

THE FUTURE OF THE EU EMISSIONS TRADING SYSTEM – RESPONDING TO THE EU GREEN DEAL PROPOSALS

LARS ZETTERBERG*, MILAN ELKERBOUT**. 13 DECEMBER 2019

* Lars Zetterberg, IVL Swedish Environmental Research Institute

**Milan Elkerbout, from Centre for European Policy Studies, is currently a visiting MISTRA Fellow at IVL Swedish Environmental Research Institute

Summary

Commission President Ursula von der Leyen's Green Deal proposals indicate what issues in EU climate policy will receive attention in the coming years. These issues include carbon leakage risk, inclusion of new sectors in the EU ETS and long-term ambition.

The expected phase out of free allocation in combination with an increasing carbon price may increase the risk of carbon leakage. If we expect European industries to invest in transformational climate-neutral products and production processes that compete on a global market the EU will need to abate carbon leakage with other means than free allocation. A carbon border tax as proposed by the new Commission President Von der Leyen is one option. While the idea of border carbon tax seems simple in theory, the devil is in the details. Alternatives such as consumption charges or product standards may also play a role in the discussion.

The rapid phase out of coal-based power in the EU will lead to the industry accounting for an increasing share of the total emissions in the EU ETS. Some observers say that we may be heading towards an "industry-dominated ETS". Over time, this can have implications for the perception of the EU as a centrepiece of EU climate policy. In response to this Ursula von der Leyen suggests expanding the coverage of the EU emissions trading system to road transport and energy use (i.e. heating and cooling of) buildings. The basic argument for inclusion of any sector into EU ETS is that would increase the effectiveness of reducing emissions across all of the ETS sectors in the EU. Nevertheless, extending the ETS remains a contentious issue due to concerns that the transport sector would buy allowances instead of reducing their own emissions.

With the current rules, the EU ETS cap will reach zero in 2058. The Paris Agreement review may change that and bring the moment of zero emissions forward, for instance to the year 2050. As we get closer to the year of zero emissions, it's likely that there will be residual emissions in the ETS sectors that are very costly to abate. This calls for the inclusion of credits representing negative emissions or international offsets that can be used by EU ETS participants for compliance to compensate for the residual emissions in the ETS. This is a politically sensitive issue due to concerns about additionality and environmental integrity but may at the same time be a discussion that is inevitable.

The EU ETS is likely to be a policy instrument to count on, much thanks to the recent reform that has increased the allowance price from about EUR 5 to EUR 25-30. Looking forward, the EU ETS must be able to deal with events that create large imbalances in supply and demand of allowances. This could be a result from a rapid phase-out of coal-based power or an economic recession. The recently introduced market stability reserve is a step in the right direction, however, a price floor similar to the California-Quebec ETS is an alternative.

Introduction

Commission President Ursula von der Leyen’s EU Green Deal proposals give impetus to the discussion of how the EU climate policy mix should be strengthened. With the pending adoption of a climate neutrality target and an EU long-term strategy in place, EU climate policy in the medium term (towards 2030 and beyond) will be more demanding and transformative.

The Juncker Commission rekindled the climate policy mix with the Energy Union strategy, gradually integrating climate, energy and industrial policy. The 2018 revision of the EU emissions trading system likewise reflects the joint challenges of effectively promoting reductions of greenhouse gas emissions while being mindful of the global competitiveness of energy-intensive industries.

The key features of the EU ETS¹ – capped emissions, tradable allowances, a price on carbon, cost effectiveness and free allocation – made the system popular among authorities and industry when it was introduced. The EU ETS is described by the EU Commission as “a cornerstone of the EU’s policy to combat climate change and a key tool for reducing greenhouse gas emissions cost-effectively” (European Commission 2019b).

Given Von der Leyen’s EU Green Deal proposals, the role of the EU ETS in the medium term may change as well. Several issues on how the EU ETS can develop up to 2030 and beyond merit discussion:

One issue is the ability of the EU ETS to continue to handle shocks affecting the supply and demand balance for allowances after the Market Stability Reserve reverts to only withdrawing 12% of the total number of allowances in circulation after 2023. The MSR review of 2022 gives the VDL-Commissions an opportunity to revisit this issue.

Secondly, the sustainability of free allocation as a carbon leakage risk safeguard is uncertain, as there is only a limited, and declining supply of allowances and free allocation comes at the cost of auctioning for other sectors. One alternative is the carbon border tax as proposed by Von der Leyen, but there are other options as well.

A third issue is the rapid decarbonization in the power sector that, if the trend is sustained, may turn the EU ETS into a policy instrument covering mostly GHG emissions from industry, and only approximately a third of total EU’s GHG emissions. This relates to Von der Leyen’s proposal to extend the EU ETS to the road transport and buildings sectors.

A fourth issue are the proposals by Von der Leyen to strengthen the 2030 and 2050 climate targets for the EU and its implications on the long-term ambition of the EU ETS and the linear reduction factor. This raises questions about the ‘end-state’ of the EU emissions trading system.

¹ The EU ETS has been in operation since 2005, is the world’s largest cap and trade and covers greenhouse gas emissions in 31 countries in the steel, cement, power, district heating, refineries, pulp- and paper sectors, and from 2012 aviation within the EU. Total emissions covered by the ETS are approximately 1.7 Gt CO₂-equivalents in 2018 (EEA 2019) or roughly 45 percent of EU’s greenhouse gas emissions (European Commission, 2019a).

Carbon leakage risk and competitiveness

With the proposal for a Carbon Border Tax, Von der Leyen (re)introduces an alternative approach to mitigating carbon leakage risk. Currently, free allocation is the established method to safeguard industrial competitiveness. The revised ETS Directive for Phase 4 extends free allocation up to 2030, subject to revised rules on how to calculate the amount of allowances each sector is entitled to.

However, according to the ETS directive, auctioning is the main method for allocating allowances. This follows from the Polluter Pays Principle. Even if free allocation was intended as a transitional mechanism to safeguard competitiveness, in phase four over 90% of industrial emissions will continue to be covered by free allowances.

For phase three, this split between auctioning and free allocation was set at 57%. For phase four, at least 54%² of the allowances will be auctioned, the rest will be allocated freely to carbon intensive industries exposed to international competition. The motivation for this is to protect them against the risk of carbon leakage. In the medium to long term, this is not sustainable. Due to the declining cap, the quantities of free allocation to industrial sectors has been declining over time. In phase four (2021-2030) an increasing share of industrial emissions will not be covered by free allocation not only because of the cap, but also because of updates to the benchmark values. After 2030, free allocation could shrink further. In the short term, this could be mitigated by increasing the share of free allocation at the expense of auctioned allowances. But doing this would decrease the share of auctioned allowances thus going against the principle that auctioning should be the main allocation method. By 2040, even in a scenario where the phase 4 rules on this split are kept the same, as would the annual reduction of the cap, the volume of free allowances available would be slightly below 400 million, about 3/5th of the volume of free allowances handed out in 2018 (just over 650 million).

In the long run, safeguards to international competitiveness are nevertheless required if we expect European industries to invest in transformational climate-neutral products and production processes that compete on a global market with conventional and potentially carbon-intensive alternatives. Alternatives or complements to free allocation exist.

The European Parliament's environment committee took some tentative steps in this direction when during the last ETS revision, it considered a "carbon inclusion mechanism" for imports from the cement sector. As the proposal did not make it past the European Parliament plenary, the idea was never examined in detail. The basic design involved requiring cement imports to be treated as if they were produced in the EU, and therefore liable for ETS compliance.

The carbon border tax as proposed by the new Commission President Von der Leyen is another option. This is a specific implementation of a what can be seen as a broader set of measures called "border carbon adjustments". While the idea of border carbon tax is a simple one (i.e. to tax imports based on their embedded emissions), the devil is in the details. Compatibility with WTO rules is politically desired; yet treating products different based on their emissions intensity is not allowed. Other WTO principles on rules of origin or the most-favoured nation principle may also play a role in the design on border measures.

The issue of border measures may be less controversial today than ten years ago due to the numerous trade disputes between the US and the EU, while China is also central to the 'trade war'. The US withdrawal from the Paris Agreement – formally notified to the UNFCCC on 4 November 2019 – further affirms the fraught state of multilateralism.

² In principle the Directive fixes the auction share at 57% per Art 10(1). Art 10(5a) allows for a reduction of up to 3% however, if this is necessary to help avoid a correction factor described in Art 10a(5)

The coverage of the EU ETS: should it be expanded?

Ursula von der Leyen suggests expanding the coverage of the EU emissions trading system to road transport and energy use (i.e. heating and cooling of) buildings³. These sectors are currently covered by the Effort Sharing Regulation, which mandates country-specific greenhouse gas emissions reduction targets for sectors outside the EU ETS. While this idea can be discussed on its own terms, one way to look at it is by reviewing the sectoral components of the current EU ETS and the trends in emissions in each of them.

Since 2013 emissions in the power sector have been dropping faster than those in industrial sectors (see figure 1 below). Emissions from industrial sectors declined steeply along with industrial output levels during the economic crisis but have since stabilised, and in some cases inched upwards again as output picked up once more. In the electricity sector, with the higher carbon prices observed since 2018, the operation costs on coal-based power generation has increased. At the same time the costs of renewables continue to fall. Furthermore, EU member states that have adopted GHG emissions reduction targets exceeding the EU's -40%-target⁴ have mostly targeted the power sector to achieve additional reductions. In for instance Germany 60% of coal-based power shall be phased out to the year 2030 and 100% to the year 2038. It's unlikely that emissions in industry are reduced at the same pace as in the power sector given the higher abatement costs and longer lead times of breakthrough technologies in industry.

As a consequence, industry will account for an increasing share of the total emissions in the EU ETS. Some observers say that we may be heading towards an "industry-dominated ETS". Over time, this can have implications for the perception of the EU as a centrepiece of EU climate policy.

With continued fast emission reductions in the power sector the impact on price formation in the EU ETS is unclear, both regarding the magnitude and sign. There may be an increasing surplus of allowances which could

lead to a price fall, but there would also be interactions with the Market Stability Reserve that may suck up the surplus and keep the price aloft. Depending on how these interactions play out there may be a desire to further reform the ETS. One should also bear in mind that different regions in the EU may be impacted differently. For example, the carbon intensity of electricity generation in northern Europe or France already tends to be low and overlap with the group of member states setting coal phase-out dates, which also tend to be comparatively wealthy. Conversely, member states in central and south-east Europe tend to have more aging energy systems. The distribution of emissions between power and industry sectors may likewise differ between regions, which will impact any negotiations for reform.

One way to respond to a shrinking ETS where industry accounts for a larger and larger share is to expand the system to include new sectors. The basic argument for inclusion of any sector into EU ETS is that would increase the effectiveness of reducing emissions in the whole EU. The priority for economy-wide emissions reductions over those in individual sectors underpins the qualification of the EU's cap and trade system as a cornerstone, and a cost-effective instrument of EU climate policy.

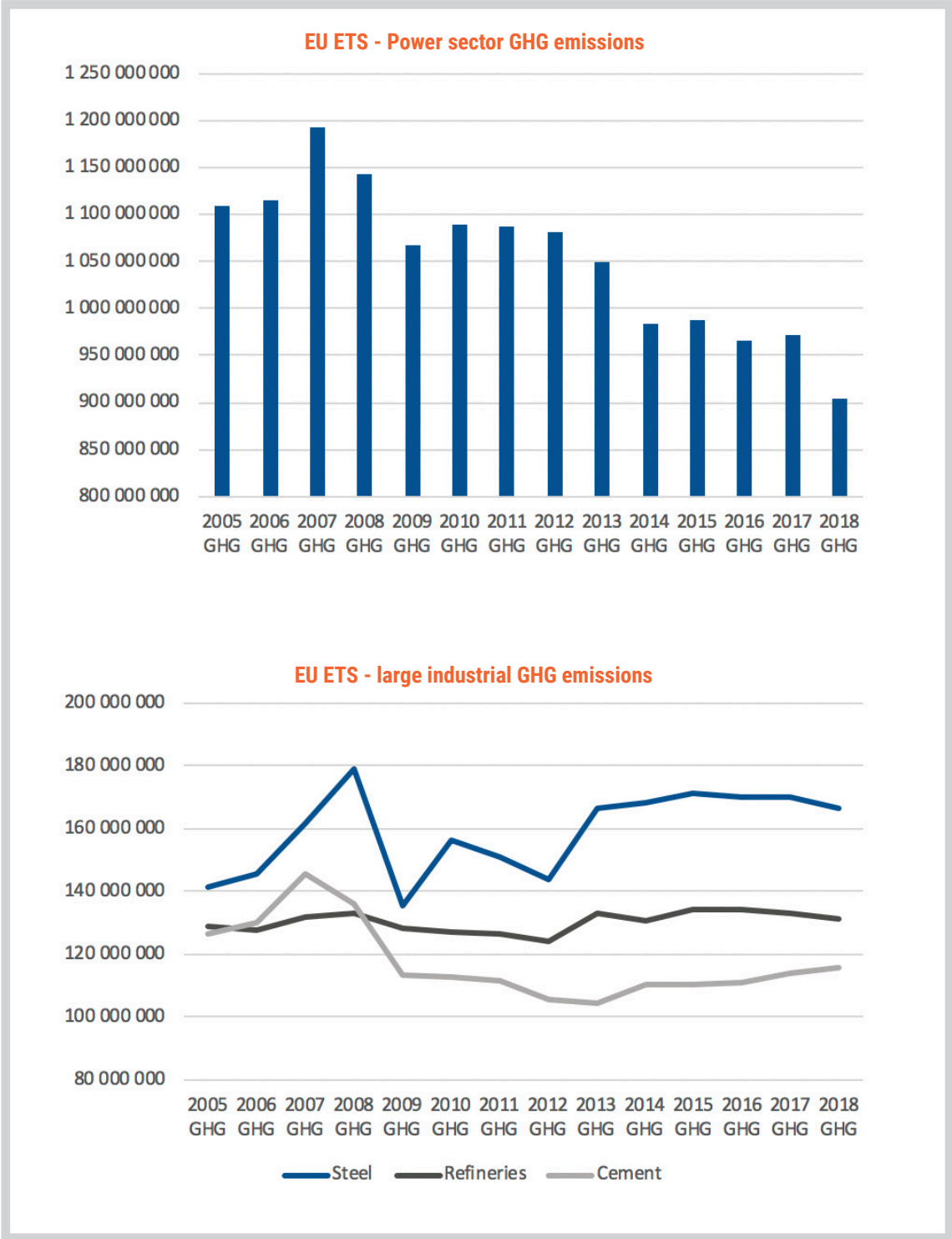
But this does not mean that carbon pricing, through the EU ETS, should replace other policies in the transport sector. In fact, the experience with other sectors already included shows that multiple policies affecting greenhouse gas emissions are common. Just as in the electricity sector, carbon pricing and renewables support policies go together, so too should carbon pricing complement, and not replace, existing vehicle standards or national measures targeting electrification of heating and energy efficiency in buildings.

An effective climate policy mix requires both push and pull policies, reflecting disincentives and incentives respectively. Therefore, the expansion of the EU ETS (or alternatively, the introduction of non-carbon pricing policies in other sectors) should not lead to the repeal of the other type. This may yet lead to interactions that

³ The topic of ETS extension was not mentioned in the Mission Letters to the Commissioners-designate

⁴ More correctly: "at least 40%" as agreed in the European Council of October 2014

Figure 1: EU ETS GHG 2005-2018 emissions from power sector and three major industries



Source: EU Transaction Log Source: EU Transaction Log

need to be managed. Including new sectors in the EU ETS inevitably changes the supply and demand balance. The strengthened Market Stability Reserve, however, ensures that the EU ETS is more capable of doing so.

Another argument to include transportation in the EU ETS is that the increasing share of electric vehicles is indirectly linked to the EU ETS through the power sector. The same goes for much of rail transport.

The idea of including transports in the EU ETS has been up for discussion previously and always lead to controversy. There is a fear that the transport sector would buy allowances instead of reducing their own emissions, thereby constraining the available supply for industry. The abatement costs in transport and buildings are either much higher than the ETS price, or non-economic barriers hinder emissions being reduced. For example, if road transport would be included by covering fuel distributors⁵, even a carbon price of 100 EUR would only add a few cents to the price of petrol. Hardly an impact that, of itself, would make people drive less or choose electric vehicles. For this reason, some argue that the transport sector should be dealt with separately.

When a sector is added to the ETS, all included sectors will be in competition for the same shared supply of allowances. In a cap-and-trade system the abatement

efforts of one sector thus depend of those of other sectors included in the same (ETS) system: This can have an impact on the carbon price signal in either direction. Indirectly this is also the case with the Effort Sharing framework since the total emissions are limited by Allocated Emissions Allowance set in legislation. However, in the ETS this competition is more direct as there is a constant trade in allowances. Additionally, in the long-run, having as many sectors as possible under the same cap helps ensure that long-term climate targets are met.

An argument against extending the EU ETS to other sectors is that it may potentially lead to higher carbon prices due to the additional demand from the newly added sectors. This would subsequently lead to problems for industrial sectors exposed to risk of carbon leakage. However, the question of how to mitigate carbon leakage risk, or to what extent is not specific to the expansion question or to the carbon price; it needs to be settled anyway. If sectors are considered at risk of carbon leakage then the response should be to implement adequate and sustainable safeguards against this risk, not to hamper the intentions of emissions trading.

Long term ambition of the EU ETS

The new European Commission president Ursula von der Leyen supports a climate-neutrality target for 2050 and an increase of the 2030 greenhouse gas emissions reduction target to 55% (or “at least 50%”). The motivation for this is that EU emissions should be reduced at a pace which is in line with the Paris agreement. If adopted, any increase would necessitate re-examining the relative reduction efforts of the ETS and non-ETS sectors. For the 2030 target and the EU ETS, this could lead to an increase in the linear reduction factor; currently set at 2.2 percent⁶.

One can wonder what will happen in the long term when the cap of the EU ETS is close to zero. With the current rules, the EU ETS cap will reach zero in 2058. The Paris Agreement review may change that and bring the moment of zero emissions forward, for instance to

the year 2050. As we get closer to the zero emissions year, it's likely that there will be residual emissions that are very costly to abate. The use of carbon capture and storage may not fully eliminate emissions due to capture rates that are below 100%. Aviation – which is partially included in the EU ETS – may likewise still continue to emit greenhouse gases well into the future. But if so - is it possible to have an emissions trading system with a zero cap? Yes, a zero cap is possible if there are credits representing negative emissions or credits representing international offsets that can be used to compensate for the residual emissions in the ETS. This is a politically sensitive issue due to concerns about additionality and environmental integrity but may at the same time be a discussion that is inevitable.

⁵ In theory, there are other ways: the point of compliance could also be for vehicle owners, or vehicle producers. This would likely be very complex in implementation, however, as it breaks with the norm that operators of facilities (i.e. often large companies), not consumers are liable for compliance.

⁶ Corresponding to 48 million tons per year

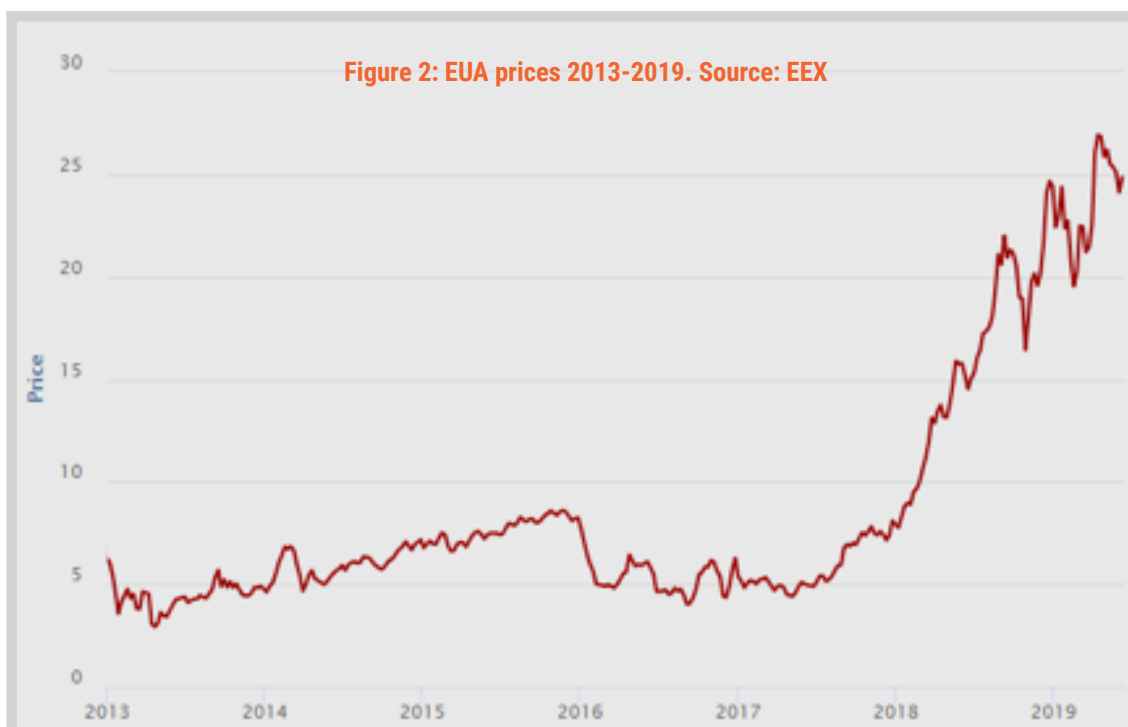
Ability to handle overlapping policies and price shocks

Between 2013 and 2018 the EU ETS was plagued by a consistently low price on allowances, see figure 2. This was due to an imbalance of allowance supply and demand, resulting mainly from the economic crisis, the influx of credits under the Clean Development Mechanism, and free allocation based on historical output levels. Moreover, renewable targets and energy efficiency policies further reduced emissions, without necessarily adjusting the supply of allowances commensurately, thereby contributing to a growing surplus. The low price was clearly not providing incentives for emissions reductions and adoption of low carbon technologies.

In response to the low allowance price, some member states introduced or wanted to introduce additional policies in order to comply with national climate objectives. However, additional emission reductions

under an emissions cap is problematic for two reasons. First, if the total volume of emissions allowances is fixed, extra emissions reductions in one country can lead to emissions increasing elsewhere in the EU, undermining the effectiveness and integrity of the national policies. This is sometimes referred to as the “waterbed effect.” It is like sitting down on one side of a water bed and seeing it rise on the other side. Moreover, if additional policies are introduced, the surplus of allowances may increase even further, putting downward pressure on the carbon price and reducing the incentive to adopt new technologies even further (Burtraw et al 2018).

In 2017 the EU ETS was reformed. From 2019 allowances corresponding to 24 percent (12 percent from 2024) of the allowance surplus is transferred into a market stability reserve (MSR). From 2023 onwards, the MSR is only



allowed to hold as many allowances as were auctioned the previous year – the rest are invalidated. Estimates show that about 3 Gt of allowances will be invalidated between the years 2023 and 2030 (Burtraw et al 2018). This has already driven up allowance price from around 5 euros to between 25 and 30 euros which is likely to accelerate the phase out of coal in the EU. Studies show that this invalidation mechanism also reduces the waterbed effect to some extent (Zetterberg 2018).

Overlapping policies are common both at EU and member state levels. They are for instance used to speed up implementation of renewable energy, improve energy efficiency, support technologies that require a certain infrastructure or to achieve other objectives such as energy security. It's likely that the EU ETS will co-exist with other policies. For that reason, it's important that the EU ETS can manage imbalances in supply and demand

that may occur due to overlapping policies. This can, for instance, be achieved by introducing a price floor in the EU ETS. A price floor can also provide buoyancy in the event of unexpected shocks, thereby providing investment certainty and maintaining market confidence and support. Price floors have been successfully implemented in the emissions trading systems in North America (Flachsland et al 2019).

The planned review of the Market Stability Reserve in 2022 provides an opportunity for the Von der Leyen Commission to safeguard and reinforce the effectiveness of the ETS and its price signal. This could be done either by updating the parameters of the MSR, by considering alternatives such as a price floors, or a hybrid, such as by making the MSR intervene based on a price trigger rather than a quantity trigger.

References

Burtraw, D., Keyes, A., Zetterberg, L. Companion Policies under Capped Systems and Implications for Efficiency – The North American Experience and Lessons in the EU Context. 2018. IVL-report C312, available on www.ivl.se.

Elkerbout, M. 2017. A Strong Revision of The EU ETS, But The Future May Bring Impetus For Further Reform. CEPS Commentary November 2017 - <https://www.ceps.eu/ceps-publications/strong-revision-eu-ets-future-may-bring-impetus-further-reform/>

European Commission, 2019a. https://ec.europa.eu/clima/sites/clima/files/factsheet_ets_en.pdf,

European Commission, 2019b. https://ec.europa.eu/clima/policies/ets_en

European Environmental Agency, 2019. <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>

Flachsland, C., Pahle, M., Burtraw, D., Edenhofer, O., Elkerbout, M., Fischer, C., Tietjen, O., Zetterberg, L. 2019. "Avoid history repeating: The case for an EU ETS price floor revisited, Climate Policy. Available on <https://doi.org/10.1080/14693062.2019.1682494> .

Zetterberg, Lars, 2018. The new logic of the EU emissions trading system, International Centre for Trade and Sustainable Development, (13 March), <https://www.ictsd.org/opinion/the-new-logic-of-the-eu-emissions-trading-system>.

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About Mistra Carbon Exit

Mistra Carbon Exit is a research programme that identifies and analyzes the technical, economic and political opportunities and challenges for Sweden to reach the target of net zero greenhouse gas emissions by 2045. We will identify pathways and policies for how Sweden and Swedish companies can become frontrunners in transforming society and industries, providing low carbon products and services while at the same time addressing market risks. This will make Sweden an important international example for other countries to follow.

Programme host:

IVL Swedish Environmental Research Institute

Programme director:

Lars Zetterberg, IVL Swedish Environmental Research Institute
lars.zetterberg@ivl.se

Vice programme director:

Filip Johnsson, Chalmers University of Technology
filip.johnsson@chalmers.se

Programme assistant:

Lovisa Källmark, IVL Swedish Environmental Research Institute
lovisa.kallmark@ivl.se

Communications:

Jessica Kriström, IVL Swedish Environmental Research Institute
jessica.kristrom@ivl.se

www.mistracarbonexit.com



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