ERCST

Roundtable on
Climate Change and
Sustainable Transition

2019

Preparing the review of the Market Stability Reserve (MSR)

Andrei Marcu

Jean-Yves Caneill

Federico Cecchetti

ERCST
Roundtable on
Climate Change and
Sustainable Transition

Preparing the review of the MSR

Andrei Marcu, Jean-Yves Caneill, Federico Cecchetti[1]

Executive Summary

The Market Stability Reserve (MSR) Decision was adopted in 2015, with the goal of providing a long-term solution to what was referred to as the supply-demand imbalance in the European Union (EU) Emissions Trading System (ETS). The MSR works as a volume-based instrument and its main function is to provide flexibility on the supply side of the EU ETS, by adjusting the supply of allowances to be auctioned, whenever the total number of allowances in circulation (TNAC) falls outside of a predefined range.

The MSR became operational in 2019, and its first review is scheduled in 2021. This review should include two elements: i) the track-record of the MSR; ii) the future impacts of the Reserve. The decision whether to change the MSR parameters or not, and if so, how, will need to be based on this analysis, as well as a discussion on what the MSR ought to achieve.

This report aims to promote a debate on:

- The components of the MSR review,
- The structure of the review,
- The parameters and data that should be monitored, leading to the 2021 scheduled review.

The paper will explain the rationale of focusing the review on the ability of the MSR to meet its goals, once these are clearly identified and defined. For each of the goals identified, the MSR review should put

[1] Andrei Marcu is the Director of the ERCST, Jean- Yves Caneill is a Senior Advisor to ERCST, and Federico Cecchetti is a Junior Researcher at ERCST.

forward a list of indicators to monitor, in order to provide a comprehensive assessment of the MSR performance and have a clear understanding of what elements of the MSR framework might need reform.

It is not the intention of this paper to duplicate or replace mandated work, but rather to provide an independent contribution to the policy debate on how the review should be undertaken.

The MSR is a complex tool, operating at a time when the EU climate agenda is undergoing a profound transformation. If the EU ETS is to continue playing a leading role in the Union's decarbonisation strategy, the MSR should effectively contribute to improving the functioning of the system.

The ideas developed in this report build on a series of meetings and discussions organised by ERCST with stakeholders in 2018 and 2019. ERCST's work on the MSR should be considered as an ongoing effort, which will need constant updates towards 2021, to reflect both political and market developments. The MSR review will also need to take into account any changes to the EU level of ambition to 2030, and beyond.

1. Introduction: the origins of the MSR

The functioning of the EU ETS has long been impacted by a what was seen as a "structural" surplus of emission allowances (EUAs), which led to carbon prices being too low to drive investments in emissions abatement.[2]

The origins of this surplus have been widely debated in the academic literature. Most authors attribute the main causes as the 2008 economic crisis, the existence of flaws in the market design, and the level of international credits imported during Phase 2 and the first years of Phase 3 of the EU ETS.[3]

Since the EU ETS is a regulatory market, it took some time before the EU institutions were able to respond to this situation. The delay in the political response led the amount of EUAs continuing to increase, until it reached about 2.1 billion allowances in 2013, roughly the equivalent of that year's supply (2.084 billion allowances).[4] In this context, EUA prices remained stubbornly low, fuelling a widespread perception that the EU ETS was not delivering upon its objectives – even if, as a market, it cannot have a price target.

It was only in 2011 that the EU institutions made a first attempt at to fix the system, by patching it up. This reform, which was always a presented temporary and ad-hoc measure, consisted of postponing the auctioning of 900 million allowances for the period 2014-2016 until the years 2019-2020, in an attempt to increase the market scarcity through a reduction of the supply of allowances.[5] "Back-loading" helped contain the quantity of EUAs that came to market, in the short-term and temporarily.

---

2 We will abstain from a discussion on what is the "right" price on the market. However, there was dissatisfaction with the price level as it was not, as expected, the main driver for low carbon investments.

3 A. Marcu et al. (2019), '2019 State of the EU ETS Report'. Retrieved from: https://ercst.org/wp-content/uploads/2019/05/2019-State-of-the-EU-ETS-Report-1.pdf

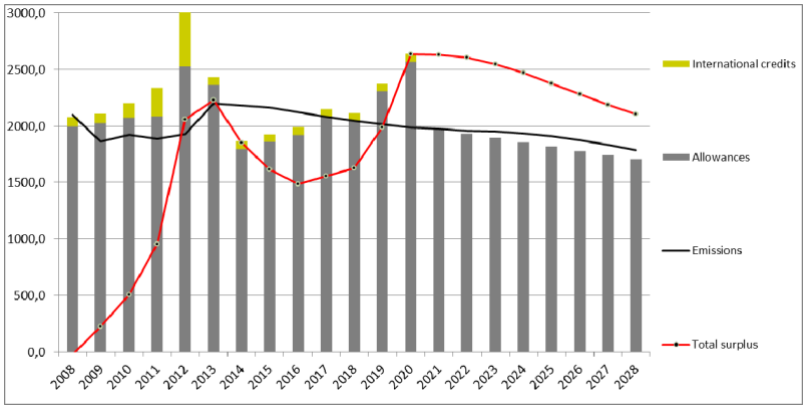
4 European Commission (2018), 'Report on the functioning of the European carbon market - COM(2018) 842'. Retrieved from: https://ec.europa.eu/clima/sites/clima/files/ets/docs/com_2018_842_final_en.pdf.

5 Commission Regulation (EU) No 1210/2011. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R1210&from=EN.

However, this action did not, and was not intended to eliminate the issue as a historical legacy, or to address any such future occurrences. Backloading left alone would have caused a rebound of the surplus, albeit a few years later.

The impact assessment accompanying the MSR Decision confirmed this outlook, indicating that the surplus would decline slowly in the years 2014 to 2016, yet still remaining at around 2 billion allowances over a 10-year period – roughly the equivalent of the amount of EUAs put yearly on the market.[6]

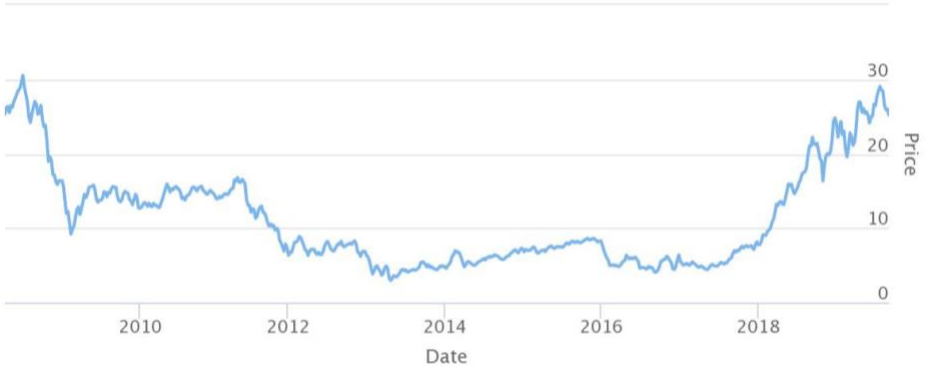
Figure 1: Projected Surplus with Backloading



Source: MSR impact assessment (EC, 2014)

The prospect of a rebound of the surplus prevented any significant recovery of EUA prices, which remained well below 10€/tCO2 in the years 2014 to 2018.[7]

Figure 2: Time Series of EUA Price (April 2008 – September 2019)



Source: Sandbag, 2019.

[6] The back-loading leads to a rebound in the surplus in 2019 and 2020 and hence does not affect the average size of the structural surplus of around 2 billion allowances in Phase 3 and 4, peaking at 2.6 billion in 2020. To clarify further, see: European Commission SWD(2014) 17, retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014SC0017&from=EN.

[7] Sandbag (2019), 'Tracking the European Union Emissions Trading System carbon market price'. Retrieved from: https://sandbag.org.uk/carbon-price-viewer/.

The EU institutions were left with the task of adopting a more comprehensive reform to the system, which could address the root issue – i.e. no mechanism to mimic flexibility on the supply side for the EU ETS in the auctioning schedule. Any such mechanism needs to address both the historical "surplus" as well as any new ones that could be triggered in the future.

As a long-term solution to fix the EU ETS "supply-demand imbalance", a Market Stability Reserve (MSR) was adopted in 2015, to start operating in January 2019.[8]

Design characteristics of the Market Stability Reserve

The MSR Decision included different mechanisms to address the accumulated surplus on the market, as well as to improve the EU ETS responsiveness to future shocks. These measures can be summarised as follows:

a) all unallocated allowances from the "backloading" are transferred to the MSR;
b) the Reserve is designed to release/absorb allowances to/from the market according to some pre-set thresholds:
   - 100 million allowances to be released from the MSR if the total number of allowances in circulation (TNAC) is below 400 million EUAs;
   - fixed percentage of the TNAC to be placed in MSR if the TNAC is above 833 million EUAs (intake rate of 12%).

Practically, the release/absorption of allowances takes place through adjustments to the future supply to be auctioned. The MSR is triggered by the value of the TNAC relative to the thresholds. The TNAC level is defined under Art. 1.4 of the MSR Decision:

> *The total number of allowances in circulation in a given year shall be the cumulative number of allowances issued in the period since 1 January 2008, including the number issued pursuant to Article 13(2) of Directive 2003/87/EC in that period and entitlements to use international credits exercised by installations under the EU ETS in respect of emissions up to 31 December of that given year, minus the cumulative tonnes of verified emissions from installations under the EU ETS between 1 January 2008 and 31 December of that same given year, any allowances cancelled in accordance with Article 12(4) of Directive 2003/87/EC and the number of allowances in the reserve. No account shall be taken of emissions during the three-year period starting in 2005 and ending in 2007 and allowances issued in respect of those emissions.*

This can be summarised by the following, simplified formula:

$$TNAC = Supply - (Demand + allowances\ in\ the\ MSR)$$

The reform of the EU ETS Directive in 2018 introduced changes to this framework, *'considering the need to deliver a credible investment signal to reduce CO2 emissions in a cost-efficient manner and with a view to strengthening the EU ETS'*.[9]

[8] Decision (EU) 2015/1814. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015D1814&from=EN.

[9] To clarify further, see the revised EU ETS Directive for Phase 4: Directive (EU) 2018/410, retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L0410&from=EN.

First, the intake rate of the MSR was increased to 24% until 2023. Second, a yearly invalidation of allowances above the number of allowances auctioned the year before was created (what we will call "cancellation mechanism"). This invalidation is set to start from 2023, and aims at cancelling part of the surplus of EUAs held in the MSR at that point in time.

Notably, the introduction of the cancellation mechanism represents a quite significant departure from the initial design of the MSR, as outlined in the 2015 Decision.[10] In fact, without the cancellation, the MSR should not lead to changes to the overall cap, as allowances could, in theory, always return to the market. On the contrary, with the cancellation in place, the long-term emissions cap becomes a function of past and future market outcomes.[11]

The MSR Review in the context of the EU ETS framework

Against the backdrop of its design parameters – lower and upper thresholds; intake rate (24% until 2023, 12% thereafter); cancellation mechanism – the MSR Decision requires, periodically, an assessment of the MSR functioning, and the delivery of its objectives.

This is specified in **Article 3 of the MSR Decision**:

> *The Commission shall monitor the functioning of the reserve in the context of the report provided for in Article 10(5) of Directive 2003/87/EC. That report should consider relevant effects on competitiveness, in particular in the industrial sector, including in relation to GDP, employment and investment indicators. Within three years of the start of the operation of the reserve and at five-year intervals thereafter, the Commission shall, on the basis of an analysis of the orderly functioning of the European carbon market, review the reserve and submit a proposal, where appropriate, to the European Parliament and to the Council.*
>
> *Each review shall pay particular attention to the percentage figure for the determination of the number of allowances to be placed in the reserve pursuant to Article 1(5) of this Decision, as well as the numerical value of the threshold for the total number of allowances in circulation and the number of allowances to be released from the reserve pursuant to Article 1(6) or (7) of this Decision. In its review, the Commission shall also look into the impact of the reserve on growth, jobs, the Union's industrial competitiveness and on the risk of carbon leakage.*

During Phase 4 of the EU ETS, reviews of the MSR will take place in 2021 and 2026. These reviews will play a key role to ensure that the EU ETS is "fit for purpose".

---

[10] To clarify further, see: G. Perino (2018), 'New EU ETS Phase 4 rules temporarily puncture waterbed', Nature Climate Change.

[11] Recent academic research highlighted how the implications of cancellation on the emissions cap could also lead to some 'unintended consequences', given that there might be more cancellation when future abatement is more costly, making the policy more stringent when the cost of compliance is higher. This can be explained by the fact that cumulative emissions depend in an important way on market's expectations on future emissions abatement costs. If an installation expects higher abatement costs in the future, it might prioritise a cut in emissions today, banking, in some cases, allowances for future use. However, with the cancellation mechanism, this could lead, in some cases, to more invalidation of allowances, which would result in higher emissions reduction than the EU ETS cap.
For further reading, see: B. Kenneth et al. (2019), 'The unintended consequences of the EU ETS cancellation policy', Munich Personal RePec Archive.

This will include the role of the MSR in shielding the EU ETS from the effects of policy overlaps, considering that the EU ETS operates in a highly interconnected environment, and is affected by climate change and other policies at the global, EU and EU Member State (MS) level.

Before analysing what the MSR review could look like, it is worth clarifying that the there are other governance mechanisms that mandate periodic assessments and reviews of the EU ETS. As in the case of the MSR review, such mechanisms could also trigger changes to the EU ETS framework.

These governance mechanisms include the review clause under Article 30 of the EU ETS Directive[12] (foreseen in 2023 and 2028), and the assessment clause under Article 29 of the Governance of the Energy Union Regulation (foreseen in 2021 and every two years thereafter).[13]

The revised EU ETS Directive also adds the obligation to report on 'other relevant climate and energy policies', whereas the Governance of the Energy Union Directive requires this 'functioning of the carbon market report' to feed into the yearly 'State of the Energy Union Report'.

This clarification highlights a key element which should be considered while analysing the MSR performance: the MSR is not a solution to fix all the existing and (potential) future problems of the European carbon market, and it should also not be treated as such. The MSR addresses one design flaw of the EU ETS, with others requiring other fixes. The MSR is an important element of the EU ETS framework, yet one among others.

The 2018 reform of EU ETS Directive adopted several changes to the EU ETS framework beyond the MSR, including changes to the linear reduction factor (LRF), the end-year cap, the adjustment of free allocation, and the funds available for innovation and modernisation.[14] Similar changes to the EU ETS framework could also be taken in the future, regardless of whether these changes also address the MSR directly.

2. Framing the MSR review

In order to frame the MSR review, the first step is to understand the aim of the exercise. Article 3 of the MSR Decision indicates that the MSR review should be developed *'on the basis of an analysis of the orderly functioning of the European carbon market'*, adding that some elements to be included in the analysis are:

- the MSR intake rate (*'the percentage figure for the determination of the number of allowances to be placed in the reserve'*);
- the continued appropriateness of the upper and lower thresholds (*'the numerical value of the threshold'*);
- and the relationship of the Reserve with competitiveness issues (*'impact of the reserve on growth, jobs, the Union's industrial competitiveness and on the risk of carbon leakage'*).

[12] *Ibid*.
[13] Regulation (EU) 2018/1999. Retrieved from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN.
[14] A. Marcu et al. (2018), *Supra* n.2.

Article 3 does not clarify any further indication on how the analysis should be carried out, nor what the structure of the review should be. The purpose of this report is to try and put forward practical answers to these open issues, and, more broadly, understanding what a good performance of the MSR is.

As a starting point, it seems reasonable to assume that the MSR review should be centred on the reserve's ability to meet its stated goals, as indicated by the relevant legislation. Put differently, the review should answer the following questions:

- is the MSR delivering upon its goals?
- in case the MSR would not be delivering, what are the reasons behind its under-performance?
- what changes might this imply to the legislation?

2.1 Definition of the MSR goals

General approach behind the MSR

Looking at the broad picture, it can be affirmed that the MSR was introduced to fix the issue of the historical surplus while preventing such a situation from occurring again, and it would do so by creating a predictable governance approach to market intervention. This market intervention, in turn, would address the supply-demand imbalances through adjustments to the supply of allowances to be auctioned.

In other words, the rationale for having an MSR is to ensure:

a) the predictability in market intervention (i.e. stability of governance);
b) adjustments of the volumes available in the market, in order to bring the supply-demand balance within a certain desirable bandwidth, as established by the regulator;

These two elements should be highlighted, as the regulator chose to create a Market Stability Reserve against potential alternatives. Starting with the first element, if the intention of the EU institutions was simply to address the built-up surplus, a one-off intervention might have been sufficient. However, this would have not ensured the longer-term predictability of future market interventions, as opposed to the MSR.

Similarly, looking at the second element, a different approach to the existing market imbalances would have been to act on prices, via, for instance, the introduction of a price floor, a price corridor, or a central carbon bank. Yet, the decision was made to adjust the volumes available in the market, as this was considered to be a more neutral approach to improving the functioning of the market.

In light of this discussion, the approach behind the MSR can be summarised as:

- ensuring the predictability for the way market interventions in the EU ETS are carried out to address "supply-demand imbalances", through automatic adjustments of the volumes in the market.[15]

[15] If we assume this definition to be valid, one element to be monitored in the future is the relationship between market volumes and liquidity. Indeed, if the MSR were to be successful in bringing the supply-demand balance within the bandwidth established by the MSR Decision, this might lead to potential problems of liquidity in the market in the long run. This issue is not analysed in the context of this paper, but should be born in mind when designing the 2026 MSR review.

It is worth noting that the concepts of "market balance" and "market imbalances", which were here mentioned to explain the rationale behind the MSR, are not easily defined, and will be separately discussed under section 2.3.

The two goals of the MSR

Having clarified what were the main reasons for the regulator to establish a Market Stability Reserve, we need to determine what the goals the MSR are, and how these can help monitoring the MSR performance through the review.

These goals can be identified by analysing the text of the MSR Decision, although they are not directly mentioned in the articles of the Decision, but rather specified in the Decision's Preambles.

Preamble (4) states:

"The report from the Commission to the European Parliament and to the Council on the state of the European carbon market in 2012 identified the need for measures in order to tackle structural supply-demand imbalances".

Preamble (5) adds that:

"In order to address that problem and to make the EU ETS more resilient in relation to supply-demand imbalances, so as to enable the EU ETS to function in an orderly market, a market stability reserve (the 'reserve') should be established in 2018 and it should be operational as of 2019. The reserve will also enhance synergy with other climate and energy policies".

Combining these excerpts with the MSR legislative history, the two goals of the MSR could be summarised as follows:[16]

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 the reason why the MSR was initially put in place, i.e. to eliminate the existing "structural imbalance" in the market. The MSR Decision indicates clearly that this was a key motivation behind the introduction of the MSR. However, the legislation does not provide an explanation on what is meant by "structural imbalance".

For the purpose of framing the MSR review, "structural imbalance" can be defined as an imbalance caused by the market environment that cannot be dealt with by the market itself, within its design characteristics and within a reasonable timeframe. This was the case of the existing surplus in the EU ETS market.

The second goal should be seen as complementary to Goal 1 and relates to the ability of the MSR to address new potential "market imbalances" emerging as a result of new events. Indeed, the MSR was not only designed to tackle the existing 'historical' surplus, but, more broadly, to *'make the EU ETS more resilient in relation to supply-demand imbalances'*.

[16] Both goals were proposed by ERCST in the current wording during multiple meetings with public and private stakeholders, finding a wide support among participants.

Considering that the MSR Decision does not only refer to the built-up surplus, we can assume that the MSR should also respond to future potential imbalances stemming from *new events*. Both the website of the European Commission and the consultations that preceded the operationalisation of the MSR seem to confirm this view.[17]

"New events" should be understood 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.

Indeed, the MSR acts within a highly interconnected environment, and will have to respond to it in order to improve the overall system's resilience. This include addressing the overlaps that exist between the EU ETS and other EU-wide and MS policies (*'The reserve will also enhance the EU ETS synergy with other climate and energy policy'*), as well as other changing circumstances that might have an impact on the market. One example of the latter is economic shocks, as shown by the role of the 2008 economic crisis in the creation of the "historical surplus".

2.2 Definition of the goal of the MSR review

The previous section highlighted how the MSR review should focus on the analysis of the MSR ability to meet its goals. These goals have been identified as the ability of the Reserve to address the historical surplus on the market, as well as new imbalances that might emerge in the future – respectively, Goal 1 and Goal 2.

However, Article 3 of the MSR Decision also mentions a third aspect to be included in the review: the ability of the MSR to address what could be dubbed "competitiveness concerns". This should be considered as a "goal of the review" rather than a goal of the MSR itself, and an attempt is made to summarise it below:

- **Assessing the impact of the MSR on growth, jobs, and competitiveness**

Several references to competitiveness can be found throughout the text of the MSR Decision. As already mentioned, Article 3 states:

"In its review, the Commission shall also look into the impact of the reserve on growth, jobs, the Union's industrial competitiveness and on the risk of carbon leakage."

Preamble (10) also adds:

"That report [… the Carbon Market Report] *should consider relevant effects on competitiveness, in particular in the industrial sector, including in relation to GDP, employment and investment indicators. The review should also look into the impact of the reserve on growth, jobs, the Union's industrial competitiveness and on the risk of carbon leakage."*

The emphasis of the MSR Decision on competitiveness issues points to the fact that the relationship between the MSR and competitiveness should be evaluated as a key and separate element in the review.

[17] The website of the European Commission clarifies that the Reserve should: (1) address the current surplus of allowances; and (2) improve the system's resilience to major shocks by adjusting the supply of allowances to be auctioned. Retrieved from: https://ec.europa.eu/clima/policies/ets/reform_en.

This is not to say that the MSR should be seen as the instrument to address each and every implication of the EU ETS on competitiveness, but only that the MSR review should evaluate if the MSR is having an impact on these "competitiveness concerns".

The importance of analysing these potential impacts is confirmed by the extensive discussions on direct and indirect cost compensation, which have always been core elements in the EU ETS negotiations. The same can be said about the role of free allocation, and its evolution over time.

Furthermore, the implications of the MSR on competitiveness also reflect the political feasibility of having a Market Stability Reserve in place: if the MSR were to cause a significant loss of competitiveness for EU stakeholders, then the political support behind the Reserve would likely start to fade away.

In conclusion, the MSR review should analyse three different goals – two Goals of the MSR, one specific Goal of the review:

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*.
3. Assessing the impact of the MSR on growth, jobs, and competitiveness

2.3 Definition of market balance for the purpose of the MSR review

Both Goal 1 and Goal 2 refer to historical and new potential sources of "imbalance", to be dealt with by the MSR "within a reasonable amount of time". These two elements need to be clearly defined:

- what is a "market balance", as opposed to market "imbalances"?
- what can be considered as a "reasonable amount of time"?

Starting with the first element, it should be recognised that defining market balance is not an easy task, since the MSR Decision does not provide with a clear-cut definition. Moreover, there is no existing definition of "market balance". What is generally used is "market equilibrium", which is defined by the state in which market supply and demand balance each other, and, as a result, there is price discovery.

In the context of the role of the MSR in the EU ETS framework, we believe that the EU ETS "market balance" could be defined according to two elements:

a) current scarcity on the market, to be identified according to the TNAC being within thresholds, as defined by the MSR Decision;
b) future expectation of market scarcity in the EU ETS, which is driven by both market and political expectations.

The two points should be considered together, as neither of them, on its own, would be sufficient to define the EU ETS market balance. On the one hand, the short-term balance could be identified with the TNAC being within thresholds. As the MSR is a formula-driven mechanism, the analysis of the short-term market balance cannot refrain from a discussion on the TNAC level.

On the other hand, the analysis of the TNAC alone cannot be considered as an adequate indicator of the market balance, as this does not include longer-term considerations of the expected market scarcity. Indeed, future market and political expectations may also influence price discovery, and there cannot be

what we can regard as a "balanced market" if these expectations of future scarcity are misaligned with the current scarcity.

If, in fact, the TNAC were to be within the thresholds, but EUA prices would remain low, this would indicate that there is a general expectation of no market scarcity in the future. This can be driven by no belief in the political will, or the fact that climate change will not be addressed by ETS but by other policy measures.

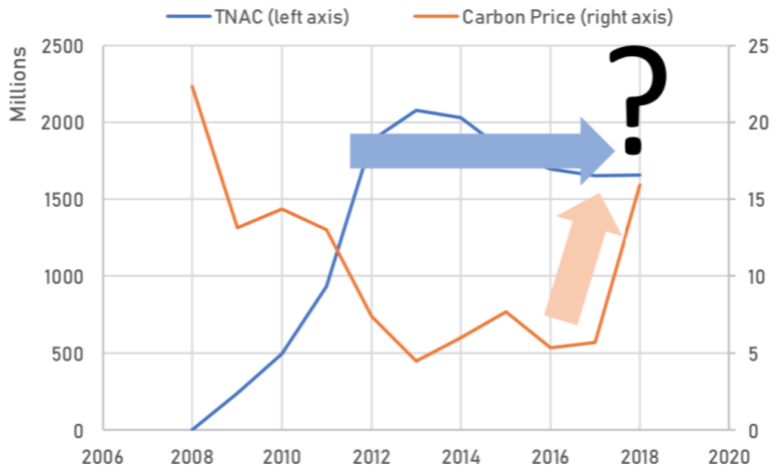
On the contrary, even if prices were to go on an upward trajectory, and yet the TNAC were to remain significantly higher than the upper threshold, this could still reveal a supply-demand imbalance, at least in the short-term.

A similar trend could be explained by the fact that the market expects the TNAC to decrease at a later stage, and this "expected scarcity" in the future contributes to the ramp-up of prices today. However, this price increase would be reverted as soon as the expectation of future scarcity were to change, meaning that an analysis of the expected TNAC evolution throughout time is still necessary.

In this context, it is worth highlighting that the role of the MSR is not to bring scarcity to the market. The scarcity of the EU ETS is represented by the system's environmental target, which is expressed through the cap. The role of the MSR is to ensure that the scarcity set by the regulation through the cap is expressed in the market at every time, thanks to the MSR ability to address supply-demand imbalances.

Before continuing the discussion, it should also be acknowledged that some stakeholders disagree with the view of including the TNAC in the definition of market balance (the first element of our definition), arguing that the TNAC is not the right indicator to express the EU ETS performance. The proponents of this views highlight that, since the start of the MSR operations in 2019, the TNAC has slightly increased, whereas the price of EUAs also went up.

Figure 3: Surplus and Market Balance



Source: Climate Economic Chair, Dauphine University (R. Trotignon, 2019)

This would contradict the idea that the TNAC should be within thresholds for the EU ETS to reach an appropriate level of market scarcity. From this perspective, the functioning of the MSR, and implicitly the EU ETS market balance, would only be guaranteed by price levels ensuring a price signal for investors to

decarbonise. Accordingly, the focus of the MSR review should be on whether EUA prices incentivise decarbonisation: keeping the TNAC within some pre-set values would not automatically ensure it.

Whether these statements hold water or not, it is worth noting that the recent ramp-up of EUA prices, at least to a certain extent, came as a result of expectations that the MSR will reduce the existing surplus in the short-to-medium term. These expectations were driven by the second element of our definition, i.e. the "future expectation of market scarcity".

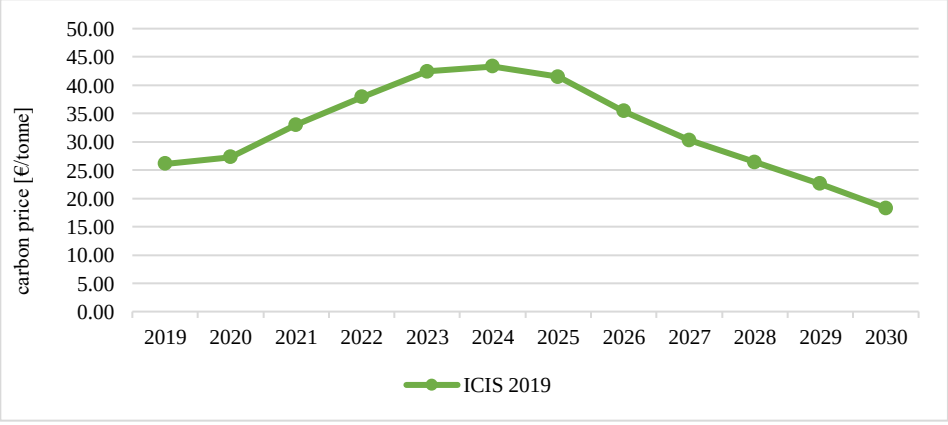
Having said that, while a discussion of EUA prices remains important in the context of the MSR functioning, price considerations should not become the primary focus of the review. This, in fact, would run the risk of promoting an analysis lacking objectivity, in the name of considerations on what represents the "right" price level. The implication would be an MSR driven by price and not quantity, which is not in the DNA of the EU ETS or the MSR.

As a final point, defining "market balance" according to the two proposed elements helps reconciling the different roles that the EU ETS plays in the short and long-term, as these two dimensions are not always aligned. Indeed, since the beginning of the EU ETS in 2005, the price of EUA has not really reflected the long-term scarcity in the market, or, in other words, the long run marginal cost.

If we assume that the EU ETS allowances will run out at a certain date in the future, price levels today should reflect this long-term scarcity. However, the current price of EUAs does not express this long run marginal cost, and the behaviour of market participants is, by and large, based on shorter-term considerations, taking into account only the short run marginal cost with a time horizon of approximately three years.

This misalignment between the short and long-term role of the EU ETS is reflected in the current market situation. On the one hand, expectations of increased market scarcity in the short and medium-term (up to 2024) were presumably among the main drivers of the increase in EUA prices in 2018-2019. On the other hand, longer-term market balance towards 2030 and beyond remains still uncertain, as shown by some price forecasts indicating a depression of EUA prices towards 2030.

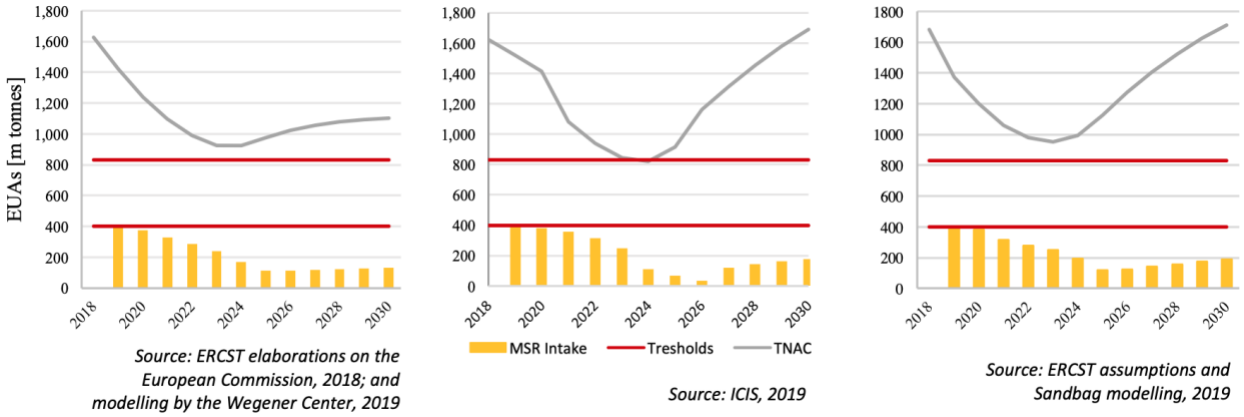
Figure 4: EUA Price Forecast to 2030 - ICIS, 2019



Source: 2019 State of the EU ETS Report (ICIS, 2019)

This is confirmed by several existing models analysing the future of the EU ETS, which show a wide consensus that the TNAC will significantly increase towards 2030, resulting in the market not being in balance by the end of Phase 4.

Figure 5: Modelling scenarios of the TNAC towards 2030



Source: 2019 State of the EU ETS Report

The lack of a 2050 EU ETS target could be seen as one of the reasons why the current price of EUAs does not always reflect the long-term market scarcity of the EU ETS beyond 2030.

TNAC composition

In several meetings with stakeholders organised by ERCST, one element that was extensively debated was the composition of the TNAC and its impact on the EU ETS "market balance". Indeed, while a majority of stakeholders agrees that there is currently no better indicator of the MSR performance than the TNAC, at least in the short-term, the analysis of its composition is still perceived as one issue not receiving the attention it deserves.

In the context of the MSR review, emphasis should be put on examining the different components of the TNAC, seeking to understand how these different components are influenced by, and have an influence on the current and future expected scarcity.

As a matter of fact, market participants make use of the existing surplus in different ways: hedging needs three years ahead; free allowance banked for future use and no longer available for the market; allowances used for compliance today; etc. These different uses are motivated by a number of different reasons.

However, looking at the TNAC as a single entity would not shed light on any of these reasons, leading to a limited understanding of the supply-demand balance in the market. For the EU ETS to function properly, a certain amount of surplus should always be available to market participants, in order to ensure intertemporal arbitrage and limit excessive price volatility.

Analysing the TNAC without looking at its composition would not show what volumes are actually available to market players, as the TNAC value does not differentiate between the allowances constituting the surplus and the allowances mobilised for hedging or banked for future use. Therefore, the MSR

review should assess these different TNAC components, as they directly influence the EU ETS "market balance".

Looking forward, the review should also analyse whether aviation allowances should be included in the TNAC formula in the longer run. Although aviation currently plays a relatively marginal role in the EU ETS market, it is expected to represent an increasingly important share of total EU ETS emissions in the future. Hence, not including the supply-demand balance of aviation allowances as part of the TNAC calculation might lead to a misinterpretation of the market needs in the future, distorting the assessment of the EU ETS "market balance".

2.4 Definition of "reasonable amount of time" for the MSR to tackle market imbalances

The second element that needs clarification is the expected period of time for the MSR to tackle market imbalances. In the definition of Goal 1 and Goal 2, we argued that the MSR should be able to react to old/new sources of imbalance "within a reasonable amount of time".

The MSR Decision does not make an explicit reference to the expected pace of reduction of the surplus. However, just achieving a reduction of the surplus would not be sufficient for the MSR to fulfil a positive role. In fact, the MSR is put in place to improve the EU ETS ability to deal with market imbalances, compared to a scenario with no-MSR in place.

This is the reason why the MSR performance should be assessed by evaluating whether the reactiveness of the Reserve is considered to be sufficiently fast, i.e. *"within a reasonable amount of time"*.

In other words, the MSR should be judged on how much faster it can address imbalances compared to a scenario with no-MSR, regardless of these imbalances being the result of old or new events and whether the time required makes sense based on objective criteria or outcomes.

In the analysis of the MSR functioning, the focus of the review should be on what period of time would be "reasonable", or "fast enough" for the MSR to play a positive role, thus guaranteeing the EU ETS market balance.

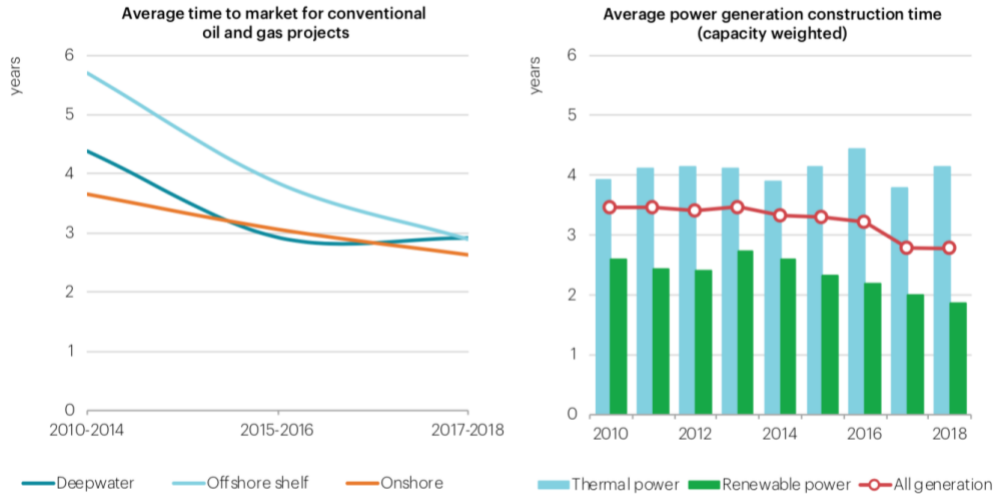
To answer to this question, it is important to reflect on the time needed for businesses to take final investment decisions (FIDs). If we assume that the EU ETS has the objective of promoting cost-effective decarbonisation, the MSR will act "within a reasonable amount of time" for as long as it will ensure a price signal to guide FIDs towards low-carbon projects.

In this sense, we can assume 3 to 5 years as being a "reasonable" timeframe for the MSR to absorb imbalances on the market, given that 3-5 years is the average time for businesses to take investment decisions (IEA, 2019).[18]

In the past decade, the energy sector has seen a shift towards energy projects with shorter lead times.

[18] International Energy Agency (2019), 'World Energy Investment'. This timeframe was also confirmed by the stakeholders involved in the ERCST meetings on the MSR review.

Figure 6: Average time to market for oil/gas and power generation projects



Source: World Energy Investments, IEA 2019

Companies are investing in projects delivering results faster, to reduce exposure to long-term uncertainties and limit capital risks. The MSR should be able to respond to this changing environment, reacting in a timely manner to market imbalances, both historical and new ones.

Moreover, fixing a timeframe to judge the MSR performance in 3-5 years helps quantifying said performance beyond a purely qualitative analysis. If the MSR would be able to meet its goals "within a reasonable amount of time", the EU ETS will be providing a coherent price signal to investors throughout Phase 4. This would also ensure that the MSR improves the market scarcity both in the short and long-term.

3. Proposed structure of the MSR review

In the previous sections, three goals of the MSR review were identified:

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** (or, in other words, eliminate surpluses resulting from new potential sources of imbalance within a reasonable amount of time).
3. **Assessing the impact of the MSR on growth, jobs, and competitiveness.**

The MSR review should analyse these goals, taking into account the earlier definitions of "market balance" and "reasonable amount of time". To do this, the review should be structured in three main parts.

- **The first part** should develop a list of **indicators** for each of the three goals, taking into account the elements stated in Article 3.
- **The second part** should assess the effectiveness of the MSR in meeting the three **goals**, to be analysed through the evaluation of the **indicators' performances**. This assessment will serve as

the basis to evaluate the continued appropriateness of the existing MSR parameters (intake rate, lower and upper thresholds, cancellation mechanism).

- **The third part** should examine the possibility for the MSR to assume new goals in the future, if any. Concerning this last part, Article 3 does not explicitly require an analysis of the future role and functions of the MSR. However, including an analysis of the MSR outlook would strengthen the role of the review, by shedding light on the future suitability of the Reserve beyond 2021. Moreover, the given definition of "market balance" already entails an analysis of the expected market scarcity in the medium-to-long term.

The proposed structure would guarantee a thorough analysis of the MSR performance, providing the European Commission with all the elements needed to potentially recommend changes to the MSR framework.

For each of the three goals, the 2021 review may need to consider recommendations on which MSR parameters might need reform, as well as what changes may need to be put in place. Such recommendations would need to be grounded on a detailed assessment of the MSR performance, according to different indicators for each goal.

In section 4, the paper will put forward a number of indicators that could be used to assess the MSR goals. This should also help understanding the origin of the potential sources of imbalance, helping to clarify when a supply-demand imbalance should be addressed by the MSR, and when, instead, other changes to the EU ETS framework might be more appropriate.

Track-record and forward-looking analysis of the MSR performance

During various ERCST meetings, several stakeholders highlighted the difficulties of having the first MSR review in 2021, given that this might be too early for the European Commission to have enough information and for the MSR enough of a track record, to undertake a fact based analysis and potentially propose changes to the MSR framework.

To avoid such criticisms, it is crucial that the review does not limit its scope to the analysis of the years 2019-2021, but rather seeks to do its evaluation taking into the future impact of the MSR throughout Phase 4. While developing a list of indicators to analyse the MSR performance, the review should therefore look at both the track-record of the Reserve until 2021, as well as at its expected performance in the period to 2030.

Indeed, having a review that focuses only on the track-record of the MSR would result in a fairly limited exercise, both in terms of scope and information available. With the MSR starting its operations in 2019, any assessment based on its track-record would translate in analysing data and indicators for just two years of operations: the "MSR calendar" is designed in a way that the TNAC for the current year is published in May of the following year, meaning that the 2021 TNAC will only be available in May 2022. This implies that, at the time of the review, only the 2019 and 2020 TNAC will be available.

If the MSR review is to represent a turning point in the significance of the EU ETS towards 2030, and potentially beyond, it is therefore important to also assess the expected impact of those policies that have already been announced, either at the EU or MS level, even if their effects will fully unfold in the years post-2021. The same reasoning applies to other changing circumstances that might affect the future of the market towards 2030, such as economic shocks.

This forward-looking analysis could be included in the MSR review through indicators based on modelling exercises and stress tests. To name but a few examples, the change of hedging needs and the potential for the market to enter a period of scarcity are two outlooks that should be evaluated, analysing whether the MSR would be able to respond to potential shocks on the demand side.

The future expected impact of the MSR on the EU ETS influences investment decisions today: if the role of the Reserve is to bring stability to the market, the MSR review should test its responsiveness to supply-demand imbalances, both in the past and the future.

4. Indicators to monitor towards the review

A list of indicators to assess the MSR performance in achieving its goals should ideally include the following:

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. Change in auction revenues for MS caused by the MSR c. Implications of the MSR on the innovation and modernisation funds

Indicators for Goal 1

As explained in the introduction, the MSR was initially put into place to tackle the existing surplus of allowances on the market – what was called "historical structural imbalance" under Goal 1. To assess whether the MSR is fulfilling its role of reducing the historical surplus, three indicators should be monitored towards the 2021 review:

a. Evolution of the TNAC for the period 2019-2020, i.e. since the start of the MSR operations.

b. Evolution of the TNAC for the period 2019-2020, to be compared with an estimate of the TNAC during Phase 3.

c. Estimated number of allowances invalidated in 2023, to be compared with the difference between the 2018 TNAC and the MSR upper threshold (i.e. an estimate of the historical surplus above the desirable level as established by the regulator).

The first two indicators are mutually reinforcing. The first one complies with the minimum design requirement of the MSR, i.e. to reduce the TNAC in absolute terms during the years of its operation. Basically, if the TNAC value has declined in absolute terms between 2019 and 2020 this should reveal the functioning of the MSR and a reduction of the surplus of allowances.

In the case where the TNAC would actually increase, or its reduction would be very limited, the assessment of indicator 1.a would have to be combined with the analysis of some of the indicators under Goal 2, to understand whether the lack of a reduction came as a result of "new events" happened in the meantime.

Indicator 1.b offers a deeper level of analysis, as it compares the total number of allowances on the market before and after the MSR operations. The comparison of the TNAC for 2019-2020 with an estimate of the TNAC for the most recent years of Phase 3 will show the pace of reduction of the surplus. If this reduction accelerates in the years 2019-2020, the MSR impact on the EU ETS market balance could be considered as positive.

In case there would not be a reduction of the TNAC, the assessment of indicator 1.b would have to be based on a counterfactual analysis comparing the estimate for the TNAC during the most recent years of Phase 3 with a hypothetical value of the 2019-2020 TNAC without the MSR in place.

Indicator 1.c offers a different perspective on the historical surplus, by focusing on the amount of allowances that will be invalidated in 2023. Arguably, the key reason behind the introduction of a cancellation mechanism was to eliminate the built-up surplus on the market. Therefore, comparing the allowances invalidated in 2023 with an estimate of the historical surplus would provide a reasonable approximation of the degree to which the MSR has absorbed this surplus. An estimate of the historical surplus can be calculated by subtracting the MSR upper threshold to the 2018 TNAC, which, by definition, already includes the total amount of backloaded allowances.

The 2018 TNAC refers to the last year before the MSR became operational and can be considered as a good proxy of the historical surplus once it is subtracted from the MSR upper threshold. Indeed, taking into account the definition given in section 2.3, having the TNAC within thresholds would not constitute a "market imbalance", meaning that the historical surplus can only be considered as any amount of allowances in the market above the upper threshold.

Overall, a general consideration worth highlighting is that it will not be possible to distinguish whether the MSR is tackling the historical surplus or new (potential) surpluses that might emerge in the years of the MSR operations. The MSR acts in a non-discretionary way: it absorbs allowances from the market according to the TNAC level, regardless of whether the TNAC itself is composed of allowances carried on from Phase 3, or new ones from Phase 4.

Nevertheless, for the purpose of having a detailed review assessing the MSR performance, it remains important to develop different indicators under each goal, so as to identify the different sources of potential imbalance.

Indicators for Goal 2

A list of indicators for Goal 2 should include:

a.1. Years needed for the MSR to absorb the potential variation of emissions in EU ETS sectors caused by Renewable Energy Sources (RES) and Energy Efficiency (EE) achievements of EU Member States in 2020, as compared to their 2020 targets.

a.2. Years needed for the MSR to absorb the potential variation of emissions in EU ETS sectors caused by new RES/EE targets towards 2030 – to be checked through stress tests and modelling exercises, testing the resilience of the MSR against new RES/EE targets.

b.1. Years needed for the MSR to absorb the potential variation of emissions in EU ETS sectors caused by MS coal phase-outs until 2020, as opposed to announced phase-outs at the time of the MSR design.

b.2. Years needed for the MSR to absorb the potential variation of emissions in EU ETS sectors caused by newly announced coal phase outs towards 2030 – to be checked through stress tests and modelling exercises, testing the resilience of the MSR against new phase-out plans.

b.1. Years needed for the MSR to absorb the potential variation of emissions in EU ETS sectors caused by variations in economic growth until 2020 – comparing the actual GDP growth rate in 2019 and 2020 with the GDP forecasts made by the EC in the MSR impact assessment.

b.2. Years needed for the MSR to absorb the potential variation of emissions in EU ETS sectors caused by variations in economic growth towards 2030 – to be checked through stress tests and modelling exercises, testing the resilience of the MSR against future potential economic shocks.

d. Years needed for the MSR to absorb the 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. Analysis of the hedging strategies of industrial and power companies in EU ETS sectors and alignment of these strategies to the MSR thresholds – to be checked through the use of proxies like the open interest on future/forward contracts and quarterly reports from utilities and large industries.

Most of the indicators proposed under Goal 2 could be broadly divided in two main categories: on the one hand, indicators addressing the track-record of the MSR at the time of the review; on the other hand, forward-looking indicators analysing the MSR expected performance towards 2030.

This reflects the reasoning included in section 3 about the need to include some scenario analysis as part of the MSR review. The indicators for Goal 2: a.1, b.1, c.1, focus on the track-record performance of the MSR. The indicators for Goal 2: a.2, b.2, c.2, look at the future implications of the Reserve towards 2030.

Indicator 2.d looks at the cumulative impact of the (potential) sources of imbalance on the EU ETS "market balance", by analysing the expected evolution of the TNAC towards 2030 according to different modelling scenarios. Indeed, as mentioned before, the MSR acts in a non-discretionary way, and the overall impact of these potential imbalances should be evaluated also at the cumulative level.

Finally, indicator 2.e provides an assessment of the evolution of the hedging strategies and their alignment to the MSR thresholds. This assessment is particularly important to understand whether the thresholds level is still appropriate according to the hedging needs of industrial and power companies.

The analysis of the hedging strategies should be both backward and forward-looking, and should compare the EU energy mix and RES penetration at the time of the MSR design against the current and (estimated) future EU energy mix and RES penetration.

Indicators for Goal 3

The assessment of Goal 3 will probably be the most problematic, as it is virtually impossible to completely insulate the effects that the MSR has on the competitiveness of EU ETS sectors. Other factors will always come into play, from the overall EU-wide macroeconomic situation to country-specific economic trends, from sector-level economic cycles to international trade issues.

Any assessment of the MSR impact on competitiveness will need to combine qualitative and quantitative considerations, to fully appreciate the multifaceted nature of the relationship between the EU ETS and economic activities.

Bearing this premise in mind, a list of indicators to monitor under Goal 3 should include:

a. Carbon leakage impact of EUA prices for industries and power companies, both in terms of direct and indirect costs, keeping in mind the carbon leakage protection measures – to be checked comparing the actual EUA prices in 2019 and 2020 with a basket of price forecasts developed by market analysts at the time of the MSR design. The assessment of the impact of the MSR on direct and indirect costs should be estimated at the lower level possible, ideally at the sectoral level.

b. Change in auction revenues for MS caused by the MSR functioning, to be estimated according to the price trajectory of EUAs and changes in the auction volumes due to the MSR. This assessment should include a counterfactual analysis of what those revenues would have been without the MSR in place, also considering the potential impact of voluntary cancellation by Member States under Article 12.4 of the EU ETS Directive.

c. Implications of the MSR functioning on the innovation and modernisation funds.

These indicators are, at least to an extent, all related to considerations about EUA prices.

It was mentioned how the expectations on the MSR operations were among the main drivers of the ramp-up of EUA prices in 2018-2019. The increase was almost fourfold (from 7.78 €/tCO2 on January 1st, 2018 to 26.22 €/tCO2 on September 16th, 2019)[19], and led to higher costs of compliance for operators,

[19] Sandbag (2019), *Supra* n. 6.

contributing, among other things, to increasing coal-to-gas switching.[20] On the other hand, the MSR also had consequences on price volatility, with different implications for financial players, speculators, and actors with compliance obligations.

In the analysis of the indicators for Goal 3, these aspects should be taken into account. Furthermore, as in the case of the indicators for Goal 2, the review should try to develop some forward-looking analysis, looking at the relationship between the MSR, competitiveness and EUA prices also beyond 2021.

The review should assess what could be the impact of the MSR on competitiveness issues if EUA prices were to reach certain levels in the future. In practical terms, this could be analysed by looking at how indicators 3.A, 3.B and 3.C would react to different price ranges – e.g. between 10 and 20 €/tCO2; between 20 and 40 €/tCO2; between 40 and 60 €/tCO2, etc.

Operationalisation of the indicators

In conclusion, the more structured the review will be, the easier for stakeholders to keep track of relevant indicators towards 2021 and beyond. With regard to the proposed list of indicators for the three identified goals, they could be operationalised as follows:

- Under Goal 1:
  - assess if the TNAC declines at a sufficient pace and if the reduction of the surplus accelerates in the years of the MSR operations (2019-2020), also looking at the amount of allowances expected to be invalidated in 2023 – absolute decline vs. pace of reduction of the "historical surplus", to be compared to the definition of "reasonable amount of time" (3-5 years).
- Under Goal 2:
  - compare the period needed for the MSR to absorb new potential imbalances caused by different sources (e.g. RES/EE targets, MS coal phase-outs, economic shocks, etc.), with the definition of "reasonable amount of time" (3-5 years).
- Under Goal 3:
  - assess the impact of EUA prices and of EU ETS-related costs on competitiveness, jobs and growth, taking into account both negative and positive impacts.

5. Looking forward: the MSR review as part of a broader reform to the EU ETS framework?

When ERCST started its series of meetings on the MSR review, at the beginning of 2019, the EU ETS framework seemed to be set in stone. The 2018 EU ETS Directive had set the stage for Phase 4, and there was a widespread perception among stakeholders that no new reform to the EU ETS would be adopted any time soon – with the exception of secondary legislation to implement the Phase 4 Directive.[21]

Today, the situation has changed, with the new European Commission declaring its willingness to reopen this discussion, and talks currently ongoing about revisiting the EU's carbon dioxide reduction target for

[20] A. Marcu et al. (2018), *Supra* n.2.
[21] A. Marcu et al. (2018), *Supra* n.2.

2030 and expanding the EU ETS coverage to new sectors.[22] The broader legislative environment is also evolving, with new and old topics put back on the political agenda for climate action, as exemplified by the new momentum to introduce border carbon adjustments in the EU.

In the preparation of the MSR review, these potential changes should be taken into account, as the MSR functioning should always be framed in the broader context of the EU ETS framework. If, for instance, reforms to the EU ETS cap and/or LRF were to be adopted, they would directly influence the MSR performance, and the MSR review would need to assess the consequences of such changes.

In light of these considerations, if the intention of the new European Commission is to significantly modify the EU ETS framework, then the MSR review should be structured as part of a broad and comprehensive reform to the EU carbon market. This would help limit regulatory uncertainty as opposed to the past, when the 2015 MSR Decision was substantially amended only a few years after its adoption, through the 2018 EU ETS Directive.

Moreover, looking at the MSR review in isolation would risk fuelling the misperception that the MSR is the only instrument to address all the existing and future potential problems of the EU ETS, portraying the Reserve as a *silver bullet* to all sorts of ills. Quite the contrary, any change to the MSR should be weighed against possible alternative options, approaching any reform to the EU ETS framework in a coherent and concerted way.

It is therefore important for the European Commission to start working on the MSR review well in advance, and to try designing a review that assesses the MSR performance in a structured and detailed manner. In order to do this, clarity is needed on what is to be considered a "good performance" of the MSR, what are the goals that the MSR is supposed to achieve, and what parameters and data should be monitored towards 2021.

We hope that the suggestions included in this paper can help structuring this exercise, promoting a discussion about the role of the MSR and the future of the EU ETS towards 2030, and beyond.

[22] If the EU's carbon dioxide reduction target for 2030 were to be increased, this would likely lead to an increase of the EU ETS target for 2030. To clarify further, see: U.v.d. Leyen (2019), 'Political Guidelines for the next European Commission 2019-2024', European Commission. Retrieved from: https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf.