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The Review of the Market Stability Reserve (MSR)

Andrei Marcu
Jahn Olsen
Domien Vangenechten
Stefano Cabras
Thomas Mertens
Jean-Yves Caneill

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1. MSR history and goals

1.1. History of the MSR

In the past 15 years, the EU Emissions Trading System has emerged as the cornerstone of the EU climate policy. However, the history of the ETS has not been without turbulence, being characterized by frequent issues that needed to be addressed and consequent adjustments along the way. The 2008 economic crisis particularly exposed the intrinsic fundamental weakness of the EU ETS which undermined the credibility of the system and triggered a deep reform of the whole system. Over time, various revisions have improved different design elements and strengthened the role of the EU ETS.

At the beginning of phase 2 of the EU ETS, it became clear that the design of the EU ETS lacked the necessary supply flexibility in order to address supply and demand shocks. On the demand side, the economic downturn, as well as overlapping policies led to a decreasing demand for EUAs. This, combined with a rigid supply of EUAs – due to allocation being largely based on historical GHG emissions - and with a high influx of affordable international credits, led to the accumulation of a substantial surplus of allowances.

While a limited surplus in the market can be accommodated for intertemporal arbitrage and to provide liquidity, the size of the surplus in the EU ETS was too high and 'structural', causing carbon prices to collapse. In the review for the third phase of the EU ETS, the European Institutions decided to phase out international credits, introduce an EU-wide cap to address perverse incentives for over-allocation and auctioning to replace part of free allocation.[1] A short-term solution to address the structural supply-demand imbalance was also introduced.

1.2. Backloading

In anticipation of more structural changes, an amendment to the auctioning schedule was proposed as a temporary measure.[2] The draft proposal from the Commission consisted of delaying the auctioning of 900 million EUAs in the period of 2014-2016 to gradually re-introduce them in the period 2019-2020. After an agreement was struck in the EU Climate Change Committee, a Decision[3] of the Parliament and Council adopted the proposed amendments to the timing of auctions of greenhouse gas allowances.

While this "backloading" proved to be useful in limiting the over-supply of EUAs during that period, its effect was only temporary and felt in the short-term. To eliminate the historical surplus and at the same time preventing such a surplus from emerging again in the future, EU institutions recognized that the system needed a more structural adjustment.

1.3. Structural reform

In 2014, the European Commission (EC) published a detailed impact assessment that considered three main options for a structural reform: retiring a number of allowances in phase 3, introducing a Market

[1] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:EN:PDF
[2] https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/2013_07_08_en.pdf
[3] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:343:0001:0001:EN:PDF

Stability Reserve (MSR) or a combination of both measures.[4] In its legislative proposal, the EC put forward the establishment of an MSR.[5] After Parliament and Council reached an agreement on a compromise text, the legislation was adopted in 2015.[6]

Instead of releasing the 900 million EUAs in 2019-2020 that were backloaded from the period 2014-2016, these allowances would be placed in the MSR. Starting from 2019, the MSR would increase or reduce the auctioning of EUAs depending on pre-determined thresholds for the total number of allowances in circulation (TNAC). If the TNAC would exceed 833 million EUAs, the MSR would reduce the auctioning supply by a quantity equal to 12% of the TNAC, while if the TNAC would be below 400 million EUAs, the MSR would release 100 million EUAs back into the market.[7]

The MSR is considered by many to have several advantages over other options that were considered in the 2012 report on the state of the European carbon market.[8] First of all, the MSR is a volume-based instrument which is consistent with the very nature of the EU ETS. Secondly, as the mechanism operates automatically based on a pre-defined set of rules, it is considered more transparent by market participants. Thirdly, the MSR works gradually, making its effect on the supply of allowances more predictable for market participants. However, the EU ETS had and continues to have many moving parts and interacts with many other policies so it is still questionable if a market can be managed on "automatic". Lastly, another underestimated characteristic of the MSR is that it emulates – albeit imperfectly – the way other energy commodities balance over the long term. As low oil prices reduce supply by discouraging exploration and drilling activities and ultimately bring prices up, so the MSR reduces the supply EUAs when demand is relatively low and re-establishes market equilibrium.

1.4. Strengthening the EU ETS and MSR

The introduction of the MSR has provided supply-side flexibility to the system on the auctioning pipeline, and addresses the historic surplus of EUAs, while also increasing resilience to future market shocks. In 2015, one year after the creation of the MSR, legislators commenced a new review process for the fourth phase of the ETS, which sought to increase its ambition in line with the 2030 climate and energy framework, as well as tweak the system in various places.

After two years of negotiations, the agreed revision of the EU ETS mainly focused on increasing the linear reduction factor (LRF), making the supply of free allocation follow more closely changes in production levels and establishing the Innovation and Modernisation Funds.[9] In addition, the MSR was strengthened with an higher intake rate of 24% until 2023 and the introduction of a yearly invalidation clause, which provides for the invalidation of EUAs held in the MSR that exceed the total number of auctioned EUAs during the previous year.

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014SC0017&from=EN
[5] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014PC0020&from=EN
[6] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015D1814&from=EN
[7] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015D1814&from=EN
[8] https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/com_2012_652_en.pdf
[9] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L0410&from=EN

The introduction of the invalidation clause signals a significant deviation from the initial design and purpose of the MSR as it impacts the long-term cap, which would become a function of past and future market outcomes.[10]

2. Revisiting the preparation of the MSR review

The MSR Decision does not offer a clear approach to how the MSR review needs to be structured except for indicating that the review should be based on an analysis of the orderly functioning of the EU ETS. This analysis should include a review of the MSR intake rate, the upper and lower thresholds and the relationship between the MSR and competitiveness.

As stated by ERCST before, a sound and effective MSR review should focus on evaluating the ability of the MSR to meet its stated goals. Hence, it is useful here to revisit what the stated goals of the MSR are.

2.1. Stated goals

As discussed in the previous chapter, the only valid rationale for the regulator for having the MSR was to create flexibility in the supply of EUAs that come to the market through auctioning as well as to address the historical surplus, while avoiding a similar situation from occurring again.

As outlined by ERCST's paper on "**Preparing the review of the Market Stability Reserve (MSR)"**, this can be translated in 2 specific goals[11]:

1. Eliminate the historical structural supply-demand imbalance within *a reasonable amount of time*;
2. Bring the TNAC within range of the MSR thresholds in case of new events *within a reasonable amount of time*.

The first goal relates to addressing the current surplus while the second goal is related to avoiding a surplus from occurring again.

2.2. Defining critical elements

Two critical elements related to the goals stated above and which are not clearly defined in the MSR Decision need more clarification before the MSR performance can be evaluated.

First, it is important to clarify what is meant by *market balance*. To define market balance in the EU ETS, it is important to consider both current scarcity in the market as well as the future expectation of market scarcity. Accordingly, market balance can be defined as the TNAC being within the thresholds as determined by the MSR Decision, while expectations of future scarcity are aligned with current scarcity and are reflected in the EUA price trajectory

Second, both goals mention *reasonable amount of time*. While this is not mentioned in the MSR Decision, the ability of the EU ETS to address market imbalances depends on whether the MSR operates

[10] ERCST (2019), "Preparing the review of the Market Stability Reserve (MSR)"
[11] Ibid.

fast enough. Therefore, the MSR review should consider how much faster the MSR addresses market imbalances compared to a scenario without the MSR.

To assess the MSR functioning, however, a definition of what can be considered fast enough to ensure EU ETS market balance is necessary. The goal of the EU ETS is to promote cost-effective decarbonisation by sending a credible price signal to businesses. Without a balanced market, the price signal does not have the desired impact on investment decisions of businesses. Therefore, the timeframe of final investment decisions can be a useful guidance when considering what is reasonable amount of time. In line with this, a reasonable amount of time is arguably between 3 and 5 years.

2.3. Indicators for MSR performance towards stated goals

In addition to the stated goals of the MSR outlined above, ERCST's paper on "**Preparing the review of the Market Stability Reserve (MSR)"** identified a 3rd element that should be considered in the MSR review. This "goal of the review" relates to the relationship between the MSR and competitiveness issues which is referenced throughout the MSR Decision text. As competitiveness issues are crucial for many EU stakeholder, the MSR review should include an assessment of the impact of the MSR on EU competitiveness as a separate element.

To summarize, the MSR review should focus on assessing the MSR's performance against the following 3 goals:

I. Eliminate the historical structural supply-demand imbalance *within a reasonable amount of time*;
II. Bring the TNAC within range of the MSR thresholds in case of new events *within a reasonable amount of time*.
III. Assessing the impact of the MSR on growth, jobs, and competitiveness

3. Assessment of the MSR

This chapter explores a simulation of a review of the MSR using the goals and indicators proposed in the paper "Review of the Market Stability Reserve" published in November 2019[12]. These indicators can be seen in the table below.

Table 1: MSR Goals

Goal 1 – Eliminate the historical structural imbalance	**Goal 2 – Bring the TNAC within range of the MSR thresholds in case of new events**	**Goal 3 – Monitor the impact of the MSR on competitiveness**
Indicators for Goal 1: a. TNAC for 2019-2020 b. Estimated TNAC for Phase 3 compared to TNAC for 2019-2020 c. Estimated number of allowances invalidated in 2023 compared with the difference between the 2018 TNAC and the MSR upper threshold	Indicators for Goal 2: a.1. Yrs. to absorb variation caused by RES/EE achievements of MS in 2020 vs. 2020 targets a.2. Yrs. to absorb variation caused by RES/EE targets towards 2030 b.1. Yrs. to absorb variation caused by overlapping MS policies (e.g. coal phase outs) in the period 2019-2020 b.2. Yrs. to absorb variation caused by overlapping MS policies (e.g. coal phase outs) for the period to 2030 c.1. Yrs. to absorb variation caused by changes in economic growth in the period 2019-2020 c.2. Yrs. to absorb variation caused by changes in economic growth towards 2030 d. Cumulative impact of all the previous indicators for Goal 2, to be estimated through a comparison of different modelling scenarios indicating the long-term trend of the TNAC towards 2030 e. Alignment of hedging strategies to MSR thresholds	Indicators for Goal 3: a. Carbon leakage impact of EUA price (both direct and indirect costs) b. Carbon leakage impacts from de-facto reducing the EU ETS cap by invalidating allowances c. Change in auction revenues for MS caused by the MSR d. Implications of the MSR on the innovation and modernisation funds

3.1. Goal 1: Eliminate the historical structural imbalance

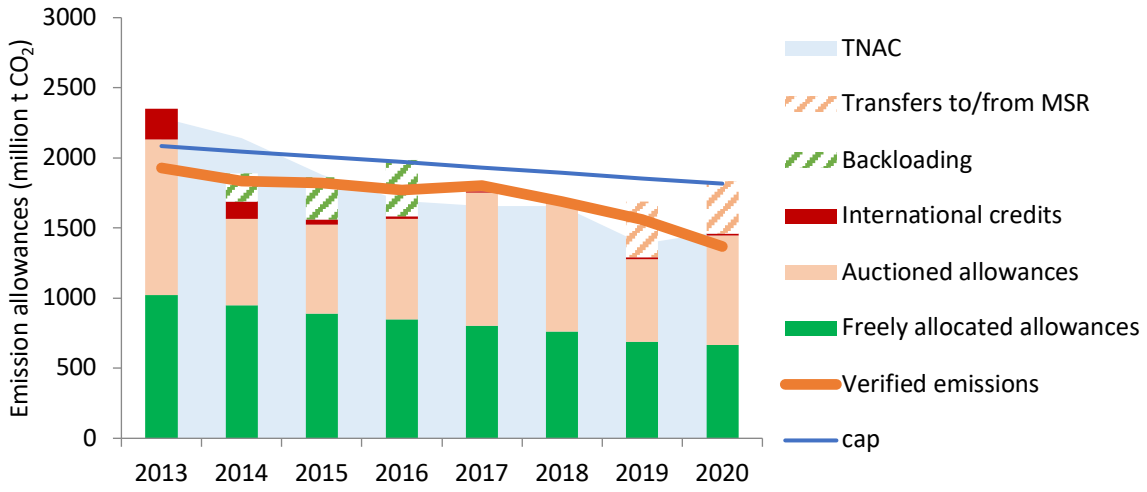
Assessing the MSR performance on its first goal consists of examining whether the MSR is on track to eliminate the large surplus that hampered the market during Phase 3 of the EU ETS.

In this respect, it is useful to look at the yearly supply and demand of allowances and the resulting TNAC, which is the European Commission's indicator for the surplus on the market. Figure 1 shows

[12] Preparing the MSR Review (ERCST), 2019

that between 2014 and 2016 the TNAC declined thanks to the initial decision to backload 900 million allowances. In 2019, the starting year of the MSR, the TNAC dropped significantly as well, from 1.65b to 1.38b. However, in 2020, due to the economic crisis leading to a significant drop in emissions coupled with the UK auctioning two years of its supply, the TNAC is estimated to have increased by over 90 million, to 1.48b.

Figure 1. supply and demand of EUAs and TNAC



Source: European Commission, 2020; EEA, 2020; and EU TL, 2021

To monitor indicator (b) - the estimated TNAC for phase 3 compared to TNAC in 2019-20 -, a simple counterfactual assessment can be done to see how high the TNAC would have been if the MSR had not been in place. This calculation shows that adding what the MSR took away from the auctioning supply would see the 'counterfactual' 2019 TNAC amount to 1.77b, and the 2020 TNAC number to 2.16b, almost amounting to the surplus at the beginning of Phase 3.

However, it should be noted that the MSR also impacts verified emission in the EU ETS by impacting market scarcity which leads to an increase in market prices. Thus, in a more realistic counterfactual no-MSR scenario, verified emissions would likely have decreased slower than what was witnessed in the last two years, meaning the TNAC would have been lower as well.

Nonetheless, if we were to base our analysis solely on an assessment of the TNAC, we can draw a straightforward conclusion: while the MSR does prevent the TNAC from spiralling out of control, it is not capable of continuously reducing the surplus, as 2020 indicates.

However, we should not conclude that the MSR is not on track to eliminate the historical surplus – and therefore achieve Goal 1- by just looking at the TNAC. In fact, it needs to be stressed that a significant number of allowances that ended up in the MSR have never been part of the TNAC in the first place.

The 900 million EUAs that were backloaded were initially foreseen to come back to the market in 2019 and 2020. If this had happened, the TNAC number would have soared. Moreover, the MSR had also taken in those allowances that remained un-allocated during Phase 3 *(e.g. allowances from the new entrant's reserve that were not used or free allocation that was not allocated due to significant production changes of installations).*

Indeed, the MSR has prevented these allowances from eventually coming back to the market, leading to the amount held in the MSR to be significantly higher than its intake rate: while the MSR has directly taken away from the market 'only' 772 million allowances over the last two years, what is 'held' in the MSR is estimated to be as high as 2.22b in 2020.

This is important to keep in mind also when assessing Indicator 3, Goal 1: whether the MSR is on track to *invalidate* the historical surplus in 2023. To assess this indicator, we first estimate the historical surplus and then compare it with the estimated number of allowances that will be invalidated in 2023. As indicated in table 1, we argue that only the number of allowances above the upper threshold (833m) in 2018 (the year before the MSR started) should be seen as part of historical surplus. Indeed, a surplus up till 833m allowances can be seen as 'necessary' for the market to be sufficiently liquid and allow installations to hedge their position.

However, as was outlined above, both the backloaded allowances and unallocated allowances should be added to this amount when talking about the historical surplus. Based on this methodology, our estimate for the 'historical surplus' amounts to 2.27b allowances.

While the pathway for verified emissions for the next few years is uncertain, the BNEF model estimates that 2.43b allowances are set to be invalidated in 2023. This means that *more* than the entire historical surplus will be removed from the MSR and that surplus generated after 2018 will already be starting to get invalidated.

3.2. Goal 2 bring the TNAC back in range of the MSR thresholds in case of new events

This is an assessment of whether the MSR brings the TNAC back within the boundaries of the thresholds, when there are new 'events', with events defined as "any significant change from the regulatory scenario that the regulator had anticipated when establishing the parameters, which might lead to supply-demand imbalances on the market. This encompasses both overlapping policies set at the EU and MS level, as well as other changing circumstances affecting the market, such as economic shocks[13]". Ideally, it would involve differentiating between various 'origins' of the surplus, which would allow stakeholders and policymakers to better understand where the oversupply is generated from.

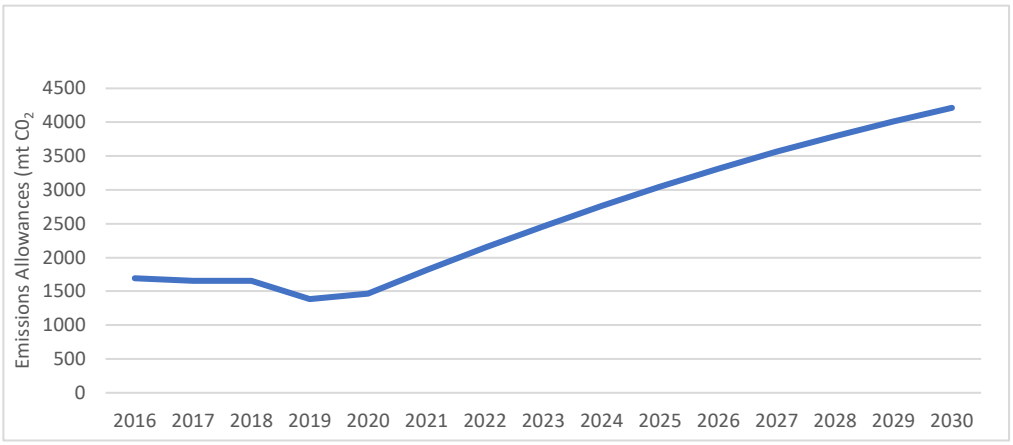
Assessing the origins of the surplus (as captured by indicators a.1 – c.2) goes beyond the scope and capabilities of this paper. This paper focuses on exploring indicator (d) which addresses the cumulative impact of all of these 'events', by assessing a few likely emissions pathways.

As in any review, the first question should be whether the tool that we are evaluating is still needed. For the MSR review this can be operationalised by answering the question 'what would happen to the TNAC if the MSR would be abolished in 2021'?

Figure 2 shows the potential evolution of the TNAC without the MSR, with the in 2018 agreed parameters for the EU ETS, and using the 'baseline' (linear) emissions pathway up till 2030 outlined in the European Commission's 2030 Climate Target Plan Impact Assessment.

[13] ERCST (2019), "Preparing for the MSR Review", p. 9.

Figure 2: TNAC in a scenario without the MSR

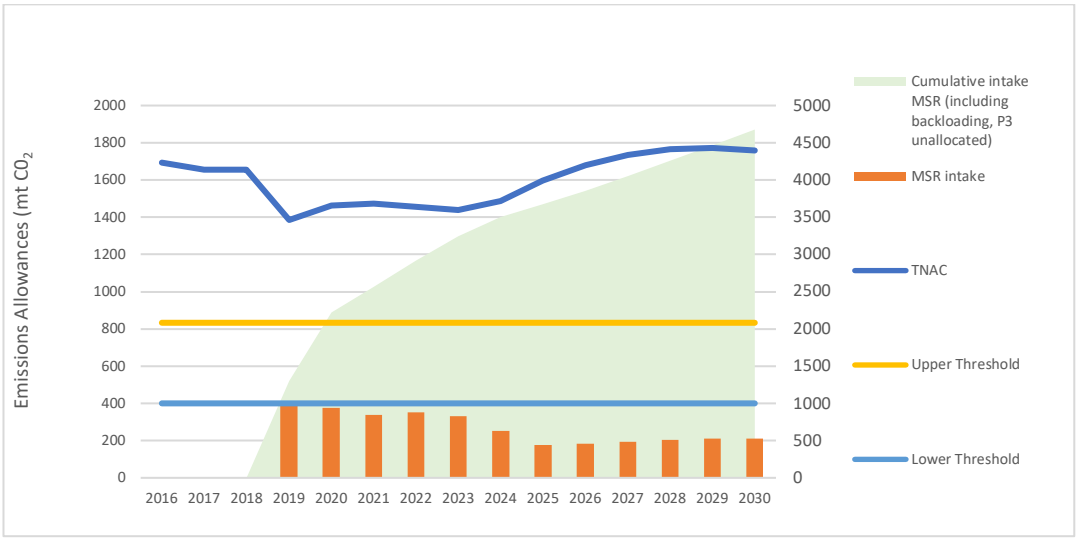


Source: ERCST based on EC data

Without the MSR in place, the TNAC would amount to over 4 billion by 2030, thus proving that the MSR is crucial to keep the TNAC under control.

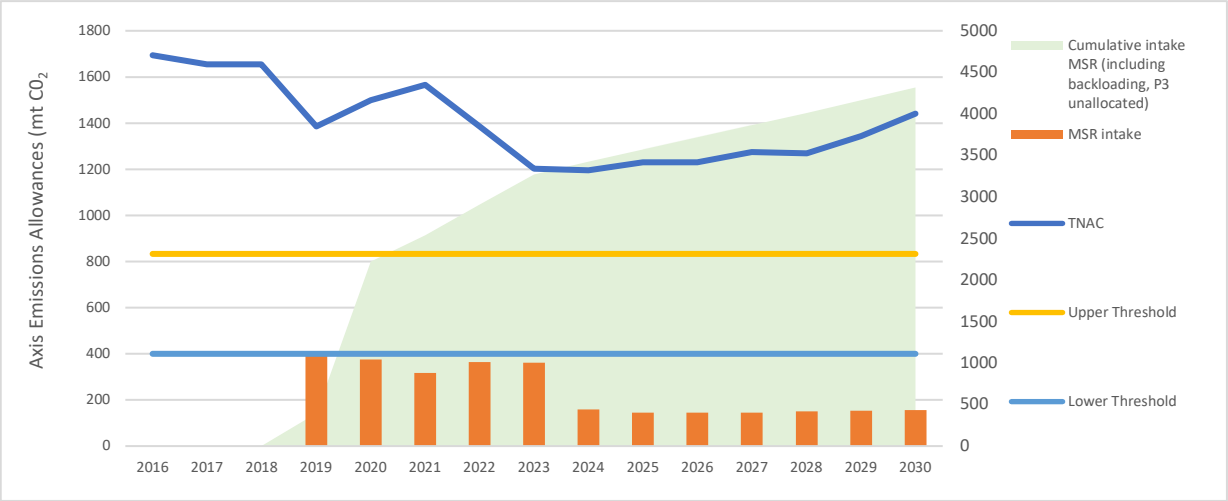
However, it remains to be seen whether the MSR is on track to bring the TNAC within the range of the thresholds. This question is explored in figures 3 and 4 below. Both scenarios use the current phase 4 ETS and MSR parameters but apply them to two different emissions pathways: the first uses the baseline scenario of the 2030 Climate Target Plan again while the second shows BNEF's old base case for the EU ETS with a 43% target.

Figure 3: current MSR parameters + BSL emissions (linear) pathway from 2030 climate target plan



Source: ERCST based on EC data

Figure 4: current MSR parameters + BNEF old base case emissions pathway



Source: BNEF

In both scenarios, we can observe that the TNAC is on a stable/downward slope until 2023, before increasing again as the MSR's intake rate declines from 24% to 12%.

Based on this brief assessment, we conclude that while the MSR is effective in preventing the market surplus from spiralling out of control, the current design parameters are insufficient to contain the TNAC in the second part of the decade.

Indeed, it can be said that already before the ongoing discussions around the European Green Deal and the review of the EU ETS, the MSR was not 'fit for purpose', as it would not have been able to bring the TNAC back within the thresholds.

3.3. GOAL 3: monitor the impact of the MSR on competitiveness

Goal 3 is a goal that is not a goal of the MSR, but a goal of the MSR review. As shown in table 1, the initial ERCST paper on the MSR review explored different indicators to operationalise this goal. Carrying out a review of the impact of the MSR on competitiveness can be seen more as a political statement than a goal that can be really assessed. Therefore, this paper will make a few observations but will abstain from an in-depth analysis.

With regards to the impact of direct and indirect costs on installations (**indicator 3a**), it can be argued that the impact on direct costs for those sectors at risk of carbon leakage was likely limited, as industry's emissions have so far been covered well by free allocation[14]. This was due to a set of circumstances that will not be repeated but can be attributed to ETS design flaws and a severe economic and financial crisis. However, it must be noted that large differences exist across sectors and individual installations, which should be kept in mind when assessing competitiveness impacts. In addition, one can see this as the past, with the current situation changing dramatically. Finally, some companies, especially those

[14] ERCST, 2021 State of the EU ETS Report.

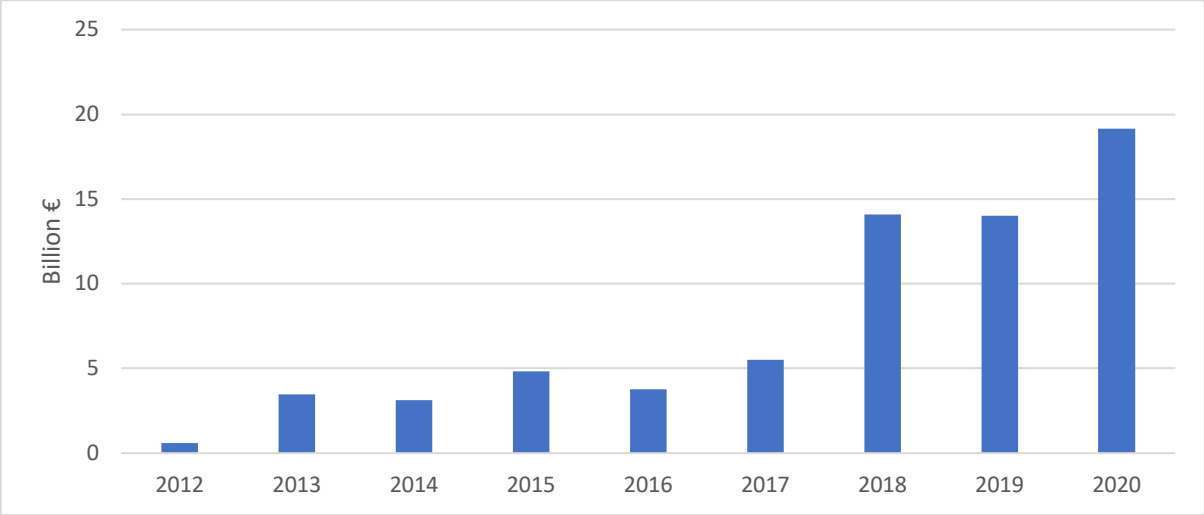
with the ability and inclination to hedge risks, have hedged their ETS compliance well into this decade. This is not to be generalized in any way.

Arguably, the MSR might have a more significant impact on indirect costs, for which not all Member States have compensation schemes in place and where, contrary to the system of free allocation, full compensation at the benchmark is not allowed (the state aid guidelines have this currently capped at 75%). Therefore, any assessment of competitiveness impacts cannot fail to consider indirect costs.

Indicator 3b is more difficult to operationalise but can be seen as increasingly important and with potentially increasing impacts. In this case the impact of the constant invalidation of allowances by the MSR post-2023 would lead to a decrease in the overall availability of EUAs. This will clearly impact EUA prices, leading to a significant price increase. What would need to be assessed, is the impact of this price increase on competitiveness, and this will require a sector-by-sector analysis. This analysis has been done by some of sectors and in some cases the results are quite significant if not dramatic.

Indicators 3c and 3d are more straightforward to assess. Indeed – as shown in table 2 – auction revenues for 2019 and 2020 increased significantly, generating almost as much revenues as the entire 2013-2018 period.

Table 2: Auction Revenues 2012-2020



Source: ERCST State of the EU ETS Report 2021

Likewise, higher EUA prices will increase the resources available in the Innovation and Modernisation Funds. Throughout Phase 4, as their allowances are monetised, total revenues should be compared with the initial estimates of their size by the European Commission when the funds were put in place.

Revenues for the Innovation Fund come from the auctioning of 450 million allowances in the period 2020-2030. In the explanatory memorandum of the delegated regulation on the Innovation Fund[15], the Commission expected the volume of the Innovation Fund to be between €6 billion (at carbon price of €15/tCO_2) to €11 billion (at a price of €25/tCO_2)). Today, with carbon prices over €40/tCO_2, the value

[15] https://ec.europa.eu/clima/sites/default/files/innovation-fund/c_2019_1492_en.pdf

would increase up to €19 billion. As EUAs prices are expected to grow further, so will the value of the Innovation Fund as it will be monetised gradually during phase 4.

The same holds for the Modernisation Fund, which is funded with the auctioning revenues of 2% of total allowances for 2021-2030 and whose size can be increased by 0.5% of the total number of allowances if the free allocation buffer to avoid the application of the CSCF (3% of the total quantity of allowances over Phase 4) is not fully used. A previous ERCST paper on Funding Mechanism[16] estimated that for prices of €20/EUA and €35/EUA, a value between €6.3 billion and €11 billion can be expected for the entire Fund over Phase 4. Consequently, with current prices the estimated value of the Fund throughout Phase 4 would be over €14 billion.

[16] ERCST (2019), "Funding Mechanism in the Fourth Phase of the EU ETS".

4. Scenario Analysis

The MSR review does not happen in a vacuum, but it is rather part of the broader review of the key pieces of the EU Climate Regulatory Framework. Notably, the MSR will operate in an environment characterized by a more ambitious overall emissions reduction target and more stringent overlapping climate policies, which will in turn affect the MSR's functioning.

Against this background, this section proposes an outlook for MSR operations in the medium term by examining several scenarios concerning possible pathways for the EU ETS through 2030. Those scenarios should not be considered as forecasts for the future, but rather as interpretative lenses to better understand how the MSR review dynamically interacts with the other pieces of the EU Climate Policy framework.

While the MSR is not per se designed to increase the EU climate ambition, it is being used to this end, impacting EUAs prices in the short term. Therefore, it influences the way in which the EU will achieve the 2030 target. For the transition to be successful and sustainable, the MSR parameters should be calibrated in such a way as to ensure that the pathway towards 2030 will be as smooth and effective as possible.

Scenarios include variations on the EU ETS 2030 emissions reduction target, CAP rebase and changes of the linear reduction factor. Today, ETS sectors are expected to deliver a 43% reduction in emissions by 2030 compared to 2005. To make the ETS target consistent with the increased overall EU 2030 emissions goal, the EC is likely to propose a reduction target of 63% by 2030, which would likely translate in a higher linear reduction factor – around 5.24% as of 2024. The option of a one-off reduction of the cap in 2024 is also under consideration and is included in the scenarios.

The following analysis uses the following four scenarios for the ETS review:

1. ETS 63% emissions reduction target, no one-off reduction
2. ETS 63% emissions reduction target, 100Mt one-off reduction in 2024
3. ETS 55% emissions reduction target no one-ff reduction
4. ETS 55% emissions reduction target, 100Mt one-off reduction in 2024

These scenarios are then tested for their sensitivity to different MSR parameters that will be the object of the upcoming MSR review. Particularly, MSR injection rates and thresholds are the following:

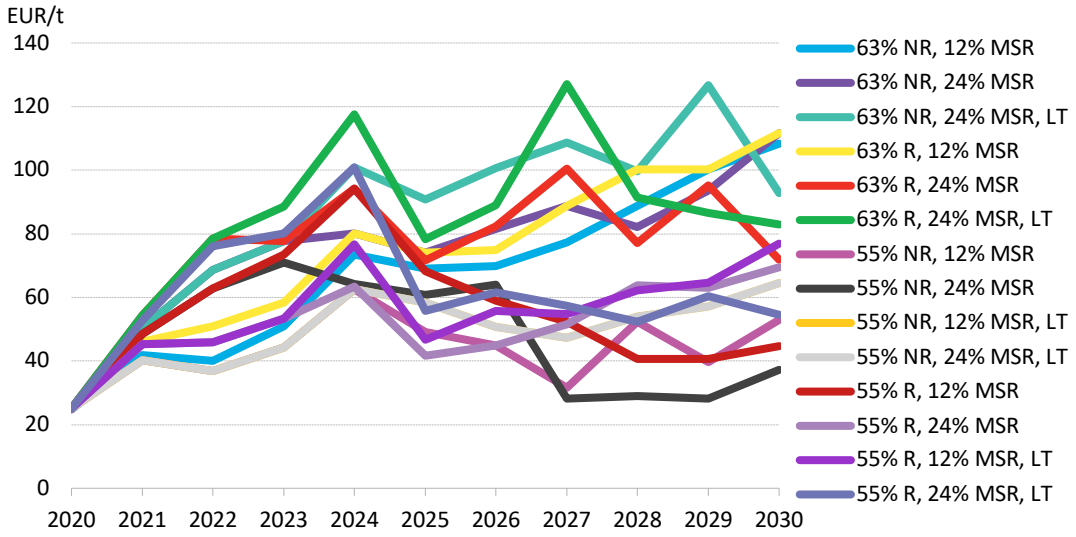
- MSR injection rate changes from 24% to 12% in 2024
- MSR injection rates stays at 24% throughout the period
- MSR injection rate stays at 24%, with the injection threshold lowered to 600Mt

4.1. EUA Prices

Figure 5 shows that with an overall 63% reduction target, EUA prices will be above 100€ towards the end of the trading period in all scenarios, except where a one-off reduction is combined with a 24% MSR after 2024. The peak in prices – 127€ per ton – is reached where a 63% reduction scenario is combined with a 24% MSR and low thresholds.

One can also notice that, irrespective of changes in the other parameters, a 12% post-2024 MSR intake rate seems to involve a more gradual and steady increase of prices. On the contrary, a higher intake rate is associated with more irregular price paths throughout the trading phase.

Figure 5: EUA Prices



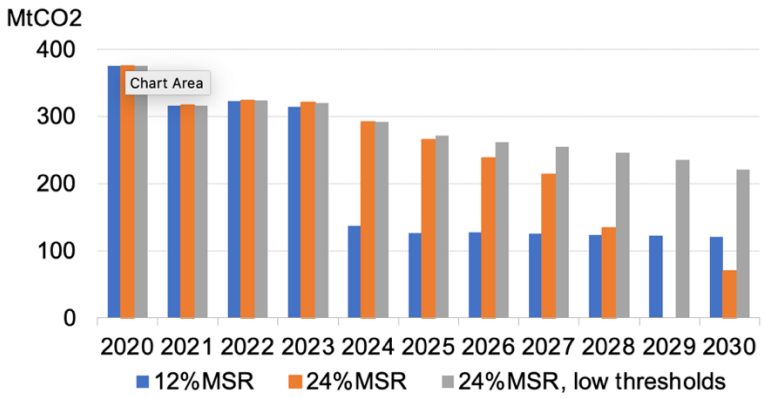
4.2. MSR Injections

Different MSR thresholds and injection rates have a direct impact on the annual number of allowances that are injected into the MSR. With a 12% MSR, an average of 186 million EUAs are injected into the MSR every year in the period 2021-2030, for a total of 1,838 billion EUAs throughout the period.

Starting in 2024, intakes in the 12% MSR scenario range between 120 and 138 MtCO2, while they are obviously much higher with a 24% intake rate. Interestingly, with a 24% MSR there is no injection in 2029.

When compared to a 12% MSR intake, a 24% MSR and lower threshold scenario throughout the period will result in an extra one billion more allowances to be withdrawn from auctions. Injections follow similar patterns even when the CAP is rebased in 2024.

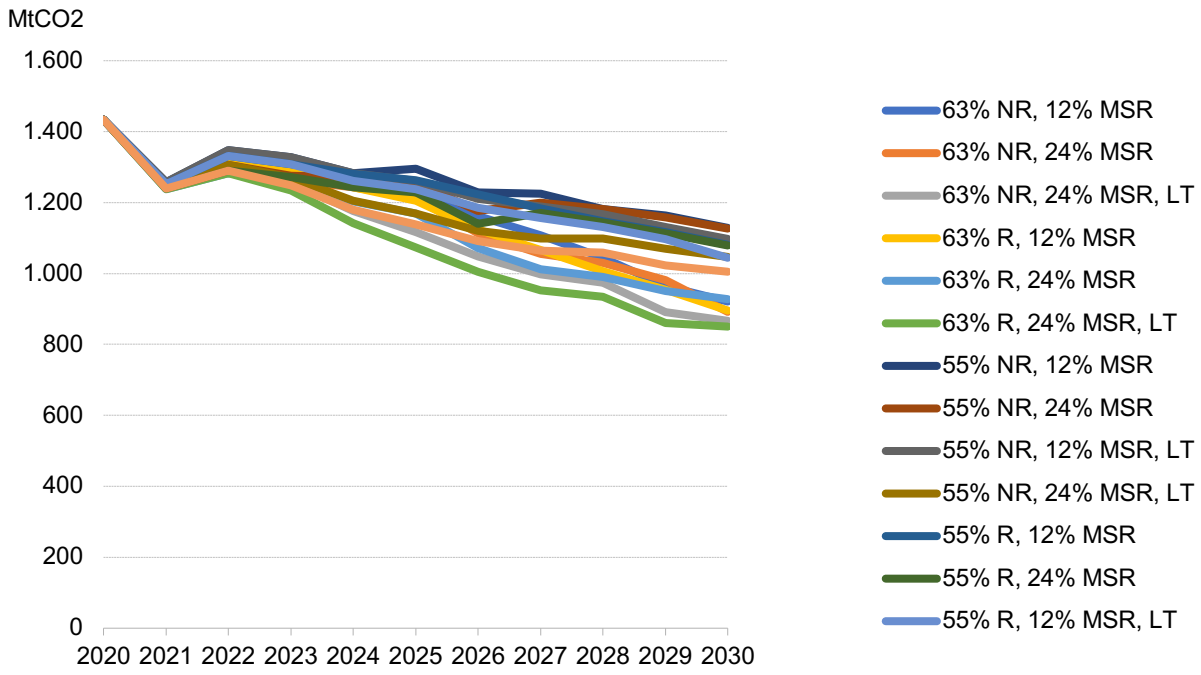
Figure 6: MSR Injections, 63% No Rebase



4.3. Emissions

The graph below indicates that the trajectory of emissions is largely independent from the actual MSR injection rate. We also notice that with lower MSR thresholds, emissions tend to follow a lower trajectory throughout the period. Rather than the MSR, it is the CAP which is the real driver for emissions reductions.

Figure 6: MSR Injections, 63% No Rebase



The two graphs below show that the ambition of the reduction target – and therefore the CAP - will determine how many sectors will participate in the abatement efforts. A linear reduction factor consistent with the 63% ETS target forces industry to abate its emissions by 530 MtCO2 starting in 2024. On the contrary, under a 55% target, the industrial sector's permanent abatement would be close to zero and it is still the power sector which produces the quasi totality of emission reductions.

Figure 7: Abatement, 63% MSR 12%

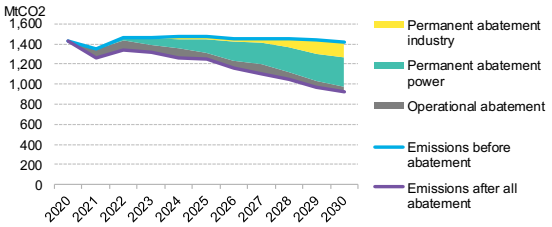
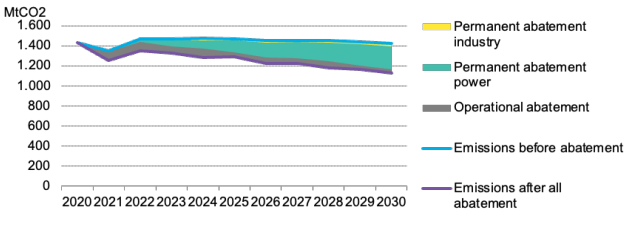


Figure 8: Abatement, 55% MSR 12%



4.4. CAP and Linear Reduction Factor

To reduce ETS emissions by 63%, the cap needs to fall by 51% between 2021 and 2030, to 769MtCO2, this would imply a 5.24% LRF from 2024. Instead, an LRF of 4.02% starting in 2024 is sufficient to

achieve 55% emissions reductions by 2030. A rebase in 2024 allows for a lower LRF afterwards, 4.38% with a 63% target and 3.17% with a 55% target. However, this would require an LRF of 10.35% and 9.14% respectively in 2024.

Figure 9: 63% no Rebase, CAP and 12% LRF

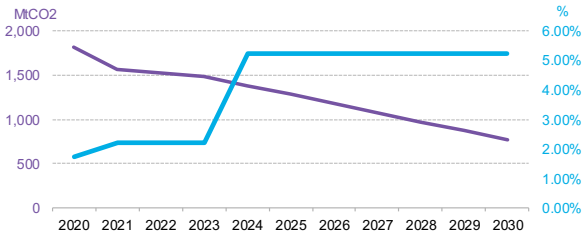


Figure 10: Supply after MSR Injections

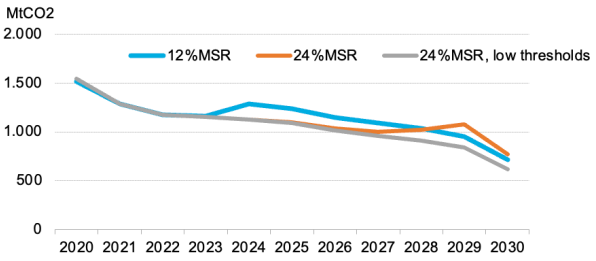


Figure 11: 55% no Rebase, CAP and LRF

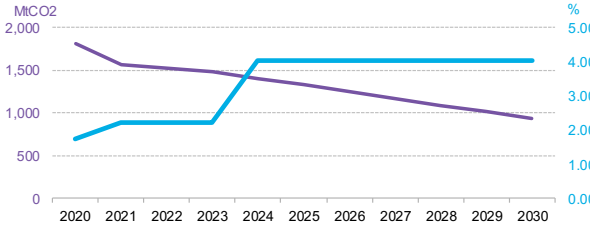


Figure 12: Supply after MSR injections

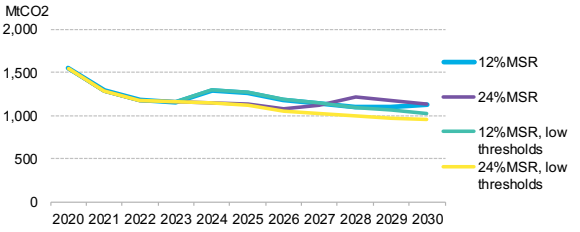


Figure 13: 63% with Rebase, CAP and LRF

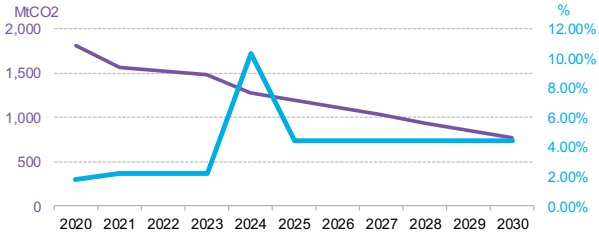
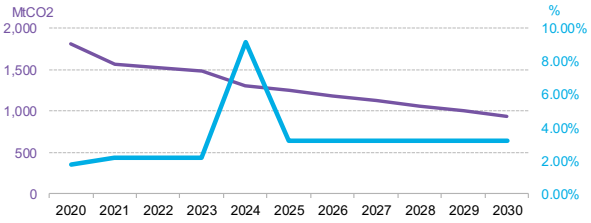


Figure 14: 55% with rebase, CAP and LRF



5. Key Takeaways

The analysis presented above leads to a number of reflections on the role of the MSR.

First, the MSR review cannot fail to consider the broader changes in the EU climate policy architecture. In the next trading phase, the ETS – and therefore the MSR – will find themselves operating in a largely uncharted territory. While in the past the ETS has primarily served as a tool to decarbonize the power sector, a higher emissions reduction target will require industry to abate emissions. Against this backdrop, the EU carbon market would serve two different goals which are not easy to reconcile. On the one hand, it should incentivize heavy decarbonization from the EU industrial sector and on the other hand it would help safeguard it from the risk of carbon leakage, as the MSR review requires to assess its impact on competitiveness.

The EU industry would likely better cope with a smooth upward carbon prices' trajectory over the trading phase rather than a bumpy one. In this respect, scenarios have shown that under a higher 2030 emissions reduction target – 63% for ETS sectors – a 12% MSR intake rate after 2024 guarantees a more stable price environment, in that it avoids price spikes. A 24 % intake rate with a 63% target will lead to price spikes and unstable prices.

At 63% reduction target a 12% MSR intake rate has the additional merit of keeping the MSR to its role of tackling existing surplus and leaving the role of creating the cap level to the LRF.

A 24% MSR intake rate has a role under the scenario where ETS sectors reduce emissions by 55% by 2030, namely preventing prices from collapsing in the second half of Phase 4.

Therefore, it would lead us to conclude that a 12% MSR intake rate would do a good job under a likely higher ambition scenario both in terms of price stability as well as transparency in the role assigned to each instrument. A 24% MSR intake rate would lead instead to price instability without significant additional benefits in terms of emission reductions.

Additionally, a higher ambition of climate targets will translate into changes in hedging behaviours. Notably, as higher carbon prices trigger abatement and complementary policies incentivize coal phase-outs, hedging from the power sector is expected to decrease. On the contrary, as carbon prices reach levels high enough to incentivize industrial decarbonization, industrial hedging is expected to increase.

The overall result of these two opposite dynamics is difficult to predict, let alone the fact that increasing investors' participation in the market could lead to more actors holding allowances for speculation. This has direct consequences for the MSR, which is designed to adjust the CAP based on the number of allowances that market actors store for future use. Other studies have highlighted the problems connected with TNAC itself as a reference parameter for the MSR, which risks triggering procyclical MSR intakes.

Moreover, the MSR interaction with overlapping – complementary – EU green deal policies will likely further affect the MSR intakes and ultimately the price impact of the MSR. Against this backdrop, the MSR needs to be equipped with the necessary flexibility to cope with this uncertain and evolving environment. More recurrent MSR revisions should be seriously considered and under a different governance approach. A five-year review period cannot match market dynamics which operate in much shorter timeframes.

Alternatively, if the current fixation with more algorithms persists, more dynamic parameters should be considered. That would mean that instead of injecting in the MSR a predetermined percentage of the TNAC, different intake rates could be applied only to the number of allowances above a determined threshold (surplus). The surplus could be further subdivided by identifying multiple thresholds so that different rates would apply to allowances above different pre-determined numbers.

Another key aspect of the upcoming revision will include aviation allowances. In this respect, for the correct functioning of the MSR, it is crucial that the European Commission includes aviation in its TNAC calculations. Aviation produces net demand for certificates, which in turns reduces actual circulation. The latter is therefore lower than the published TNAC. As demand for aviation allowances is slated to increase in the next years, MSR injection may fail to reflect supply/demand conditions. Similarly, whether the MSR will work correctly and in accordance with market fundamentals will also depend on the linking and trading arrangements that will be created between the EU ETS and the recently established UK system, as well as the potential system(s) that could be put in place for new intra-EU sectors currently not covered by carbon pricing, such as maritime, building and road transport.