

Measures to strengthen the EU ETS

A review of recent
literature

Preface

A significant strengthening of both global and EU climate policy will be necessary to achieve Paris agreement objectives. Within the EU the Emissions Trading Scheme (ETS) has a special role as it today covers 45% of the emissions and with proposals from the European Commission it may be further extended. This paper aims to summarize potential measures for further strengthening of the ETS that have been highlighted in recent literature and put them in perspective of the Swedish position regarding the development of EU's climate policy.

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1. Climate targets and policies

In December 2019 the European Council endorsed the EU 2050 climate-neutrality target and the European Commission (EC) has put forward a proposal to cut emissions in the EU by 50-55% by 2030. Currently the EU commission is preparing a proposal for the EU's long-term strategy for submission to the UNFCCC, which further specifies the EU's targets and measures to achieve them. (European Commission, 2018)

The Swedish parliament has endorsed that EU's target should be sharpened to at least 55% by 2030 compared to 1990 levels and be in line with the Paris agreement's 1.5-degree target. In order to achieve these ambitions, the provisions for the Emission Trading Scheme (ETS) and Effort Sharing Regulation (ESR) sectors needs to be strengthened. The current Swedish positions identifies several possibilities to reform the ETS. These include an increased Linear Reduction Factor (LRF), review of rules governing the Market Stability Reserve (MSR), a gradual phaseout of the free allocation of emission allowances in line with the polluters pays principle and strengthened rules for aviation. Sweden is open to examine a larger sectoral scope of ETS but argues that it may not jeopardize achieving zero emissions in the EU by 2050 in all sectors, due to e.g. widely differing prerequisites for decarbonisation in different sectors.

2. Current state of the EU ETS – Fundamental mechanisms and implemented reforms

The EU ETS has been strengthened step by step over time. The 3rd trading period (2013-2020) meant that all emissions from EU ETS installations were limited by a single, EU-wide cap for the first time. Free allocation of allowances was limited to 43% of the cap and the NER300 programme¹ was introduced to fund renewable energy and carbon capture and storage projects.

Following a period of large surplus of allowances and low prices the EU ETS was further reformed in late 2017. The system was extended by the so-called Market Stability Reserve (MSR) which is a mechanism that balances the amount of allowances available to the market by removing or injecting them from or into the market depending on the Total Number of Allowances in Circulation (TNAC). In addition, the LRF will be increased from 1.74% to 2.2% during the 4th trading period and project based credits from outside the ETS will no longer be allowed. Other tools implemented to assist the transition towards carbon neutrality are the innovation and modernization funds that are financed by the sale of 450 million

¹ The NER300 programme was funded by the sale of 300 million emission allowances from the New Entrants' Reserve (NER) set up for the third phase of the EU emissions trading system (EU ETS).

EUA as well as any unspent fund from the NER300 programme. (European Commission, 2019, 2016).

As a result of the reforms EUA prices are up from 5 €/EUA in 2017 to 25 €/EUA in February 2020. The higher EUA price together with other policy measures such as renewable electricity targets and coal phase out plans in several member states has triggered a decrease in coal-based electricity production. This trend makes relatively large emissions reduction scenarios during the upcoming years more likely. Despite being generally positive this is also bearing the risk of the allowance surplus to start increasing again. The risk of an increasing surplus which results in another price drop in connection with the EU ETS' zero emissions target at 2058 with the current LRF are important issues that need to be addressed in the short term in order to guarantee emissions reductions and the corresponding necessary technology development to achieve Paris agreement and national Swedish climate targets.

3. The need for increased ambition in the EU ETS to align with climate targets and policies

Based on the current misalignment of several design features of the EU ETS with ambitious Swedish and Paris climate targets, it can be concluded that there is a need for another timely reform of the ETS. The following aspects and mechanisms can be subject to adjustments in order to guarantee alignment with Swedish and Paris agreement targets:

- Adjusted LRF in order to limit emissions to levels corresponding the targets.
- Adjustments to the MSR in order to continued stabilize the EUA price.
- Phase out free allocation and possible introduction of other carbon leakage safeguard.

Avoiding large EUA price fluctuations and sending a strong and predictable CO₂ price signal is necessary to support the development and deployment of low-carbon technologies that are of strategic importance for Swedish industry. Examples for these are the HYBRIT H₂-based steel making project as well as carbon capture and storage projects in the energy and cement industry.

4. Studies targeting EU ETS reform

Recently several studies investigated different aspects of the future development needs of the EU ETS. The main results in these studies are summarized below. The studies all investigate the need for additional reform of the EU ETS and which measures could be applied to achieve different aims the investigations focus on. Some of the studies aim at identifying measures that enable the EU ETS to increase climate ambition, e.g. to align it with the Paris agreement targets (Aleksandar Zaklan et al., 2020; Carbon Market Watch, 2019; Graichen et al., 2019; Patricia Buckley et al., 2019), while others aim at identifying measures to safeguard the continued functioning of the EU ETS considering developments such as rapid decarbonisation of the electricity sector, carbon leakage and declining free allocation of EUA (Chris Rosslowe et al., 2020; “How EU trade policy can enhance climate action,” 2019; Matts Andersson and Filippa Pyk, 2019). All studies are based on the assumption of the UK still being part of the EU ETS.

4.1. Adjustments to the LRF and other measures involving the cap

A report commissioned by the Oeko Institute and financed by SITRA (Graichen et al., 2019) investigates necessary adjustments to the EU ETS in order to increase climate ambition. The study investigates adjustments to the EU ETS in order to enable emissions reductions of 55% -60% below 1990 level by the year 2030^{2,3}. Increasing the LRF is one way to set EU ETS emissions on a path towards this goal. According to Graichen et al., (2019) the LRF should be increased to 4.11% starting in 2021 or 6.02% starting in 2026. In addition, surplus allowances from previous trading periods need to be eliminated during the 4th trading period.

Aleksandar Zaklan et al. (2020) have commissioned a report financed by the German Environmental Protection Agency investigating the necessary adjustment of the cap in the EU ETS considering the IPCC1.5°C Special Report and the Paris Agreement. The authors derived a remaining carbon budget for the years 2016-2050 and present different adjustment options for the LRF. Increasing the LRF to 2.9% during 2021-2030 or 3.5% 2026-2030 represents the minimum required adjustment in order to achieve the goals set out in the IPCC1.5°C and the Paris Agreement. But this leads to the need for drastic abatement effort past 2030 in

² The split between ESR and ETS is based on the 2050 long-term strategy proposed by the European Commission (European Commission, 2018). The emissions pathway “1.5LIFE-LB” was used to interpolate the ETS share of the remaining emissions in 2030. The resulting ETS share of emissions is 35%. This pathway represents a high ambition in the EU ETS, meaning that emissions in the trading sector decline faster than in the ESR.

³ This corresponds to 2030 emissions of 913 Mt_{CO2equ.} – 812 Mt_{CO2equ.}. Graichen et al. estimate the gap between the current EU ETS 2030 target and the 55% - 60% reduction target to 420 Mt_{CO2equ.} – 521 Mt_{CO2equ.}

order to stay in line with the cost-effective below -1.5°C pathway that was derived by the authors. An LRF that is fully aligned with the 1.5°C pathway and that safeguards the emissions pathway set out in the EU's long-term vision amounts to 4.0% between 2021-2030 and 5.8% if starting 2026. This pathway allows for a less steep LRF after 2030 and even for some emissions 2040-2050.

Carbon Market Watch (2019) published a report on how to strengthen the EU ETS. The think tank recommends an increased LRF to 4.2% in order to align the EU ETS with the 1.5°C target and to decarbonise the EU ETS by 2040 (2.8% leads to 0 emissions in the EU ETS by 2050).

In their report the think tank Sandbag (Patricia Buckley et al., 2019) modelled behaviour of the EUA surplus under different emissions scenarios. The scenarios assessed imply emissions reductions of 50% - 58% of total EU GHG emissions compared to 1990 levels from which corresponding emissions reductions in the EU ETS are derived. The model shows that the MSR initially decreases the surplus, which later in all scenarios starts to increase again. Sandbag claims that increasing the LRF alone is not the right way to handle the surplus issue, because the LRF would need to be adjusted to very high levels (4%) and the surplus would still amount to approx.1 Gt by 2030.

4.2. Rebasing the cap

Another measure to handle the EUA surplus and/or increase ambition in the EU ETS is by resetting the cap to the previous year's verified emissions, also called rebasing. This means that the difference between the cap and the actual emissions in the year of rebasing is cancelled and the emissions trajectory starts from the actual emissions at the year when the cap is reset. This measure investigated by Graichen et al. (2019) and is advocated for by Patricia Buckley et al. (2019) in order to ease the need for drastically increasing the LRF and still maintain a functioning trading system.

According to Graichen et al. (2019) rebasing alone is not enough to achieve 55% emissions reduction by 2030. In addition, the LRF needs to be increase to 3.18% starting 2021 or 4.16% starting 2026. According to (Patricia Buckley et al., 2019) rebasing is useful to handle the EUA surplus and can be utilised to account for increased ambition in the EU ETS by at performing at cap reset even at later stages.

Table 1 summarizes the suggested measures concerning the LRF and adjustments to the cap in the literature.

Table 1 Measures concerning the LRF and adjustments to the cap found in the literature.

Reference	Measures
Graichen et al. (2019)	Increase LRF to 4.11% starting 2021 or 6.02% starting 2026 to achieve 55% emissions reduction by 2030. Rebasing the cap, plus increased LRF: 3.18% starting 2021 or 4.16% starting 2026 to achieve 55% emissions reduction by 2030.
Aleksandar Zaklan et al. (2020)	Minimum to achieve Paris Agreement goals: increase LRF to 2.9% during 2021-2030 or 3.5% 2026-2030 More trustworthy path: 4.0% during 2021-2030 and 5.8% 2026-2030. Less step LRF after 2030.
Carbon Market Watch (2019)	Increase LRF to 4.2% in order to align the EU ETS with the 1.5°C target.
Patricia Buckley et al. (2019)	Increase to 4%, but this still leaves a high EUA surplus. Preferred option: Resetting the cap in 2025 in order to deal with the EUA surplus.

4.3. Adjustments to the MSR and other supply regulation measures

Graichen et al. (2019) suggest the following adjustments to the MSR and other measures to regulate EUA supply. The MSR was introduced to decrease the surplus of EUA and prepare the EU ETS for future unforeseen shocks by regulating the supply of EUA. Under the emissions scenario applied by Graichen et al. (2019) the current setting of the MSR (intake threshold: 833 Mt, release threshold 400 Mt; 2019-2023 intake of 24% of surplus, then 12%) are not sufficient to avoid the EUA surplus to increase again during the 4th trading period. Keeping the intake rate at 24% or increasing it to 36% can stabilise the surplus. In addition, the authors suggest decreasing the thresholds gradually to account for the decreasing hedging demands of the power sector in the EU ETS. Coal phase-out plans of different EU member states may lead to a rapid decline in emissions in the EU ETS. Graichen et al. (2019) therefore argues that the option given to member states to unilaterally cancel EUA to handle a rapid decline in emissions should be utilised to strengthen the EU ETS.

Carbon Market Watch (2019) recommends increasing the intake rate to the MSR to 36% by 2024 in order to effectively stabilise the EUA surplus resulting from phase-out of coal power and to implement a mechanism to automatically cancel EUAs that are in the MSR more than 5 years. According to the authors the MSR threshold should be set on a declining path as hedging demand of the power sectors is declining due to coal phase-out and increased renewables, which leads to a lower

need for surplus in the market. Also, the authors advocate for countries to cancel EUA surplus that is generated by the phase-out of coal and even to in the future allow countries to cancel EUA that are no longer needed due to e.g. national policies that lead to additional emissions reductions, an option that is currently limited to EUA that are made obsolete due to power plant closures.

Sandbag (Patricia Buckley et al. 2019) also investigate the consequences of increasing the MSR intake rate and come to the conclusion that under their assumptions a 24% intake rate can stop the EUA surplus from growing but does not achieve tightness in the market. This can be achieved by increasing the intake rate to 36%.

Consulting company WSP produced a study financed by the Swedish Environmental Protection Agency (Matts Andersson and Filippa Pyk, 2019), which aims at identifying measures to strengthen the EU ETS. Like earlier studies WSP recommends increasing to MSR intake rate and gradually decrease MSR intake and outlet thresholds in order to cope with the EUA surplus.

4.4. Phase out of free allocation and carbon leakage safeguards

In a sector specific report on how to decrease industrial emissions in Europe Carbon Market Watch (2019) points out the negative effects that free allocation has on the functioning of the EU ETS. Free allocation means foregone government income that otherwise could be used to fund research, development and deployment of low-carbon technologies as well as a lack of incentives for polluters to invest in these technologies or otherwise decrease emissions. According to Carbon Market Watch the free allocation of EUA should therefore be phased-out and the revenues should be spent on climate action and to fund investments in clean industrial processes.

Sandbag (Chris Rosslowe et al., 2020) reports on increasing electricity imports to the EU ETS that originate from carbon intensive power plants in e.g. Russia, Morocco and Serbia. Sandbag recommends implementing Border Carbon Adjustments (BCA) for electricity in order to avoid carbon leakage from the EU ETS electricity sector. Implementing BCA on electricity might also serve as a feasible option for testing and developing BCA for other products, which can enable for continued decreased free allocation as advocated by the Swedish government.

The Centre for European Policy Studies (CEPS) (Dröge et al., 2019) published a policy brief recommending the EU Commission to investigate the consequences of implementing BCA, extending the EU ETS to include the consumption of carbon intensive materials and the decarbonisation potential of product standards. All these measures have clear implications on EU trade and are aimed at promoting

investments in low-carbon technologies and materials as well as safeguards to carbon leakage.

Graichen et al. (2019) suggest implementing a tiered approach to free allocation in order to more specifically target emissions at risk to carbon leakage as well as to decrease the overall number of freely allocated EUA. The authors suggest basing free allocation on the sector specific carbon leakage risk. In addition, the tiered approach leads to an increase in auction revenues. These additional revenues can be used to fund emissions abatement in industries covered by the EU ETS.

WSP (Matts Andersson and Filippa Pyk, 2019) investigated other measures. Concerning carbon leakage WSP recommends prioritising BCA on bulk goods such as electricity, cement, steel and refinery products as these covers most of the industrial emissions.

4.5. Additional measures

(Graichen et al., 2019) suggest several additional measures to utilise the EU ETS for increasing EU climate ambition. These are summarized in the following:

- **Implement a carbon price floor.**

Two options how to implement a carbon price floor are discussed:

- Surrender charge

Corresponds to a top-up of the EUA price in order to achieve a minimum price. Increases the cost of emissions and decreases price uncertainty and can therefore trigger long term development and deployment of low-carbon technologies.

- Auction reserve price

EUA at an auction are only sold if a certain minimum price level is achieved. Graichen et al. suggest that allowances that do not clear the minimum price should be cancelled, thus decreasing the surplus but also influencing the MSR. Setting a price path in advance decreases uncertainty and triggers investments.

- **Extending the scope of the EU ETS, by building-specific heating, transport, and/or shipping.**

The authors conclude that to include the shipping sector could potentially decrease emissions in that sector by app. 80 Mt_{CO₂equ.} by 2030. Inclusion of transport and building-specific heating is not expected to have a significant effect on these new sectors as they already are subject to energy and/or CO₂ taxation. Inclusion of these two sectors is deemed to be more complicated and needs substantial preparations.

5. Conclusions and recommendation

In the short- and medium-term, the most important measures to adjust the ETS according to studies are:

- **Increasing the LRF to around 4% from 2021 or higher if changed at a later stage** in order to set the EU ETS emissions trajectory towards the target of at least 55% lower GHG emissions by 2030. An LRF of 4% leads to zero emissions in the EU ETS by approx. 2040. The rapid decarbonisation of the electricity sector requires a high LRF in order to achieve tightness in the market and keep sending a stable price signal. Decarbonisation of other sectors in the EU ETS at a later stage might be more difficult and **may allow for less steep LRF after 2030**. E.g. the emissions pathway derived by (Aleksandar Zaklan et al., 2020) allows for a less steep LRF after 2030 in order to enable for cost-efficient decarbonisation.
- **Rebasing the cap** can be used in addition to a steeper LRF, thus enabling for a lower increase in the LRF, to approx. 3.18% by 2021 in order to achieve 55% emissions reduction by 2030.
- In combination with increasing the LRF the **MSR intake rate** should also be kept at 24% after 2023 or even increased to 36% in order to cope with the EUA surplus caused by rapid decarbonisation of the electricity sector.
- Increased ambitions and corresponding carbon prices are also essential for industry initiatives or CCS to become economically viable. **Price floor mechanisms** such as proposed by (Graichen et al., 2019) can be useful to decrease uncertainty and safeguard a minimum carbon price which in return triggers investments in low-carbon technologies.
- **Phase-out and establish a replacement for free allocation** in order to provide a carbon price signal to consumers of carbon-intensive products and promote decarbonisation along value chains. A tiered approach to free allocation might be a solution in the short and medium term in order to most efficiently distribute the remaining free allocation. Eventually alternatives such as a BCA need to be implemented to replace free allocation. Due to their product conformity and obvious carbon leakage **electricity imports to the EU ETS** may be a suitable first target to introduce and evaluate BCA in practice.
- Due to the lack of current climate policy instruments in the **shipping sector** and the relative ease of its' **inclusion in the EU ETS** the shipping sector is a promising candidate for being added to the EU ETS.

In the long-term Sweden and other member states with high climate ambitions need to be provided with the necessary tools that enable for effective introduction of national policy measures in order to achieve e.g. national climate targets. A change in the EU ETS directive to allow countries to cancel EUAs that are no longer needed, an option that is currently limited to EUAs that are made obsolete due to power plant closures, could be helpful. This will allow Sweden and other ambitious member states to implement national policies that aim to achieve national climate targets without jeopardizing the functioning of the EU ETS and the risk of emissions moving elsewhere in the EU ETS.

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