sandbag

Comparing options for EU ETS reform

November 2016

Summary

It is essential that the opportunity is taken to address the problems of the EU Emissions Trading System (EU ETS) now. If this opportunity for reform is missed, the EU ETS is likely to remain week for at least 10 years and potentially through to 2030, undermining its credibility.

Rebasing at the start of Phase 4 to reflect the actual level of emissions in 2020 is the only option currently under debate that can effectively bring the market back into balance during Phase 4.

Rebasing has other attractive properties such as being based on actual outcomes, so it is robust to responses that are different from expectations, and increasing the value of funds.

Increasing the LRF has a small beneficial effect. It is potentially valuable as a complement to rebasing, but is not a substitute for it because its effect is so much smaller.

Retiring allowances from the MSR, preferably by means of a size limit, helps market stability in the long term. If all unallocated allowances from Phase 3 are transferred into the Market Stability Reserve (MSR) 2 billion tonnes of allowances should be retired early in Phase 4. However, this is unlikely to lead to a significant market tightening until late in Phase 4 at the earliest because those allowances would not have been expected to return to market in the interim in any case.

Increasing the rate at which allowances are placed in the MSR helps tighten the market a little earlier, but does not change the situation in aggregate over the phase. It therefore has a small but worthwhile effect on the market, and is again complementary to other reforms.

We therefore recommend that the option to rebase the start of the Phase 4 cap to reflect actual emissions in 2020 is adopted. This should ideally be complemented by an increase in the Linear Reduction Factor (LRF) and by changes to the MSR. However, these are not enough on their own – the give the appearance of meaningful reform without engaging with what is actually needed.

About Sandbag

Sandbag is a London and Brussels-based not-for-profit think tank conducting research and campaigning for environmentally effective climate policies.

Our research focus includes reforming the EU Emissions Trading System and the Effort Sharing Decision; accelerating the phase-out of old coal in Europe; deep decarbonisation of industry through technologies including Carbon Capture & Storage.

For more information, visit sandbag.org.uk or email us at info@sandbag.org.uk

Introduction

This study looks at options for reform of the EU ETS that are currently under consideration that seek to adjust overall allowance supply. It considers their effectiveness in creating a well-functioning ETS, with an appropriate balance of supply and demand and prices at levels adequate to stimulate both short term fuel switching and longer term abatement. The options considered are:

- Increasing the rate at which allowances are withdrawn into the MSR

- Retiring allowances from the MSR or limiting its size (for the latter, we assume automatic retirement of allowances above the maximum size of the MSR)

- Changing the Linear Reduction Factor

- Rebasing the cap to reflect the actual level of emissions in 2020.

Sandbag recently analysed the impact of different methods of free allocation of allowances, including the effects of changing the auction share and tiering of free allocation, in a separate report.

In assessing these options we have considered two emissions scenarios:

- A base case where emissions continue a slow decline at similar to the historic rate. We consider it highly unlikely that emissions will be greater than this.

- A low emissions case in which there are more extensive actions to reduce emissions through measures such as energy efficiency, renewables, and reductions in emissions from carbon intensive power generation.

We find that none of these options for reform would cause large rises in the price or a cumulative shortage of allowances in the short to medium term under either emissions scenario. Instead, they represent an incremental and moderate set of potential reforms. Such reforms would be expected to follow the Paris Agreement, including in terms of provision in current EU legislation which stipulate that in the case of an international agreement securing global cooperation to reduce emissions, then the EU would step up its ambition levels.

Of the options under consideration a **rebasing of the cap at the start of Phase 4 is the most effective way of reforming the system**. This should preferably be accompanied by an increase in the linear reduction factor. Reforms to the MSR are worthwhile, and help contribute to the long term stability of the market. However, they do not solve the problem of a continuing annual creation of additional surplus in the first half of Phase 4. They are thus complementary to rebasing and increasing the linear reduction factor, rather than an alternative.

Context for reform

It is crucial that the current opportunity for effective reform of the EU ETS is not missed …

The EU ETS is the foundation of EU policy to reduce emissions in the sectors it covers. However, at present it is largely ineffective. There is a large cumulative surplus of allowances and emissions are continuing below the cap. Consequently, prices are at about a fifth of the level expected when Phase 3 was established, which is well below the level needed to stimulate either short term emissions reduction or longer term investment. The introduction of the MSR in 2019 is only a partial and limited solution to these problems.

A persistently weak EU ETS would have a range of adverse consequences. Regulation to reduce emissions would be likely to be more fragmented and less effective. This would increase the costs to the European economy of meeting targets in both the short and long term, and opportunities for cost effective emissions reductions would continue to be missed, as they are at the moment. It would create competitive distortions and additional costs for companies. It would also weaken the EU's international leadership position. In contrast, effective reform now can lead to the development of a strong and prosperous low carbon economy while reinforcing EU leadership.

It is essential that the opportunity is taken to address the problems of the EU ETS now. If this opportunity for reform is missed the EU ETS is likely to remain week for at least 10 years and potentially through to 2030. This would undermine the credibility of the EU ETS as a mechanism. It would be in place for 25 years, operating with a continuous and growing surplus and without producing adequate price signals except very briefly early in Phase 2.

Reform will need to take account of a large surplus at the start of Phase 4 …

There is currently a surplus of 1.8 billion allowances available to the market and over 1 billion allowances already destined for the MSR[1].

Emissions continue to be about 200 million below the cap each year (see Chart 1a), so a surplus continues to be generated each year, adding to the cumulative surplus available to the market. By 2020, there will also be up to 2.2 billion allowances which are due to be placed in the MSR[2].

Phase 4 will thus start with a large surplus (see Chart 1b). By 2020 the total cumulative surplus of allowances will reach 3.8 to 4.4 billion, of which approximately 1.6-2.2 billion will be available to the market and 2.2-2.3 billion will be in the MSR. These totals are almost completely unaffected by reform, as none of the regulatory changes have any significant effect on the current Phase of the EUETS[3].

Chart 1a: Emissions remain below the cap for the remainder of Phase 3…

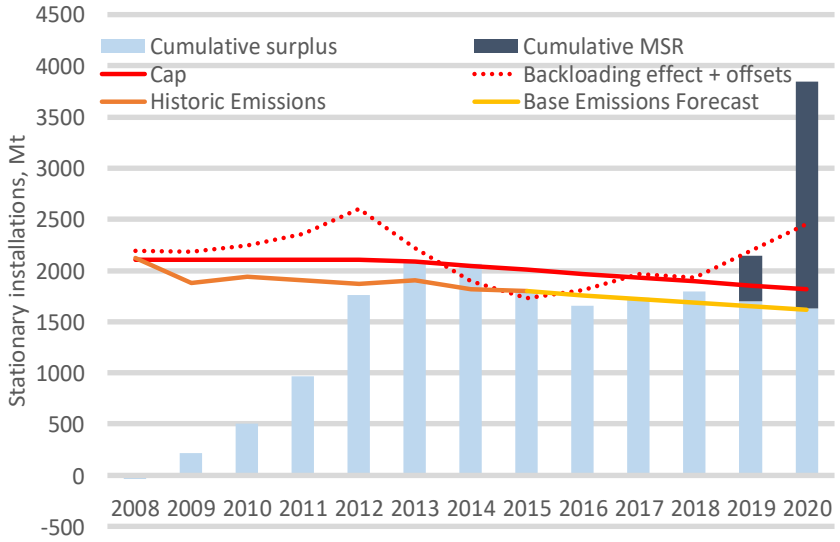
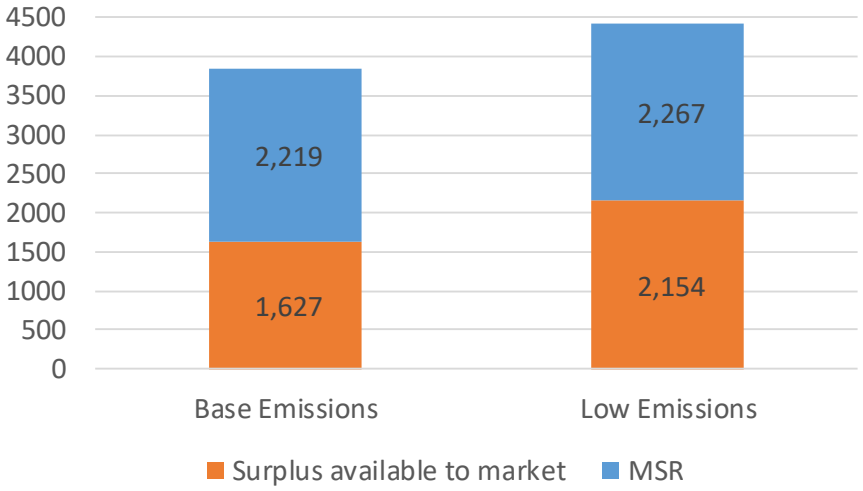


Chart 1b: …This leads to a large surplus by 2020



[1] 900 million allowances from backloading, with the rest coming from unallocated New Entrant Reserve and free allocation allowances

[2] Council Decision 2015/1814

[3] If the rate at which allowances are placed in the MSR is increased before the start of Phase 4 as the MSR begins operation in 2019 this will have a small effect on the proportion of allowances available to the market and in the MSR. However only an additional [xx] million tonnes will be transferred to the MSR. There may also be a small effect on emissions if prices in Phase 3 adjust in anticipation of the effect of reforms.

Under current proposals a surplus continues to be generated well into Phase 4 …

Under the Commission's current proposals there will continue to be an annual surplus generated during of Phase 4. Emissions below the cap will persist to about the middle of Phase 4 even under our base emissions case (see Chart 2a). This is because emissions in 2020 will be well below the cap – indeed in 2015 emissions were already slightly below the 2020 cap[4] - and the cap will reduce only slowly to match emissions. The cumulative surplus (including the MSR) will thus continue to grow.

In our low emissions case an annual surplus continues throughout Phase 4. The cumulative surplus available to the market may decrease over time as the annual surplus is less than the amount of the existing surplus placed into the MSR, but it still means that on an annual basis there is no shortage of allowances and the market will remain weak.

Chart 2a: Emissions will remain below the cap well into Phase 4, and possibly throughout

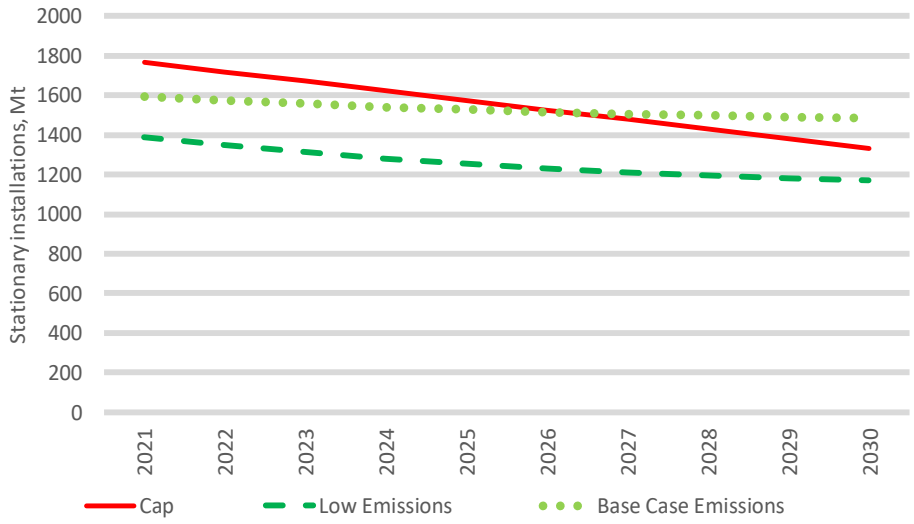
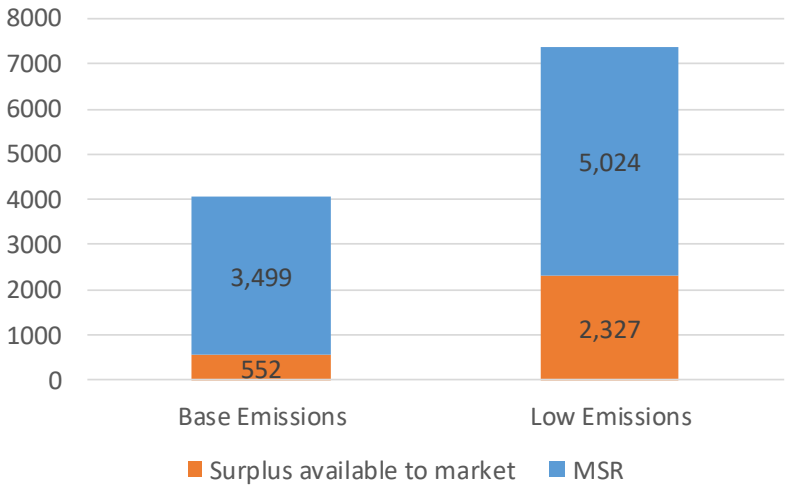


Chart 2b: This will lead to 3.5 to 5.0 billion allowances in the MSR and some surplus still available to the market by 2030



With total supply during Phase 4 likely greater than total emissions …

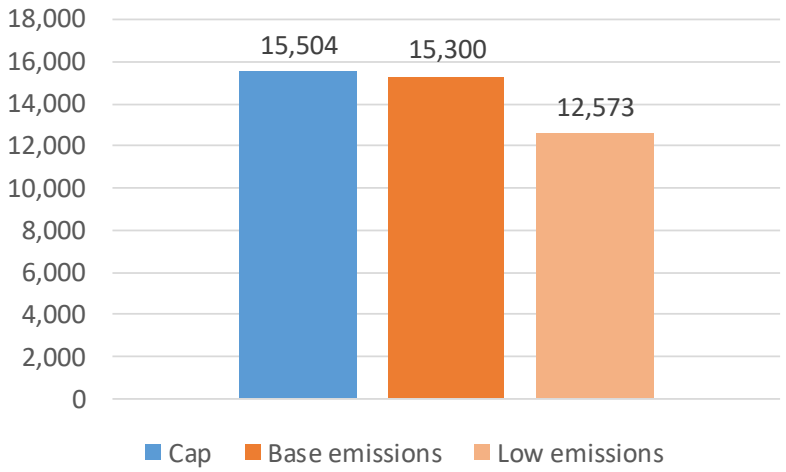
The lack of stringency is further illustrated by comparing the total cap with total emissions over Phase 4. Under our base case emissions scenario total emissions for Phase 4 are similar to the total cap, even without taking into

[4] Emissions in 2015 of 1,803 million tonnes compared to a 2020 cap of 1,806 million tonnes

account in the surplus at the start of Phase 4. Under our low case emissions scenario, which assumes more vigorous action to complement carbon pricing, emissions are well below the cumulative cap.

This implies that even with the operation of the MSR the supply demand balance remains relatively weak throughout Phase 4 in the absence of serious, meaningful reform.

Chart 3: Comparison of total cap for Phase 4 with total emissions under out two scenarios



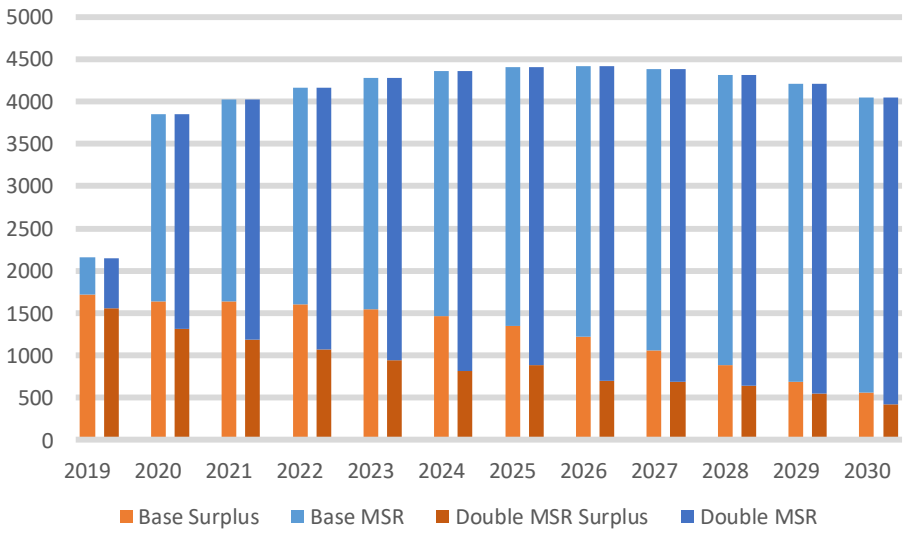
We now consider various reform options in the context of a large surplus at the start of Phase 4, and continuing annual surplus in the early years of the Phase.

Assessment of options for reform

Option 1: increasing the rate of transfer to the MSR

Doubling the proportion of the surplus that is placed in the MSR redistributes allowances to the MSR earlier. This will provide some limited tightening of the market in the middle years of Phase 4. However, by the end of the phase the size of the slower rate has largely caught up, and there is only quite a small difference in the remaining surplus available to market and the size of the MSR. This is because the increased rate does not change the fundamental supply demand balance.

Chart 4a: MSR volumes and surplus available to the market with different withdrawal rates

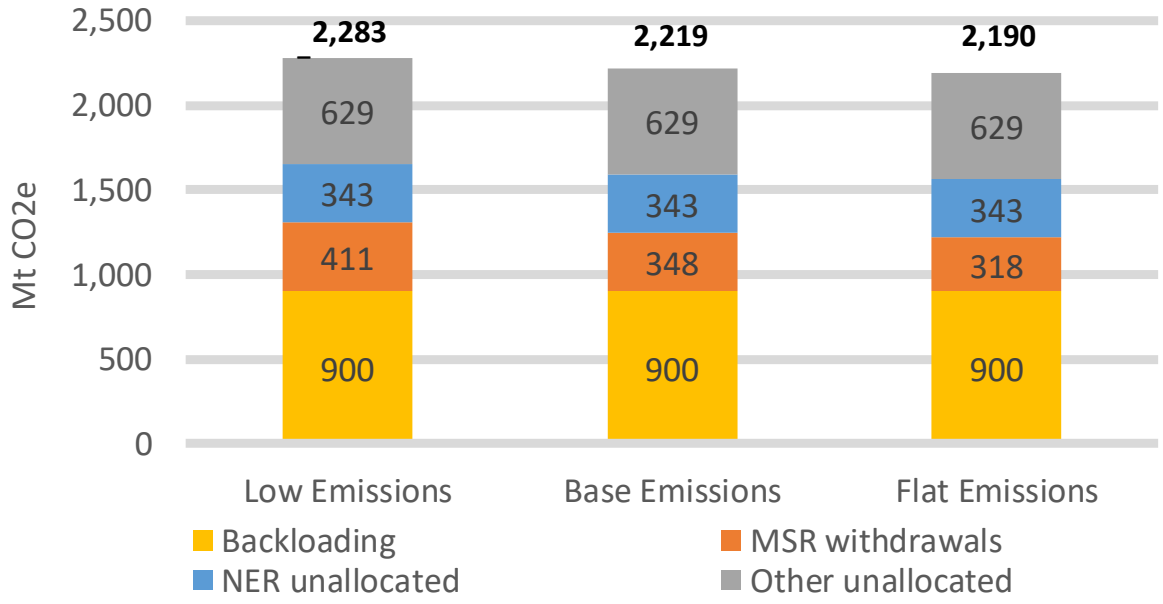


Option 2: Retirement of allowances from the MSR or limiting its size

The recommendation by the ITRE Committee to retire 300 million allowances[5] is a welcome precedent. However, given the scale of the surplus and number of allowances in the MSR, it is only a first step towards the necessary scale of allowance retirements. This may be supplemented by retirement of specific volumes (e.g. 1.5 or 2 billion allowances) or by retirement above a certain size limit (for example a billion allowances). Retirement of allowances in the MSR is likely necessary for long term market stability because otherwise the size of the MSR would create too much uncertainty about the future role of those allowances (see our previous report).

As noted above, the MSR will almost certainly contain over 2.2 billion allowances by 2020, assuming that unallocated allowances are placed in the reserve (see chart 4b for a breakdown of sources of allowances. This total is largely insensitive to assumptions about emissions in the intervening period. The MSR will continue to grow thereafter reaching at least 3.5 billion allowances by 2030. Retiring 2 billion allowances from the MSR appears desirable to keep the MSR to a reasonable size.

Chart 4b: Sources of allowances in the MSR in 2020

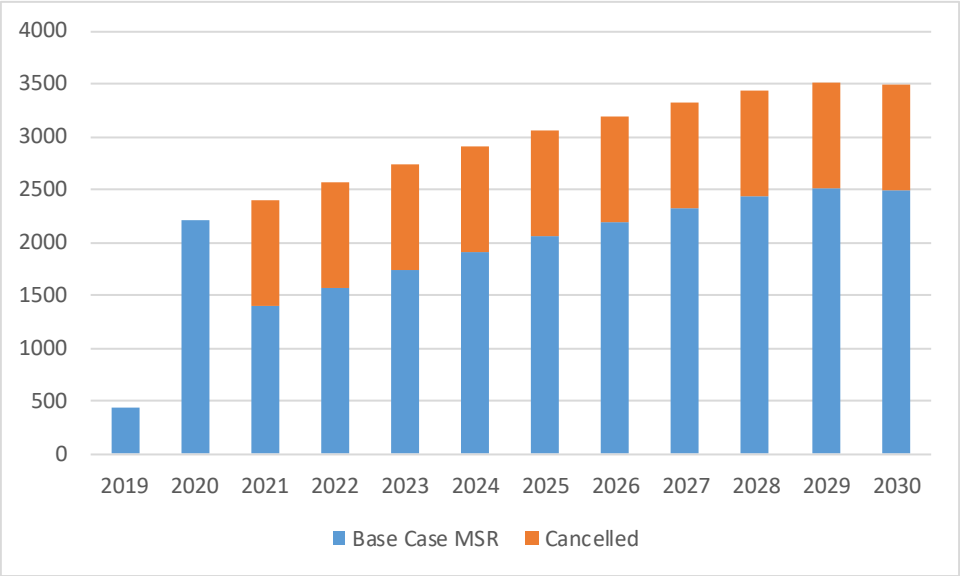


However, retiring a specified volume or limiting the size of the MSR would not be expected to have much of an effect on price except in the very long term. Allowances in the MSR are not immediately available to market. Indeed, removing them from the market while a large surplus persists is the fundamental objective of the MSR. Return of allowances from the MSR does not begin much before 2030 under current proposals, so any retired allowances would not have been due to return to the market until after 2030 in any case.

The effect of retirement on the number of allowances in the MSR is quite straightforward as the MSR is significantly larger than the amounts retired. Since the return rate remains unchanged at 100 million tonnes per annum, all this does is reduce the size of the MSR by the amount of the retirement. This will potentially limit the volume of returned of allowances in the mid to long term future.

[5] ITRE opinion 10/11/2016

Chart 5: Effect of retiring volumes from the MSR

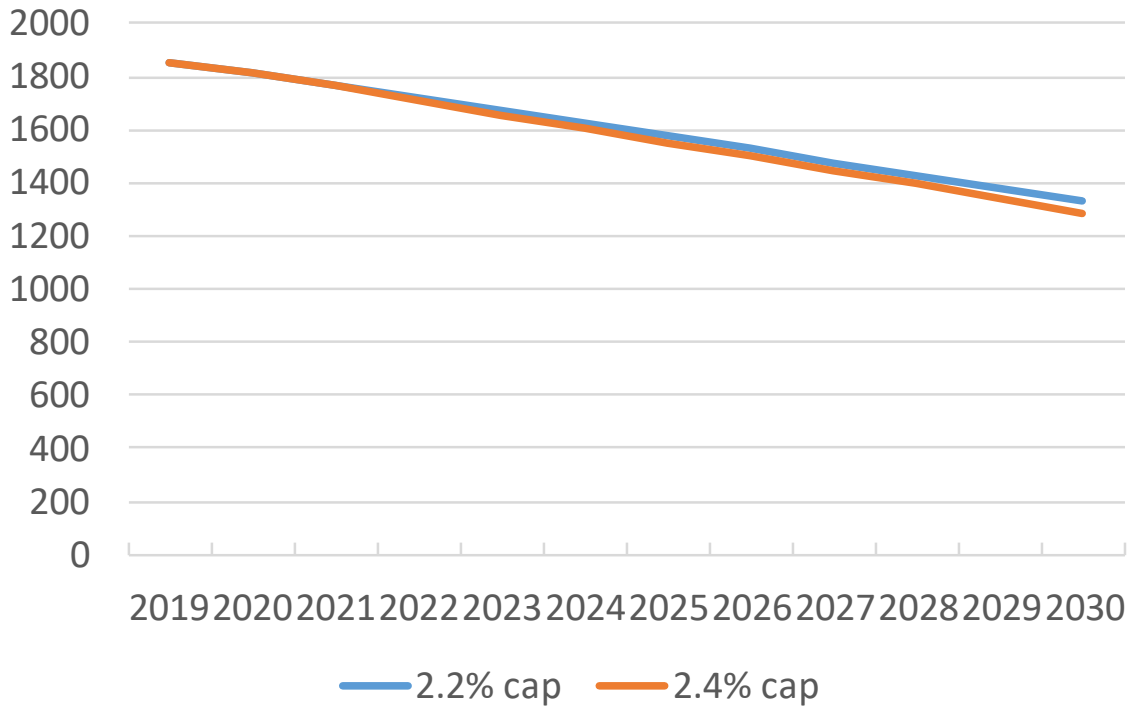


Limiting the size of the MSR, as previously recommended, has advantages over retiring a certain volume. It gives a steady and predictable outcome for the size of the MSR irrespective of the size of the surplus, which is inherently subject to uncertainty.

Option 3: Increasing the LRF from 2.2% to 2.4%

This option reduces the cap only slowly. Over time its effect increases somewhat, but the total effect over the phase is only about 1.6% of the cumulative cap, at approximately 240 million tonnes over Phase 4. This is equivalent to the additional surplus currently being accumulated each year at present, or 3-5% of the cumulative surplus (including volumes in the MSR) expected in 2030. It therefore has little effect on the market (see Chart 6).

Chart 6: The effect on the cap on increasing the Linear Reduction Factor from 2.2 to 2.4%



A much larger increase in the LRF (e.g. to 4%) would be needed to have the scale of effect necessary to rebalance the market, and even this would make less difference in the early years.

Although it is worthwhile, this increase in the LRF it makes only a limited contribution to solving the problem of restoring the supply demand balance.

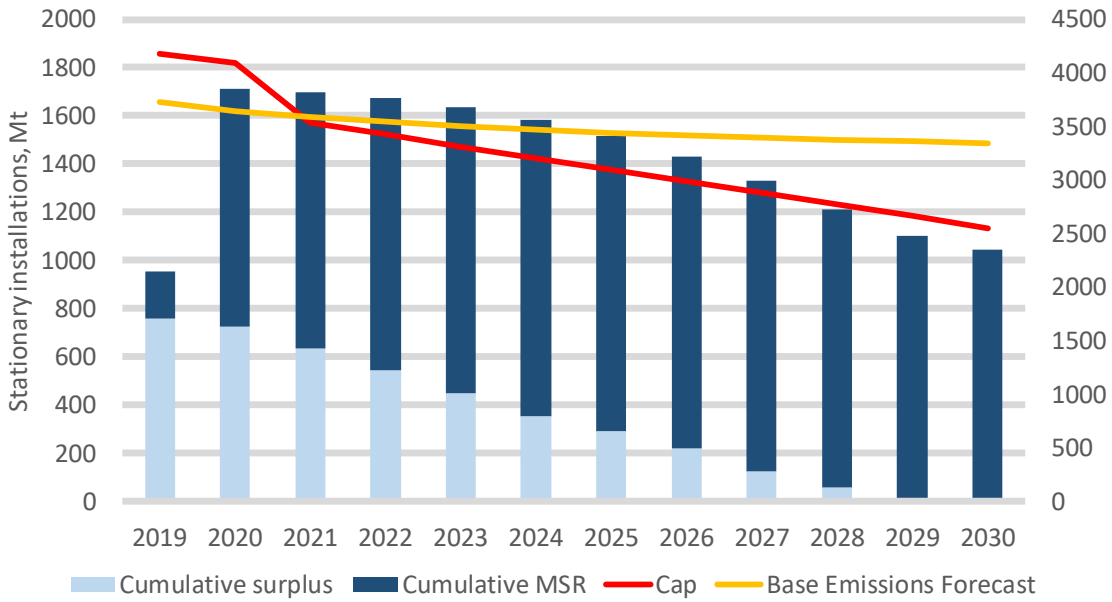
If this were extended into the long term the difference would be much greater over time. However, in practice the LRF will be reset at the end of each phase in any case.

Option 4: Rebasing the cap to reflect actual emissions at the end of 2020

Aligning the cap with the reality of emissions for Phase 4 has several advantages, which Sandbag reviewed in our previous report. In particular:

- It is the only option that adjusts the aggregate supply/demand balance in Phase 4 by enough over the relevant timescale to have a meaningful impact on the market, including on prices.
- It is the only option that will deal the new surplus generated each year due to the cap being above emissions, and so it is the only option to a large an immediate effect early in the Phase – other options will still mean a refusal to act on the built-in surplus issue of the ETS.
- It is robust to outcome emissions being different from expectations, because it automatically aligns with reality.
- It reduces uncertainty about the difference between supply and demand, and therefore about price.

Chart 7: The effect of rebasing on the cap and surplus



Rebasing can usefully be complemented by the other options. Specifically:

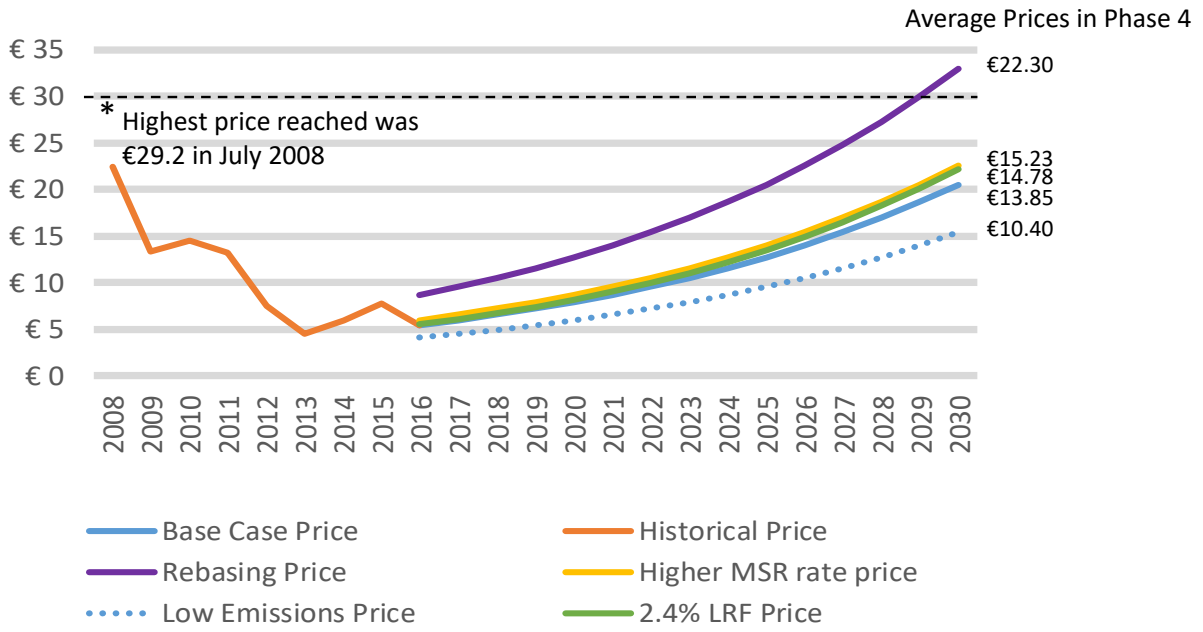
- Increasing the LRF to 2.4% provides some useful additional tightening and a lower starting point for the subsequent Phase.
- Increasing the rate at which allowances are placed in the MSR can help to provide greater stability, especially if accompanied by retirement of allowances.
- Retirement of allowances from the MSR can help long term stability

Analysis of likely effects on prices shows rebasing to have the largest effect …

The effectiveness of the various options in restoring the market to a more appropriate supply demand balance, so that it is able to provide effective market signals, is measured in part by the effect on each option on prices. Chart 8 shows the effect on prices of each of the proposed changes.

We have developed a central case price scenario based on the proposed cap and the emissions in our base case[6]. The effect of other policies is estimated through their effect of the supply demand balance. In practice prices are, of course, unlikely to follow a smooth trajectory such as this. The price trajectory is intended to represent a reasonable expectation of price movements so that the effect of various policies can be assessed.

Chart 8. Expected prices under different reform options



The projections show the following.

- Changing the LRF from 2.2 to 2.4% increases price, but only slightly, because the effect on supply is so small.
- Similarly, increasing the rate at which allowances are placed into the MSR slightly increases prices by reducing the surplus more quickly, but the effect is again quite small.
- There is little effect on price during Phase 4 from retirement of allowances from the MSR, so it is not shown separately on the chart. The reason for this is that allowances start returning from the MSR only towards the end of Phase 4 under our modelling. There are anyway allowances in the MSR even after retirement of 2 billion or more, so these can return to the market as required in the later 2020s. The retired allowances would only have been needed after 2030, and so only have a large effect on the price then, although there may be some small effect "rippling back" into the later parts of Phase 4.

[6] Our price modelling is based on estimating when the market is likely to become short of allowances, taking account of the operation of the MSR. We also estimate price likely to be necessary to stimulate substantial emissions reductions at that time based on marginal abatement costs. These future prices are brought back to the present day assuming a constant percentage escalation based on the (risked) cost of capital. Price variations due to policy changes are assessed based on how their effect on how long it is likely to be before the market becomes materially short and substantial abatement is required. Tightening supply brings the date at which the market becomes short closer, and so raises prices in the intervening years. Conversely, lower emissions postpone the date at which the market becomes short, and so raise prices further.

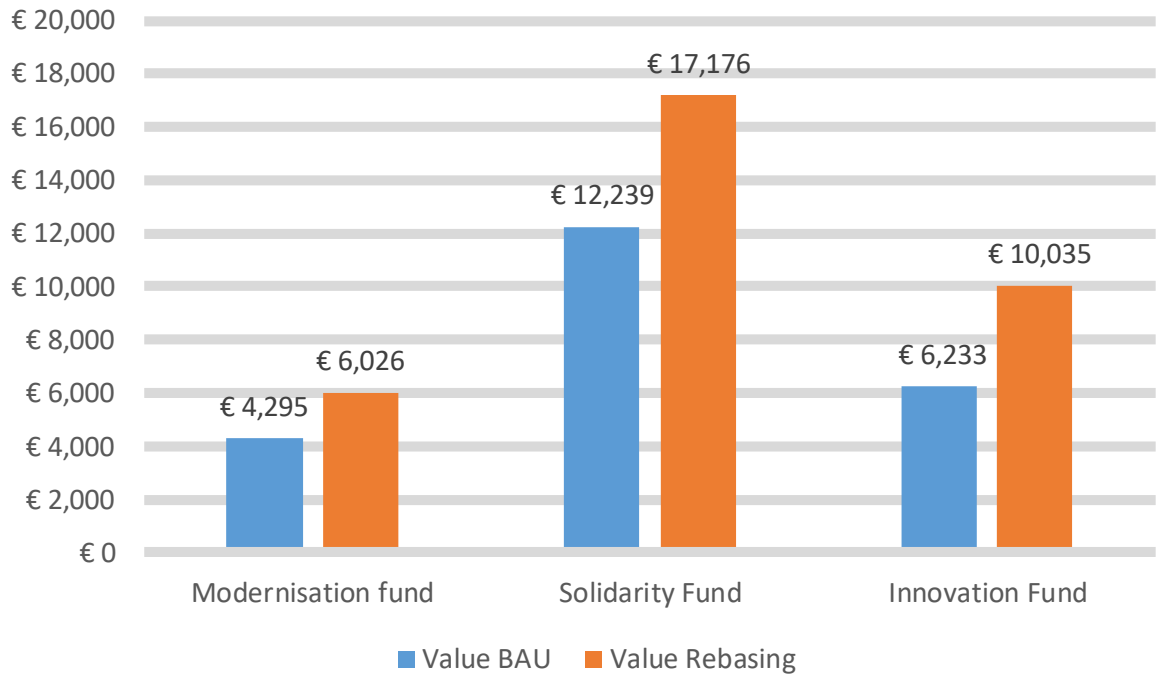
- In contrast rebasing emissions has quite a substantial effect, because is it materially reduces total supply, and begins to do so from the start of Phase 4. This immediately stops the surplus growing, so the market returns to balance earlier.

- The low emissions case reduces prices because it increases the surplus and delays the date at which the market becomes cumulatively short of allowances.

The value of funds is increased by these reforms …

Measures to tighten supply generally increase the value of funds. Some funds, such as the solidarity fund, have fewer allowances with tightening of the cap. However, their value increases as the increase in price due from tightening supply more than offsets the decrease in the number of allowances. This effect is rather small for the change to the LRF, because both the change in the cap (a little over 1%) and the increase in price are both small. However, it is much larger for rebasing which causes a larger change in the price. This is shown in the chart. The percentage increase in value for the innovation fund is larger as the number of allowances in the fund is unaffected by the change in the number of allowances issued under the cap.

Chart 9: value of funds with and without rebasing of the cap



Conclusion

Based on our analysis we conclude the following:

- It is essential that the opportunity to address the problems of the EU ETS is taken now. If this opportunity for reform is missed the EU ETS is likely to remain week for at least 10 years and potentially through to 2030, undermining its credibility.

- Rebasing at the start of Phase 4 to reflect the actual level of emissions in 2020 is the only option currently under debate that is effective bringing the market back into balance during Phase 4.

- Rebasing has other attractive properties such as being based on actual outcomes, so it is robust to responses that are different from expectations, and increasing the value of funds.

- Increasing the LRF has a small beneficial effect. It is potentially valuable as a complement to rebasing, but is not a substitute for it because its effect is so much smaller in the near to mid-term.

- Retiring allowances from the MSR, preferably by means of a size limit, helps market stability in the long term. If all unallocated allowances from Phase 3 are transferred into the MSR 2 billion tonnes of allowances should be retired early in Phase 4. However, this is unlikely to lead to a significant market tightening until late in Phase 4 at the earliest because those allowances would not have been expected to return to market in the interim in any case.

- Increasing the rate at which allowances are placed in the MSR helps tighten the market a little earlier, but does not change the situation in aggregate over the phase. It therefore has a small but worthwhile effect on the market, and is again complementary to other reforms.

About this briefing

We are grateful to the European Climate Foundation for helping to fund this work. Full information on Sandbag and our funding is available on our website (www.sandbag.org.uk).

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