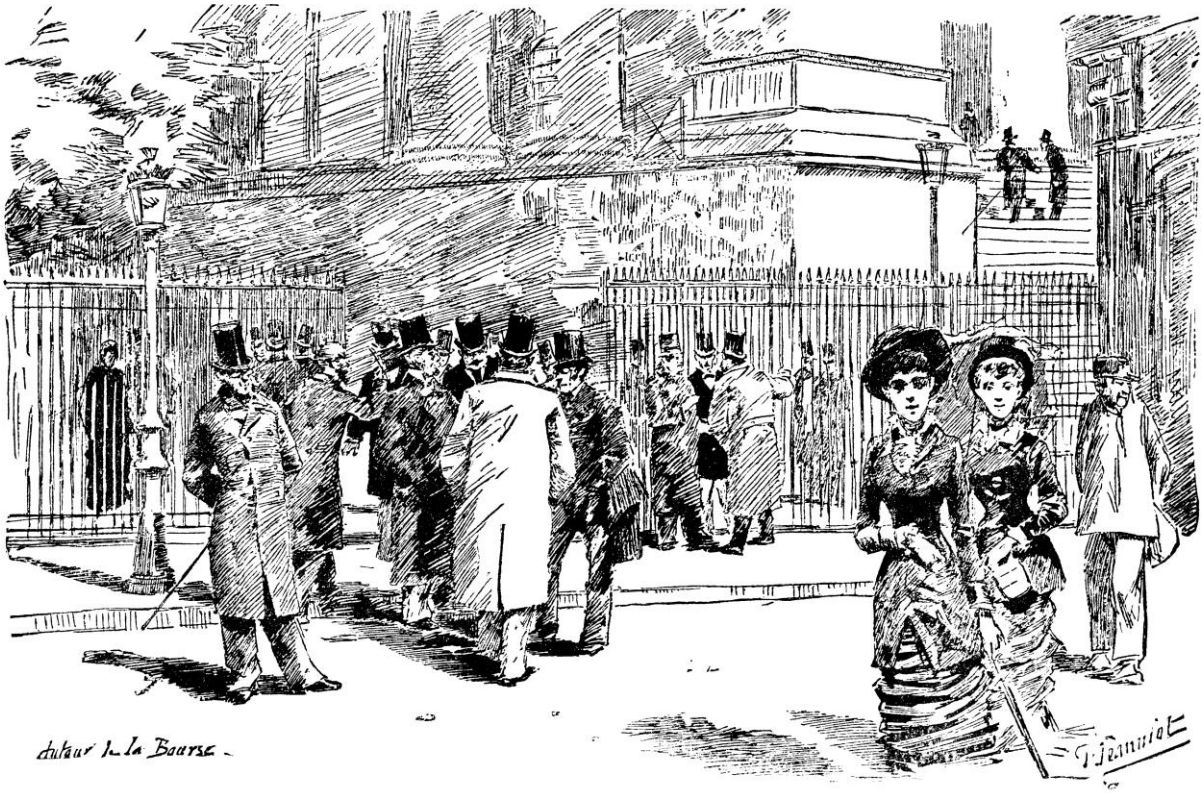
2021 State of the EU ETS Report



OUTSIDE OF THE BOURSE.

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This Paper has been the subject of stakeholder consultations, including a workshop convened by the authors with stakeholders including NGOs, think tanks, academia, policy makers, market participants and representatives of industry.

A grant to produce this report was provided by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and by the French Ministry of Ecological and Solidary Transition. The authors thank them for their continued support for this report.

The European Roundtable on Climate Change and Sustainable Transition (ERCST) is a Brussels-based think-tank incorporated as non-profit organization under Belgian law. ERCST provides rigorous intellectual analysis of EU and international climate change developments and policies, by using the experience and research of its staff, as well input from stakeholders who participate in its activities. ERCST provides original ideas and research into European and international debates on climate change policy. It represents its own views and strives to ensure in a very strict way its independence and integrity.

BloombergNEF (BNEF) is a strategic research provider covering global commodity markets and the disruptive technologies driving the transition to a low-carbon economy. Our expert coverage assesses pathways for the power, transport, industry, buildings and agriculture sectors to adapt to the energy transition. We help commodity trading, corporate strategy, finance and policy professionals navigate change and generate opportunities.

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EcoAct is an international advisory consultancy and project developer created in 2005, which joined the Atos Group in 2020. EcoAct works with clients to meet the demands of climate change. We work with many large and complex multinational organisations to offer solutions to their sustainability challenges.
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2021 State of the EU ETS Report

Table of Contents

List of Figures

List of Tables

2021 State of the EU ETS Report

Key Takeaways

This report marks the end of the third phase of the European Union's Emissions Trading System (EU ETS), which concluded in 2020 and will be remembered as a period of constant reforms and adjustments aimed at correcting its design flaws. Indeed, the end of the Phase 2 saw the EU ETS in difficulty, saddling the market with a gigantic surplus of allowances, accompanied by low prices, which persisted for the first five years of the third trading period.

These inherent and inherited design flaws, mainly related to supply not being able to mimic significant changes in demand as well as the high influx of international carbon credits were recognized and largely addressed through a number of measures, especially the introduction of the Market Stability Reserve (MSR) and adapting the system of free allocation to better reflect changes in activity levels.

Despite the third phase being marked by adjustments, recovery and low EUA prices, the EU ETS' environmental goals were achieved and surpassed for the third phase. However, it was not the ETS price signal that drove this accomplishment, but other policies which were mainly introduced in the power sector. In this, the EU ETS indeed has little credit to take. However, in recent years the EUA prices were sufficiently high to support coal to gas switching in the power sector.

The last few years have highlighted a newfound resilience of the EU ETS. In spite of a deep economic crisis trigged by the response of governments to Covid-19, the market recovered quite rapidly and the trust in the ETS as a tool to decarbonize the EU while providing a first-mover advantage to the EU's industry is higher than ever.

Lastly, the market itself has been and continues to function reasonably well, with good liquidity and tight spreads.

The EU ETS is now at the start of a new phase, and not only a new trading phase. The world is in the Paris Agreement and almost every day seems to be bringing new and more ambitious announcements from governments and businesses. But the asymmetry in the ambition of countries in terms of their climate policies remains, with the EU significantly ahead of many of its trading partners.

The level of the ambition of the EU has gone up to a target of at least -55% net greenhouse gas (GHG) emissions by 2030, and the EU ETS is moving from a tool to decarbonize power to a tool to decarbonize industry. Moreover, it is moving from a situation of almost chronic oversupply of allowances to increasing levels of scarcity. All this is new, and the EU ETS will need to be adapted through the "Fit for 55 package" to these new circumstances.

The uncertainty on how the EU ETS revision will land is significant, but there seems to be only one direction – and the question has to be, is that sustainable?

While nothing was announced yet, critical elements of the EU ETS are at play. The review of the MSR, the design of an EU Carbon Border Adjustment Measure (CBAM) and what this will mean to free

allocation are not small items, they are fundamental, and can make a big impact on the speed of decarbonization as well as the competitiveness of industrial Europe. And we all want a decarbonized but industrial Europe.

How the EU ETS will function in this unknown and bullish territory is unclear and will need to be carefully monitored in the coming years. It seems likely that the EUA price signal on its own will not be sufficient to enable the development and (mass) deployment of innovative low-carbon technologies, and that well-designed, complementary supportive tools will play a vital role in making the transition manageable, affordable, just and, ultimately, sustainable.

It is important to also notice that the EU ETS has so far incentivized the production of low-carbon products. Increasingly so, this approach will have to be matched with measures targeting the demand side to ensure the eventual uptake of low-carbon products and services. To ensure that rising carbon prices are socially and politically sustainable, next to the ETS, which will keep reducing the size of the 'negative' emissions market through a decreasing cap, a 'positive' clean market should be created by reinjecting the ETS revenues into the economy.

The key to success will ultimately lie in effectively managing the interaction between carbon pricing and other climate policies, by enhancing positive synergies and avoiding negative spill-overs. The transition needs to be sustainable and the EU ETS review in 2021 is critical in this equation.

1 Background

Like all initiatives, the EU Emission Trading System (EU ETS) requires, periodically, an assessment regarding its well-functioning and the delivery of its objectives. Article 10(5) of the EU ETS Directive provides for such a yearly assessment, to be carried out by the European Commission (the Commission).

This "State of the EU ETS" Report is an independent effort which is not intended to duplicate or replace mandated work. It focuses on identifying issues and making assessments of the performance of the EU ETS, while looking ahead to what is on the horizon for the EU's carbon market in the coming years.

This report is intended as a **"snapshot"**, providing policymakers and stakeholders with an overview of how the EU ETS is doing by April of each year, based on previous year data. Within the constraints posed by the lack of publicly accessible data, the Report tries to assess the question whether the EU ETS is **"fit for purpose".**

As background, following the completion of the review for Phase 4 (2021-2030) of the EU ETS in early 2018[1] many stakeholders made the assumption that the EU ETS was made "fit for purpose" until 2030. Instead, much has happened over the last few years: the Commission published its communication, "A clean planet for all"[2] in late 2018. The EU election and appointment of the new Commission led to the publishing of the European Green Deal (EGD)[3] and the endorsement of the climate neutrality objective by the European Council (the Council)[4] in late 2019.

Since then, the Commission has proposed an updated 2030 GHG reduction target of (net) 55%, which has been endorsed by the Council, while the European Parliament (the Parliament) backs a 60% target.

Today, we are at the dawn of a new review process, not only for the EU ETS, but for all climate and energy policies as part of the "Fit for 55 package", which will be proposed by the Commission in June 2021.

While the exact content of the package continues to be the object of speculation, some elements have been unveiled over the course of 2020 through e.g., the communication for the 2030 Climate Target Plan (CTP)[5] and the Open Public Consultation (OPC)[6]. The authors believe that the resulting proposal will take a rather cautious approach, being an *evolution* rather than a *revolution* from the current ETS. Section 8 will explore further what the EU ETS could look like under the EGD.

While policymakers and stakeholders are preparing for this, Europe is still trying to cope with Covid-19, which has impacted both the EU ETS directly and the debate around climate policy as well as severely strained the EU's participatory processes. It remains unclear what long lasting impacts both the pandemic and governments, businesses and individuals' responses to it, will have on the functioning of the carbon market.

Finally, we have to still flag, maybe especially in this current crisis which illustrates how interconnected the world is, that while the EU ETS is a complex instrument, and for some a world in itself, it does not exist in a

[1] Directive (EU) 2018/410. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L0410&from=EN

[2] European Commission (2019). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0773&from=en

[3] European Commission (2019). The European Green Deal. https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

[4] European Council (2019). https://www.consilium.europa.eu/media/41768/12-euco-final-conclusions-en.pdf

[5] European Commission (2020). The 2030 Climate Target Plan. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0562&from=EN

[6] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12660-Updating-the-EU-Emissions-Trading-System/public-consultation

vacuum. For all its faults, the EU ETS should not be compared to an ideal world, but to real options that would be available to address climate change.

It must be remembered that the EU ETS operates in a highly interconnected environment and is affected by climate change and other policies at different levels: global, EU, EU Member States, and sub-national jurisdictions. It has to live with that reality and respond to it.

2 An EU ETS "fit for purpose"

In order to assess whether the EU ETS is "fit for purpose", the parameters which measure its success first need to be identified. Simply put, "what do we expect the EU ETS to deliver?" Ideally there would be Key Performance Indicators (KPIs) which will give clarity on the performance of the EU ETS in identified areas.

In reality, there are not always clear quantitative indicators for what the EU ETS may be expected to deliver. In some cases, objective, quantitative indicators have emerged gradually, as experience is gained with these mechanisms, both in the EU, but also around the world. Experience from other markets may also provide benchmarks. Nevertheless, some of the assessments will have a level of subjectivity and judgement (sometimes political) attached to them.

In this context, we need to remind ourselves that Article 1 of the EU ETS Directive[7] outlines its broad objectives:

> *"This Directive establishes a scheme for greenhouse gas emission allowance trading within the Community in order to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner. This Directive also provides for the reductions of greenhouse gas emissions to be increased so as to contribute to the levels of reductions that are considered scientifically necessary to avoid dangerous climate change."*

Some objectives are clearly enunciated and identified, while some stakeholders may see other objectives as implicit. The direct deliverables assessed by this report include:

1. **Environmental delivery**. Does it deliver against absolute environmental targets as expressed in the EU ETS Directive and the EU's long-term climate change objectives?
2. **Economic efficiency**. Does it deliver macro-economic efficiency and function as a driver for cost-effective decarbonization, taking carbon leakage concerns into account?
3. **Market functioning**. It is worth having a market only if it functions well and leads to good price discovery.

Over time, other deliverables or indicators have come to be "expected" or "understood". Some have come to equate the good functioning of the EU ETS, wrongfully in our view, with the delivery of a "right price" which could incentivize certain technologies or approaches. This report will not judge the success or failure of the EU ETS based on price levels.

Long-term competitiveness

One indicator not explicitly mentioned is the expectation that the EU ETS will contribute to the long-term (competitive) advantage for Europe. This has become more explicit with the EGD, which was presented by the Commission as Europe's "New Growth Strategy", aimed at transforming the EU into a fair and prosperous society. The main issue is perceived to be the magnitude of upfront investments that need to

[7] Directive (EU) 2003/87/EC. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02003L0087-20180408&qid=1587648079332&from=EN

be made in order to put Europe firmly on a new path of sustainable and inclusive growth, the source of these investments, and how to manage the transition.

Many stakeholders expect that the EU ETS will play a key role in this new growth strategy, and will help accelerate the transition to a low-carbon economy by:

- Incentivizing investments to accelerate the transition;
- Addressing the socio-economic impacts associated with the transition to a low-GHG economy through revenue-recycling;
- Contributing to the creation of a market for low-carbon products;
- Incentivizing behavioural and system change.

The first two objectives can be considered as being more explicit, as they are clearly captured in the EU ETS Directive by the legislators. For example, through the requirement for Member States to use at least 50% of the revenues generated from the auctioning of allowances for climate and energy purposes, as well as through the establishment of dedicated funds, such as the Innovation[8] and Modernisation[9] Funds, the EU ETS explicitly facilitates investments in low-carbon technologies and helps address socio-economic impacts and facilitate a "Just Transition".

For these two objectives, the inputs are clear and KPIs can be developed, e.g., in terms of the amount of investment leveraged; new jobs created; retraining of workers, etc.

The third and fourth objectives could be considered as being less "mature" in the policy debate and KPIs more difficult to develop.

Promote carbon pricing

One additional role is that of the EU ETS as a pioneer in promoting carbon markets as a tool for addressing climate change. Many studies, including the annual ICAP Status Report[10] and the annual State and Trends of Carbon Pricing report from the World Bank[11], show that carbon pricing is spreading across the world. The internationalization of the EU ETS, including through linking it to other markets, as well as the use of Article 6 of the Paris Agreement, needs to be considered as part of the vision during the transition period.

It is increasingly clear that the EU is using multiple approaches to promote the use of carbon markets around the world. Firstly, through "leading by example" and persuasive diplomacy, other jurisdictions take inspiration from the EU ETS in designing their own policy responses to climate change.

Secondly, the EU is able to leverage climate ambition or the use of carbon markets as a condition in free trade agreements or throughout its accession process.

Lastly, the EU can use a "stick" approach to convince other countries to adopt more ambitious climate policies and/or carbon pricing mechanisms. The exploration of the use of a carbon border adjustment mechanism (CBAM), is a move in this direction.

[8] https://ec.europa.eu/clima/policies/innovation-fund_en

[9] https://ec.europa.eu/clima/policies/budget/modernisation-fund_en

[10] ICAP (2021). Emissions Trading Worldwide: Status Report 2021 https://icapcarbonaction.com/en/icap-status-report-2021

[11] The World Bank (2020). State and Trends of Carbon Pricing 2020. http://hdl.handle.net/10986/33809

3 Changes in the regulatory environment

3.1 Secondary legislation for phase 4 of the EU ETS

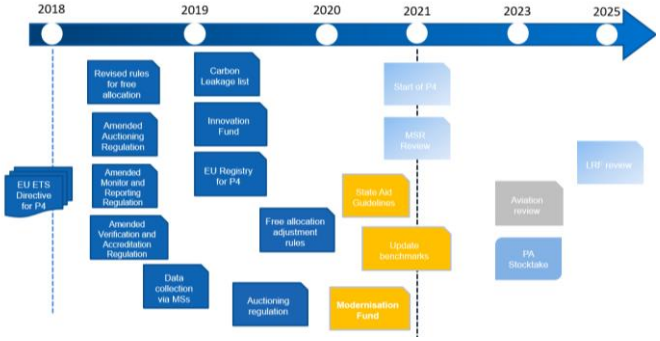
Started in 2018, work on the secondary legislation to implement the provisions in phase 4 of the EU ETS has continued in 2020 and the beginning of 2021. Three important pieces of legislation were adopted in 2020, as can be seen in Figure 1.

After submitting the Draft Regulation on revised benchmark values for free allocation for industrial installations in the EU ETS to be applied in the period 2021–2025 to public consultation in December 2020, the Commission published the implementing Regulation on 15th March 2021[12]. The regulation updates 31 out of 54 benchmarks at the maximum update rate of 24%[13] to reflect progresses made by most industrial sectors in reducing the greenhouse gas emissions per unit of product during the last years.

Earlier in the year, following the establishment of the Innovation Fund in 2019 and the launch of the first call for project proposals in July 2020, the Commission adopted the implementing regulation on the operation of the Modernization Fund in July 2020. The Modernisation Fund is the second of the two low-carbon funds created by the EU ETS Directive for phase 4 to support investments in modernising the power sector and wider energy systems in ten eligible lower-income Member States.

The Commission on September 21, 2020 also adopted the reviewed EU ETS State Aid Guidelines for 2021-2030 regulating member states' compensation of some electro-intensive industries for indirect carbon costs. The EU ETS Directive determines that within three months of the end of each year, Member States that have an indirect cost compensation scheme in place should make available to the public, in an easily accessible form, the total amount of compensation provided and a breakdown per benefitting sector and subsector.

Figure 1: Timeline of the secondary legislation related to the EU ETS



Source: ERCST, 2021

3.2 Brexit implications for the EU ETS

One political development that has had, and will continue to have, consequences for the EU ETS is Brexit. The United Kingdom (UK) was the second-largest emitter in Europe, and British companies were among the largest buyers of EUAs. The EU and the UK have found an agreement on their future political relationship

[12] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0447&qid=1617870888213&from=en

[13] The EU ETS revised Directive specifies that the benchmarks will be reduced by an annual rate from a minimum rate of 0.2% to a maximum rate of 1.6%, leading to reductions of the benchmarks between 3% and 24% over the 15 years between 2008 and 2023, the mid-point of the period 2021 -2025.

in October 2019[14]. The Withdrawal Agreement, which entered into force in January 2020, provided for a transition period until the end of 2020. As of 1st January 2021, relations between the EU and the UK are governed by the new EU-UK Trade and Cooperation Agreement, agreed upon in December 2020.

The decision was that during the transition period from 1st February 2020 to 1st January 2021 the UK installations and aircraft operators remained full participants in the EU ETS and compliance obligations apply for 2019 and 2020 emissions.

In November 2020, the Commission took these developments into account by adopting a Decision on the adjusted Union-wide quantity of allowances (cap) for phase 4 of the EU ETS. This will be further discussed in Delivery against phase 4 target (2021-2030) section 5.2.

3.3 The new 2030 Climate Target

Following-up the endorsement of the climate neutrality objective by the Council in its December 2019 conclusions, in September 2020 the Commission published the 2030 Climate Target Plan Communication[15]. The new proposal delivers on the commitment made in the EGD to put forward a comprehensive plan to increase to 55% the EU emissions reduction target for 2030.

In December 2020, the EU Council endorsed the new target. Meanwhile, a new nationally determined contribution (NDC) for the European Union[16] was also communicated to the UNFCCC in December 2020, reflecting the at least -55% target. To deliver on this higher target, by June 2021 the EU Commission will propose a policy package revising all relevant climate-related pieces of legislation.

As a first pillar, the Climate Law to ensure a climate neutral European Union by 2050 was presented by the Commission on March 4, 2020 and, following a public consultation in the spring of 2020, is still subject to trilogue negotiations.

3.4 Other regulations in the European Green Deal related to the EU ETS

As part of the EGD, the EU is committed to address competitiveness concerns and the risk of carbon leakage. Against this backdrop, the Commission intends to put forward a legislative proposal by June 2021 for a CBAM, aimed at ensuring that the price of imports to the EU reflect their carbon content. Several policy options are currently being examined.

In its resolution adopted in March 2021[17], the EU Parliament demonstrates a preference for the mechanism to be linked and complementary to the broader reform of the EU ETS. Contrary to the report earlier adopted in the ENVI committee in February, the final text adopted by the Parliament is silent on the relationship between a CBAM and the current carbon leakage protection measures.

Another regulation at the top of the EU policy agenda related to the EU ETS is the EU Green taxonomy adopted in July 2020. Climate mitigation criteria will be adopted in 2021 and the EU ETS revised benchmarks for 2021-2025 will be used for setting criteria thresholds for industrial sectors.

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[14] EU and UK withdrawal agreement: https://www.consilium.europa.eu/en/press/press-releases/2020/01/30/brexit-council-adopts-decision-to-conclude-the-withdrawal-agreement/

[15] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0562&from=EN

[16] https://data.consilium.europa.eu/doc/document/ST-14222-2020-REV-1/en/pdf

[17] https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2020/2043(INI)&l=en

3.5 Aviation

Aviation has been covered by the EU ETS since 2012, although it has its own allowances (EUAAs) and a separate auctioning calendar, where only 15% of the historical aviation emissions[18] are auctioned in phase 3. The initial Directive incorporated all flights within, from and to the European Economic Area (EEA). However, following a political push-back from other countries, the EU decided to defer to ICAO which set up its own program the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Therefore, since 2014, the scope of EU ETS has been limited to flights within the EEA.

Beyond 2020, whereas the CORSIA program becomes operational for a first pilot phase in 2021, the Commission is currently preparing a proposal to amend the EU ETS for aviation by June 2021. The proposal is expected to both reduce the share of allowances allocated for free to aircraft operators as well as address the implementation of CORSIA in EU law in a way that is consistent with the EU's 2030 climate objectives.

Adopted in 2016 by the ICAO, CORSIA aims to stabilize aviation emissions at the average level of CO_2 emissions from international flights between 2019 and 2020, and establishes, from 2021 onwards, a global market-based mechanism (MBM) to offset, through international credits, CO_2 emissions exceeding that average. However, the impact of COVID-19 on international aviation had repercussions on global aviation CO_2 emissions, which in 2020 are expected to have fallen to below 40% of 2019 levels. Considering this, the original 2019- 2020 emissions average to calculate the emissions baseline was replaced by the 2019 average only for CORSIA's pilot phase.

3.6 International developments

2020 was an eventful year for climate policy around the world. The newly elected US president, Joe Biden, rejoined the Paris Agreement and previously committed the US to achieving carbon neutrality by 2050.[19] In October 2020, China announced a target of net-zero emissions by 2060 in its fourteenth-Five-Year-Plan (2021-25) and has pledged to peak emissions before 2030. Furthermore, the first implementation phase of the Chinese carbon market (January 1 to December 31, 2021) has been officially launched.

In 2020, other large countries also committed to achieving carbon neutrality by 2050, including Japan, South Korea, and South Africa. In total, with the future involvement of United States, 127 States representing 63% of global GHG emissions are currently considering, or have already adopted, net-zero targets.[20]. How these commitments translate into actual policies will be important to monitor in the future, as comparing levels of efforts will be key in designing effective carbon leakage protection measures, including a CBAM. Currently the EU remains significantly ahead in terms of its commitments, and how its climate policies will practically impact its economy compared to most of its trading partners.

Due to Covid-19, COP26 was postponed from November 2020 to November 2021 and the UNFCCC negotiating process was largely stopped. However, this has not halted the NDC submission process. On the contrary, the "Climate Ambition Summit" organized on December 12, 2020 witnessed a new surge in submission and pledges from 75 countries. The EU itself, as already mentioned, has updated its NDC as well.

Despite advancements on countries' NDCs, over the past year there was no progress regarding the operationalization of Article 6 of the Paris Agreement, which provides a framework for international carbon markets and other forms of international cooperation between countries. While this does not directly

[18] Historical aviation emissions equal to 95% of the average emissions between 2004 and 2006.

[19] https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/

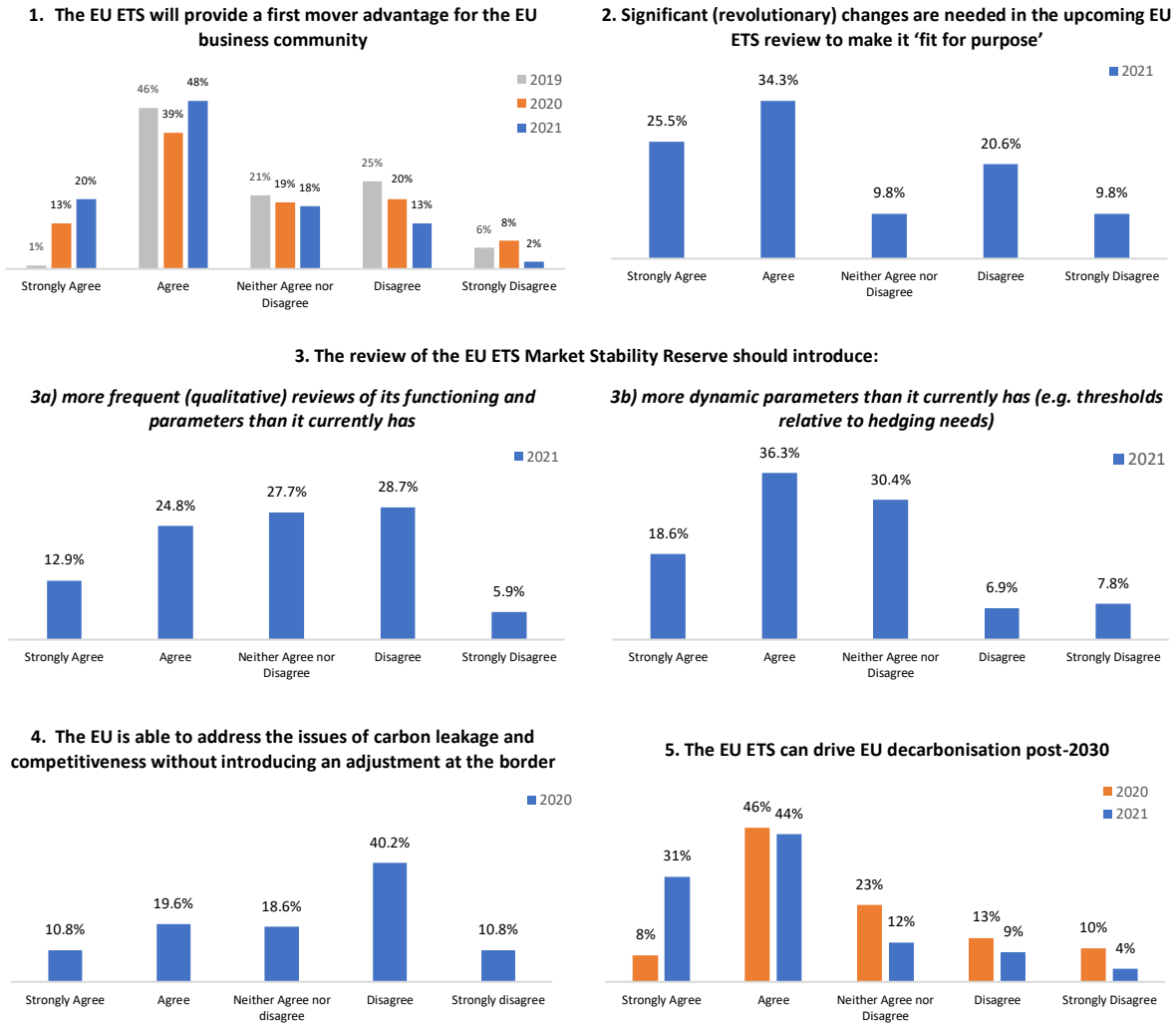
[20] Climate Action Tracker (2020). https://climateactiontracker.org

impact the EU ETS, it could impact the development of rules for accounting and linking ETS systems as they should be specified in Article 6.2 of the Paris Agreement.

4 Sentiment Market Survey

Historically, market sentiment has played an important role, some may say more so than fundamentals, in shaping the behaviour of the EU ETS. While the balance may be changing, sentiment driven by regulation continues to play an important role until all climate-related commitments are solidly enshrined in law. For the fourth year, this Report carried out a Market Sentiment Survey which reached out to stakeholders whom the authors believe are "players & opinion makers" in the EU ETS. The sample includes experts, policymakers, industrial and utility operators, traders, and civil society and is not intended to be statistically representative.

Figure 2: Sentiment Market Survey - Results



Due to the ongoing policy developments under the EGD, the survey questions changed considerably compared to last year. Respondents were asked questions about some "hot topics" including the review of the MSR and the prospects for a CBAM. The downside of this change is that a comparison with previous years is not possible for these new questions.

Compared to last year, it can be concluded that confidence in the EU ETS has increased despite a turbulent year due to Covid-19: a large majority (68%) believes that the EU ETS will provide a first mover advantage for EU businesses and ¾ of respondents think the EU ETS will be able to drive the EUs decarbonization post-2030, a significant increase compared to previous year.

Despite this seeming confidence in the EU ETS, around 60% of respondents does believe that the EU ETS will need to be changed significantly in order to become 'fit for purpose'. When it comes to the MSR review, a slight majority of respondents believe that it should equip the MSR with more dynamic parameters, while there seems to be less appetite for more frequent MSR reviews. It is worth noting that for questions, close to 30% neither agrees nor disagrees with the two options.

Finally, just over 50% of respondents think that the EU will need to recur to some sort of border carbon adjustment measure to address carbon leakage, while 30% think that this is not necessary.

The overall sense is that more clear opinions are emerging in some areas, but with many stakeholders still sitting on the fence when it comes to key issue such as the MSR and CBAM. It is unclear whether this is driven by the lack of a concrete proposal by the regulator or by many still undergoing a process of discovery, which could be a concern.

5 Environmental delivery

The EU ETS needs to be seen as an instrument to deliver price discovery for EUAs within the scarcity created by the cap on GHG emissions. The power of an ETS is in the cap. If the EU ETS is to be considered successful, the environmental delivery, or delivery against the cap, is key.

However, this delivery must be seen as being multi-faceted, in that the ETS needs to be examined for its delivery in the trading period, as set out by the Directive, as well as its contribution to the achievement of the long-term climate change objectives to which the EU has subscribed.

This later condition is not explicitly expressed in the EU ETS Directive and can be seen as being a political decision in terms of the timing (milestones) of the effort to reach the long-term EU de-carbonisation goals which takes away some of the flexibility, and therefore benefits that a market approach was meant to provide. It also increases state intervention in the economy.

5.1 Delivery against phase 3 target (2013-2020)

In this case, the issue is straightforward: does the EU ETS deliver against its current trading period target for 2020 of -21% GHG emissions (vs 2005)?

The 2020 ETS target was already reached in 2014, and emissions have continued to decline since. The official numbers from the European Environment Agency (EEA) show that by the end of 2019, emissions from stationary installations had already decreased by 35.4% compared to 2005.[21] EEA data is not yet available for 2020.

[21] https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1

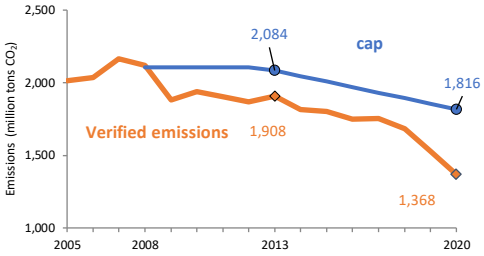
The preliminary data published on April 1, 2021 by DG Climate Action show that emissions from *stationary* sources again decreased sharply in 2020, by an estimated 10.6%, up from 9.1% last year. This significant fall in emissions comes just short of the year-on-year decrease seen in 2009, caused by the 2008/2009 financial crisis. Likewise, in 2020 the Covid-19 induced economic crisis caused a 7.1% decline in the EU28's GDP, in part explaining the large drop in emissions.

Based on the preliminary data, emissions from stationary installations are estimated to have dropped to 1368mt in 2020, or already by 42.2% compared to 2005. The 'gap' between the target path and verified emissions now amounts to 448mt CO_2e.

On average, total emissions have been declining by 75mt CO_2e per year during phase 3, more than twice as fast as the cap, which declines by 36 Mt per year. In 2020, emissions decreased 4.2 times faster than the cap (see Figure 4)

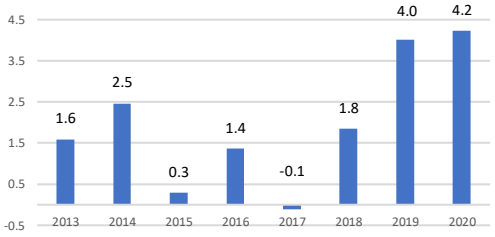
While emissions covered by the EU ETS are decreasing rapidly, there is a big difference in the picture for different sectors, as can be seen in Figure 5 showing the evolution of verified emissions over phase 3.

Figure 3: Verified emissions and EU ETS cap



Source: Wegener Center elaborations on data from the EEA, 2021 and EUTL, 2021

Figure 4: Ratio of the annual variation in emissions to the annual variation in the cap



Source: ERCST and Wegener Center elaborations on data from the EEA, 2021 and EUTL, 2021

Since 2013, emissions from power installations have decreased on average by 5.6% per year, emissions from industrial heat have decreased on average by 2.8%, and industrial emissions by 1.4% on average (though especially for industry, this is mainly due to 2020 being an exceptional year). In 2020, power emissions decreased by an estimated 13.9%, industrial heat by 5.6% and industrial emissions by 7.3%.

Disaggregating further for industrial emissions, Figure 6 shows an index of total verified emissions for some of the large emitting industrial sectors. The data clearly shows that all industrial sectors experienced significant, but varying, decreases in emissions last year, ranging from over 11% for metals to 'only' 4.2% for glass in 2020. A rebound effect in emissions should be expected to occur in 2021 as the economy recovers. The pre-2020 trend also differs among the shown sectors: while glass and cement emissions rose consistently over the last eight years, other sectors' emissions reduced gradually.

Figure 5: Index of verified emissions

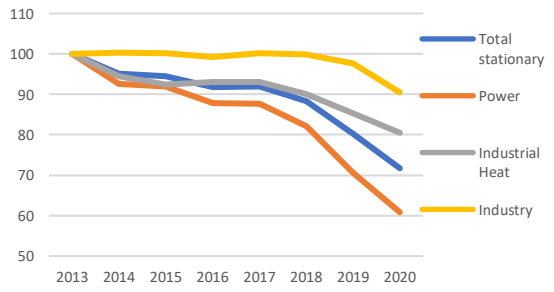
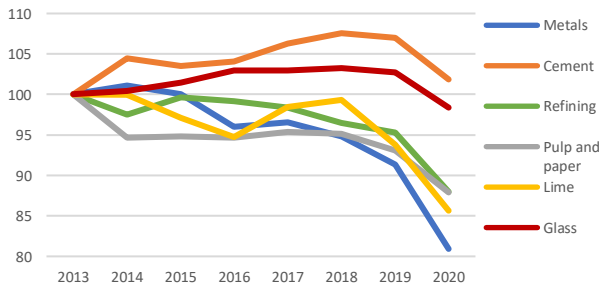


Figure 6: Index of verified emissions for selected industrial sectors



Source: BloombergNEF and ERCST elaborations on EUTL, 2021

Emission intensity

The picture regarding absolute emission outlined above only tells part of the story. For industrial sectors, emissions have historically been closely linked to changes in activity levels and decreasing emissions due to falling activity levels are not a desired outcome, as the aim of Europe's climate policy is to decarbonize, not reduce industrial output. Ideally, emissions and activity levels should increasingly become decoupled, meaning the EU economy is truly decarbonizing.

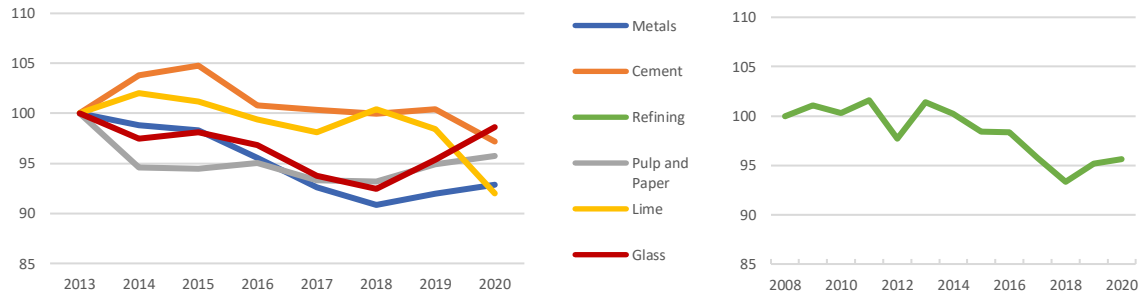
However, data showing carbon intensity of production is challenging to obtain, as it is not always publicly available for independent researchers – and when it is available, it is often at aggregated levels. In previous editions of this report, intensity data was shown for those (limited number of) sectors whose sectoral associations made it available.[22]

In Figure 7, verified emissions of the main industrial sectors are *weighed* by the "volume index of production"[23], a dataset from Eurostat which is an important indicator for industrial production in Europe. The resulting index can be interpreted as *a proxy* for how the CO_2 intensity of these sectors has evolved in recent years.

Indeed, this index should be seen as an approximation, as the "volume index of production" dataset is a value-adjusted indicator and calculating the emissions intensity of industrial production is inherently more complex than presented here. It is in no way intended to replace the data provided by associations.

The data seems to indicate that the CO_2 intensity of all sectors has slightly decreased since 2013, although 2020 should be treated as an anomaly. What should be evident is that the rate in decarbonization for the industrial sectors this indicator shows is not sufficient to achieve the longer-term climate objectives of the EU.

Figure 7: Index of emissions for selected industrial sectors, weighed by "volume index of production"[24]



Source: BloombergNEF and ERCST elaborations on EUTL, 2021 and Eurostat, 2021

Another source of data that can be used to explore emission intensity trends are the annual inventories for Annex I Parties to the UNFCCC. The common reporting format (CFR) tables, which are standardized data tables containing mainly quantitative information, are completed by April 15 each year by all EU Member states and contain both activity and emissions data for some key sectors.

[22] A. Marcu. et all. (2019). 2019 State of the EU ETS Report. https://ercst.org/wp-content/uploads/2019/05/2019-State-of-the-EU-ETS-Report.pdf

[23] Eurostat (2021). Production in industry - annual data. sts_inpr_a

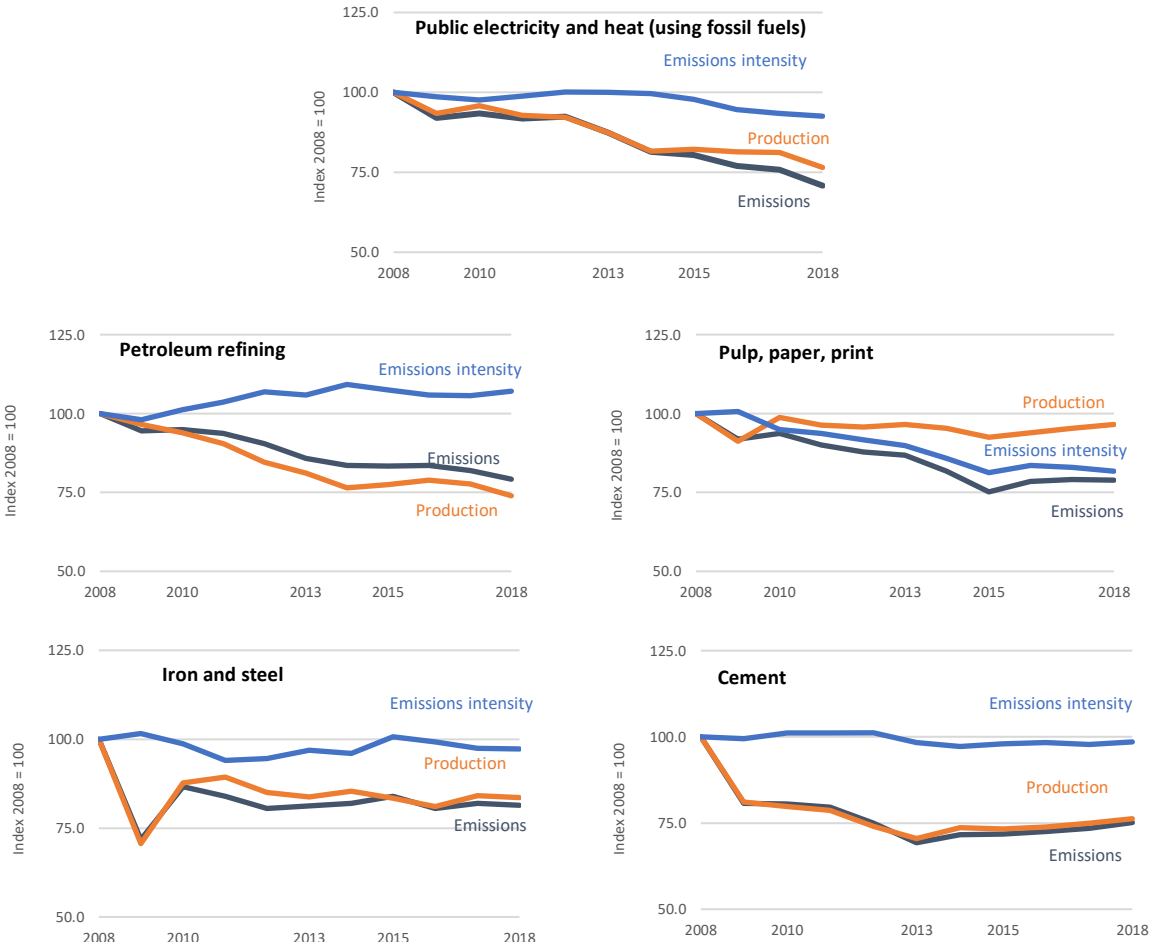
[24] The refining sector is shown starting from 2008, to smoothen out for the years 2012-2013 which are considered to be "abnormal" and starting in this year would overestimate the intensity improvements made by the sector.

While the clear advantage is that this dataset has both actual annual activity and emissions levels for a number of sectors coherently defined over different countries, the sectoral definition goes beyond the activities covered by EU ETS and thus covers data beyond the installations covered by the EU ETS. Nonetheless, it should be seen as a reliable indicator to determine the overall trend in emission intensity for these sectors.

Figure 8 shows indexes for emissions intensities for 5 sectors, which are calculated as emissions per unit of activity that are either production volumes or energy units consumed.

The CFR data shows slightly different results than our proxy in Figure 7. Firstly, for public electricity and heat generation using fossil fuels a decline in emissions intensity can be observed after 2015, pointing towards the occurrence of fuel switching from coal to gas. This will be further explored in section 6.1.

Figure 8: Emission intensity index for 5 sectors based on CFR tables submitted by EU28 Member States to the UNFCCC (2008 - 2018)



Source: Wegener Center elaborations on EU28 national inventory submissions to the UNFCCC, 2021

Secondly, industrial sectors with emissions stemming mainly from energy use show varying trends. For the two examples shown in Figure 8, we can see a clear downward trend in emissions intensity for pulp, paper & print, while the intensity of petroleum refining initially increased, after stabilizing post-2013.

Lastly, for those sectors where emissions both stem from energy use as well as processes, such as the production of iron and steel as well as cement, rather constant emissions intensities can be observed. In

these sectors, the dynamics of emissions are still very closely tied to activity levels as current technologies cannot avoid emissions from processes.

5.2 Delivery against phase 4 target (2021-2030)

A longer-term view, but also a clear target, brings a second question: are the EU ETS sectors on-track to deliver against the currently agreed target for the next trading period, a reduction of 43% by 2030 (vs. 2005)?

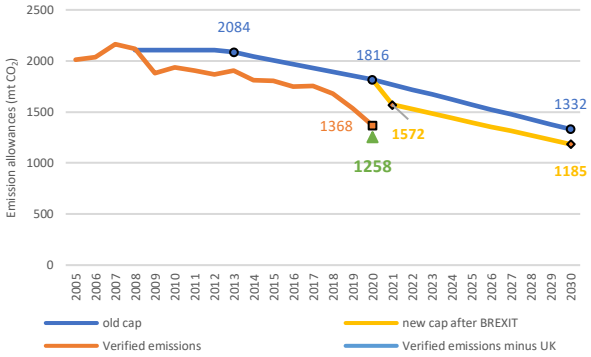
As was outlined above, emissions have already dropped by an estimated 42.2% compared to 2030. While a rebound effect should be expected in 2021, the EU ETS is already close to achieving its (current) phase 4 objective.

One important recent development is the UK leaving the EU ETS following Brexit. Consequently, the Commission has revised[25] the phase 4 cap to reflect the reduced coverage of the EU ETS, which is shown in Figure 9.

Interesting to note is that the recalculation of the cap is done based on the average quantity of allowances issued by the UK during the period 2008 -2012.

As the UK's ETS emissions have decreased faster than others since then, the reduction of the cap in 2021 (196mt) is considerably higher than the UK's verified emissions in 2020 (estimated to be 110mt). This implies that the market will become 'tighter' due to the UK leaving the EU ETS, although verified emissions remain significantly below the cap.

Figure 9: Verified emissions, old cap and revised cap following Brexit.



Source: ERCST and Wegener Center elaborations on EEA, 2021; EUTL, 2021; and European Commission, 2020

However, the overall picture remains the same: 2020 verified emissions for the remaining stationary installations are currently only 73mt CO_2 above the 2030 target. Of course, the 2030 ETS target is expected to be increased significantly under the EGD, and will be further explored in section 8.

5.3 Delivery against EU long-term domestic environmental commitments

To what extent does the trading period target lead the EU to deliver on its longer-term goals and commitments? As discussed in previous editions of this Report, EU domestic climate change targets have historically been expressed in several documents. Until recently, the "2050 Roadmap" was the main document mentioning a number of intermediate GHG reduction targets for the EU as a whole (40% by 2030, 60% by 2040, and 80%-95% by 2050 (vs. 1990)) and proposed a reduction of 90% for ETS sectors compared to 2005.[26]

[25] European Commission (2020). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XC1211(07)&from=EN

[26] European Commission (2011). 'https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0112:FIN:EN:PDF

The 2019 Commission communication entitled the "Clean Planet for All"[27] included two carbon neutrality scenarios - 1.5 LIFE and 1.5 TECH – respectively envisaging a reduction of 95% and 102% in EU ETS emissions by 2050, compared to 2005 levels.

Now, with the publishing of the EGD, and the endorsement by the Council and Parliament of the climate neutrality goal by 2050, these documents are essentially outdated as the EU intends to have net zero emissions by that time. However, it remains to be seen what level of ambition, and what pace of reductions, is expected from the EU ETS beyond 2030.

6 Economic delivery

The EU ETS has been presented, and is thought by many, to be the main component of EU climate change policy. Its stated goal is to "*promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner".* This creates the expectation that EUA prices will drive decarbonisation, which is considered to be the most economically efficient way. This section looks at whether the EU ETS delivers in this respect, and discusses other areas where the EU ETS contributes to decarbonisation, such as financing the transition through the use of auctioning revenues.

As part of the drive towards decarbonization, one other indicator of the economic impact of the EU ETS is the total costs incurred by the installations covered by the ETS to meet the cap. These costs, both direct and indirect, are also an indicator of the risk of carbon leakage, as they can lead to a loss in competitiveness for covered sectors and installations, compared to operators in jurisdictions with less stringent or no carbon constraints. In this context, providing protection against the risk of carbon leakage is another area where the EU ETS provisions must deliver.

6.1 Is the EU ETS a driver for change?

As previously discussed, emissions covered by the EU ETS decreased significantly over the last years. However, it is unclear to which extent this decrease was driven by the EU ETS rather than by changes in levels of production and investment, or through incentives provided by other policies. If the EU ETS is not the driver, then we are off the most efficient path for decarbonization.

Many researchers have difficulties in separating the effect of the ETS from other policies, also due to the lack of pre-2005 emissions data, which are needed to estimate counterfactual emissions, and to difficulties in separating the effect of the ETS from those of other policies or events.[28]

To address the issue of pre-2005 and counterfactual emissions, researchers have made estimations based on aggregated data at sectoral/country level or data at firm/plant level. While the aggregated sectoral/country approach shows the economy-wide effect on emissions, the firm/plant approach is more reliable and can account for macroeconomic trends.

[27] European Commission (2019). https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

[28] Muûls et al. (2016). Evaluating the EU Emissions Trading System: Take it or leave it? An assessment of the data after ten years. https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/Evaluating-the-EU-emissions-trading-system_Grantham-BP-21_web.pdf

The results from studies taking these approaches indicate that the EU ETS had a positive effect on reducing GHG emissions in its early phases.[29][30] Taking an aggregated sectoral approach, one recent study found strong evidence of the impact of the EU ETS on emissions beyond the effect of the 2008/2009 financial crisis.[31] It concluded that about 1.2 billion tons of CO_2 of saved cumulative emissions between 2008 and 2016 can be attributed to the EU ETS – more or less 3.8% of total emissions over that period. Another study used an installation-level approach and found that the EU ETS reduced emissions by 10% to 14% *compared to business-as-usual* over the period 2005-2012.[32]

However, these studies mainly look at the first two trading periods of the EU ETS. Estimations for the third period are lacking. Future research can provide an estimation for the third period to evaluate whether the early positive effect is attributable to acting on low-hanging fruits and the subsequent impact of the ETS has slowed down, or a deeper decarbonization trend can be observed.

Another goal of the EU ETS, not directly stated in the directive, is to create incentives for installations to invest in new technologies, and new processes, aimed at reducing emissions. This goal is translated in the ability of operators to anticipate the need for allowances, and thus future costs, and invest in research and development of low-carbon technologies. This can also be triggered by direct support provided through ETS revenues (either by Member States or through ETS funds such as the Innovation and Modernisation funds).

Literature on this goal shows mixed conclusions, suggesting a moderate impact of the ETS on the uptake of low-carbon technologies and innovation at best.[33][34][35] Calel & Dechezleprêtre[36] find increased patent activity in low-carbon innovations due to the ETS over the period 2005-2009, suggesting a positive effect of the ETS on innovation. Others[37] conclude that the ETS has not had a significant effect on firms' decision to invest in low-carbon technologies.

One recent study[38] on UK firms finds a positive effect of the ETS on patenting and R&D spending and suggests that the ETS has been more effective in stimulating innovation of low-carbon technologies rather than in leading to the deployment of these technologies.

Studies focusing on phases 1 and 2 of the EU ETS highlight the fact that design elements such as the overallocation of free allowances through grandfathering did not encourage R&D spending or the uptake

[29] Ellerman & Buchner (2008). Over-Allocation or Abatement? A Preliminary Analysis of the EU ETS Based on the 2005–06 Emissions Data. https://doi.org/10.1007/s10640-008-9191-2

[30] Anderson & Di Maria (2011). Abatement and Allocation in the Pilot Phase of the EU ETS. https://doi.org/10.1007/s10640-010-9399-9

[31] Bayer & Aklin (2020). The European Union Emissions Trading System reduced CO2 emissions despite low prices. https://doi.org/10.1073/pnas.1918128117

[32] Dechezleprêtre, Nachtigall & Venmans (2018). The joint impact of the European Union emissions trading system on carbon emissions and economic performance. https://doi.org/10.1787/4819b016-en

[33] Schmidt et al. (2012). The effects of climate policy on the rate and direction of innovation: A survey of the EU ETS and the electricity sector. https://doi.org/10.1016/j.eist.2011.12.002

[34] Borghesi & Montini (2016). The Best (and Worst) of GHG Emission Trading Systems: Comparing the EU ETS with Its Followers. https://doi.org/10.3389/fenrg.2016.00027

[35] Fabrizi et al. (2018). Green patents, regulatory policies and research network policies. https://doi.org/10.1016/j.respol.2018.03.005

[36] Calel & Dechezleprêtre (2016). Environmental Policy and Directed Technological Change: Evidence from the European Carbon Market. https://ideas.repec.org/a/tpr/restat/v98y2016i1p173-191.html

[37] Lofgren et al. (2014). Why the EU ETS needs reforming: an empirical analysis of the impact on company investments. https://doi.org/10.1080/14693062.2014.864800

[38] Calel (2018). Adopt or Innovate: Understanding technological responses to cap-and-trade. https://ideas.repec.org/p/ces/ceswps/_6847.html

of technologies.[39] Therefore, it is reasonable to expected that changes related to these elements in phase 3 would boost the uptake of low-carbon technologies and innovation.

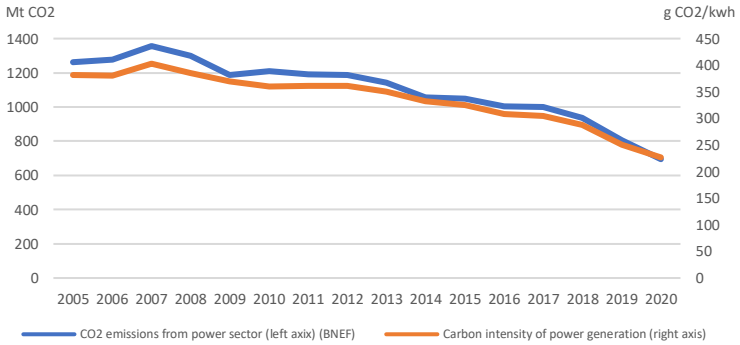
While academic literature for phase 3 is lacking, these observations suggest a long-term behavioral change. Moreover, if current price levels are sustained, wider deployment of low-carbon technologies could be expected.

Focus on the power sector

To better understand the role of the EU ETS in driving down emissions, a good example is provided by an analysis of the power sector. Since 2005, CO_2 emissions covered by the EU ETS from the power sector decreased by an estimated 570mt CO_2 (45.1%), with the bulk of emission reductions taking place since the start of phase 3. Since 2005, the carbon intensity of power generation decreased by 41.6%.

In previous editions of this report, it was shown that the deployment of renewable energy sources was the most important driver in decreasing CO_2 emissions from the power sector since 2005[40]. While the EU ETS has played a supportive role in the deployment of renewable energy sources, it is not sufficient on its own, and has historically not been the main driver. However, with EUA prices rising in recent years, and prices of renewables continuing to drop, the EU ETS is becoming an increasingly important factor.

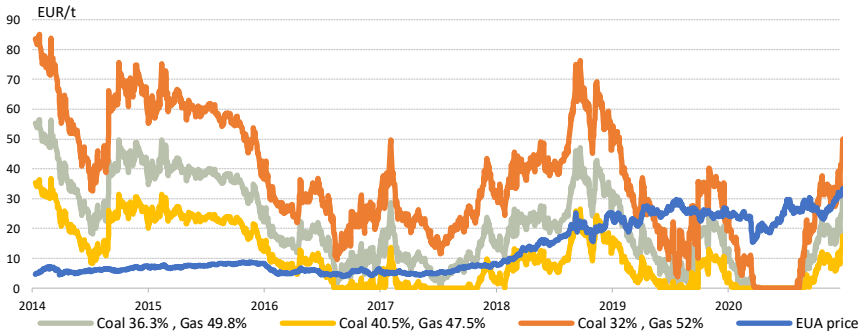
Figure 10: CO_2 emissions from the power sector and carbon intensity of power generation (2005-2020) in EU28



Source: ERCST and BloombergNEF, data from Eurostat,2020, EUTL,2021 and Agora Energiewende and Ember, 2021.

EUA prices are often seen as a potentially effective trigger for a switch from carbon-intensive fuels to less carbon-intensive ones, as is the case for coal-to-gas switching. To better understand the role of the EU ETS in the coal-to-gas switch, Figure 11 shows the EUA price

Figure 11: switching price for different thermal efficiencies, compared to the EUA price



Source: BloombergLP, BloombergNEF

[39] Teixido, Verde & Nicolli. (2019). The impact of the EU Emissions Trading System on low-carbon technological change: The empirical evidence. https://doi.org/10.1016/j.ecolecon.2019.06.002

[40] See 2020 State of the EU ETS Report

superimposed on a range of CO_2 switching prices[41] for different thermal efficiencies.

While the EUA price (blue line) was only higher than the low-efficiency switching price before 2019, we can see that during the last two years it was also constantly above the medium-efficiency switching price, and for most of the year the EUA price was even higher than the high-efficiency switching price.

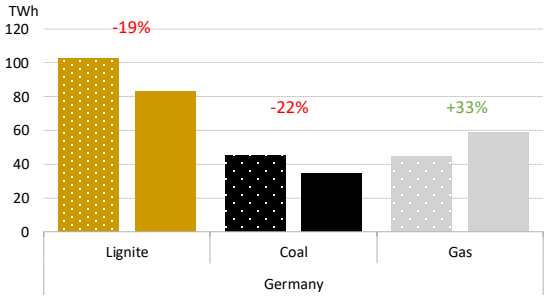
This indicates that, beyond the economic downturn caused by the Covid-19 induced crisis, fuel switching likely contributed heavily to the large emission reductions witnessed in 2020, and that the EUA price played an important role in this.

In Germany, which still produces the largest amount of electricity from hard and lignite coal, power generation from coal dropped, and power generated by gas increased, substantially again in 2020, as can be seen in Figure 12. In Poland, coal generation dropped by 7.5% while gas generation increased by 13%.

Interestingly, for EU28, Agora Energiewende and Ember estimate that power generated by both coal and gas decreased in 2020, by 20% and 6% respectively. [42]

This can be attributed to a decrease in demand (and production), a continued strong increase in the deployment of renewables and a significant increase in net imports of electricity (+61%), which could be a cause for concern as the carbon content of electricity produced in neighbouring countries is higher than the one in the EU.

Figure 12: evidence of fuel-switching in Germany



Source: ISE Franhaufer, REE

In conclusion, power sector emission covered by EU ETS have so far decreased by almost 38% during phase 3. Of course, it is hard to attribute this evolution solely to the EUA price – especially since renewables penetration should mainly be attributed to other policies. Looking back at 2020, the emission reductions can mainly be explained by:

- fuel switching due to higher carbon pricing combined with continued low gas prices;
- a steady continuation of renewable penetration in the EU power mix;
- good conditions for renewables, leading to significant increases in output from renewable sources beyond what can be attributed to the additional capacity of renewables installed;
- Covid-19 resulting in a decrease in overall electricity consumption.

Use of auctioning revenues

The EU ETS can also play a role in the transition to a low-carbon economy through the use of auctioning revenues, as Member States (Article 10 of the EU ETS Directive) are expected to use at least half of the revenues for climate and energy related purposes.

In 2020 auction revenues increased from €14.6 billion in 2019 to €19.16 billion[43]. This increase is mainly attributable to the UK, which auctioned its combined 2019 and 2020 volumes last year. However, revenues

[41] The CO_2 switching price is the CO_2 price that would make equal the prices of producing electricity from gas and from coal power plants, which depends on the relative gas and coal prices, and on the efficiencies of power plants.

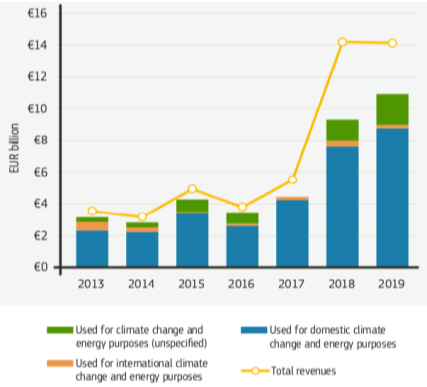
[42] Agora Energiewende and Ember (2021). The European Power Sector in 2020: Up-to-Date Analysis on the Electricity Transition. https://ember-climate.org/wp-content/uploads/2021/01/Report-European-Power-Sector-in-2020.pdf

[43] ERCST elaborations on EEX. EUA Primary Market Auction Reports. https://www.eex.com/en/market-data/environmental-markets/eua-primary-auction-spot-download

of EU27 Member States also increased by 13% compared to 2019. In total, cumulative auctioning revenues amount to €69 billion over phase 3.

According to the Commission[44], over the period 2013-2019, close to 80% of auction revenues were spent for climate and energy purposes, mainly within the EU (see Figure 13). In 2019, the last year for which data is available, close to 78% of auction revenues were used for climate related purposes, up from 70% in 2018.

Figure 13: use of auctioning revenues



Source: European Commission, 2020

The impact of direct financing low-carbon technologies through recycling EU ETS revenues will likely become more significant in the coming years, supported both by rising EUA prices as well as by the recently launched Modernisation and Innovation Funds, which will be used to finance energy system investments in 10 Central and Eastern European Countries and the deployment of innovative low-carbon technologies across the whole EU respectively.

Over the course of phase 4, the revenues of 2% of the total quantity of phase 4 allowances will be made available for the Modernisation Fund[45] while the revenues of at least 450 million allowances will make up the Innovation Fund. The first call for proposals for the Innovation Fund was launched in 2020, and saw a large interest from project developers[46] - the fund could potentially become a game-changer for industrial decarbonization.

6.2 Monetary impacts and carbon leakage

The monetary impact faced by industrial installations to meet EU ETS obligations can be seen as an indicator for the risk of carbon leakage. These monetary impacts are of three types:

1. Direct costs, which is the number of allowances that needs to be bought on the market multiplied by the EUA price;
2. Indirect costs, which are the costs of compliance for energy generators that are passed through to their customers, which are especially relevant for energy intensive industries;
3. Administrative costs, which are largely considered to be relatively small, in the order of a few eurocents per ton of product.

Direct Costs

Free allocation is the instrument currently used to mitigate the risk of carbon leakage from direct costs. This could change in the future as the EU is exploring the option to introduce a CBAM. The relationship between free allocation and CBAM is likely to be one of the most debated issues in the "Fit for 55" package, with some, including the Commission, seeing a CBAM as an alternative to free allocation while others see a complementary relationship. Both approaches are possible under the principle of avoiding the so-called "double-protection". This will be further discussed in section 8.3.

[44] European Commission. (2020). EU Climate Action Progress Report.

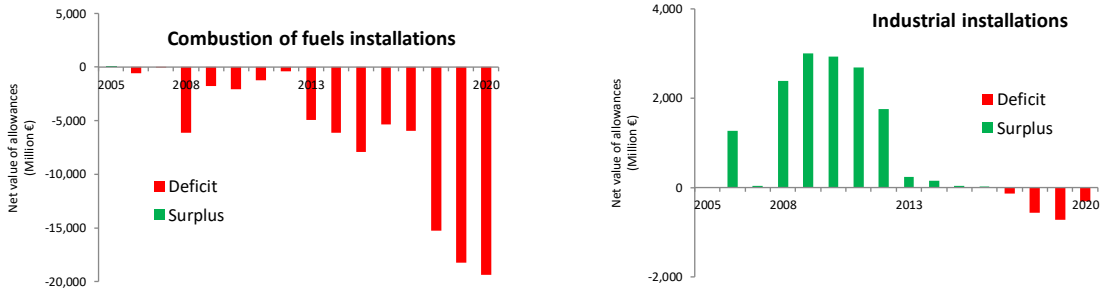
[45] Some eligible Member States have increased their portion of the Modernisation Fund by adding some of their regular auction pool allowances to the fund. https://ec.europa.eu/clima/policies/budget/modernisation-fund_en

[46] https://ec.europa.eu/inea/en/innovation-fund/large-scale-project

Direct costs are the costs that an installation faces to comply under the EU ETS and is the difference between its verified emissions and free allocation multiplied by the EUA price. Figure 14 shows the estimate of the yearly direct costs for the combustion of fuels installations, largely represented by electricity generation, and industry sectors (as defined by EUTL activity codes).[47]

This shows that the power sector has been short since 2006, while the industry as a whole historically did not face any costs and can be seen as largely having been protected from carbon leakage. Data shows that the industrial sector received up to 966 million free allowances more than their verified emissions since 2008, mainly due to the design flaws of phase 2. In contrast, during phase 3, industrial installations as a whole have a net deficit of 15 million free allowances compared to their verified emissions.

Figure 14: net cost of allowances



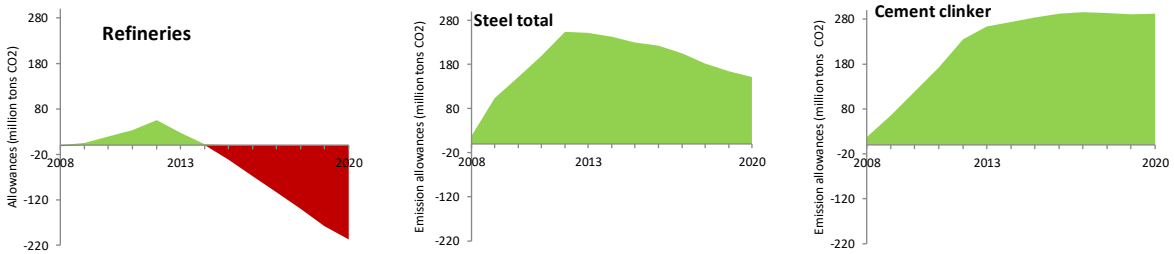
Source: Wegener Center elaborations on EEA, 2020, and EUTL, 2020

Figure 15 provides a more detailed picture of the position of some of the main industrial sectors, showing the *cumulative position* for the steel, refineries, and cement sectors – the three biggest emitting activities, which together account for almost two thirds of industry emissions.

Refining shows a negative cumulative surplus, having consistently experienced a shortage over phase 3, effectively using up the net surpluses cumulated over phase 2. The steel sector received considerable overallocation during phase 2, a trend which also reversed during phase 3. On the contrary, the cement sector's cumulative surplus remained largely stable over the last few years, and has increased since 2013.

The picture for the other industrial sectors is similar: most of them accumulated significant amounts of surplus over phase 2, a trend which is has been reversed during phase 3.

Figure 15: cumulative surplus of free allowances – Refining, Steel and Cement clinker



Source: Wegener Center elaborations on EEA, 2020 and EUTL, 2020

[47] For the EUA price, the average of ICE closing prices for December delivery of the same year were used.

While many industrial installations have historically been over-allocated, it is important to note that they do not necessarily still "hold" these excess allowances in their accounts. For example, some have sold a large share of these allowances in the aftermath of the 2008/2009 financial crisis.

The figures above indicate that the situation has changed significantly in recent years, as the year-to year surplus in free allocation has been decreasing for most industrial sectors, while some sectors experience an (increasing) net deficit. This is mainly due to the application of the cross-sectoral correction factor (CSCF), the introduction of a benchmarking approach rather than grandfathering free allocation and the gradual phase-out of free allocation for industrial sectors not deemed at risk of carbon leakage.

However, despite the CSCF reaching a value of almost 82% by 2020 (meaning free allocation is reduced by almost 18% for all installations), industry as a whole has only faced direct costs since 2017.

In practice, the CSCF's impact is largely mitigated by the inherent inflexibility of the free allocation rules which existed throughout phase 3, namely that the level of free allocation is dependent on *historical* activity levels[48] and is only adapted if significant changes (>50%) in production levels occur.

Decreasing production levels, which is the case for many industrial sectors in the aftermath of the financial crisis, effectively shielded industry as a whole from the application of the CSCF, and thus from the risk of carbon leakage.

Table 1: Applicable CSCF Values during phase 3

Year	CSCF value
2013	94.27%
2014	92.63%
2015	90.98%
2016	89.30%
2017	87.71%
2018	85.90%
2019	84.17%
2020	82.44%

However, the picture for individual sectors can differ substantially. Figure 16 shows the situation for the aluminium and paper & pulp sectors respectively. It shows that despite the application of the CSCF, the paper & pulp sector continues to receive more free allocation than it has verified emissions. On the contrary, the aluminium sector, which would already be naturally short of free allocation due to increasing activity levels (and emissions) has an even greater shortage of free allocation because of the application of the CSCF. Such differences can be even larger for individual installations and highlights that the CSCF impacts some harder than others.

Figure 16: impacts of the cross sectoral correction factor for the Aluminium and Paper & Pulp sectors

Source: ERCST elaborations on EUTL, 2021

In summary, the data suggests that industry as a whole was over-allocated considerably in phases 1 and 2, while direct costs were not significant in phase 3 for industry as a whole. However, large differences exist between sectors and individual installations. Moreover, it seems clear that the situation of overallocation was reversed for most sectors during phase 3, a trend which is likely to continue in the next few years due to the changes to the system of free allocation implemented for the EU ETS phase 4 revision.

[48] In principle, the baseline period is either 2005-2008 or 2009 and 2010.

Indirect costs

Indirect costs are the other important aspect in assessing the economic impact of the EU ETS and the risk of carbon leakage. Indeed, the power sector passes its own compliance cost on to customers through higher electricity prices. Industries, especially those facing international competition, cannot pass this additional cost to end-consumers, leading to the potential risk of carbon leakage.[49]

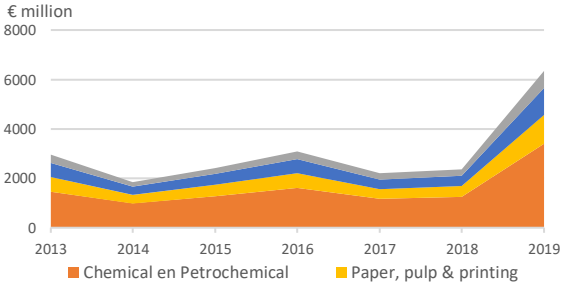
While it is clear is that some electricity intensive industries will experience increasing indirect costs as EUA prices rise and industry is expected to electrify, quantifying these indirect costs for those sectors at risk of carbon leakage is difficult, as electricity consumption data is hard to come by at the right disaggregated level.

Figure 17 below tries to quantify indirect costs for the four main sectors on the carbon leakage list for indirect costs as determined in the 2012 state aid guidelines.[50] It does so by multiplying electricity consumption data from Eurostat by the EUA forward price at year t-1 and the applicable regional emission factors (which can be seen as a proxy for pass-through rates) set out in annex IV of the 2012 state aid guidelines.

Indirect costs for these sectors combined were in the range of €2 - €3 billion between 2013-2018, before almost tripling to over €6 billion in 2019[51] following the rise in EUA prices. Of course, it should be stressed that Eurostat's sectoral classification does not align with that of the EU ETS, covers the electricity consumption of the entire sector, not only those installations covered by the EU ETS, and definitely not only those deemed at risk of carbon leakage.

Rather, it should be seen as a rough high-end estimation of the indirect costs these sectors face as a whole, as we cannot account for e.g. specific electricity contract arrangements that some installations might have, the fact that some installations generate their own electricity, or the fact that some sectors can (partially) pass-through these costs as well.

Figure 17: High-end estimation of indirect costs for four sectors



ERCST based on Eurostat, 2021; European Commission, 2012

Contrary to direct costs, there is no harmonized approach for compensation of indirect costs: only partial and regressive compensation is available at the discretion of Member States, and subject to the aforementioned state aid guidelines. Currently, Member States can compensate for up to 75% of the calculated indirect costs, down from 80% for the period 2016-2018, and 85% for 2013-2015.

At the time of writing, thirteen Member States (including the UK)[52] and two regions (Flanders and Wallonia in Belgium) provide compensation for indirect costs. Czechia and Romania were the most recent countries whose indirect cost compensation schemes were approved by the Commission, though Czechia will only start providing compensation in 2021 for the costs incurred in 2020.

[49] Of course, the same holds true for private consumers, leading to e.g. energy poverty concerns.

[50] European Commission (2012). Guidelines on certain State aid measures in the context of the greenhouse gas emission allowance trading scheme post-2012. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012XC0605(01)&from=EN

[51] This is the most recent year for which electricity consumption data is available

[52] Norway also provides compensation of indirect costs

Table *2* shows the most recent data available on the amount of compensation given by Member States for costs incurred in 2018 and 2019. This is compared with the percentage of auction revenues as, according to the revised EU ETS Directive, Member States should seek to compensate for maximum 25% of their auctioning revenues.

The table shows significant differences between Member States, which can be largely explained by the fact that auctioning revenues are based on the relative amount of emissions Member States had in the period 2005-2007 and are thus skewed towards those Member States that had an emission-intensive power sector. This can lead to big variations in the percentage of auction revenues used for indirect costs compensation, as the amount of compensation given is a function of how energy-intensive a Member States' industry is.

Table 2: Indirect costs compensation and total EUA auction revenues – 2018 and 2019

Member State	Compensation paid in 2019 for 2018 (€ million)	Auction revenues 2018 (€ million)	Percentage	Compensation paid in 2020 for 2019 (€ million)	Auction revenues 2019 (€ million)	Percentage
Finland	29.1	249.8	**11.7%**	74.6	217.4	**34.3%**
Flanders (Belgium)	35.9	200.0	**18.0%**	89.9	186.5	**48.2%**
France	102.1	818.4	**12.5%**	266.4	711.6	**37.4%**
Germany	218.5	2565.3	**8.5%**	546.0	3146.1	**17.4%**
Greece	16.8	1291.1	**1.3%**	42.2	503.3	**8.4%**
Lithuania	0.3	80.1	**0.3%**	0.7	83.7	**0.8%**
Luxembourg	4.2	18.1	**23.2%**	**	16.8	**
Netherlands	40.3	500.8	**8.0%**	110.1	435.6	**25.3%**
Poland	/	/	**/**	75.0	2545.9	**2.9%**
Romania	/	/	**/**	**	747.9	**
Slovakia	6	229.7	**0.0%**	4.0	244.5	**1.6%**
Spain	172.2	1291.1	**13.3%**	61.0	1225.2	**5.0%**
UK	22.2	1607.3	**1.4%**	57.8	1326.1*	**4.4%**
Wallonia (Belgium)	7.5***	179.4	**4.2%**	7.5***	167.3	**4.5%**
TOTAL	***655.0***	***9031.2***	***7.3%***	***1 335.3***	***11 558.1***	***11.6%***

*Note: the UK auctioned its 2019 allowances in 2020 due to Brexit arrangements, 2019 revenues show 1/2nd of the 2020 auctioning revenues
**Note: data for Luxembourg and Romania was not yet available at the time of writing
***Note: Wallonia has voluntarily limited its yearly budget to €7.5 million

Source: ERCST elaborations on Member States reports on indirect costs compensation, 2021

Overall, the amount of compensation given increased significantly for most Member States in 2019 compared to 2018[53], as the EUA forward price increased substantially. As we had foreseen in last year's report, the percentage of auction revenues used increased again for Member States as the 2019 forward price was closer to the average 2019 EUA price.

As the EUA prices continues to rise, it should be expected that the amount of indirect costs compensation provided will also rise in the future, potentially raising questions about the sustainability of this approach.

[53] This is not true for all Member States. For example, Spain increased its budget significantly for indirect costs compensation incurred in 2018 to provide more ex-post compensation for the years before, explaining the decrease in compensation given that can be observed for costs incurred in 2019. Another example is Wallonia, which has voluntarily capped the total amount of compensation it provides to €7.5 million per year.

7 Market functioning

7.1 Market functioning trackers

The EU ETS needs to deliver good price discovery to deliver efficient decarbonization, and with that, environmental and economic benefits. A good market functioning includes liquidity in the secondary market and active participation in auctions. It also needs to deliver transparency, access to relevant data and ease of access to the market.

Table 3: Market Functioning Tracker

Indicator	2018/2017	2019/2018	2020/2019
Volumes			
Open interest			
Auction participation			
Auction coverage			
Auction versus spot spread			
Ask-bid spread			
Cost of carry			
Volatility			

Legend	
	Improving
	Stable
	Worsening

This report looks at eight key performance indicators (KPIs) to evaluate whether the market is functioning optimally, if there any alarm signals, or if there is room for improvement. While the indicators are useful by themselves, it is crucial to put them in the context of historical developments. This provides a true picture of how well the market is functioning, and if it is improving or deteriorating compared to previous years.

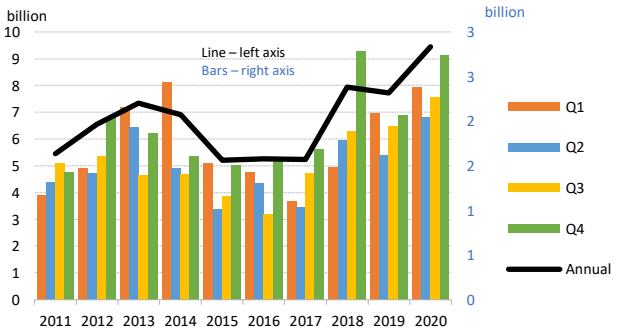
Overall, the market had a good year, especially given the Covid-19 pandemic. Most of the KPIs remained at similar levels to 2019. This shows that market participants were not perturbed by the risks associated with Covid-19.

The EU ETS is proving its mettle after years in the doldrums. Recent and ongoing reforms have tightened supply, finally bringing scarcity to the market. This has resulted in a carbon price above €40, enough to drive coal-to-gas fuel switching across the continent (as shown in section 6.1). Utilities remain the largest group of companies with compliance obligations, but financial investors are increasingly interested in the market as well. This has brought additional demand and liquidity to the carbon market and is likely one of the reasons the price has increased as fast as it has.

Volumes

Traded volume is crucial when determining liquidity. A liquid market allows market participants to open and close positions (get in and out of the market) when they want. Liquidity in the market allows participants to be active, without unduly affecting the market, and allows them to be confident that the future is priced at its true value.

Figure 18:Traded EUA Volumes



Source: ICE, EEX, BloombergNEF

In 2020, there was a 22% year-on-year increase in total traded volume compared to 2019. Traded volumes reached 2.74 billion in Q4 of 2020, the second highest seen since 2011. Lower emissions in 2020 and higher levels of fuel switching did not dampen traded volumes, indicating that speculators have faith in the future of the market.

More futures contracts changed hands in the second half of the year than in the first, likely due to a positive view of the EU's Covid-19 recovery stimulus as we as policy developments under the EGD which have a bullish impact on the market.

Open interest

Open interest[54] denotes the total number of open contracts in a market and is therefore another KPI that can be used to measure liquidity in the market. For EUA futures, it is often used as an indicator of utility activity, as they are the single largest actor in the market.

Open interest was lower in 2020 than in 2019 for most of the year. However, this trend reversed in November until the end of the year. In 2019, open interest already dropped significantly despite traded volume going up. In last year's report, we said that this was not a worry because 2018 was an exceptional year with the price of carbon increasing rapidly.

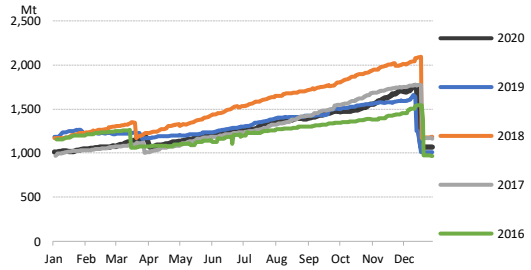
As such, it should not be seen as a surprise that open interest has dropped back to 2016-17 levels. Increased coal-to-gas fuel switching and fears of low emissions and a global recession as a result of the covid-19 pandemic are likely to have contributed to lower open interest in 2020 compared to 2019.

Auction participation

This KPI shows the number of participants in daily auctions on EEX. Auction participation shows how many participants are bidding into auction, thus reflecting interest in primary supply.

Participation stayed pretty much flat in 2020, with an average of 23.2 participants per auction. Auctions in the second half of the year had a higher number of participants, averaging 24 participants per auction compared to 22 in the first half.

Figure 19: Aggregate open interest seasonality

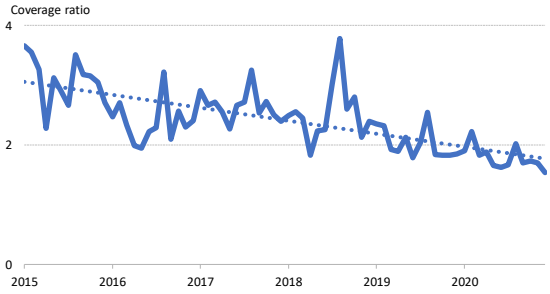


Source: ICE, EEX, BloombergNEF

Auction coverage

Auction coverage ratio is the total number of bids in an auction in relation to the number of available EUAs. This indicator tells us what actual auction demand is when compared to supply on the primary market. The coverage ratio continued its downward trend in 2020, with an average ratio of 1.79 compared to 2.03 in 2019. The average cover ratio has fallen below 2, which may give reason for concern if the trend continues. It is possible that this could allow some market participants to exercise market power or game auctions in the future, especially if the downward trend continues.

Figure 20: EU ETS auction coverage ratio



Source: BloombergNEF

[54] Open interest is the total number of outstanding contracts that are held by market participants at the end of each day. It measures contracts that **have been bought or sold without completion of the transaction by subsequent sale or purchase, or by making or taking actual delivery of the financial instrument or physical commodity.** It is one measurement of activity levels in the futures market. Generally, the higher the open interest, the more a particular contract is traded and hence the higher is the level of liquidity.

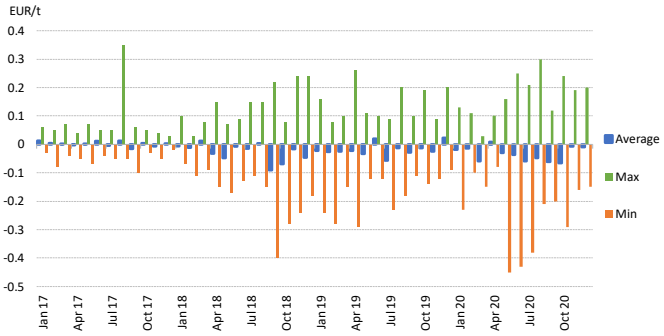
Auction-spot differential

The auction-spot differential KPI measures the difference in the EUA price between auctions and the secondary market. A low difference is preferable as the opposite could indicate an ability of market participants, particularly speculators, to exercise market power.

The auction spot differential went up in 2020, reaching a high of €0.15 in July. Whilst this may give some reason for concern, the effect is most limited because the EUA price is also higher this year.

For example, an auction-spot differential of €0.07 at a carbon price of €5 could be reason to worry, but it is much less dramatic if the price is €30.

Figure 21:Monthly average difference between auction and spot price



Note: negative values in the original data counted as positive
Source: EEX, BloombergNEF.

Ask-bid spread

This KPI shows the difference between the lowest ask price and the highest bid price in the market at market close and is another indicator for market liquidity as well as transaction costs. The average ask-bid spread decreased slightly in 2020, with a monthly average of 0.02 compared to 0.03 in 2019.

The fact that the ask-bid spread stays relatively low is a good indication of reasonable liquidity in the market, as there is a risk of a widening spread if there are fewer bid or ask prices.

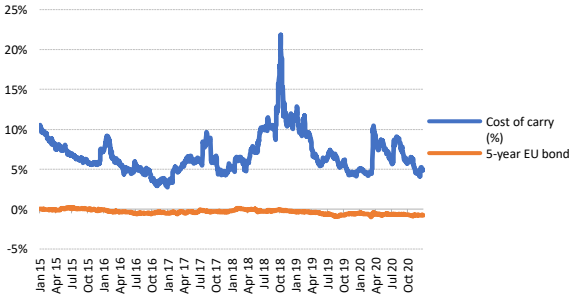
The decrease could be an expression of lower risk as it indicates less difference in the price the bidder is willing to pay, and the price sellers expects to receive. The year-on-year difference is so marginal that no clear conclusion can be drawn from the change.

Cost of carry

Cost of carry can be used as an indicator of how market players expect the price to move in the future. It shows the difference between the price on the spot market and futures with delivery in the future, and therefore tells us the premium the market places on future contracts. The cost of carry went down by just 1% in 2020, meaning market players put a smaller premium on future price developments.

Uncertainty due to Brexit and Covid-19 may have caused a less positive sentiment for EUAs. The change is not a big one, however, and is not a cause for concern unless the cost of carry drops even further.

Figure 22: Cost of carry – EUA versus AAA EU 5-year bonds



Source: ICE

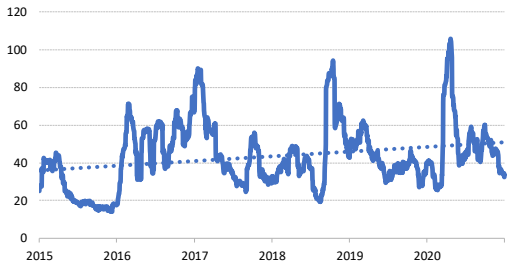
A lower cost of carry does not necessarily reflect lower price expectations for the future, but that spot contracts are valued higher in comparison.

Volatility

Volatility represents how much prices move around the mean price. High volatility is not positive for compliance entities as utilities and industrials need to be able to trust in a price signal if they are going to base long-term investments on it. In contrast, high volatility may be positive for traders and other financials wanting to make profit from the price changes.

Volatility increased in 2020. We have seen a lot of price speculation in 2020, with the European institutions discussing the EU's new climate target, the ETS (and MSR) review and the introduction of a CBAM. Policy announcements and news have the potential to move the EUA price on a day-to-day basis as the market is entirely driven by legislation. A higher degree of volatility is always expected in the EU ETS when compared to other energy commodities, as it is a smaller market and does not respond only to fundamentals.

Figure 23:Volatility



Source: Bloomberg, BloombergNEF

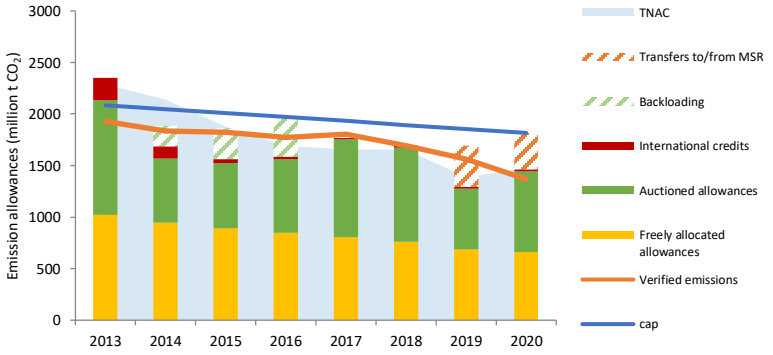
The increased volatility – as already mentioned - could be a concern for compliance entities, but an opportunity for speculators in the market.

7.2 Supply-demand balance and evolution of TNAC

The legacy of the design flaws during phase 2 of the EU ETS resulted in a significant surplus being built-up in the market at the start of phase 3. Indeed, the 2008/2009 financial crisis led to a significant decrease in demand for EUAs, which was not mirrored by changing supply due to the inflexibility of auctioning and method of grandfathering free allowances. Total supply was even higher than the cap due to the influx of international credits.

At its peak in 2013, the amount of EUAs in circulation reached almost 2.1 billion, which was more than one year worth of market supply. To address this issue, the EU first 'backloaded' the auctioning of 900 million allowances between 2014 and 2016, as a temporary measure, and subsequently introduced the MSR, which started operating in 2019.

Figure 24: supply and demand of EUAs and TNAC



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

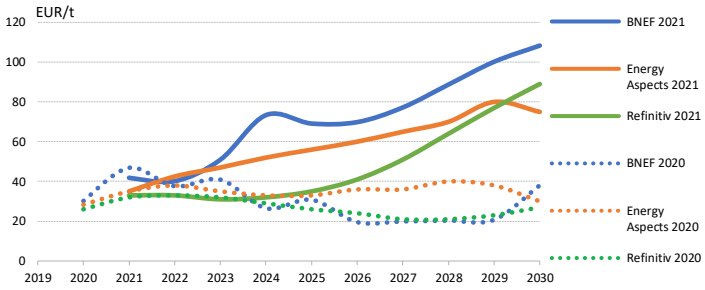
As a result, the total number of allowances in circulation (TNAC), an indicator for the surplus which is published each year by the Commission in May has been decreasing over the course of phase 3. In 2020, the sharp decrease in verified emissions, combined with a considerable increase of supply due to the UK auctioning its allowances for both 2019 and 2020, resulted in supply again being higher than demand, despite the intake of 354 million EUAs by the MSR, as can be seen in Figure 1.

It is estimated that the TNAC rose in 2020 by 92.5 million, to 1 478 million.

7.3 Price forecasts

If the aim of this report is to keep track of changes that have an impact on the EU ETS, it is interesting to follow how the perception of the market changes over time. To do that, we can evaluate price forecasts from different analysts

Figure 25: EUA price forecast



Source: BloombergNEF, Energy Aspects, Refinitiv

Figure 25 shows 2020 and 2021 forecasts collected from various analysts. The 2021 updates show a strong consensus that the price will continue to trend upwards. Signals from the European Institutions that the bloc's interim 2030 emissions target will be more ambitious in light of the EGD means that the 2030 price from all three forecasters have more than doubled compared to last year.

Although the forecasts collected may vary from year to year and methodologies may change, they give an impression of market sentiment. All three 2021 forecasts have an expected increase in the price of carbon, illustrating that undersupply is expected throughout phase 4. The magnitude of that increase varies amongst the forecasts, but all of them reach at least €80 per ton at some point.

8 The EU ETS in the European Green Deal

One of the key components of the "fit for 55" package that is meant to implement the EGD is the Commission proposal for a revised ETS directive, which is expected by June 2021.

8.1 New targets and ambitions for the EU ETS

The 2030 Climate Target Plan presented by the Commission on September 17, 2020, together with the accompanying impact assessment, set a pathway to achieve climate neutrality by 2050 and the mid-way target of 55% emissions reduction by 2030 and put forwards the required adjustments to align the EU climate policy framework with the strengthened targets.

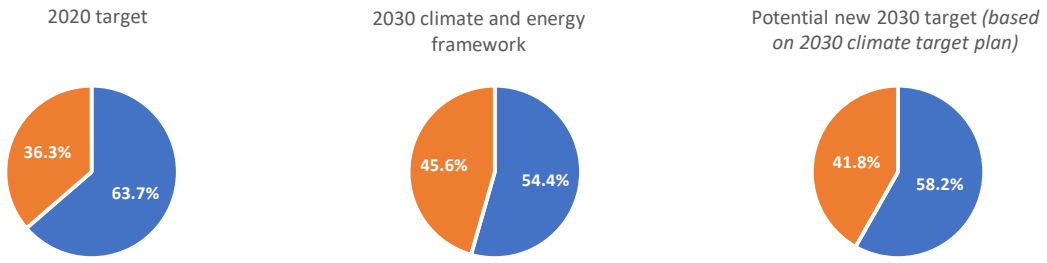
The main pillars of the CTP were reiterated in the Inception Impact Assessment (IIA) for the ETS review, which outlines the objectives of the policy initiative - namely the strengthening of the ETS and its potential expansion to new sectors. Together with the IIA, the Commission conducted a public consultation to seek stakeholder views on a range of issues and design choices for a strengthened EU ETS.

The 55% target marks a significant quantitative leap in ambition with respect to the precedent 40% emissions reduction objective and needs to be translated in the various pieces of the EU climate legislation. Today, ETS sectors are expected to deliver a 43% reduction in emissions by 2030 compared to 2005. The ESR, on its part, is expected to deliver an overall 30% reduction in the same period. This translates in a relative contribution to the 2030 target of around 54,4% for ETS and 45,6% for ESR sectors.

The wording of Commission's documents on the various EGD policy components is clear in that the ETS is expected to deliver the bulk of additional emissions abatement and therefore sees its relative weight further increased in the EU climate policy architecture. The Impact Assessment that accompanied the CTP outlined multiple scenarios where ETS installations reduce their GHG emissions by 65% compared to 2030 as the most cost-effective pathway.

Under the 2030 Climate Target Plan, the ETS relative contribution in achieving the overall reduction target raises to 58.5%, with the ERS's share declining to 41,5%. This reflects in the expectation that 67.5% of *additional* emissions reduction between the 2030 Climate and Energy Framework and the proposed 2030 Climate Target Plan will come from ETS sectors.

Figure 26: relative contribution from ETS and ESR sectors in different climate targets (vs. 2005 emissions) – ETS in blue, ESR in orange



Interpretation: for the 2020 target, 63% of the GHG reductions vs. 2005 are to be delivered by the EU ETS
Source: ERCST elaborations on European Commission, 2020

Regardless of whether the ETS scope will be eventually enlarged, the phase 4 cap and 2030 target will need to be brought in line with the revised ETS 2030 ambition. Updating the LRF will be necessary. The LRF needed to achieve a specific emission reduction target for the ETS depends on its starting year, the baseline level from which the LRF is applied – in this whether the cap will undergo a one-off reduction/rebase and the size of it are important factors – and on the ETS scope.

As was highlighted in section 5.1, ETS installations are currently emitting less that the EU ETS cap, with a 'gap' between the cap and actual emissions estimated at around 360 million allowances in 2020 (excluding the UK) and projected to persist in the first part of the decade. Moreover, more ambitious complementary energy efficiency and renewable energy policies that will be implemented in the run up to 2030 will potentially keep the emissions profile further below the cap. An update of the LRF, a rebasing of the cap, or a combination or both can tackle this surplus. This cannot be done unless it can be justified in an objective way though political decision of a higher NDC or changes in market supply/demand.

Table 4: required LRF to reach an increased 2030 target for different starting years, without or with a one-off reduction of the cap, and year net-zero emissions is reached if LRF continues post-2030

Without one-off reduction of the cap			**With a one-off reduction of 200Mt CO_2e**		
Year	**LRF**	**Year net-zero is reached if LRF continued**	**Year**	**LRF**	**Year net-zero is reached if LRF continued**
2023	5.12%	2038	**2023**	3.65%	2041
2024	5.53%	2037	**2024**	3.83%	2040
2026	6.78%	2036	**2026**	5.37%	2037

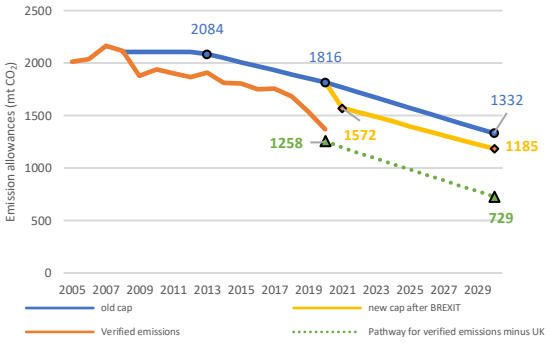
Source: ERCST elaborations on European Commission, 2020

As shown in Table 4, the necessary LRF to reach the -64.85% 2030 ETS target in line with the EU overall -55% goal depends both on its starting year and on its starting level (referred in the table as one-off reduction or rebase). An early starting year and/or a rebase allows for a lower LRF to achieve the same level of ambition.

Verified emissions will have – in any case - to decrease at a significantly slower pace than the LRF, as they are currently well below the level of the cap. Figure 27 shows that it is sufficient that emissions decrease by 52mt $C0_2e$ – equivalent to an LRF of 2.65% - to achieve the -65% target by 2030. This is significantly slower than the cap, as well as slower than the track record of the ETS during phase 3, as was highlighted in section 5.1.

Focusing for a moment on post-2030 and the role ETS can play toward the achievement of carbon neutrality by 2050, it should be emphasized that in every scenario with an LRF compatible with the 2030 ETS objective, the ETS is expected to reach net-zero emissions before 2050.

Figure 27: Pathway required for verified emissions to reach an increased 2030 target



Source: ERCST elaborations on EEA, 2020; EU TL, 2020 and European Commission, 2020

8.2 Increase in the scope of the EU ETS

The Commission is also considering possible adjustments to the current ETS and ESR scopes. Notably, the Commission is looking at a potential extension of carbon pricing to non-ETS sectors, with a particular focus on maritime, road transport and buildings. At this stage, the extension to the maritime sector seems very likely to be proposed by the Commission.

Moreover, in September 2020, the Parliament has adopted its position[55] on the Commission's proposal to revise the EU MRV regulation which endorsed the extension of the ETS to the maritime sector, further strengthening the political support for this extension. Today, many stakeholders seem to have largely accepted that this will happen, and the discussion is focused more on its modalities.

In contrast, the outlook for the extension to road transport and buildings is still less certain. Such extension would almost double the ETS GHG emissions coverage, which would pass from 45% to around 80% and would add to the ETS two sectors with higher abatement costs and lower price elasticity, thus posing considerable stress on existing ETS sectors. This, coupled with doubts on the two sectors' readiness for carbon pricing and concerns over the societal impact of higher fuel and heating prices, suggests that the Commission might opt for a transitory ETS for the new sectors which would be gradually integrated in the existing system.

8.3 Carbon leakage measures

The upcoming ETS revision brings into debate the future of free allocation which is currently used to address the risk of carbon leakage. According to several projections, free allocation may run out by the end of this decade, meaning the CSCF will kick in. In the EGD, the Commission announced that – should differences in the levels of climate ambitions persist worldwide – it would propose a CBAM in order to ensure that the price of imports reflect more accurately the price of the carbon imbedded in them.

The Commission is currently considering different design options relative to the CBAM. Some stakeholders, including the Commission, stress that an EU CBAM has to be seen as a replacement for current carbon

[55] European Parliament (2020). https://www.europarl.europa.eu/news/en/press-room/20200910IPR86825/parliament-says-shipping-industry-must-contribute-to-climate-neutrality

leakage protection measures (free allocation and indirect costs compensation) in order to avoid what they call "double-protection".

Others see different options and support combining free allocation with a CBAM in a complementary way, which would also avoid "double protection". In the complementary model, the adjustment at the border for imports would only cover that portion of emissions that is not covered by free allocation for domestic producers. Indeed, as free allocation only provides protection at the benchmark of the 10% best producers in a sector, a CBAM could be designed to level the playing field for those emissions above the benchmark.

Yet, currently both the scope and the form of an EU BCAM remain unknown. Early indications seem to hint towards starting with a pilot phase which could cover some sectors in which the goods' carbon content is easily identifiable, such as some basic materials and electricity. There are additional indications that the proposal may make use an 'infinite' and virtual pool of allowances to be made available to importers at the same price as EUAs under the EU ETS.

8.4 Use and division of ETS revenues

Considering increasing revenues as well as increasing needs to finance climate action, the revision of the EU ETS may also touch upon the use of ETS revenues. In this respect, the size of the Modernisation and Innovation Funds are expected to be increased, both to enable, as well as speed up, the transition and mitigate the effects on the most exposed communities.

The issue of ETS revenues has also become political. One paragraph in the December 2020 EU Council conclusions reads '*the problem of imbalances for beneficiaries of the Modernisation Fund in not receiving revenues that are equivalent to the costs paid by the ETS installations in those Member States will be addressed as part of the upcoming legislation'*.

What this implies exactly remains unclear, but it seems that some Central and Eastern European Member States are looking to get a higher share of the ETS revenues, potentially through strengthening the Modernisation Fund.

Indirect costs compensation is another growing source of demand for ETS revenues. Indeed, as electricity prices are set at the margin and the EUA price continues to increase, indirect costs will continue to rise until most of the EU's electricity is produced by renewables. As increasingly more Member States acknowledge this risk by providing compensation for these costs, a larger share of revenues is expected to be dedicated to indirect costs compensation.

Moreover, there are increasing calls to harmonize the process at the EU level in order to ensure that the sectors exposed to the risk of carbon leakage are compensated equally in all Member States.

In view of the likely increase of auctioning revenue, several stakeholders also call for stricter spending rules to ensure that those revenues are spent coherently with the EU climate objectives. Today, the ETS Directive provides that Member States should use at least 50% of auctioning revenues for climate and energy-related purposes. Options on the table include both increasing this threshold and requiring that all revenues are spent in a way that is compatible with the climate neutrality objectives and/or 'do no significant harm' principle.

Lastly, the Commission is also expected to come forward with a proposal for an ETS-based own resource.

8.5 Review of the Market Stability Reserve

The IIA and OPC have also made it clear that the review of the MSR, which was scheduled to take place in 2021, will be carried out in conjunction with the ETS review. Several parameters are being looked at, including:

- Increasing the MSR intake rate and/or maintaining the increased 24% rate after 2023;
- Maintaining the invalidation rule whereby, starting in 2023, MSR holdings above the previous year auction volume will lose validity;
- Updating the MSR thresholds to reflect changes in hedging needs;
- Impose compulsory allowances cancellation when member States impose national measures that drastically reduce demand for allowances;
- Including net-demand for EUAs by the aviation sector when determining the TNAC number;
- Etc.

It should be noted that in the OPC, some of these elements are not only presented in the context of improving the functioning of the MSR, but also as options to increase the level of ambition of the ETS. Indeed, while elements such as the invalidation rule (which was put in place to permanently solve the issue of the *historical* surplus) can de facto enhance the cap, the MSR was never intended to be a tool to enhance ambition.

Rather, the MSR has been always been presented by the legislator as a tool that can temporarily alter supply following unforeseeable changes in demand. Assigning to the MSR the task of lowering the EU ETS cap would therefore mark a significant departure from its original purpose.

Lastly, in the context of the OPC, the Commission also advanced the possibility of combining a carbon price floor with the MSR. This would also significantly alter the ethos of the MSR, which is currently a pure quantity-based market stability measure.

8.6 The EU ETS beyond 2030

Finally, the ETS revision should also help clarify the role the EU ETS will play after 2030. Beyond clarifying the pathway for ETS emissions post-2030, a number of issues should be part of this longer-term vision for the EU ETS.

Firstly, while the EGD is almost silent on the role of negative emissions technologies, the topic is gaining increasing attention at the EU and global level. In its current form the ETS Directive does not provide for CO_2 removal credits. However, integrating negative emissions technologies in the ETS could incentivize the deployment of these technologies as well as provide a means to balance the harder to abate emissions of certain industrial processes.

Secondly, as the EU is set to significantly increase its climate ambition and to take the lead at the global level, comparing climate efforts across countries and jurisdictions will become ever more crucial, especially in a world where border carbon adjustments are increasingly discussed. Consequently, the ETS review may also want to consider climate efforts undertaken in non-EU economies and revise carbon leakage and indirect cost compensation measures accordingly as well as find how to link the EU ETS with foreign carbon markets.

Thirdly, while the use of international credits for EU ETS compliance has stopped in 2020, this decision could be revised as to grant more flexibility and cost efficiency in a carbon market that is set to become increasingly tight and to implement those cooperative approaches outlined in article 6 of the Paris Agreement.

Finally, market liquidity issues might arise in the medium to long-term as the ETS tightens. Beyond some of the flexibilities outlined above, an eventual extension of the ETS scope could be a way to ensure sufficient liquidity for the ETS in the coming decades.