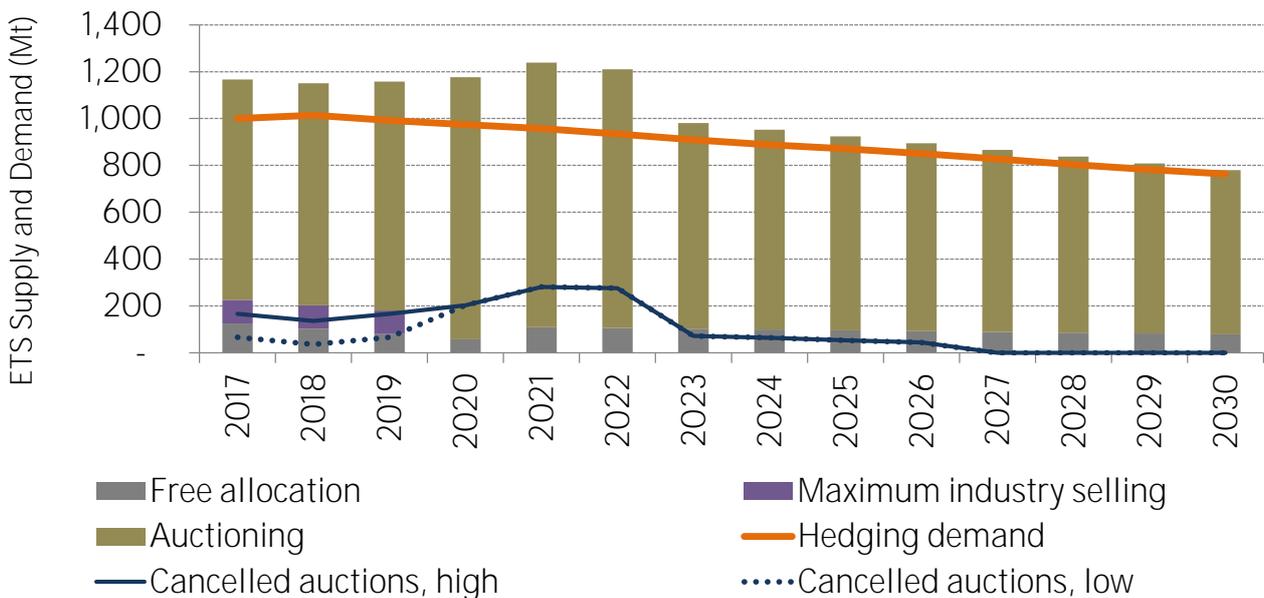
utilities (grey bars). Power companies also buy allowances from the industrial sector. While some industrials are buyers in the market, most are on the sell side and the sector is a net source of supply. As explained above, we assume about 100 Mt per year as the maximum amount of allowances that will be sold by industrials below the price floor (purple bars). Note that the purple bars would be absent in the case of no industrial selling (our "low" case), leading to lower overall supply. The final source of supply that power companies rely on is the regular auctioning of allowances by member states (brown bars).

We project the auctioning volume will rise in the period from 2020 to 2022. This is partially because we assume Poland and other Eastern European states will auction in 2020 left over free allowances unallocated to power producers in the order of 122 Mt. We also project higher auctioning in 2021 and 2022 because we assume that the 400 Mt Innovation Fund will be disbursed in these years at a rate of 200 Mt per year.

As the figure illustrates, power companies will be able to buy as many allowances from auctions as needed for their hedging purposes. Therefore, all auctioning volumes above the orange line will end up being cancelled. In total we estimate that 1,163-1,463 Mt and will be transferred to the MSR during the period 2017-2030 (depending on industrial selling behavior as explained above). The solid and dotted blue lines represent the auction volumes that will be cancelled in each case. These estimates suggest that it will take one to two months of cancelled auctions for the carbon price to reach the price floor in 2017.

“The carbon market will go without auctions for one-two months before the price reaches the price floor

Figure 2: Surplus auction volumes to go into MSR under proposal



*We do not project a need for cancelled auctions after 2026 because we project that additional demand for allowances from the industrial sector will lift the price off the price floor (see Figure 3).

The amount to go into the MSR under a price floor will be greater than under the current MSR rules, with which we estimate the MSR will absorb 1,076 Mt.

Price implications

Given the range of possible auction cancellations, we calculate the long term effects of the price floor on the EU ETS. In Figure, 3 we present our forecast for the range of CO2 price trajectories that could result from the price floor (orange band).

If we assume the high end of possible auction cancellations, we project that the EU ETS will regain a balance between supply and demand in 2033. This balance will lead to additional need for CO2 abatement, which will push the price higher than the price floor, starting in 2027, in line with the marginal cost of abatement.

However, if we assume the low end of possible auction cancellations, we project that the EU ETS will remain oversupplied until the end of the forecasting horizon (2035). We do nonetheless forecast the price to rise above the price floor in this case because the market will be very close to being short of allowances around 2030, which will prompt companies to increase demand for allowances, lifting the price from the floor. In this case, the price is driven by sentiment, rather than marginal abatement costs.

Worth noting is the fact that our price forecasts assume energy efficiency and renewables deployment in line with a 27 percent renewable energy target for 2030 and a 27 percent energy efficiency target for 2030. If deployment of clean technology exceeds these levels, the carbon price would be lower around 2030. There is a possibility that the carbon price will remain glued to the price floor all the way through to 2030.

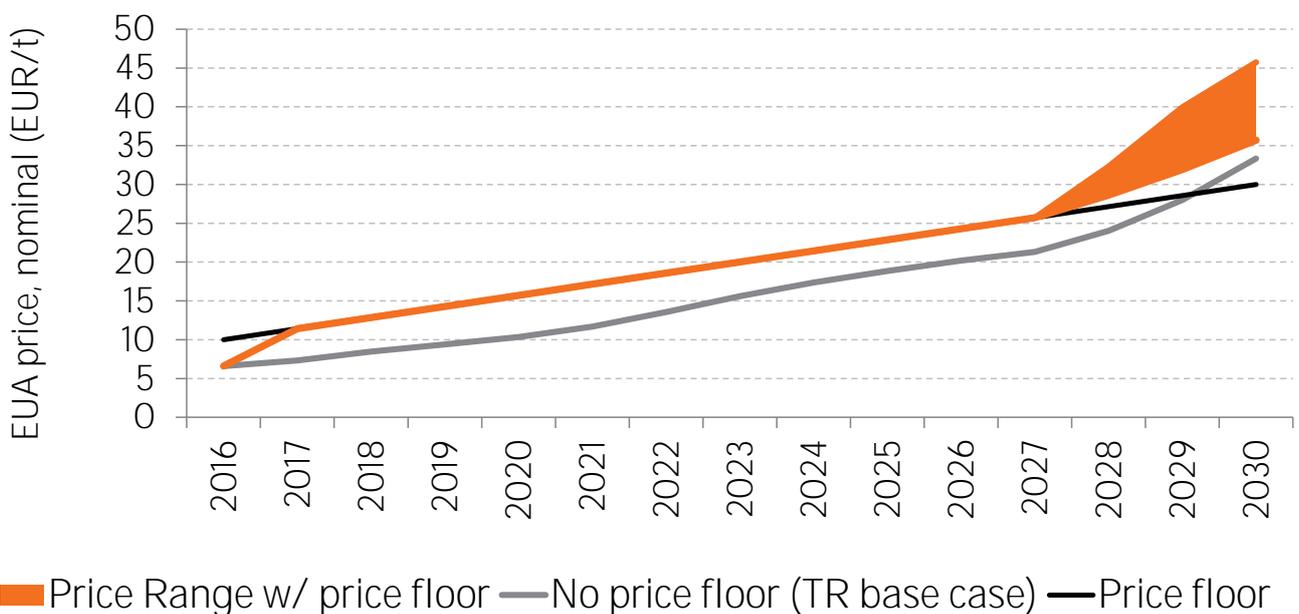
Table 1: Impact on auction volumes

Million tons CO2	Auction volumes placed in MSR w/ a price floor, high	Auction volumes placed in MSR w/ a price floor, low	Auction volumes placed in MSR w/ current policy
2017	167	67	-
2018	136	36	-
2019	166	66	191
2020	203	203	183
2021	281	281	165
2022	276	276	159
2023	72	72	154
2024	64	64	142
2025	53	53	82
2026	44	44	-
2027	-	-	-
2028	-	-	-
2029	-	-	-
2030	-	-	-

The carbon price will be higher under a price floor scenario than our current base case projection, which is displayed in grey in Figure 3. (See our February price forecast report for a detailed description of our base case assumptions, or contact us).

There is a possibility that the price will hit the ceiling around 2030, depending on the level of such a ceiling. In this case, there will be a release of allowances from the MSR, which will reduce the price compared to what we have shown in Figure 3. In this

Figure 3: CO2 Price projections in the event of a price floor*



*We have not included a price ceiling in this analysis as the French non-paper makes no specific references to a particular ceiling level

analysis, we have assumed no price ceiling because the French non-paper makes no specific references to a particular price ceiling level.

Impact on abatement

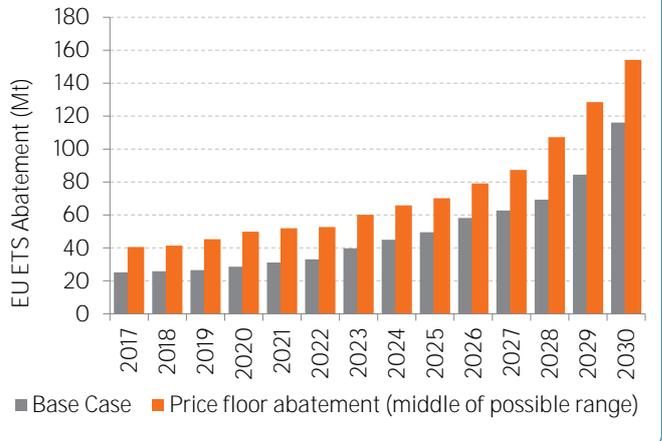
The EU ETS will incentivize more abatement with a price floor than without. Our model estimates that a price floor will trigger additional abatement of around 300-400 Mt in the 2017-2030 period, depending on the amount of cancelled auctions, as discussed above. This figure includes additional abatement from fuel switching in the power sector as well as industrial adoption of more energy efficient technologies.

It is worth noting that the introduction of the price floor will very likely cause additional deployment of renewables compared to a scenario without a price floor. However, this effect has not been taken into account in our analysis. Moreover, a price floor will provide predictability for low-carbon investment decisions, which will very likely increase investments compared to a scenario without the price floor. This is another effect we have not taken into account in Figure 4. Therefore the estimate of additional abatement of 400 Mt is very likely an underestimate of the additional abatement that would result from a price floor. Finally, there is a possibility that the current policy framework results in a price lower than the level of our current base case forecast. If this were the case, a price floor would result in even more additional abatement than estimated above.

Impact on government revenues

Figure 5 presents our estimates for the impacts on member state revenues from a price floor. The non-paper states that the establishment of a price corridor “would not have a significant impact on the cumulated Member State auction revenue”. Given the price trajectory presented above, we find that revenues would in fact be significantly higher than with the current ETS set-up.

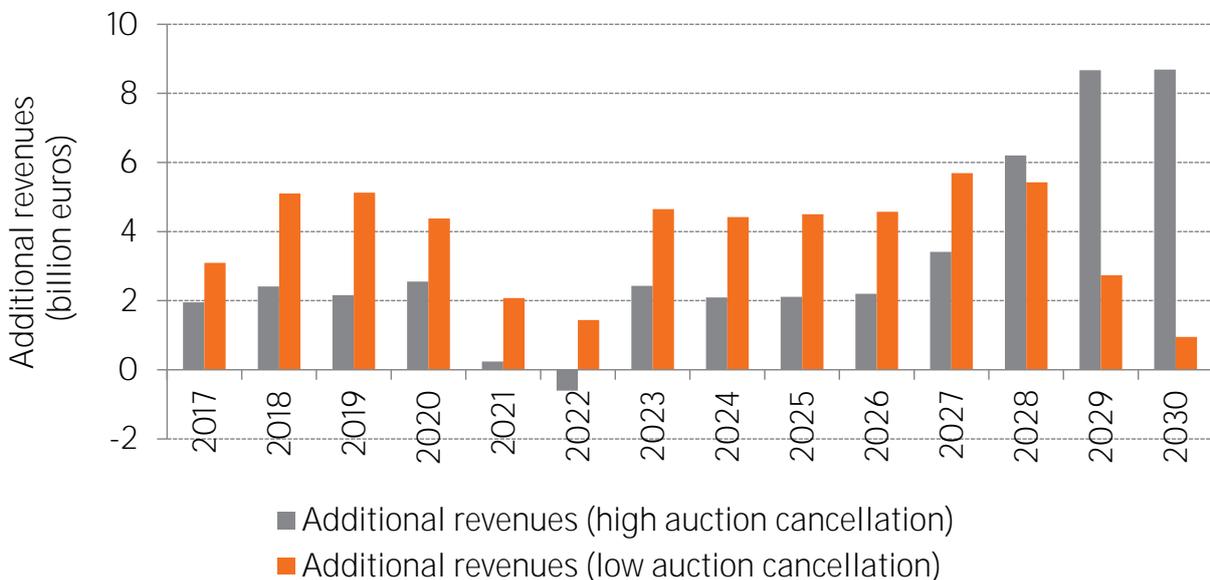
Figure 4: Additional abatement caused by proposed price floor



We estimate that auctioning revenues will be 2-3 billion higher in 2017 (range is based on the amount of industrial selling as discussed above). This is because the increase in the carbon price will more than compensate for the reduction in auctioning volume. In the long term, the price floor will provide significantly greater revenues. An exception to this is the period 2021-2022 when we assume additional supply from the Innovation Fund equal to 200 million allowances per year. The extra auctioning from this fund requires that member states cancel greater auctioning volumes, resulting in lower revenues. All in all for the period 2017-2030, we estimate that auctioning will be 45-54 billion greater under a price floor.

A pertinent concern when it comes to revenues is the near term impact of a new policy proposal. While the analysis above shows that higher revenue in the near term is the most likely outcome, it leaves out several risks that are worth considering. One of the main uncertainties when it comes to short term revenue impacts from the price floor is the amount of short term demand in the

Figure 5: Additional revenues caused by the proposed price floor



carbon market. And as we found in our February price forecast report, the largest risk to near term demand levels is the amount of hedging demand in the power sector.

There is a noteworthy chance that hedging demand will drop in the near term. The recent crash of the CO2 price is very likely at least partially due to weak utility demand. Low power prices have recently been discouraging power companies from selling as much power generation far in advance as they previously have been. If demand from the power sectors turns out lower than we have assumed in Figure 2 (which is based on average historical hedging rates), then the amount of auction volumes that will have to be placed in the MSR will increase and government revenues will decrease.

To consider the risk of low hedging, we assume that the percentage of power generation hedged for future power generation declines by roughly half, leading utilities to sell a greater share of their power generation in the current year (this is equivalent to the “low hedging scenario” in our February price forecast). We further assume the maximum possible amount of industrial selling (100 Mt per year until 2019). In this case, we estimate that a price floor will increase 2017 revenues slightly (+75 million) compared to the base case (current MSR design). In conclusions, any drop in government revenues as a result of the price floor appears quite unlikely.

Could it fly?

France presented the proposal at an Environment Council working group meeting on 16 March. Member states will now do their homework by preparing initial positions on this idea. As the proposal has a high political profile, Royal may also discuss this with her colleagues during the informal Environment Council 14-15 May, where carbon pricing has been put on the agenda by the Dutch Presidency.

EU fiscal policies require unanimous agreement in the Council rather than qualified majority voting. This also goes for environmental legislation “primarily of a fiscal nature”. According to [Article 192](#) of the Lisbon Treaty, the Council should act unanimously (and involving the Parliament only by consultation) when adopting such provisions. If unanimity were required, it would be a show stopper.

But does an auction reserve price trigger this requirement? There is no a clear answer to whether the French proposal could be considered a carbon tax. We think this will depend on how the mechanism is structured. A discussion in this regard would be whether the aim of the measure is “primarily” fiscal, i.e to secure government revenues, or primarily environmental. The case can surely be made that the main aim is to establish a predictable price signal so as to trigger low-carbon investments that will help the EU meet its long term climate targets cost-effectively. Our analysis shows that indeed, the proposal adds environmental benefit compared to the base case.

We think the Commission will consider the proposal a fundamental change to the EU ETS, as the system would change from being a purely quantity-based instrument to a hybrid one, where the carbon price signal is influenced by the cap and is

additionally guided by a price corridor. In particular, the idea is not likely to be well received by the Commission administration, which in the Impact Assessment accompanying the MSR proposal notes that “...a mechanism prescribing a certain price corridor runs counter to a market logic and even substitutes it, by distorting the carbon price level that would otherwise be revealed by the market.” [Reportedly](#), there may be greater support in the political levels of the EU executive. However, backing from the administration is also important. A formal price corridor proposal would have to be accompanied by more thorough impact assessments.

While the Commission’s role is important, it will ultimately be up to the Council and the Parliament to determine the legislative framework governing the European carbon market. We think that political capital has been tapped reforming the ETS though the quantitative based reforms of backloading and MSR. Although price triggers were discussed in the MSR impact assessment, this discussion was never picked up in the political debate. We suspect that, in general, policy makers will have little appetite to revise the structural reform they adopted less than a year ago. So while all elements of the ETS directive can in theory be discussed and revised in the phase 4 review process, we think the timing for reassessing the MSR is simply wrong. Procedurally, a serious political consideration of an auction reserve price would require a thorough impact assessment, which would seriously delay the phase 4 review process. All in all, we find it very unlikely that policymakers will address the MSR parameters before the first scheduled review in 2022.

Annex: Analysis Probability Guidelines

In our analyses, we make use of specific language to describe probability ranges as indicated by the table below. The purpose of this strategy is to enable you, our reader, to easily understand the probability that we attach to a future event. Using specific language also allows us to transparently update probabilities in light of new information, helping you make sense of new developments. Finally, this framework helps us measure the performance of our predictions over time and provide accurate forecasts.

Probability	Percent
Extremely likely	95-100%
Very likely	82-94%
Quite likely	69-81%
Somewhat likely	56-68%
Even chance	45-55%
Somewhat unlikely	32-44%
Quite unlikely	19-31%
Very unlikely	6-18%
Extremely unlikely	0-5%

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