CARBON MARKET ANALYST

Look before you leap: analysis on the design of the Market Stability Reserve

14 October 2014

TO THE POINT

The implementation of the Market Stability Reserve (MSR) as proposed by the Commission is likely to lead to an average 2021-2030 carbon price of €23/t in real terms, €9/t higher compared to a scenario without the MSR. We estimate this price increase to result in an additional abatement of 784 Mt in the EU ETS up to 2030.

The future development of the carbon price is mainly dependent on the start date of the MSR as well as on the handling of backloaded allowances. Enacting the mechanism in 2018 will affect EUA prices already during phase 3, leading to a 24 percent increase in the average 2014-2020 carbon price compared to a start date in 2021. Transferring the backloaded allowances to the MSR could increase the average price by 15 percent in the same period.

The German MSR proposal will likely lead to a gradual rise in the carbon price, which could help meet the mechanism's objective to mitigate the risk of high-carbon lock in. The average 2014-2020 price is estimated to rise by approximately 39 percent as a result, compared to a scenario featuring the Commission's MSR proposal. The carbon price signal generated by this proposal is estimated to reduce an additional 469 Mt up to 2030 compared to the Commission's proposal.

The French MSR proposal is estimated to result in the same average carbon prices as the Commission's proposal over the 2014-2020 (€9/t) and 2021-2030 periods (€23/t). France's proposal will however result in a different carbon price trajectory, which will send a different signal to the market and could result in 44 Mt fewer emission reductions than the Commission's proposal in the 2021-2030 period.

In the event of a financial recession, the implementation of the MSR will partially offset the impact of the economic shock on carbon prices. The MSR will over time reduce the number of excess allowances; in contrast, the current design of the EU ETS would lead to a mounting oversupply in such a scenario.

The expected timetable for the MSR proposal would allow for enacting the measure earlier than 2021 as proposed by the Commission. The discussions in the Council are already quite advanced and, depending on progress in the Parliament, the measure could be adopted by mid-2015.

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Introduction

The Commission has proposed to reform the EU ETS through the implementation of a Market Stability Reserve (MSR) - a mechanism that will automatically adjust market supply depending on fluctuations in demand. The impetus for this proposal has been the large oversupply in the EU ETS, which will reach 2.2 billion allowances by the end of this year, according to our forecast. The MSR is supposed to meet two main objectives according to the impact assessment accompanying the proposal – 1) reduce the current oversupply of allowances and 2) make the EU ETS more resilient to demand-side shocks in the future. By achieving these objectives, the Commission aims to enhance the inter-temporal efficiency of the EU ETS. Inter-temporal efficiency refers to the ability of the EU ETS to incentivize low-carbon investments consistent with the least-cost emissions pathway necessary to reach the EU's long-term climate goals.

The fate of the MSR proposal will be determined through the ordinary legislative procedure between the EU's two lawmakers – the Parliament and member states in Council, a procedure which normally takes one to two years. This process has the potential to change the current form of the proposal and therefore alter the way it affects the carbon market. Council discussions are already quite advanced with large countries voicing general support for the reform proposal. Many member states have come forward with their formal positions over the last months. The process in Parliament was held up by the European elections in May, but MEPs are now starting work on the file as well. The final form of the MSR will be settled though negotiations between the Parliament and the Council, and the procedure will be finalized through votes in both institutions.

In this report, we examine the design parameters of the MSR and their impact on the market through sensitivity analysis. We use our carbon price model to construct scenarios which change one or two parameters of the proposal at a time and compare these to a reference scenario featuring the MSR as proposed by the Commission. All scenarios presented assume a 40 percent GHG target, a 27 percent renewables target, and a 30 percent energy efficiency target for 2030 in line with the Commission's Energy and Climate package proposal. More information about the methodology of our price forecasting model can be found in the Annex at the end of this report. For an introduction into the MSR proposal, see the textbox below.

Reference scenario – EU ETS' future with the Commission's MSR proposal

We present our base case forecast of the market supply and demand balance, which reflects the Commission's MSR proposal, in Figure 1a (solid line). We forecast the market surplus will reach 2.2 Gt in 2014. This will be followed by a brief reduction in the oversupply in line with the backloading measure. However, towards the end of phase 3, the reintroduction of most of the backloaded allowances will expand the oversupply once again. In 2020, the number of excess allowances will reach its highest level in history at 2.3 Gt. This expansion of the oversupply occurs despite the attempt of the Commission to smoothen the return of the backloaded allowances in the current MSR proposal through Article 2, which distributes some of

The Commission's Market Stability Reserve proposal explained

The Market Stability Reserve functions as an automatic adjustment of the annual auctioning volumes. The basis for the annual adjustments is the **market surplus** (also referred to as "allowances in circulation") defined as: the allowances allocated since 2008 + international credits used for compliance since 2008 – verified emissions since 2008.

On 15 May of each year beginning in 2017, the Commission will publish an official estimate for the market surplus for the previous year.

The MSR will begin operating in 2021, according to the Commission's proposal. In 2021, 12 percent of the surplus recorded for 2019 (two years back) is withdrawn from the annual auctioning schedule and placed into the market stability reserve. In 2022, 12 percent of the surplus recorded for 2020 will be withdrawn and placed into the market stability reserve. This will be repeated every year until the surplus falls below **the upper trigger** of 833 Mt. The proposal also defines a **lower trigger** equal to 400 Mt. If the market surplus is below this number, allowances are returned to the market from the reserve in annual installments of 100 Mt.

Article 2 of the proposal foresees an additional adjustment in auctioning volumes to take place in 2020. This adjustment is equal to two-thirds of the difference between the auctioning volumes in 2020 and the average auctioning volumes in 2021 and 2022. This volume, which we estimate will be 421 Mt, will be withdrawn from the auctioning schedule in 2020 and released back in equal halves in 2021 and 2022.

Figure 1a: Market balance with and without the MSR

Reference case reflects TRPC base case assumptions on 2030 targets.

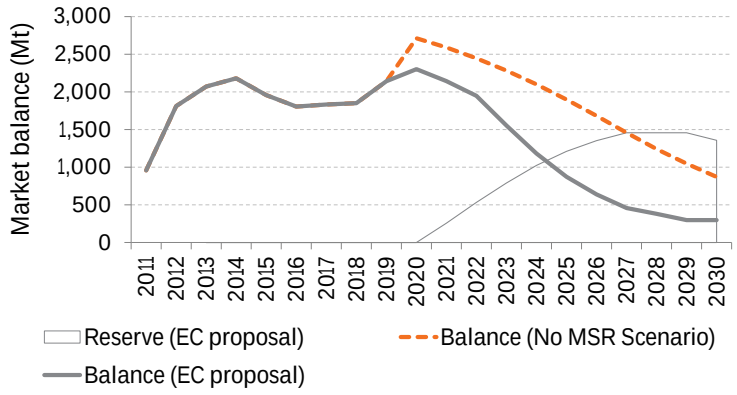
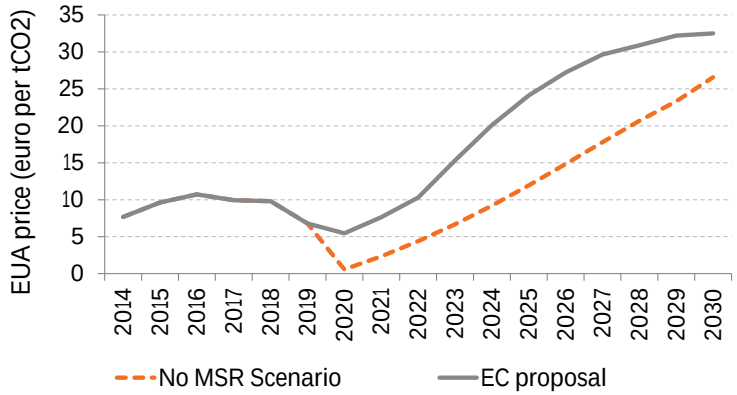


Figure 1b: EUA price path with and without the MSR

Reference case reflects TRPC base case assumptions on 2030 targets. All prices in real 2010 euros.



the allowances from 2020 to the following two years (see textbox for details).

After the surplus reaches its peak in 2020, it will begin declining again due to the impact of the MSR and the decreasing cap. We estimate that it will take the MSR six years to reduce the oversupply below the Commission's upper boundary of 833 million tons. The market surplus will then gradually stabilize by 2030 as the amount of emission reductions triggered in the EU ETS is estimated to offset the shrinking market cap. We forecast that by 2027 the reserve will have accumulated close to 1.5 billion allowances. The reserve will likely begin to release these allowances back to the market in 2030.

The development of the market surplus in our base case is also reflected in the carbon price pathway predicted by our price forecasting model (Figure 1b, solid line). The carbon price is likely to experience some instability around 2020 as the reintroduction of the backloaded allowances causes a downward push to the price in 2019 and 2020. The implementation of the MSR, together with the gradually decreasing cap are then likely to induce a gradual rise in the carbon price which is likely to reach an average price of €23/t in the 2021-2030 period in real 2010 euro terms. Given this carbon price outlook, we estimate that the EU ETS will trigger 1,680 Mt of abatement from 2014 to 2030.

We note that this report presents carbon price pathways predicted by our quantitative model, which may not always represent our official price predictions as they do not include qualitative adjustments. The prices predicted by our model therefore should be viewed as a representation of the relative impact of different policies on the carbon market and as indicative approximations.

What happens without the stability reserve in place?

In the absence of the MSR, the market will experience a substantially greater and longer-lasting oversupply as illustrated by Figure 1a (dashed line). The market surplus will decline relatively slowly in line with the decreasing market cap. As a result, the market will likely still hold an oversupply of 900 million allowances in 2030.

Figure 1b contains the respective carbon price pathway predicted by our model. A scenario without the MSR will see the carbon price reach rather low levels around 2020 due to the full reinjection of the backloaded allowances in two batches equal to 300 Mt in 2019 and 600 Mt in 2020. The price will likely rise as the cap decreases in line with a 40 percent GHG target for 2030. Our model estimates the price to reach an average 2021-2030 price level of €14/t. The MSR therefore accounts for an €9/t rise in the carbon price post 2020 and

accounts for 48 percent of the value of EUAs in the next decade.

As a result of a lower carbon price, the EU ETS without the MSR will incentivize emission reductions of 895 Mt from 2014 to 2030. We therefore estimate that the MSR will cause 784 Mt of additional abatement if it were implemented.

Early implementation

Given the current progress of the MSR file, we believe that the earliest possible adoption of the proposal could be before the 2015 summer recess (see policy timeline below). This would allow for the mechanism to be brought into operation already in phase 3 and allowances could be withdrawn from the market as soon as 2017. Implementation in 2017, however, has not so far received explicit or public support from member states. Instead, one of the strongest supporters of an early implementation – Germany – has proposed for the MSR to begin withdrawing allowances in 2018.

Figure 2a displays the impact of implementing the MSR in 2018 on the market supply and demand balance. The market surplus is likely to begin falling as soon as the MSR is enacted in 2018. The reintroduction of the backloaded allowances will however hamper the ability of the MSR to reduce the oversupply. The return of the backloaded allowances will once again increase the oversupply of the market in 2019, as the MSR will likely be unable to entirely absorb the backloading's supply shock. The backloaded allowances will return over the course of four years between 2019 and 2022 in line with Article 2 of the Commission's proposal.

These dynamics are also reflected in the carbon price trajectory predicted by our model (Figure 2b). The introduction of the MSR in 2018 will likely increase the EUA price to around €12/t already in 2018. The reinjection of the backloaded allowances is then likely to counteract the effects of the MSR and keep the price from rising further until after 2020. With the start of phase 4, the carbon price is likely to rise and join the same pathway as the price under the Commission's proposal. As a result of the early start of the MSR, the EU ETS will trigger 211 Mt additional emission reductions compared to the Commission's proposal, or 1,891 Mt of abatement between 2014 and 2030.

Figure 2a: Market balance in early implementation scenario
MSR implemented in 2018. Allowances begin to be withdrawn in 2018.

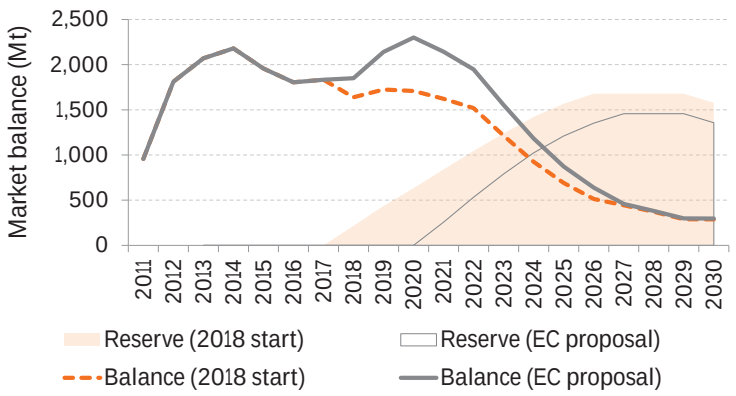
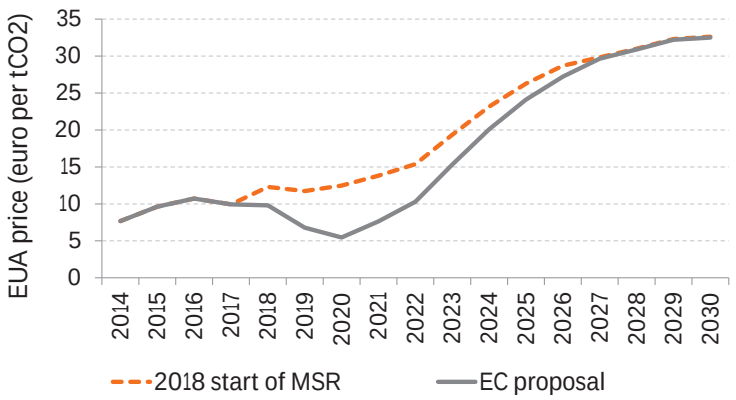


Figure 2b: EUA price path in early implementation scenario
MSR implemented in 2018. Prices in real 2010 Euros.



The fate of the backloaded allowances

The backloading measure stipulates that the 900 million allowances withheld from the market will be returned in two batches of 300 Mt in 2019 and 600 Mt in 2020. Under the Commission's MSR proposal the reintroduction of the backloaded allowances is stretched over 2019 to 2022. Ths injection of supply is likely to cause instability in the carbon price around 2020 as stated above. Such concerns have led some member states to discuss possible ways to coordinate the backloading and the MSR mechanism by handling the reintroduction of the backloaded allowances within the MSR proposal. Germany has proposed to transfer the 900 million allowances into the MSR, while other voices have called for a permanent cancellation of allowances.

The market impact of transferring the backloaded allowances to the reserve is depicted in Figure 3a. In this scenario, the market surplus will likely be stable at just below 2 billion tons for the rest of this decade. The surplus will begin declining only after the MSR begins operating in 2021. As shown in Figure 3b, the carbon price is likely to remain stable around €10/t for the remainder of phase 3 as the backloaded allowances are not released to the market. The effect of the MSR will likely begin to be fully reflected in the carbon price starting in 2021.

Abatement is also likely to develop differently if the backloaded allowances were transferred in the reserve. We estimate that as a result of the higher carbon price pathway, the EU ETS will reduce 1,937 Mt from 2014 to 2030, 258 Mt more than under the Commission's proposal.

Figure 3a: Market balance if backloaded allowances go into MSR
Instead of returning to the market, 900 Mt are transferred directly into the reserve in 2019 and 2020.

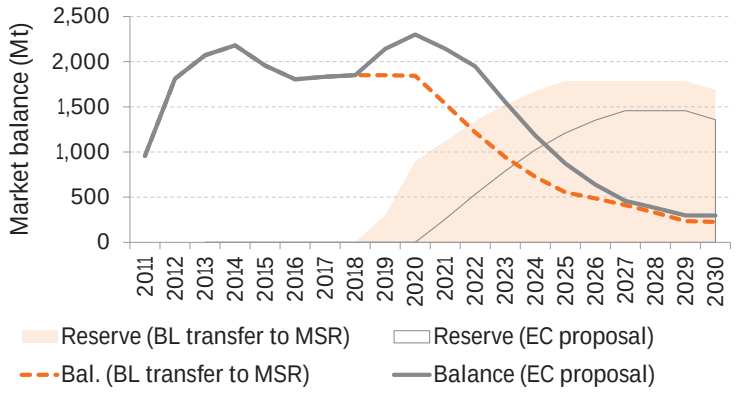
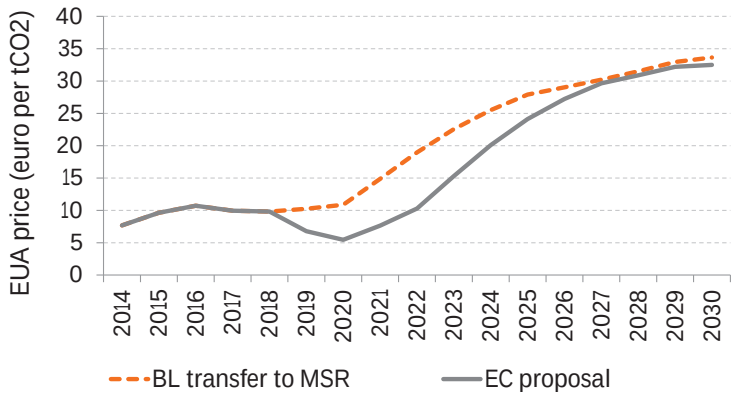


Figure 3b: EUA price path if backloaded allowances go into MSR
900 Mt transferred in the reserve in 2019 and 2020. Prices in real 2010 Euros.



German MSR proposal

Germany has voiced support for an earlier start of the MSR and for the transfer of the backloaded allowances to the reserve. In a non-paper dated 4 July 2014, Germany advocated for the Commission to begin publishing an official estimate of the market's balance in 2017 and for the MSR to begin withdrawing allowances from the market in 2018. The German government has thus called for a de-facto start of the MSR in 2018.

We present the development of the market balance resulting from the German proposal in Figure 4a. The market surplus will likely begin to decline as the MSR becomes operational in 2018. The decline of the market surplus is gradual as the transfer of the backloaded allowances to the reserve avoids a temporary increase of the oversupply towards 2020. Therefore, the two components of the German proposal – a pre-2021 start date and the transfer of the backloaded allowances to the reserve – have complementary functions in achieving a gradual reduction in the

market oversupply already in phase 3. The market balance is likely to fall below the Commission's prescribed upper boundary of 833 Mt in 2022, four years earlier than under the Commission's proposal. The reserve will likely accumulate close to 2 billion allowances, which will begin to be released to the market in 2030.

We have not modeled the EU ETS beyond 2030, but it appears likely that the carbon market will develop differently post-2030 depending on whether the German or the Commission MSR proposal is implemented. As shown in Figure 4a, the reserve under the German proposal will hold 500 million more allowances in 2030 than under the Commission proposal. These allowances are likely to be released in the market and mitigate potential price increases beyond 2030.

The impact of the German proposal on the carbon price according to our price model is depicted in Figure 4b. The combination of a 2018 start and the withholding of the backloaded allowances is likely to push the price higher already in phase 3 and could result in a price around €18/t in 2020. Under this scenario the carbon price is higher than under the Commission's proposal until 2027, when prices are likely to reach the same level of around €30/t.

The overall price trajectory under the German proposal shows a relatively stable carbon price increase compared to the Commission's proposal. The gradual increase in the carbon price is likely to give market participants a longer timeframe to prepare for the emission reductions necessary to meet the proposed 2030 target of reducing emissions by 40 percent compared to 1990 levels. This is in line with the MSR's objective to enhance the inter-temporal efficiency of the EU ETS, but will

Figure 4a: Market balance - German MSR proposal

MSR begins to withdraw allowances in 2018. 900 Mt backloaded allowances are transferred to the reserve in 2019 and 2020.

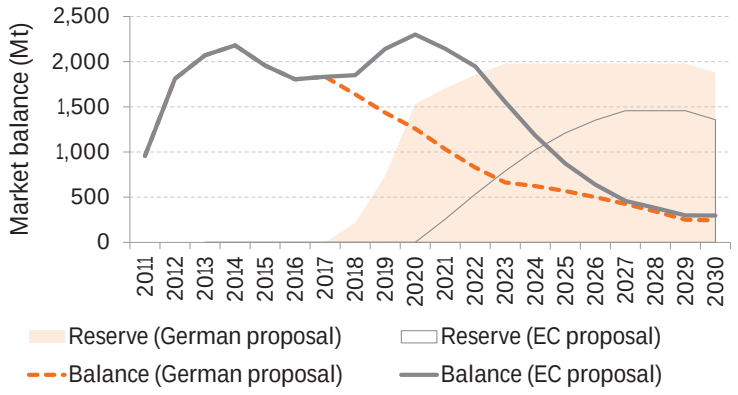


Figure 4b: EUA price path - German MSR proposal

MSR begins to withdraw allowances in 2018. 900 Mt backloaded allowances are transferred to the reserve in 2019 and 2020. All prices in real 2010 euros.

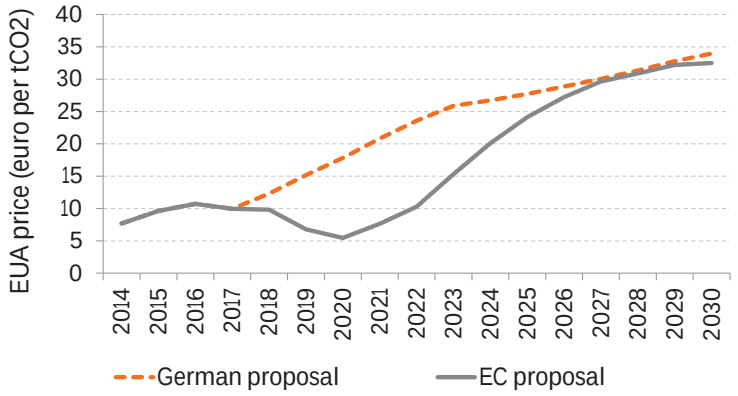
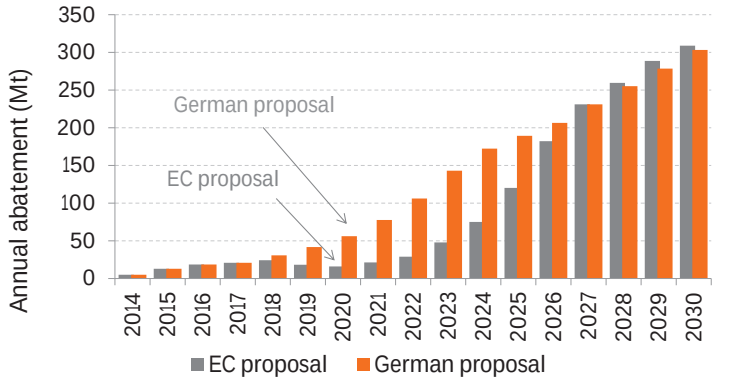


Figure 4c: CO2 abatement - German MSR proposal

MSR begins to withdraw allowances in 2018. 900 Mt backloaded allowances are transferred to the reserve in 2019 and 2020.



likely increase the short-term cost of compliance for participating companies, which could intensify companies' carbon leakage concerns.

The German proposal will likely have a significant impact on the abatement in the EU ETS (Figure 4c). Under the Commission's proposal (grey bars) we estimate the EU ETS to incentivize annual abatement of 30 Mt on average until 2020, mainly through fuel switching in the power sector, and rising levels of abatement in both the power and industry sectors after the MSR becomes operational in 2021.

Under the German proposal (orange bars), we estimate higher carbon prices to cause higher levels of abatement at an earlier point in time, resulting in 469 Mt additional abatement up to 2030 compared to the Commission's proposal. Overall, the EU ETS under the German proposal incentivizes 2,148 Mt of abatement in the 2014-2030 period.

Closer to 2030, the annual abatement under the German proposal is estimated to be less than the abatement triggered by the Commission's proposal. This is due to the fact that the early abatement mainly triggered by the early implementation of the MSR reduces the need for abatement in the long-run.

The main effect of the German proposal on abatement is the distribution of abatement costs across time. The proposal is likely to encourage EU ETS participants to reduce emissions gradually towards 2030. This stands in contrast to the Commission's proposal which is likely to cause market participants to face a steeper rise in abatement costs after 2021.

French MSR proposal

France has proposed amendments to the Commission's proposal which alter the formula used to determine the operation of the MSR. Under this proposal, the MSR is triggered when the oversupply is above an upper threshold of 1,300 Mt. The MSR would then withdraw a volume equal to 33 percent of the difference between the surplus and the lower threshold, which is set at 800 Mt. When the surplus is below the lower threshold, the MSR would release to the market a volume equal to 33 percent of the difference between the surplus and the upper threshold.

We model the impact of the French proposal in Figures 5a and 5b. This proposal is likely to result in a quicker reduction in the market surplus compared to the Commission's proposal (Figure 5a), as the MSR withdraws around 400 Mt on average between 2021 and 2024. This is a significantly higher volume than the volume taken out of the market under the Commission's proposal (equal to 200 Mt on average between 2021 and 2027).

From 2026, the MSR will likely begin

Figure 5a: Market balance - French MSR proposal
Scenario reflects French proposal for the MSR formula.

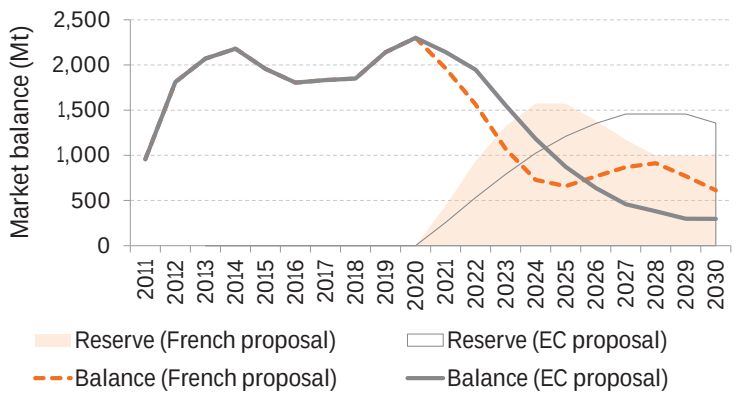
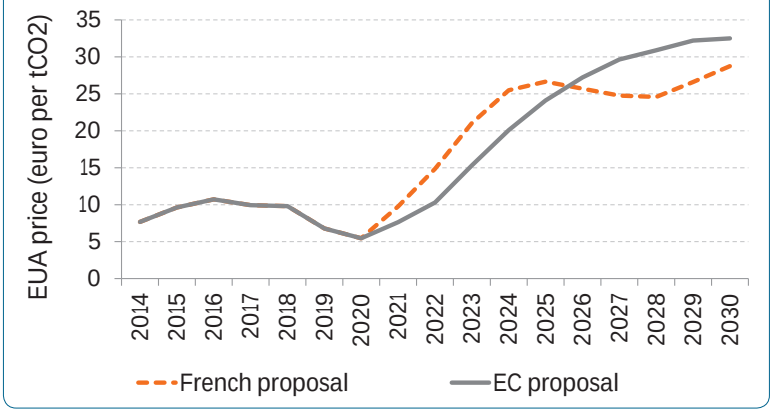


Figure 5b: EUA price path - French MSR proposal
Scenario reflects French proposal for the MSR formula. All prices in real 2010 euros.



releasing allowances back into the market under the French proposal. This will result in an expansion in the surplus as around 200 Mt allowance are being returned per year. These rapid changes of the the market surplus are reflected in the carbon price trajectory predicted by our model which, sees prices increasing at a relatively fast pace to reach €27/t in 2025, and then falling slightly towards €25/t by 2028 (Figure 5b).

Given this carbon price pathway, we estimate the French proposal to result in more abatement than the Commission's proposal up to 2026, and lower levels of abatement thereafter. In total, the EU ETS reduces 44 Mt fewer emissions under this proposal in the 2021-2030 period.

A reason for the price fluctuations shown in Figure 5b is the time lag which it takes the MSR to adjust the auctioning volumes. Under the Commission's proposal, the MSR takes two years to adjust market supply. France has voiced support for a shorter time lag. A shorter MSR time lag time will smooth out the carbon price trajectory displayed in Figure 5b.

The MSR time lag

Under the current proposal, the Commission will publish on 15 May every year an official estimate of the market's supply-demand for the previous year. Any adjustments to the auctioning volume on the basis of this number then take place in the following year, thus leaving a two-year lag in the operation of the MSR. France and a number of other member states have supported a shortening of this time lag.

It may be possible to shorten the MSR time lag from two years to one and a half years. This implies that the Commission's publication of the oversupply volume on 15 May would be followed by an adjustment of the auctioning volume perhaps as early as July of the same year. The MSR can then adjust the auctioning volumes scheduled from July to June the following year.

Figure 6: Market balance with shorter MSR time lag

Scenario reflects a one-and-a-half-year time lag. Reference reflects a two-year lag as proposed by the Commission.

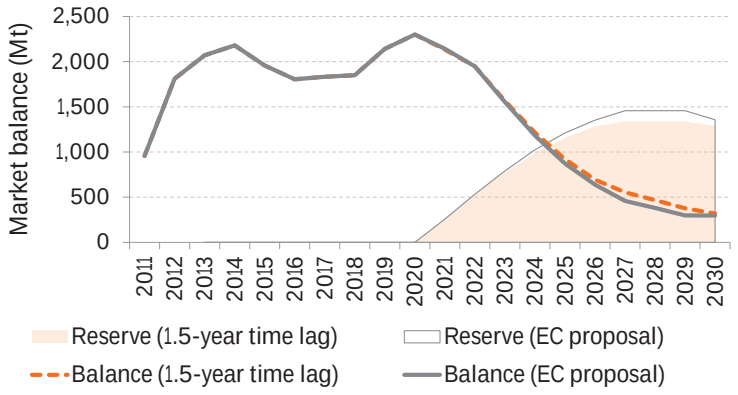


Figure 6 displays the market impact from a one-and-a-half-year MSR time lag. The main difference to the current proposal concerns the period after 2026. Due to the shorter time lag, the MSR is able to react quicker to the fact that the oversupply has fallen under the upper limit of 833 Mt, and cease withdrawing allowances from the market. This development in the market surplus will likely result in a slightly lower carbon price post-2026 compared to the Commission's proposal. According to our price forecasting model, the annual carbon price will be 3 percent lower on average from 2026 to 2030.

These results imply that the carbon price outlook is not sensitive to the time lag of the MSR. Instead the carbon price forecast up to 2030 depends mainly on how soon the current oversupply is depleted. The time lag may be of greater relevance for the EU ETS once the oversupply has fallen within the preferred surplus band between the MSR thresholds. At this point in time, the time lag will play an important role in determining how quickly the MSR reacts to demand shocks, which drive the oversupply out of this band. A shorter time lag, such as a one-and-a-half-year lag will likely increase the stability of the carbon price in such cases.

The impact of the MSR threshold levels

The Commission's proposal has set an upper threshold at 833 Mt (if the surplus is above this level, allowances are taken out of the market) and a lower threshold at 400 Mt (if the surplus falls below this level, allowances are returned to the market). The reasons behind the choice of these specific levels are not entirely clear. The Commission argues that the thresholds should allow the market a certain level of oversupply. The Commission assumes that an oversupply in the market is necessary to help power companies cover their EUA obligations for future years in line with power hedging patterns. We discuss the power sector hedging needs in more detail below. Here we present results from our modeling

Figure 7a: Market balance with alternative MSR thresholds

Scenarios reflecting alternative MSR thresholds. Reference reflects the 833 Mt and 400 Mt thresholds proposed by the Commission.

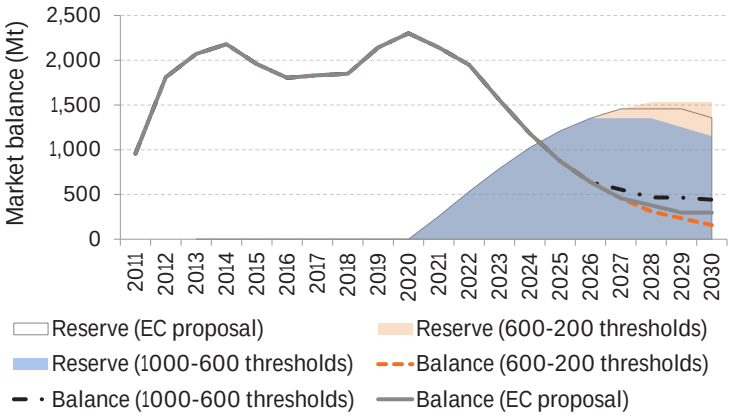
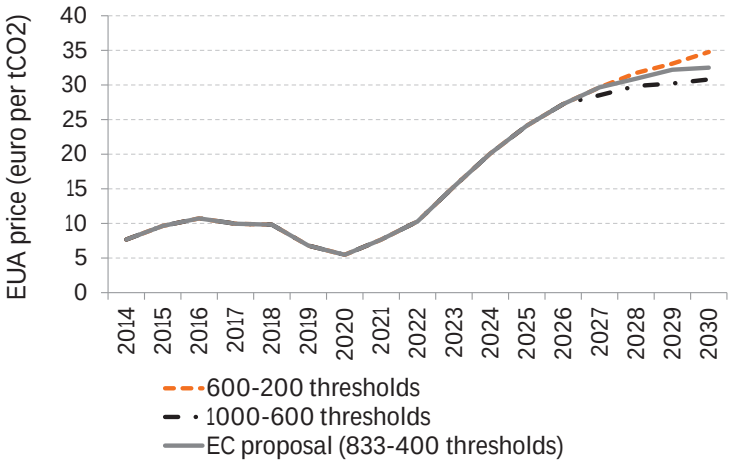


Figure 7b: EUA price paths with alternative MSR thresholds

Scenarios reflecting alternative MSR thresholds. Reference reflects the 833 Mt and 400 Mt thresholds proposed by the Commission. All prices in real 2010 euros.



of the impact of alternative MSR thresholds on the carbon market.

We first present a simulation where the MSR upper threshold is set at 1000 Mt and the lower threshold is set at 600 Mt. The impact of higher trigger levels results in a higher market surplus (Figure 7a). This is likely to lower the carbon price somewhat compared to the Commission proposal (Figure 7b). The chosen thresholds of 1000 Mt and 600 Mt result in a 2030 carbon price of €31/t, compared to €33/t under the current Commission proposal, according to our model.

A lower set of trigger levels will have the opposite effect on the market. As an example we show a simulation with an upper threshold of 600 Mt and a lower threshold of 200 Mt. This scenario is likely to result in a slightly lower market surplus towards 2030 (Figure 7a) and a slightly higher carbon price in 2030 (Figure 7b).

Power sector hedging and the MSR

A debate has unfolded over the importance of power hedging needs for the design of the MSR and for the proposed thresholds of 400 and 833 million allowances. Power companies sell electricity several years in advance, and simultaneously buy the carbon allowances necessary for this future electricity generation. The Commission has argued that the MSR proposal should accommodate this behavior. It has argued that the threshold levels should allow the market a certain level of oversupply, and implied that this oversupply should be roughly equal to the amount of allowances power companies need to buy for future power generation.

The amount of power hedging demand from companies is however not consistently reported and relatively opaque. Based on public information, we assume that power producers sell electricity up to three years ahead. In 2014 we assume power producers require 867 million tons of carbon allowances to cover power sales. This number is expected to grow towards 939 million tons in 2020 due to decreasing free allocation to eastern European utilities. The power hedging demand is then estimated to drop to 729 million tons in 2030, due to the growing share of renewable energy sources. These numbers suggest that the proposed thresholds are representative of the hedging needs of power companies.

However, the future of the power hedging pattern remains largely uncertain. Therefore a question arises as to what the effect on the market will be if the MSR thresholds are set below (or above) the actual power hedging needs. Some voices say that the annual

hedging demand is far greater than the proposed thresholds and that the MSR will create a significant shortage that could cause EUA prices to spike. We find the choice of MSR thresholds is unlikely to disrupt the orderly functioning of the market or the stability of the carbon price, but it is likely to impact the costs that power companies bear when engaging in hedging. Our finding rests on the premise that an oversupply of allowances is not necessary to cover power sector hedging needs.

In the case where no oversupply is present, power companies can hedge their power sales by buying allowances on the forward market. To attract willing sellers, the price for forward carbon contract will have to reflect a large enough premium on top of the price for a spot carbon contract. If this were the case, there would be market participants willing to offer forward contracts to power companies, in order to benefit from an inter-year price difference. Therefore, if the EU ETS oversupply were insufficient to meet power forward hedging, the forward market will accommodate hedging demand by increasing the price of forward carbon contracts compared to spot contracts.

The oversupply becomes important only in the way it can affect the price difference between spot and forward contracts. The lower the oversupply in the market is, the larger the premium for forward contracts will theoretically be and vice versa. Another factor which will determine the price difference between spot and forward contracts is the amount of risk that sellers take on when offering forward carbon contracts. This in turn will be related to the perceived credibility and the predictability of the EU ETS. We find that setting the MSR thresholds is therefore a discussion about the costs of hedging rather than the orderly functioning of the market.

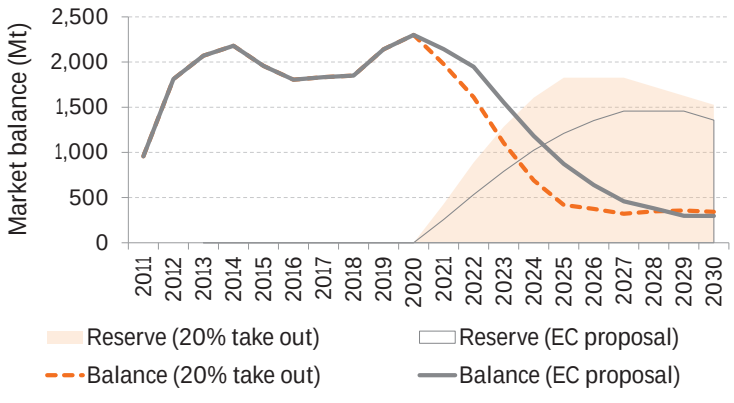
Size of the annual adjustments

The annual adjustments determine how many allowances are removed from the market or released back. The Commission's proposal specifies that 12 percent of the oversupply shall be removed from the market each year the surplus is larger than the upper trigger of 833 Mt. The proposal also sets the amount of allowances to be returned into the market at 100 million tons per year.

To model the market impact, we simulate an arbitrary scenario, in which the MSR withdraws 20 percent of the market's surplus. As shown in Figure 8a, this scenario will result in a quicker depletion of the market surplus after 2021. We estimate that 365 million allowances will be withdrawn on average between 2021 and 2025, a volume greater than the average 200 million allowances withdrawn under the Commission's proposal. As a result, the market surplus will fall below the upper threshold of 833 Mt in 2024, two years earlier than under the Commission's proposal.

As a result of this scenario, the carbon price will begin to increase faster after 2021 than under the Commission's proposal (Figure 8b). The price is likely to stabilize after 2025 as the EU ETS triggers enough annual abatement to offset the impact of the declining market cap. In 2030, this scenario results in a carbon price roughly equal to the one generated by the Commission's proposal, according to our model. As the carbon price rises earlier under this scenario, it triggers more emission reductions, resulting in an additional 214 Mt of abetment in the 2021-2030 period compared to the current proposal.

Figure 8a: Market balance with alternative annual adjustments
Annual take out volume changed to 20% from 12% as proposed by the EC.



Resiliency against demand shocks

According to the Commission, one of the two main goals of the MSR proposal is to make the ETS more resilient to demand side shocks. To explore how the market will react to future demand shocks, we have devised a scenario in which a financial recession unfolds in 2021 and follows the same pattern as the double dip recession the EU has seen over the past six years. EU GDP growth in 2021 is set at 0.5 percent, in line with 2008 growth and 2022 growth is set at -4.4, to mirror the contraction in 2009 (Table 1). A recovery follows before the economy falls into a recession again in 2025, as it did in 2012. Growth eventually returns to the 1.9 percent for the rest of the next decade as assumed in our base case forecast.

In the absence of the MSR, a financial recession will likely lead to an expansion of the market oversupply to over 2.5 billion tons for most of the next decade (Figure 9a). This long lasting surplus is likely to discourage market participants from holding allowances into the future and could result in extremely low prices up to 2030 (Figure 9b).

Table 1: GDP comparison
In 'Recession GDP' scenario, EU GDP growth from 2021-2026 is equal to the historical GDP growth in 2008-2012. Source: IMF

	TRPC GDP	Recession GDP
2021	1.91	0.50
2022	1.90	-4.40
2023	1.90	1.80
2024	1.90	1.70
2025	1.89	-0.30
2026	1.89	1.20

Figure 8b: EUA price path with alternative annual adjustments
Annual take out volume changed to 20% from 12%. All prices in real 2010 euros.

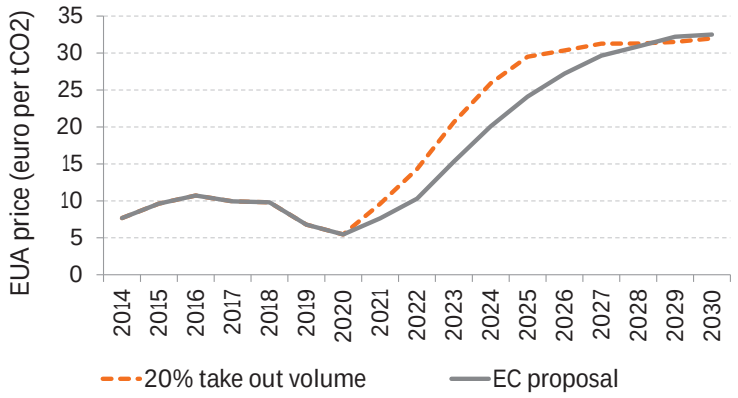


Figure 9a: Market balance in a financial recession
Scenarios reflect a financial recession beginning in 2021. Reference reflects Point Carbon base case GDP assumptions; See Table 1 for GDP assumptions.

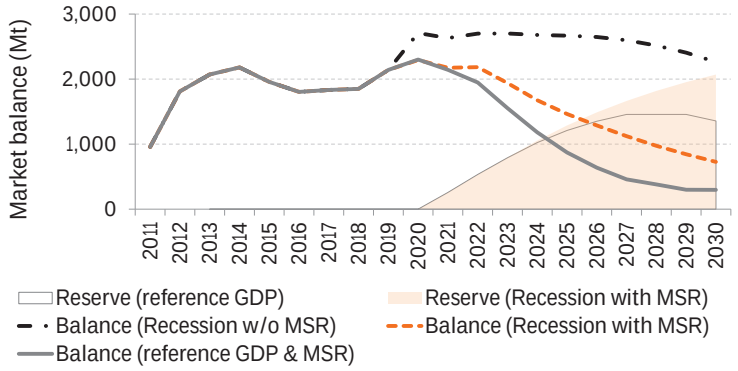
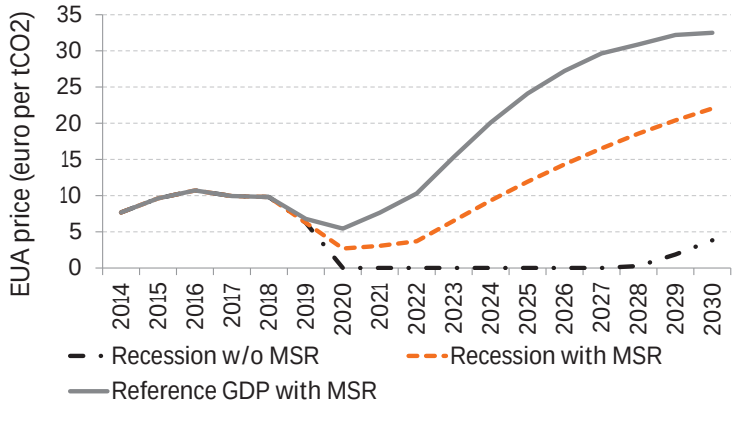


Figure 9b: EUA price paths in a financial recession
Financial recession begins in 2021 and follows same annual GDP growth rate as the 2008 financial recession. All prices in real 2010 euros.



On the other hand, if the MSR is adopted, it will react to the reduction in demand resulting from the financial crisis by withholding more allowances from the market. The MSR is likely to partially offset the impact of an economic crisis on the carbon price (Figure 9b). The reserve will likely prevent the carbon price from dropping towards €0/t and result in an increasing price trajectory as it reduces the market surplus over time.

The carbon price trajectory is forecast to decrease as a result of a financial crisis as the MSR will likely not offset the full impact of an economic downturn. This is due to the parameter of the MSR which governs how many allowances can be withdrawn from the market, which the Commission has set at 12 percent of the oversupply.

To illustrate this, we examine the development of EU ETS emissions as a result of an economic shock. For 2022, our simulation has modeled a GDP contraction of 4.4 percent. This lower economic activity reduces emissions by around 200 Mt in 2022. The MSR will react to this in 2024 by withdrawing 12 percent of the oversupply in 2022. As a result of the economic contraction the oversupply in 2022 is now 200 Mt greater than what it would have been without the recession. Therefore, the MSR reacts to the economic shock by effectively withdrawing 12 percent of the additional 200 Mt from the market. Thus, the supply reduction driven by the MSR will not match the demand reduction of an economic recession. The MSR will nonetheless reduce the market surplus under an economic crisis, but it will take longer to do so than in the absence of such a shock.

From this example, it follows that the MSR would be able to offset the impact of external shocks to a greater extent if the percentage of oversupply withdrawn from the market is allowed to increase the further away the market surplus is from the MSR's upper trigger level.

We also note that the MSR will never be able to fully offset external shocks due to the fact that it allows the market balance to fluctuate freely between the threshold values (from the 400 Mt lower threshold to the 833 Mt upper threshold).

Timeline for the MSR – waiting for the Parliament

The ordinary legislative procedure needed to implement the MSR normally takes between one and two years. The overall progress on this particular proposal will largely depend on how the debate in the Parliament develops. We see the Council debate as quite advanced, with a number of working group meetings having taken place since the MSR proposal was put forward in January. As discussed above, many countries have come forward with official positions on the proposal, tabling amendments or measures to strengthen the measure, with countries increasingly leaning towards supporting the reform proposal. Member states could come to an agreement at the Environment Council on 17 December, in a qualified majority vote (i.e. 260 out of in total 352 votes). A Council position at this point in time would in our view influence the decision-making process in the Parliament.

Due to the European elections, the Parliament is at a different stage in processing the file, and several steps will have to be undertaken before it reaches a position on the MSR. The Parliament's environment committee (ENVI) in charge of the MSR file has scheduled a vote on the proposal for its meeting on 23-24 February 2015. Before this vote can take place, the committee has to agree on its opinion based on a report scheduled to be put forward early December by the rapporteur of the file Ivo Belet of the conservative European People's Party. Following the vote in ENVI, a plenary vote will take place to settle the Parliament position, possibly in March 2015. Subsequently, representatives from the Parliament, the Council and the Commission would come together in so-called trilogue negotiations to find a compromise that can be accepted by member states and the Parliament – with the outcome to be confirmed through formal votes in both institutions. As such informal negotiations are normally quite productive, the aim of the forthcoming Latvian Presidency of the Council to pass the proposal into law within the end of its term in June 2015 could be within reach.

A best-case scenario, in which the final votes take place sometime ahead of the 2015 summer recess, would allow for the adoption of the MSR before the end of 2015. Considering only the time needed for finalizing the legal procedures, this would allow for an implementation of the measure as early as 2016 with a view to withhold the first allowances from the market starting in 2017. However, political positions at this point in time indicate that despite the theoretical possibility of a start in 2017 the MSR will likely start at a later point in time.

Summary

We find that alternative designs of the MSR can greatly influence how soon the oversupply in the market is diminished, what trajectory the carbon price follows, and how much abatement is triggered by the EU ETS. Table 2 summarizes the results from our modeling of alternative MSR designs and their impacts.

The start date of the MSR and the question of how the backloaded allowances are handled stand out as the most important considerations for the development of the EU ETS up to 2030. The implementation of the MSR in phase 3 would result in a quicker reduction of the market surplus than under the Commission's proposal. Of importance to the carbon price is also how the implementation of the MSR will be coordinated with the scheduled reintroduction of the backloaded allowances. The proposal to transfer these allowances into the reserve will prevent a drop in the carbon price towards 2020 and likely cause the oversupply to fall within the MSR surplus band two years earlier than the Commission's proposal.

The German proposal, which combines these two options, would result in a gradual decline of the surplus likely to be coupled with a steady rise of the EUA price starting in phase 3. This proposal enhances the inter-temporal efficiency of the EU ETS, and improves the ability of the MSR to meet one of its objectives of reducing the current oversupply. Transferring the backloaded allowances in the reserve could however add political complexity as it interferes with the recently adopted backloading decision.

France's proposal to alter the MSR formula could change the carbon price outlook post 2020, while leaving the phase 3 policy framework unchanged. Due to a higher rate with which allowances are removed from the market, this proposal leads to a reduction in the surplus in 2024, two years before the Commission's proposal. The average carbon prices for the 2014-2020 and 2021-2030 periods are estimated by our model to be the same as those under the Commission's proposal. However, the trajectory of the carbon price after 2020 is likely to differ with the French proposal, which we estimate will result in slightly less abatement.

In terms of the importance of the MSR thresholds in relation to the needs of the power sector to hedge carbon allowances, we find that the choice of MSR thresholds is unlikely to affect the orderly functioning of the market or the stability of the carbon price, but it is likely to impact the costs that power companies bear when engaging in hedging.

Going forward, the political process will undoubtedly cover wide ranging discussions due to the highly technical nature of the proposal and its multiple objectives to both reduce the current oversupply and increase the future flexibility of the EU ETS against potential changes in market demand. To explore additional carbon price simulations, access our MSR Simulation Tool, available on Thomson Reuters Eikon.

Table 2: Summary of Point Carbon model results

*Presents carbon prices estimated by our quantitative EUA price model. Scenario numbers refer to changes vs. EC proposal.

MSR Scenarios	Year when surplus falls within chosen surplus band	Average 2014-2020 price (€/t)*	Average 2021-2030 price (€/t)*	Abatement triggered by EU ETS (2014-2020) (Mt)	Abatement triggered by EU ETS (2021-2030) (Mt)	Allowances in reserve in 2030 (Mt)
Commission proposal	**2026**	**~9**	**~23**	**116**	**1,564**	**1,357**
Early Start (2018)	one year earlier	+2	+2	+41	+170	+222
Transfer of 900 Mt backloaded allowances to the MSR	two years earlier	+1	+4	+22	+235	+330
German proposal	four years earlier	+3	+5	+70	+399	+523
French proposal	two years earlier	No change	No change	No change	-44	-359
Alternative thresholds (1,000 Mt - 600 Mt)	one year earlier	No change	-1	No change	-61	-204
Alternative thresholds (600 Mt - 200 Mt)	one year later	No change	No change	No change	+36	+177
Alternative size of MSR adjustments (20% take out)	two years earlier	No change	+3	No change	+214	+170

Annex: The Point Carbon price forecasting model

Our price forecasting model consists of three modules. The first module is an econometric price forecasting model. This model relates historical EUA prices with the historical "perceived" EU ETS supply and demand balance to simulate how the observed strategic behavior of market participants influences the carbon price. The perceived market balance is calculated as 'Actual Demand' minus 'Perceived Supply'.

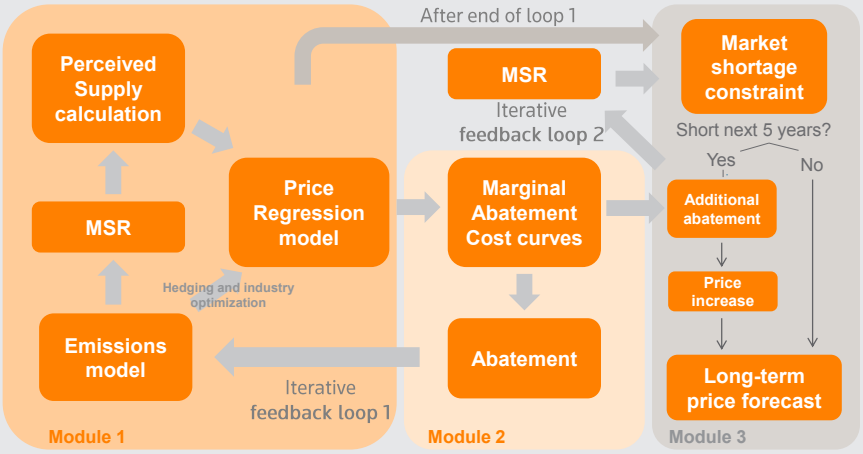
We calculate 'Actual Demand' on the basis of historical verified emissions as well as our forecast for future emissions. Emissions in the power sector have been adjusted for forward hedging needs to reflect the actual demand of power sector participants in any given year. Forward hedging is done up to three years ahead and is calculated on the basis of public financial reporting by major European utilities. In the industrial sectors, demand is based on the sector's current balance between emissions and free allocation and the sector's balance for the next three years. Industrial participants are therefore assumed to optimize their trading three years ahead.

'Perceived Supply' is based on the future EU ETS cap as well as market participants' expectations about any potential changes to the cap. We expect market participants to evaluate different scenarios regarding the potential future cap changes and weigh them based on probabilities, representing their expectations regarding the chance of each scenario. We construct the future 'Perceived Supply' based on current legislation as well as in-house policy analysis regarding any potential legislative changes. The future 'Perceived Supply' is based on a 40 percent greenhouse gas target, a 27 percent renewable energy target and a 30 percent energy efficiency target for 2030. Our base case forecast also factors in the adoption of the Commission's proposal for an MSR and its implementation in 2021.

The second module of our price forecasting model simulates the interaction between the future EUA price expected by the market and the amount of abatement in the EU ETS. A feedback loop is used to estimate the impact of abatement on the carbon price and to forecast the future carbon prices and abatement levels. Our model uses marginal abatement cost curves for the power and industry sectors. Fuel switching abatement in the power sector is calculated by a power dispatch model, while abatement in the industry sector is based on currently available abatement options and takes into account inter-temporal effects of investment decisions.

The third module simulates a constraint, which specifies that market participants cannot be short of EUAs for their annual compliance needs. The module simulates the market's reaction to a potential future shortage by calculating an abatement schedule based on least-cost optimization. We assume that market participants would begin to cover shortages by beginning to abate emissions five years in advance. The higher abatement needs caused by the impending shortage have a bullish effect on the price on the basis of our marginal abatement cost curves.

EUA price model illustration



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