

PRICING CARBON TO PUT EUROPE ON A PATH TO CLIMATE NEUTRALITY

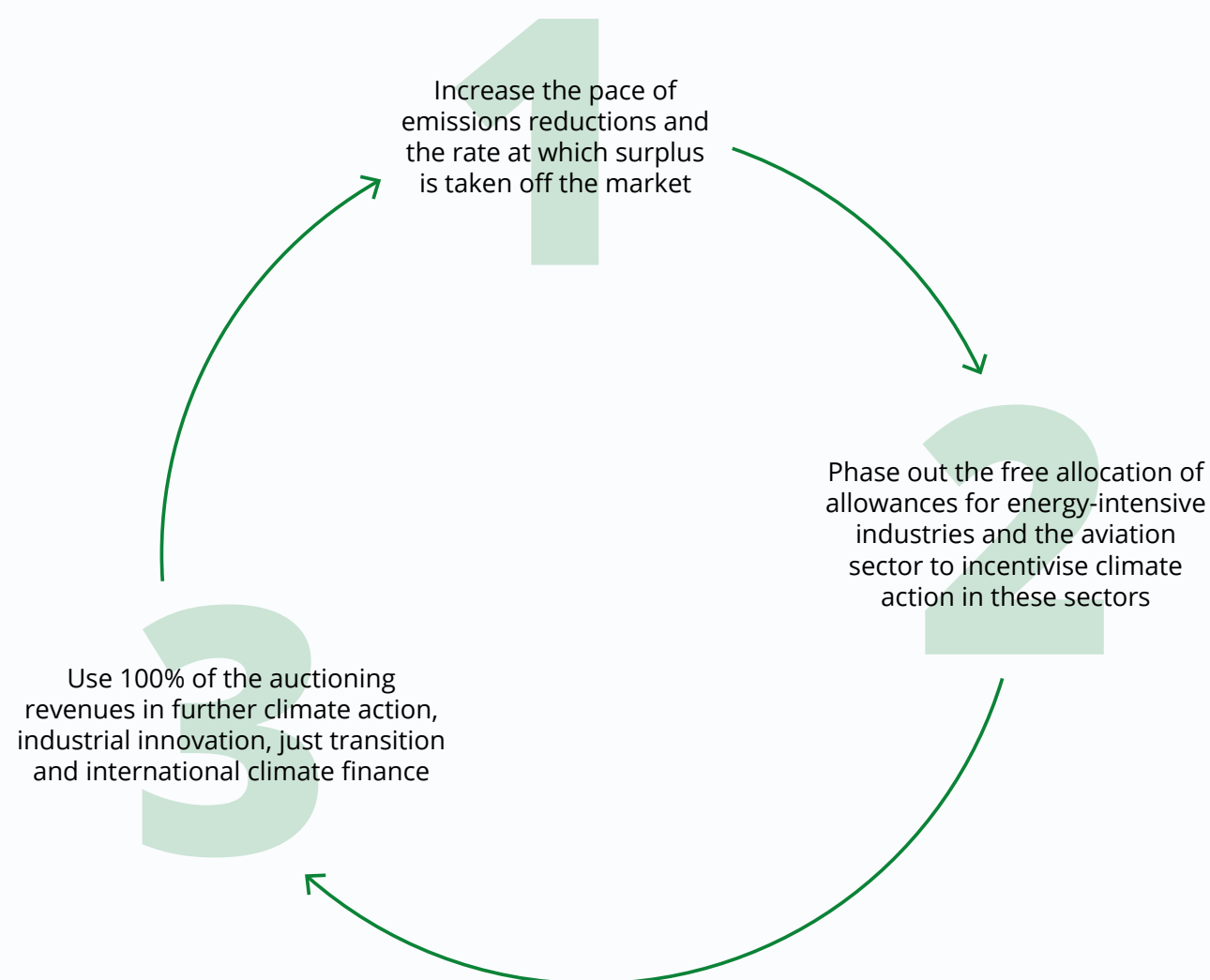
KEY ELEMENTS OF THE **EU EMISSIONS**
TRADING SYSTEM REVIEW



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3 Key recommendations to make the EU carbon market compatible with the Paris Agreement



Executive summary

The upcoming revision of the EU Emissions Trading System (EU ETS) is a crucial opportunity to strengthen the scheme and ensure that it contributes to the goals of the Paris Agreement. For the EU to keep its global climate commitment, the EU ETS should contribute to at least 65% emissions reduction by 2030 and to reaching climate neutrality by 2040. In order to increase the pace of emission reductions in the sectors covered by the ETS, a combination of the increase of the linear reduction factor (LRF) and a one-off reduction of the cap will have to be adopted. These changes should be implemented as soon as the legislative process allows and no later than by 2023.

There are 1.39 billion allowances in surplus on the market. The number is decreasing thanks to the Market Stability Reserve (MSR) which absorbs and invalidates extra allowances under certain conditions. However, the surplus could grow in the future, as a result of the decarbonisation of the power sector and the ongoing coal phase-out in many EU member states. To limit or prevent this, the MSR should be strengthened in particular by lowering the upper threshold which triggers intakes, and increasing the intake rate. Price control instruments, such as floor prices, or turning the MSR into a hybrid system by setting thresholds based on prices, could drive additional emission reductions, and the latter would have the added benefit of simplifying the currently highly complex MSR.

There is no empirical evidence of carbon leakage having happened in the EU ETS and ex-ante modelling shows that carbon prices do not have significant impacts on international competitiveness. Nevertheless, carbon leakage risk mechanisms (such as free allocation and indirect cost compensation) continue to undermine both the polluter pays principle and the carbon price signal for a large share of the energy-intensive industries and aviation sector. Given the sectors' ability to pass through costs, free allocation has led to windfall profits. The European Court of Auditors recommends better targeting of free allocation and improving the setting of benchmarks. This would incentivize industrial decarbonization, raise auctioning revenues and limit windfall profits.

The EU shipping sector is a significant source of greenhouse gas emissions that are currently not addressed through any climate measures. Including this

sector in the EU ETS would be a huge step forward with regards to the international challenge of decarbonizing the shipping industry. This inclusion should cover both ingoing and outgoing vessels, with a significant percentage of revenues recycled back into the sector to push the transition. However, EU ETS inclusion will not magically bring this industry in line with the Paris Agreement – complementary measures will be necessary. For example, the European Parliament's proposal on the shipping monitoring, reporting and verification (MRV) file includes a binding target for shipping companies to reduce their emissions-intensity by 40% by 2030.

The aviation sector has been the fastest growing under the EU ETS, and has been a net buyer of allowances. At the global level, governments have agreed on the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), the pilot phase of which started at the beginning of 2021. Key aspects of the upcoming EU ETS reform will be to reduce the share of free allocation to airlines, and cover international flights - currently excluded from the law's scope - through a combination of CORSIA and the EU ETS. Any scaling back of the EU carbon market's current scope, e.g. replacing it with CORSIA, would constitute a significant step backwards for EU climate policy.

While carbon pricing can provide a strong incentive for industries to reduce emissions and switch to cleaner technologies, it will not be sufficient to drive the deep industrial transformation that is required for the European Union to reach climate neutrality by 2040. Even with a CO₂ price higher than previous years, investments still go to incremental changes and low-carbon technologies rather than breakthrough climate-neutral solutions. When looking at the amount of funding required to make this happen, it is clear that the current public and private funding is insufficient to effectively drive the clean energy transition in the industrial sectors. Public investments in R&D, innovation and clean energy have slowly increased over the past years but are still far from sufficient.

Finally, the use of international credits under the EU ETS has significantly contributed to the accumulation of surplus on the market, and the credits used have for the most part not reduced emissions. The EU has therefore ruled to exclude such credits going forward, which closes an important loophole in the law.

Foreword

From an abject failure to a success story? That is the emerging narrative of the European Union Emissions Trading System (EU ETS). Only a few years ago, the price signal was too low to have a significant impact on the industry and the coal power plants. Launched in 2005, the EU ETS was criticised for being a paper tiger - creating more administration than real climate impact.

Today, the EU ETS is a cornerstone of the EU's policy to combat climate change and a key tool for reducing greenhouse gas emissions cost-effectively. It is the world's largest carbon market and covers over 11,000 power plants, manufacturing industries and aircraft operators in 30 countries, all 27 EU member states plus Iceland, Norway, and Liechtenstein. The price is expected to rise above 50 euro per tonne of carbon dioxide during 2021.

During the European Parliament's last mandate, I was the green negotiator for the EU ETS reform in the ITRE committee. That time around, the European Parliament and the Member States agreed on a much more progressive and ambitious reform than the Commission had proposed. This agreement was largely made possible by another green initiative, "The Swedish Proposal", which was put forward in the Council by the Swedish green minister of climate and environment Isabella Lövin.

The last reform reduced the total number of allowances due to a more ambitious linear reduction factor (LRF). This time, our ambition should be to increase the LRF further, eliminate the allocation of free allowances and expand the system to also include the shipping sector. In addition, we must ensure that the aviation sector pays for its fair share of emissions in practice and not only in theory.

When the EU ETS was introduced, warning voices about carbon leakage were raised, arguing that businesses and European jobs would move abroad. Sixteen years later, the opposite is happening. Other countries, including China and the US, are discussing or already implementing emission trading systems inspired by the EU ETS.

I am delighted to have the opportunity to publish this report in collaboration with Carbon Market Watch. Hopefully, this report will contribute to an additional progressive reform of the EU ETS, in line with the Paris Agreement. A vital reform that might be referred to as "The Swedish Proposal 2.0" could continue to inspire the rest of the world to take responsibility for climate change.

Jakop Dalunde

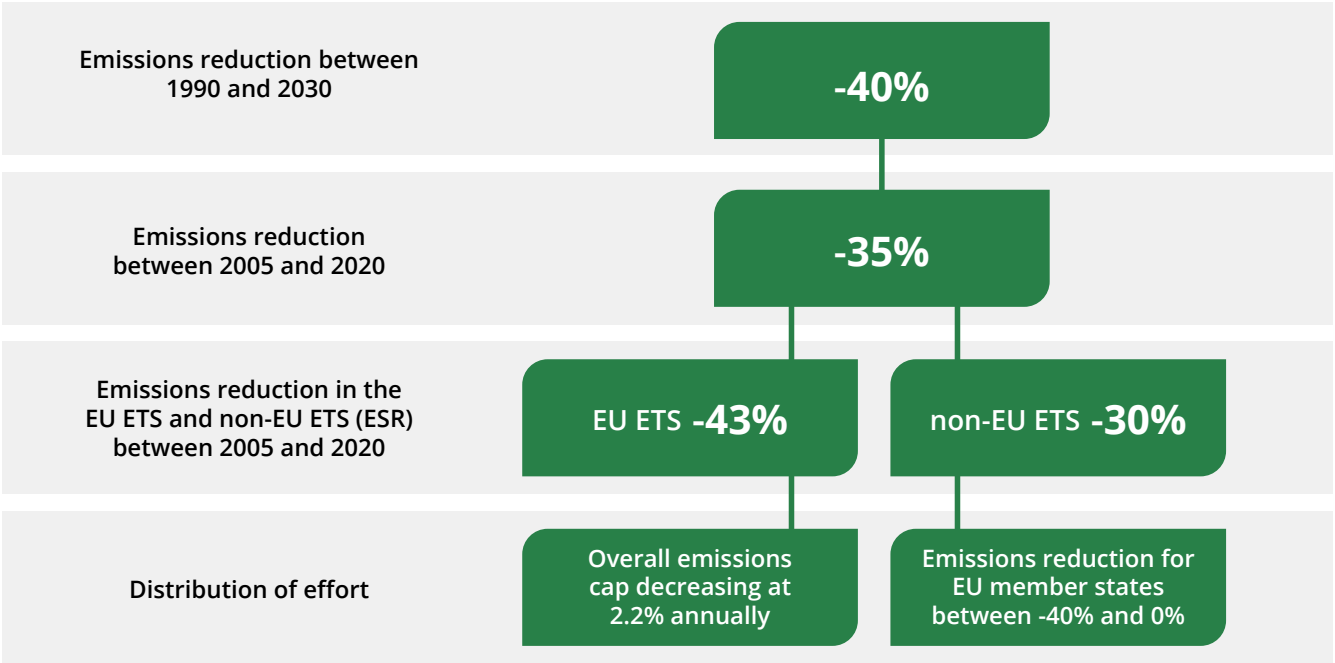
Member of the European Parliament (Greens/EFA)

Setting a cap to deliver on the European Green Deal

For the EU to do its fair share of global climate action, it should reduce emissions by at least 65% by 2030 and reach climate neutrality by 2040. Covering almost half of Europe's greenhouse gas emissions, the EU Emissions Trading System (EU ETS) has a key role to play in this effort. In order to strengthen the pace of emission reductions achieved by the EU ETS, the following parameters have to be considered:

1.The share of emission reductions achieved by ETS versus non-ETS sectors

The current 40% GHG reduction target is divided between ETS and non-ETS sectors as follows.



This implies that roughly about 1/3 of the total emission reduction effort by 2030 is carried by non-ETS sectors (like buildings, transport...) and 2/3 of the effort by sectors covered under the ETS.

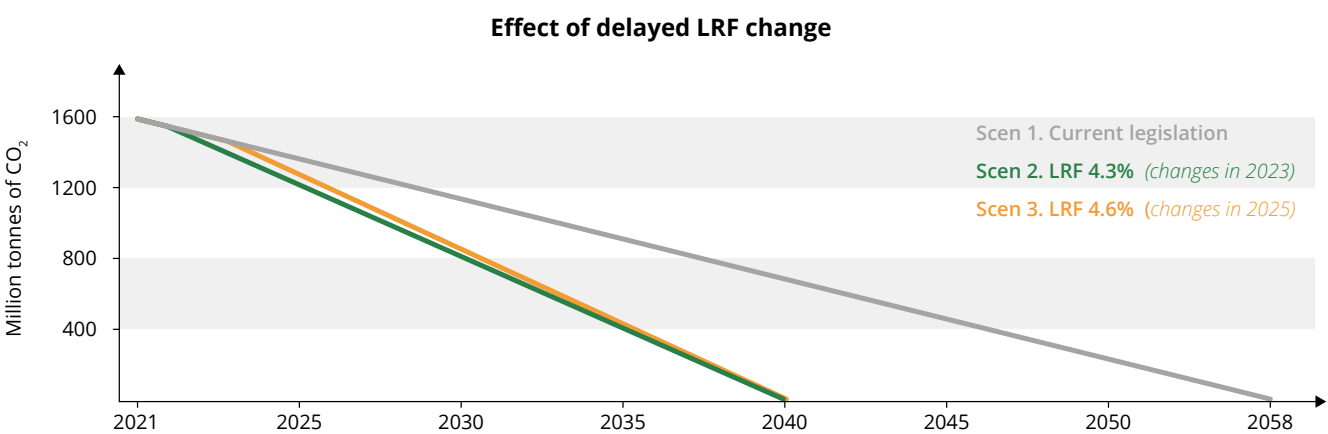
The overall at least 55% greenhouse gas reduction target agreed on by the EU Heads of State or Government would require increasing the emissions reduction target for the EU ETS sectors to between 64 and 69%,¹ depending on the scenario and scope.

Increasing the headline emissions reduction target to 60%, as supported by the European Parliament, would require strengthening the EU ETS target to between 61 and 71% below 2005 emissions by 2030. Moving to a Paris compatible 65% target would require increasing the EU ETS target to between 66 and 75% below 2005 emissions by 2030.²

¹ Table 28 in *European Commission impact assessment, accompanying the Communication "Stepping up Europe's 2030 climate ambition, 2020*
² *Umweltbundesamt, 2020*

2. The Linear Reduction Factor (LRF)

Under the Paris Agreement, the EU has committed itself to pursuing efforts to limit global warming to 1.5°C. In terms of the EU ETS, this means that it should contribute to an overall target to reach net-zero emissions by the year 2040. However, under the current EU ETS rules, decarbonization of the EU's power and industry sectors would happen only in the year 2058. The pace at which emissions go down is defined by the so-called Linear Reduction Factor (LRF). The reference point for the application of the LRF is the average annual allowances issued during the period from 2008 to 2012. In phase 3 of the EU ETS, the LRF was 1.74%. As of this year, it is 2.2%.



At the start of phase 4 of the EU ETS, the European Commission set the cap,³ (ie. the quantity of ETS allowances to be issued) at 1.57 billion. This excludes the volumes to be auctioned by the UK from 2021, with the exception of electricity generation in Northern Ireland.⁴ As of 2021, the increase of the linear reduction factor to 2.2 % amounts to an annual reduction of 43 million allowances.

Based on these numbers, and in order for the ETS cap to reach zero by 2040, the LRF would have to be increased to 4.3% as of 2023. In case policymaking action is delayed up to 2025, an LRF of 4.6% would be required. This will achieve the ETS cap reaching zero by 2040, but not 70 % emission reduction below 2005 by 2030 without rebasing. To achieve a 70 % emissions reduction, the LRF should be raised to 5,8% as of 2023.

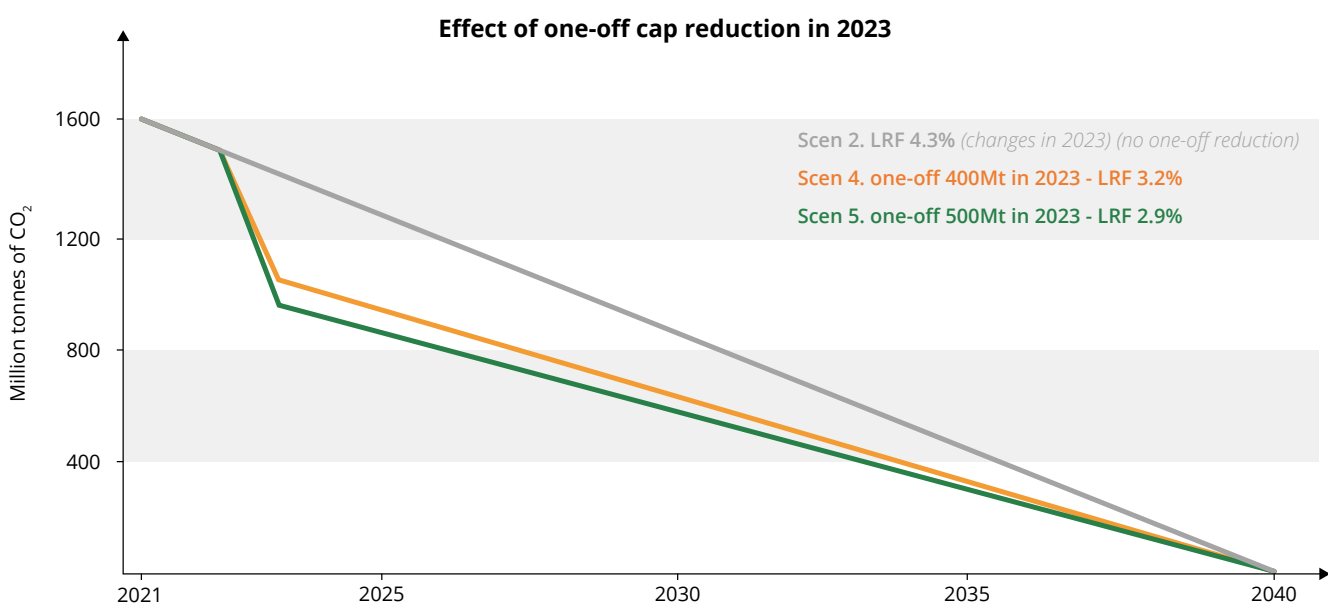
3 European Commission, 2020

4 European Commission, 2020

3. A one-off reduction of the cap

The installations covered by the EU ETS today have been emitting significantly less than the total cap since 2009 (see graph below). In 2019, the gap between the cap and the actual emissions was estimated at around 250 million allowances.⁵ This difference is projected to continue and risks to aggravate as a consequence of the Covid-19 pandemic. Without further action, a large surplus of allowances risks to depress the carbon price signal and would undermine the investment signal for clean renewable and energy-efficient technologies.

Therefore, the European Commission should propose a one-off reduction of the cap. It's much more effective to reduce emissions in the near future than in the 2040s. A rapid reduction in allowances is needed because of the urgent nature of climate change. This will also reduce the risk of reinforcing climate feedback mechanisms (ie. positive feedback effects which further amplify the impacts of climate change). A one-off reduction of the cap would realign the available emission allowances with the verified emissions under the EU ETS and would complement the strengthening of the LRF to avoid another oversupply on the carbon market. The graph below shows that with a one-off reduction of 400 million allowances the LRF would need to increase to 3.2% as of 2023 in order to reach zero by 2040. In case a one-off reduction of 500 million allowances is applied, the corresponding LRF would be 2.9%. These scenarios would lead to an EU ETS target of 70% below 2005 emissions by 2030, which is compatible with an economy-wide 65% target as outlined in the previous section.



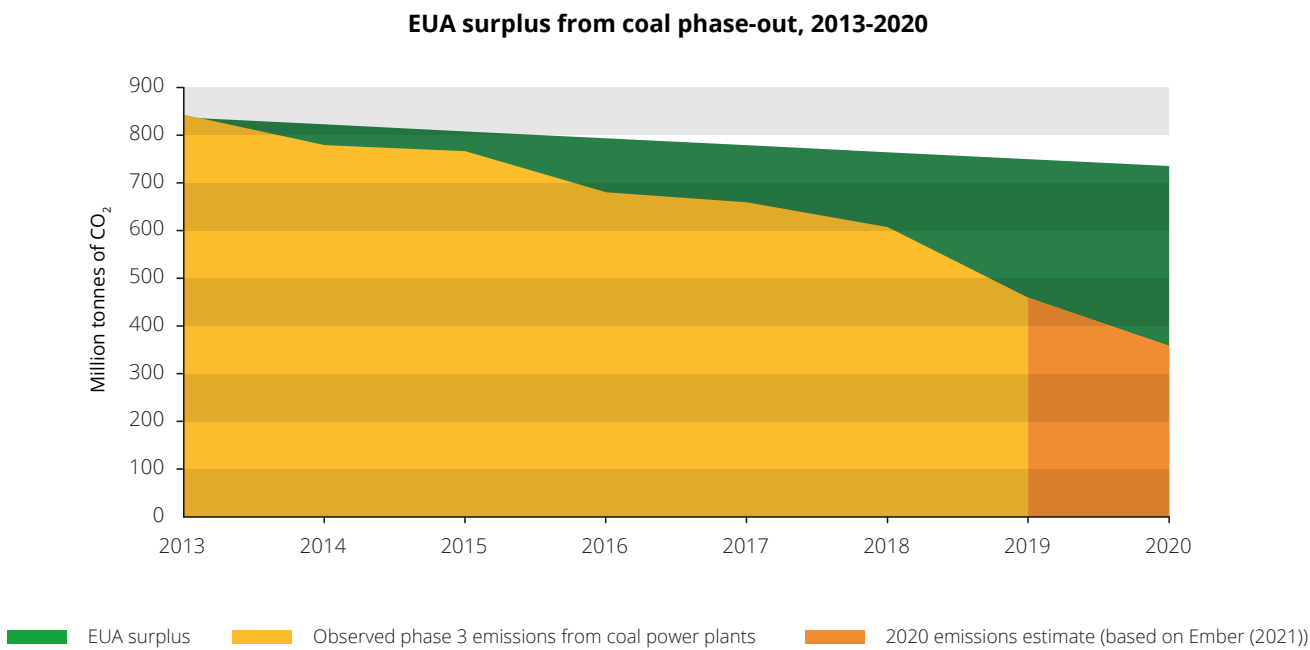
It is important to remember how interlinked all the parameters described above are. As they revise the rules, EU policymakers will have to agree on a consistent package in line with the aim of the EU ETS Directive (Article 1) “to contribute to the levels of reductions that are considered scientifically necessary to avoid dangerous climate change”. It is essential to implement the required changes as soon as the legislative process allows and no later than by 2023. Any delay will require a steeper LRF and a larger one-off reduction.

5 European Commission, 2020

The risk of a “coal bubble”

The European power sector is cutting its emissions much faster than the EU ETS cap is reduced annually, thus creating a surplus. This is adding to the existing historical surplus which amounted to 1.39 billion permits in 2019. As a result of the closure of coal power plants in the EU, a surplus of about 1.1 billion EU Allowances (EUAs) accumulated over phase 3 alone (2013-2020).^{6,7,8}

This has allowed other sectors to continue emitting.



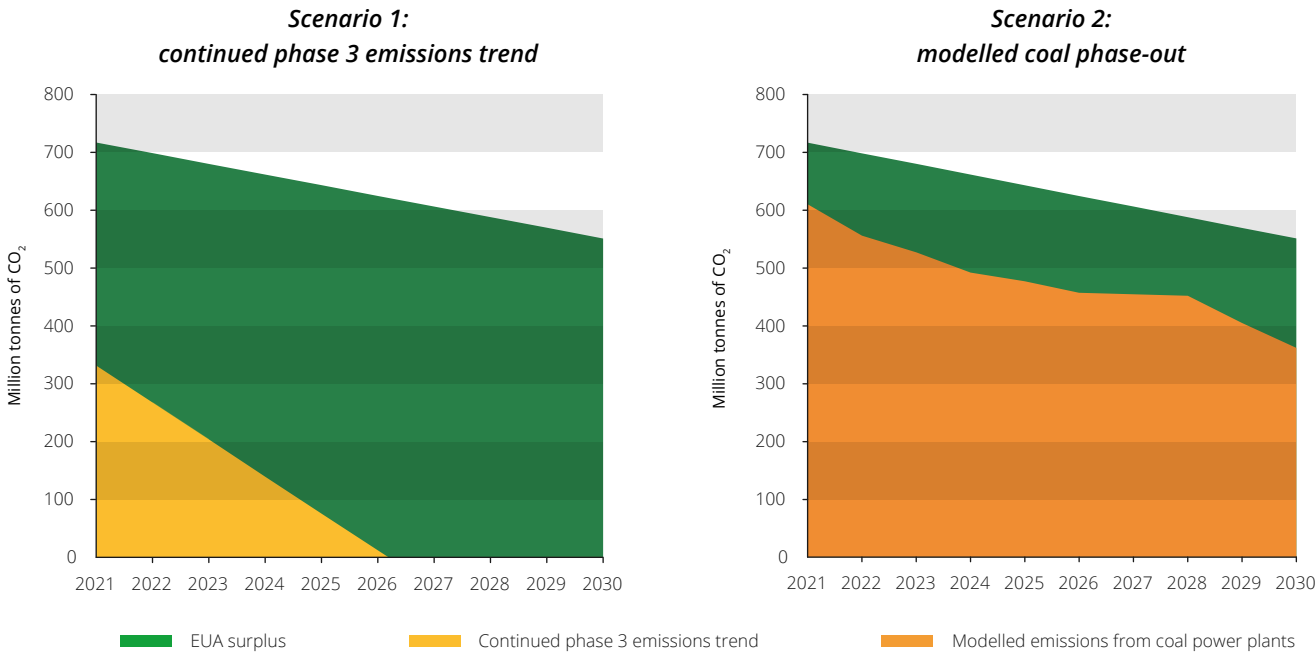
Without a one-off reduction of the cap over phase 4, additional surplus will likely accumulate over 2021-2030. Based on announced coal phase-out plans, a surplus of 1.55 billion EUAs would accumulate over that period. If instead the decarbonisation rate witnessed during 2013-2020 continues over phase 4, the surplus would reach 5.31 billion EUAs, more than three years' worth of total EU ETS emissions.

⁶ All quantitative estimates of coal power plant emissions in this section of the paper are based on data prepared by Alessandro Vitelli, using data from the EU beyond coal campaign. Post-2020, when no plant-specific closure date is publicly available, closures were modelled by plant age so that the oldest plants retire first

⁷ 2020 emissions for the EU coal power sector are assumed to be 22% below 2019 levels, based on the Ember and Agora Energiewende (2021) estimation that coal power generation fell by 22% in 2020 (see: “EU power sector 2020”)

⁸ Surplus = cap - observed emissions from coal power plant. 2020 emissions are assumed to have sunk in proportion to the decrease in generation, i.e. 22% compared to 2019. The cap is modelled as if it applied only to coal, in order to estimate the surplus for the coal power sector. To model this “coal-only” cap, the relevant rules from the ETS regulation were adapted to the coal power sector, i.e. a linear reduction factor of 1.74% for the period 2013-2020 is applied based on the average of 2008-2012 emissions for the coal power sector only.

Comparing two scenarios for coal emissions 2021-2030



This clearly shows that, without added measures, the ongoing coal phase-out will vastly outpace the cap decrease, and thus create extra surplus on the market.

Calibrating the Market Stability Reserve

The Market Stability Reserve (MSR) absorbs surplus allowances off the market and permanently cancels some of them. The MSR can thus permanently reduce the total quantity of allowances and therefore help raise the carbon price.

Therefore, reviewing the MSR's key parameters is necessary to make the EU ETS more resilient and to strengthen its environmental integrity. A higher intake rate will have a positive impact because it increases the quantity of allowances absorbed by the MSR in years when the total number of allowances in circulation (TNAC) is above the upper threshold. A 12% intake rate starting in 2024 (as currently planned) would lead to a cancellation of 3.3 billion allowances over phase 4 (slightly more than 2-years' worth of ETS emissions). Increasing this rate to 24% or 36%, again from 2024, would lead to a cancellation of 4 billion and 4.4 billion allowances respectively over phase 4.⁹ Given the impact of the decarbonisation of the power sector (see previous section), an intake rate of at least 24% is needed.

If there are more allowances in the MSR than the quantity auctioned in the previous year, the difference will be invalidated. This is the key mechanism driving up EUA prices. Therefore, allowances which have been held in the MSR for 3 to 5 years should be automatically invalidated.

⁹ Oeko Institut (2019): “The role of the EU ETS in increasing climate ambition”

Guaranteeing the carbon price through a price floor

In 2012, the European Commission argued that it is the total quantity of allowances that drives emission reductions in an ETS, rather than price levels, and that fixing the price would hence risk increasing costs at no benefit for the climate.¹⁰ However, other studies have found that, if combined with a mechanism to cancel allowances such as the MSR, price floors could lead to further emission reductions.¹¹

There are two main avenues to set a price floor: auction reserve prices, and surrender charges. A surrender charge can be set by any country, even unilaterally, and requires emitters to pay a “top-up” fee that equals the difference between the current EUA market price, and the set floor price. This is how the Netherlands and the UK have adopted price floors.

Alternatively, governments can set auction reserve prices, which is a minimum price necessary for an auction to “clear”, i.e. for allowances to be sold by the government. The ETS already includes a mechanism to control the minimum price of auctions, but it only specifies that auctions shall be cancelled if the auction prices are “significantly” under the prices of the secondary market¹² and the associated allowances are not cancelled, the auction is simply postponed.

Ultimately, a crucial lesson is that price floors, whether they are set at EU or national level, should be accompanied by a system to reduce the overall quantity of allowances, e.g. the MSR.

10 European Commission (2012): “The state of the European carbon market in 2012”

11 Oeko Institut (2019): “The role of the EU ETS in increasing climate ambition”

12 Regulation (EU) 1031/2010 article 7(6)

Carbon leakage

The hypothetical risk of carbon leakage

Carbon leakage refers to the hypothetical situation where economic activities and related greenhouse gas emissions are moved from one jurisdiction to another one with no or less stringent climate change policies.

Extensive ex-post research by a variety of academics, think tanks, consultancies and international organisations has shown no evidence of carbon leakage due to either direct costs (i.e. the cost of purchasing EUA) or due to indirect costs (ETS costs for electricity producers that they in turn pass on to industrial electricity consumers).¹³

While the lack of ex-post evidence for carbon leakage could be either related to the EUA price being too low in the past and/or existing carbon leakage protection mechanisms being sufficiently strong, ex-ante modelling research into the topic also shows limited to no carbon leakage¹⁴ materialising. One study¹⁵ even finds that higher carbon prices in the EU ETS are associated with fewer emissions both in the EU and abroad, others¹⁶ indicate that severe negative effects on competitiveness under the current and near-future design of the scheme are unlikely.

Both research tracks and their extensive respective literature lead to the same conclusion: carbon leakage has not been an issue in the EU, and at current EUA price trends it will not become a real problem in the near future.

Free allocation and carbon border adjustment measure

Despite no ex-post evidence of carbon leakage, over 43% of all available emission allowances are to be allocated for free at least until 2030 under the current EU carbon market rules. The majority of the power sector pays for its pollution¹⁷ (for modernisation purposes power plants in poorer member states have received transitional free allocation – this has been found to not promote decarbonisation).¹⁸

13 A.o. ADE and Compass Lexecon (2020), Combined retrospective evaluation and prospective impact assessment support study on ETS State Aid Guidelines, commissioned by DG Competition. p 9.
Branger, F., P. Quirion and J. Chevallier (2017) ‘Carbon Leakage and Competitiveness of Cement and Steel Industries under the EU ETS: Much Ado About Nothing’, The Energy Journal vol 0(3)
Bruegel (2020), ‘A European carbon border tax: much pain, little gain’
Dechezleprêtre, A., C. Gennaioli, R. Martin, M. Muûls and T. Stoerk (2019) ‘Searching for carbon leaks in multinational companies’, Working Paper No. 165, Grantham Research Institute on Climate Change and the Environment
World Bank (2019) Report of the High-Level Commission on Carbon Pricing and Competitiveness, World Bank Group.

14 A.o. Branger, F. and P. Quirion (2014) ‘Would border carbon adjustments prevent carbon leakage and heavy industry competitiveness losses?’ Ecological Economics, Elsevier, vol 99: 29-39
Bruegel (2020), ‘A European carbon border tax: much pain, little gain’
Condon, M. and A. Ignaciuk (2013) ‘Border Carbon Adjustment and International Trade: A Literature Review’, OECD Trade and Environment Working Papers, no.2013/06, Organisation for Economic Co-operation and Development
McKibben, W., A. Morris, P. Wilcoxon and W. Liu (2018) ‘The role of Border Carbon Adjustments in a US Carbon Tax’, Climate Change Economics vol 9(1)

15 Dechezleprêtre A, Gennaioli C, Martin R, Muûls M and Stoerk T (2021) Searching for carbon leaks in multinational companies. Centre for Climate Change Economics and Policy Working Paper No. 187

16 Eugénie Joltreau & Katrin Sommerfeld (2019) Why does emissions trading under the EU Emissions Trading System (ETS) not affect firms’ competitiveness? Empirical findings from the literature, Climate Policy, 19:4, 453-471, DOI: 10.1080/14693062.2018.1502145

17 CMW (2020), ‘The EU Emission Trading System – carbon pricing as an important tool to achieve the objectives of the Green Deal’, published in ECA Journal 02/2020: Climate Change and Audit

18 European Court of Auditors (2020), ‘Special Report - The EU’s Emissions Trading System: free allocation of allowances needed better targeting’

Over the 2008-2030 period, the EU industry will have received approximately €383 billion euros worth of freely allocated EUAs.¹⁹ Under the current legislation, another 6.5 billion allowances will be given for free between 2021-2030.²⁰

Due to this free allocation, more than 90% of industrial carbon pollution²¹ does not carry any cost for the polluting companies. This has led to nearly stagnant industrial emissions since 2012 – dropping a paltry 1% between 2012 and 2018²². Emissions from the aviation sector even increased at an average rate of 4.7% per year between 2013 and 2017.²³ In contrast, emissions from the power sector dropped by 13% in 2019 alone.²⁴

Carbon leakage measures have also led to substantive windfall profits for companies. Many companies have passed on the EU ETS costs to their consumers even when they didn't have to pay the EUA price, or have been able to sell surplus permits. Industrial sectors gained more than €25 billion over 2008-2015.²⁵ The European Court of Auditors has found that free allocation to industry and aviation in Phase 3 (2013-2020) did not reflect the sectors' ability to pass through costs and was insufficiently targeted. They recommend better targeting free allocation (i.e. tiering free allocation and limiting it) and improving the setting of benchmarks. The European Commission has accepted these recommendations.²⁶

Abolishing free allocation would incentivize industrial decarbonisation, raise auctioning revenues and limit windfall profits – without causing substantial carbon leakage risks. The upcoming revision of the carbon market rules should therefore trigger the end of free allocation in the EU.

While free allocation has not been abolished yet, a replacement carbon leakage protection mechanism has already entered the EU ETS debate: the Carbon Border Adjustment Measure (CBAM). This measure would be preferable to free allocation as it ensures that polluters pay for their emissions. However, a number of basic criteria need to be fulfilled if the CBAM is to become an effective, necessary and fair climate measure.²⁷

Indirect cost compensation

Companies can be compensated by member states for theoretic increases in electricity prices caused by electricity producers passing through costs to their industrial consumers. This is the case for industrial sectors which use a lot of electricity, who argue that also their products are at risk of carbon leakage. Note that there is no evidence for such carbon leakage.²⁸ The European Commission's 2019 report on 'Energy prices and costs in Europe' even states that over 2015-2018 electricity prices for industry have been falling significantly,²⁹ while EUA prices remained relatively stable over the same period.³⁰

This compensation is regulated at the EU level by the 'EU ETS state aid guidelines' that were revised in 2020.³¹ Member states can implement their own state aid schemes, but they have to conform to the EU-level guidelines – which includes a list of eligible sectors, methodologies for calculating maximum payouts to individual installations and reporting guidelines.

This state aid scheme is overly generous, and has allowed public payouts of nearly 1.2 billion Euros to the industry just in 2017 and 2018. The new guidelines have fixed some historic problems, but the guidelines remain highly problematic. Three of the main failures³² are:

- Sectors such as oil refineries and plastic producers are on the list of eligible sectors, and that list has been expanded using an opaque 'qualitative' method
- Conditions for receiving and using aid that would have concrete climate benefits have been dropped or weakened significantly
- The amount of state aid companies can receive is calculated overly generously – for example by assuming that fossil fuel-based electricity generation is the only driver of electricity prices throughout the EU and that renewable energy and storage will not play a major role in the market by 2030.

¹⁹ ODI et al (2017), 'Phase-out 2020: monitoring Europe's fossil fuel subsidies'

²⁰ CMW (2019), 'Cracking Europe's hardest climate nut'

²¹ CMW (2019), 'Cracking Europe's hardest climate nut'

²² Ember (2019), 'NEW DATA: EU ETS emissions fall as wind & solar replace coal'

²³ EASA (2020), 'Aviation emissions under the ETS current phase (2013-2020)'

²⁴ Ember (2020), 'Europe's coal power collapse exposes steel plants as Europe's biggest emitter'

²⁵ CMW (2015), 'Mythbuster Reload – Industry windfall profits from Europe's carbon market 2008-2015'

²⁶ European Court of Auditors (2020), 'Special Report - The EU's Emissions Trading System: free allocation of allowances needed better targeting'

²⁷ For more detail see: CMW (2020), '10 Key Principles for a Carbon Border Adjustment Measure (CBAM)'

²⁸ ADE and Compass Lexecon (2020), Combined retrospective evaluation and prospective impact assessment support study on ETS State Aid Guidelines, commissioned by DG Competition. p 9.

²⁹ Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Energy prices and costs in Europe COM(2019) 1 and SWD(2019) 1

³⁰ EEX Auction clearing prices (source: EEX), comparing January 2015 and January 2018.

³¹ European Commission (2020), 'State of the Union: Commission adopts revised EU Emission Trading System State aid Guidelines' (https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1712)

³² For more information, see CMW (2020), 'EU Commission waters down carbon market state aid rules to please large polluters'

International shipping

The EU shipping sector emitted 144 Mt of greenhouse gases in 2019³³ and its emissions are projected to increase by up to 50% between 2020 and 2050 due to growth in global trade.³⁴

The sector should be included in the EU ETS, as already supported by the European Parliament³⁵ and the European Commission. The main questions on shipping inclusion relate to the scope, carbon leakage, the so-called Ocean Fund and complementary policies.

The scope should be as broad as possible, the EU ETS should cover domestic or short sea shipping, and incoming and outgoing international shipping. If only domestic shipping were covered, 62% of all EU trade-related maritime emissions would be excluded.

There is no risk of carbon leakage in the maritime sector due to the EU ETS. Costs passed through would be small, and would not risk pushing shipping services outside the EU's borders.³⁶ Therefore, carbon leakage protection mechanisms are not necessary.

The European Parliament has proposed establishing an 'Ocean Fund', a funding mechanism that reduces administrative burden for SMEs and operators with few activities in the EU and funds climate innovation in the shipping sector. The fund would finance energy efficiency measures, development and deployment of zero-carbon fuels and necessary port-side infrastructure.

The EU carbon market on its own will not be sufficient to decarbonise the shipping sector,³⁷ complementary measures will be necessary. For example, the European Parliament also proposes a binding target for shipping companies to reduce their emissions intensity by 40% by 2030.³⁸

By expanding the EU ETS to cover shipping emissions the EU would show climate leadership and push for stronger action at the International Maritime Organisation (IMO).

Shipping in the EU ETS would require defining the governance of the interaction between the EU and a potential future global carbon pricing mechanism, and planning for potential divergences between the two. The EU should however confirm the primacy of the most climate ambitious tool, a potential global shipping market-based mechanism cannot lead to any downgrading of the climate ambition of the EU carbon market.

International aviation

International³⁹ aviation emissions are currently excluded from the EU ETS' scope until 2023 under the "stop the clock" mechanism which was adopted to allow more time to find an agreement at the International Civil Aviation Organisation (ICAO). In 2016, governments adopted the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). The system will require airlines from participating States to compensate for the growth in CO₂ emissions from international flights above a 2019 baseline during the 2021-2035 period.⁴⁰ CORSIA is expected to cover only around 6% of CO₂ emissions from outbound flights from the European Economic Area (EEA).⁴¹ It relies on offsets which will likely be priced significantly below EUAs, is restricted to flights between two participating states, covers only international flights, addresses only the growth in CO₂ emissions, and ignores non-CO₂ impacts. CORSIA is therefore much weaker than the EU ETS.

The share of free allocation to airlines is currently set at 85% of the cap. But given that emissions from flying have consistently exceeded the cap, airlines effectively receive free allowances covering around half of their emissions (47.5% in 2019).⁴² In 2017, ETS-related costs for airlines represented 0.3% of their total operating costs.⁴³ One recent study estimated those costs as 1.2% of total operating costs in 2021, rising to 3.4% of total operating costs in 2030.⁴⁴

ETS scope and CORSIA implementation

The European Commission has proposed six options for the treatment of international flights under the EU ETS and CORSIA, ranging from implementing only CORSIA for all flights, to implementing the EU ETS for all flights, as well as various combinations of the two. The most stringent option, that of a full scope ETS covering both EU and international flights, should be adopted. This is because the ETS has a much wider coverage of emissions than CORSIA, and its expected price level is significantly higher.

In addition, given that the EU ETS already covers all flights between EEA countries, implementing CORSIA on these flights as a substitute to the EU ETS, would de facto constitute a regression from the EU's current climate policy ambition. The cost of implementing CORSIA on flights covered by the EU ETS is estimated to be equivalent to 1.8% of the ETS costs.⁴⁵

Another alternative would be to maintain the current EU ETS coverage for intra-EEA flights, as well as extend it to cover the share of CO₂ emissions from international flights that is not covered by CORSIA, i.e. emissions up to the 2019 baseline, while CORSIA would be implemented to cover international flights above the 2019 baseline. This would constitute a pragmatic solution, allowing the EU to demonstrate its support for international action by implementing CORSIA, while also constituting a significant increase in climate action for the EU.

Under no circumstances should CORSIA replace any part of the EU ETS' current scope.

³³ Thetis MRV database, 2019

³⁴ IMO (2020), "Fourth IMO GHG Study", (registration required)

³⁵ For more details see the CMW press release [available here](#).

³⁶ Transport & Environment (2020), 'T&E's response to the EU's Emissions Trading System Inception Impact Assessment'

³⁷ Transport & Environment (2020), 'T&E's response to the EU's Emissions Trading System Inception Impact Assessment'

³⁸ European Parliament (2020), 'Global data collection system for ship fuel oil consumption data – Adopted text'

³⁹ Throughout this section, "international" aviation refers to flights which leave an EFTA country to a non-EFTA country, or those which leave a non-EFTA country to an EFTA country, i.e. it does not include internal flights between EFTA countries, nor flights which do not take off nor land in an EFTA country.

⁴⁰ The original target was to compensate emissions above a baseline of average 2019-2020 emissions, but this was changed to 2019-only as a result of the covid-19 crisis which led to very low 2020 emissions, and subsequent industry lobbying to change the baseline.

⁴¹ Own calculations based on data from Taks (2020) "Add-on to report "Costs of EU ETS and CORSIA for European aviation" taking into account the impacts of the COVID-19 pandemic on aviation emissions". This assumes a U-shaped recovery for the aviation sector, reaching 2019 emissions levels by 2024.

⁴² European Commission (2020): [Report on the functioning of the European carbon market](#)

⁴³ EASA (2019): [European aviation environment report](#)

⁴⁴ Assuming an EUA price reaching 43€ for the period 2025-2030, based on Taks (2020) "Add-on to report "Costs of EU ETS and CORSIA for European aviation" taking into account the impacts of the COVID-19 pandemic on aviation emissions"

⁴⁵ Over the 2021-2030 period, *ibid*.

Phasing out free allocation to airlines

Given the low risk of carbon leakage in the aviation sector,^{46 47} the need to better enforce the polluter pays principle, and the potential to generate significant revenues to finance a green and just transition, the European Commission should propose a complete phase-out of free allocation upon the entry into force of the revised EU ETS regulation.

Finally, the EU ETS' coverage of the aviation sector is limited to its CO₂ emissions. This is a significant limitation as so-called “non-CO₂” impacts from aviation - NO_x, soot particles, oxidized sulphur species, and water vapour with increasing climate effect on higher altitude - contribute to global warming around two times more than CO₂ alone.⁴⁸ While significant uncertainty remains regarding the exact extent of these impacts, it is clear that they are significant, and should urgently be addressed, e.g. through a NO_x charge for the sector.

Buildings and transport

Carbon emissions from the building and transport sector currently make up around one third of the total EU greenhouse gas emissions. This is mostly due to burning of fossil fuels for heating buildings and road transport. Currently, these emissions are regulated by the EU Effort Sharing Regulation (ESR), which sets binding annual greenhouse emission reduction targets for each EU country for the period 2021 to 2030. The ESR is set to be reviewed as part of the Fit for 55 package later this year.

Several options in the European Commission's public consultation document kicking off the ESR review contained the idea of moving the transport and buildings sectors into the EU ETS, and repealing the ESR.

In order to understand the implications of such a move, the following aspects need to be considered:

- This is a major overhaul of the current EU climate policy architecture. It is complex and politically sensitive, and it risks upsetting the progress that over the past decade has finally led to a high enough carbon price to reduce pollution from power plants in Europe. In case the inclusion of transport and buildings fossil fuel emissions in the ETS is poorly calibrated it risks causing another crash of the carbon price.
- Even if properly implemented the resulting price signal is unlikely to encourage citizens to switch to cleaner technologies and it would do nothing to address the real barriers to the low carbon transition.⁴⁹ It therefore risks being a distraction from active decarbonisation measures in those two sectors, such as tighter CO₂ standards or accelerated energy efficiency improvements, both at EU and national level.
- It could be a socially regressive tool: the burden of the required transition in those sectors would be transferred on to citizens, many of whom would just be forced to pay higher prices without having the possibility of choosing cleaner alternatives. The impact on higher transport fuel and heating costs needs to be carefully considered and complemented with redistributive mechanisms.
- By removing these sectors from the ESR, national governments would no longer be incentivised to take national action to decarbonise road transport and buildings, such as implementing fiscal measures, modal shift, demand reduction or building renovation.

⁴⁶ European Commission (2006): SEC(2006) 1684, section 5.3.2

⁴⁷ European Commission (2017): SWD(2017) 31, section 5.2.1

⁴⁸ EASA (2020): “Updated analysis of the non-CO₂ climate impacts of aviation and potential policy measures pursuant to the EU Emissions Trading System Directive Article 30(4)”

⁴⁹ Cambridge Econometrics (2020): *Decarbonising European transport and heating fuels - Is the EU ETS the right tool?*

A carbon price to drive innovation

While carbon pricing can provide a strong incentive for industries to reduce emissions and switch to cleaner technologies, it will not be sufficient to drive the deep industrial transformation that is required for the European Union to reach climate neutrality by 2050.

At the time of writing, the CO₂ price in the EU is close to 40 euros per tonne of CO₂, which is some of the highest it has been in the last decade. However, even with a CO₂ price higher than previous years, investments still go to incremental changes and low-carbon technologies rather than breakthrough climate-neutral solutions.

When looking at the amount of funding required to make this happen, it is clear that the current public and private funding is insufficient to effectively drive the clean energy transition in the industrial sectors. Public investments in R&D, innovation and clean energy have slowly increased over the past years but are still far from sufficient.

The private sector has also contributed to clean research and innovation, providing around 75% of the EU investments. However, as shown in a recently published report by CDP⁵⁰ (formerly the Carbon Disclosure Project), industries like steel and cement have spent very little on low-carbon investments in the past few years. Public funding will continue to play a key role in coordinating research and steering private investment, and helping to bridge the gap from research to commercial deployment and attract new private investments by de-risking technologies.

The potential for exploiting synergies between funds and for increasing public funding is considerable. In the shipping sector there are numerous technologies that could be incentivized for large-scale deployment even at relatively low carbon prices.⁵¹ Quite a few of these technologies are no-regrets options: if implemented they would actually save money. Carbon pricing alone might not drive innovation in these areas as they are not already being implemented – complementary policies will be necessary to force broad implementation of these technologies.

Finally, in the aviation sector, various options for decarbonisation exist, including optimised routes, more efficiency (through e.g. lighter aircrafts and more fuel-efficient reactors), sustainable aviation fuels, and simply flying less.

The marginal abatement costs in the aviation sector are high, and a carbon price alone is highly unlikely to incentivise in-sector reductions. This is why emissions have continued to increase in the European aviation sector, in spite of being covered by the EU ETS.

⁵⁰ CDP (2020) “Doubling Down - Europe's Low-Carbon Investment Opportunity”

⁵¹ IMO (2020), “Fourth IMO GHG Study”, (registration required)

Making the best out of EU ETS revenues

The total revenues generated by EU member states, the UK and EEA countries from the auctions between 2012 and 30 June 2020 exceeded EUR 57 billion. The EU ETS Directive provides that at least 50% of auction revenues should be used by EU governments for climate and energy related purposes.

According to the information submitted to the Commission by the member states, they spent or planned to spend a total of 77% of these revenues for specified climate and energy related purposes in 2019. Only a small share of this amount (about 1.9 billion or 4% of total revenues in this period) was spent on international climate and energy purposes.

The Innovation Fund

The Innovation Fund is one of the two funds created by the EU ETS Directive. It supports innovative technologies and breakthrough innovation in sectors covered by the EU ETS, including innovative renewables, energy intensive industries, carbon capture, utilisation and storage (CCUS) and energy storage.

The first call for large-scale projects under the Innovation Fund was launched in July 2020, and saw a demand and variety of low-carbon projects 20 times larger than the resources made available in the call. It is clear that the overall financial capabilities of the Innovation Fund will need to be drastically increased. This would act as a major opportunity and support for industry in their efforts to decarbonise and is much more effective than the non-targeted allocation of free allowances. More auctioned revenues should be redirected to make the fund bigger. If ETS revenues were used to complement public investments in clean energy, funding would be more effective and Europe could accelerate its progress towards a carbon-neutral industry.

The Modernisation Fund

The Modernisation Fund is the second fund created by the EU ETS Directive and supports investments in modernising the power sector in ten lower-income Member States

The ETS Directive defines the priority areas for investment, namely generation and use of electricity from renewable sources, the improvement of energy efficiency (except fossil fuels installations), energy storage, the modernisation of energy networks, and just transition in carbon-dependent regions. At least 70% of the Modernisation Fund resources must be spent on priority investments, which is the preferred option. In case member states allocate resources to "non-priority" investments, the criteria are looser and coal-based district heating is allowable in a few countries. Transparency of the Modernisation Fund is therefore required to ensure confirmed priority and non-priority investments can deliver long-lasting climate benefits at member state level.

The threat of international carbon credits under the EU ETS

Between 2005 and 2020, installations under the ETS were allowed to use international credits as a substitute to EUAs.⁵² By 2020, 1.54 billion international credits were used, equivalent to 96% of the estimated total entitlements. 75% of these came from only two countries: China (Clean Development Mechanism, CDM, credits) and Ukraine (Joint Implementation, JI, credits).⁵³ The use of these international credits has contributed to the accumulation of a surplus of EUAs and several papers have pointed to their lack of environmental integrity. Other shortcomings have been pointed out, including negative impacts on local communities.⁵⁴

The ETS review for phase 4 clarified that international credits would no longer be allowed from 2021, and the European Council adopted in December 2020 a domestic net emission reduction target of -55% by 2030 compared to 1990,⁵⁵ thus excluding the use of international credits. Given the history and current status of international carbon markets, it will be important to maintain the domestic emission reduction target, and not rely on international credits to meet domestic targets.

⁵² Directive 2004/101/EC

⁵³ European Commission (2020): "Report on the functioning of the European carbon market"

⁵⁴ Carbon Market Watch (2018): "The Clean Development Mechanism: local impacts of a global system"

⁵⁵ European Council conclusions EUCO 22/20

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Jakop Dalunde

