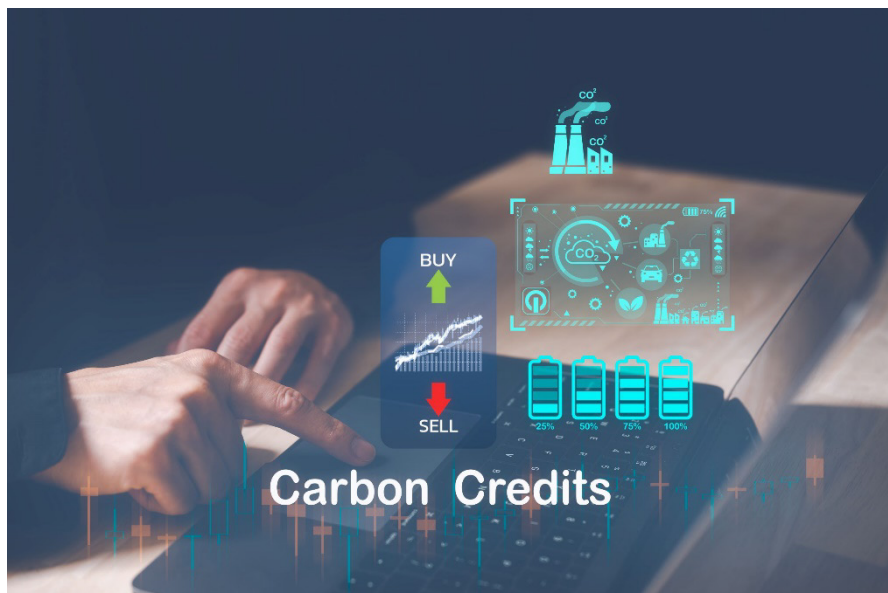


# The EU Emissions Trading System: Method and Effects of Free Allowance Allocation

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## **Abstract**

This in-depth analysis for the Committee on Budgetary Control concerns the system used for the free allocation of emission allowances within the EU ETS. It reviews recent press criticisms of the free allocation system, reviews the transparency of the system and assesses the risk it creates unintended distortions. It estimates the cost of free allocation to the EU budget and how these proceeds might be spent. It concludes with three policy recommendations.

This document was requested by the European Parliament's Committee on Budgetary Control.

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## LIST OF ABBREVIATIONS

<b>CBAM</b>	Carbon border adjustment mechanism
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CORSIA</b>	Carbon Offsetting and Reduction Scheme for International Aviation
<b>CSCF</b>	Cross sectoral correction factor
<b>EC</b>	European Commission
<b>EEX</b>	European Energy Exchange
<b>EU ETS</b>	European Union Emissions Trading System
<b>EUA</b>	EU allowance
<b>GDP</b>	Gross Domestic Product
<b>GHG</b>	Greenhouse gas
<b>GVA</b>	Gross Value Added
<b>NAPs</b>	National Allocation Plans
<b>NIMs</b>	National Implementation Measures
<b>RED II</b>	Renewable Energy Directive (revised)

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## EXECUTIVE SUMMARY

### Background

The EU Emissions Trading Scheme (EU ETS) is a key tool of the European Union's policy to combat climate change through reducing greenhouse gas emissions, whereby participating companies must surrender allowances for the carbon they emit. Auctioning is the default method for allocating emission allowances, but a sizeable proportion are also allocated for free to sectors at risk of carbon leakage. The free allocation of allowances is being phased out for a range of sectors.

This analysis for the Committee on Budgetary Control considers the system used for the free allocation of emission allowances and addresses questions on the transparency of the system, the impact on EU finances, any distortions it creates, and its effectiveness in achieving the EU's environmental goals.

### Benchmarking and the allocation of allowances

The allocation of free allowances to industrial emitters is based on a benchmarking system. Product benchmarks are expressed in terms of greenhouse gas (GHG) emission intensity (tonnes of GHG emitted per tonne of product produced) and represent the performance of the 10 per cent most efficient installations covered by the EU ETS producing the product. There is reasonable transparency in this process – the methodology by which benchmarks are determined is clear and explicit and the benchmarks themselves are explicit and accessible, as is the allocation of free allowances across installations.

### The impact on EU Revenues

Revenues from the auctioning of allowances accrue to Member States and to the EU through two key funds – the Innovation Fund and the Modernisation Fund. In addition, in the near future revenues from auctions and the forthcoming carbon border adjustment mechanism (CBAM) will also contribute to EU Own Resources. To the extent that the free allocation system reduces the revenues available from the auctioning of allowances, it reduces EU revenues.

Using data and assumptions on the number of freely allocated allowances, the carbon price and the phasing out of free allocation, we estimate the value of free allocation from the commencement of auctioning in 2012 until 2022 at €127bn. The total forthcoming value over the remaining lifetime of the free allocation system (from 2023 to 2033) is estimated at €331bn. The estimated impact on Own Resources is a forgone €99bn from 2023 to 2033 from auctioning, and a further foregone €0.4bn per year in relation to the CBAM.

### The effectiveness of the system of free allocation and potential distortions

The purchase of emission allowances to fulfil obligations under the EU ETS increases costs to firms and incentivises them to reduce emissions. However, carbon-intensive industries that would struggle to pass on the costs of a carbon price require some form of protection to avoid unsustainable sector contraction or a level of carbon leakage (relocation of production to areas with a lower or no carbon price) that would significantly undermine the reduction in emissions.

Although the system of free allocation is frequently criticised as providing limited if any incentives for firms to reduce their emissions, firms do still have an incentive to reduce emissions as they can sell excess freely-allocated allowances. The use of emission-intensity benchmarks to allocate free allowances also means that firms have an incentive to improve their efficiency such that a greater proportion of their emissions are covered by free allowances. Free allocation is also being phased out

for aviation and certain sectors at high risk of carbon leakage – the latter through the carbon border adjustment mechanism.

That said, there are some remaining risks which could distort competitiveness, undermine emission reduction and reduce EU revenue. The definition of firms at high risk of carbon leakage is binary and could overlook sectors where some cost pass through is in fact possible. Product benchmarks, whilst effective in incentivising carbon efficiency in existing processes, are less suited to incentivising step-changes to new low-emitting technologies. Insofar as benchmarks are based on production processes or intermediate inputs rather than end products, free allocation will provide a subsidy to processes that involve higher emissions relative to lower-emitting technologies that produce the same end product but are excluded from the specific benchmark.

A final risk is that the CBAM – the key instrument for reducing free allocation – may lack political support if there is insufficient international cooperation over climate change policy, i.e. some form of carbon pricing in markets that import into the EU. This would undermine the phasing out of free allocation and the anticipated increased in EU revenue from auctioning.

### **Policy recommendations**

Our policy recommendations for the system of free allocation are:

- Material increases in the transparency of the technical benchmarking process are unnecessary and could have negative consequences on industry competitiveness, but increased scrutiny of related political decisions could be warranted.
- There would be value in an expedited system to review and revise the product boundaries for benchmarks where there are clear competing low-emission technologies producing the same or alternative products, such that free allocation can be stopped and the distorting subsidies removed.
- The Committee on Budgetary Control should be aware of and should keep under evaluation the risk that political support for the carbon border adjustment mechanism comes into question, such that the phasing out of free allocation and increase in EU revenues is undermined.

# 1. INTRODUCTION

This in-depth analysis for the Committee on Budgetary Control concerns the system used for the free allocation of emission allowances within the EU ETS.

## Box 1: The EU ETS and Free Allocation<sup>1</sup>

The EU Emissions Trading System (ETS) operates on a “cap-and-trade” principle whereby the EU sets a cap on the total of certain greenhouse gases that can be emitted annually by operators covered by the system - specifically carbon emissions from electricity and heat generation, energy-intensive industries, aviation and maritime transport, plus certain other greenhouse gas emissions involved in the production of chemicals and aluminium.

After each year, operators must surrender enough EU allowances (EUAs) to fully cover their emissions that previous year. There is an existing stock of allowances within the system, enabling there to be a secondary market whereby allowances and their derivatives can be bought and sold as required. New allowances are added to the system in two ways: sold via auctions and provided directly to firms via a system of free allocation. The total of new allowances added each year, via these two routes, falls over time, so total emissions must fall. In the current ETS phase approximately 43 per cent of all new allowances will be allocated for free.

Most revenues from the auctioning of allowances feed into Member State budgets. Revenues retained at the EU level supply the funds supporting innovation in low-carbon technologies and the energy transition: the Innovation Fund and the Modernisation Fund.

The basis on which firms receive free allocation allowances is set out in more detail below, but is intended to cover sectors where the scope for emissions reductions is limited, there would be little ability to pass costs of purchasing allowances on to consumers, and the risk of carbon leakage (e.g. producers relocating production outside the EU) is high. Free allocation allowances are fully fungible with auctioned allowances and can be bought and sold on secondary markets. So if firms in receipt of free allocation allowances succeed in reducing emissions, they gain the benefit of being able to sell their “spare” allowances.

## 1.1. Research questions addressed

This in-depth analysis addresses the following questions:

- *Describe and summarise reports that companies may have been using the free ETS allowances for profit (addressed in Section 2).*
- *Describe and analyse the system the Commission uses for establishing the list of best performers that is the basis for the distribution of free allowances, also in terms of its transparency and openness to scrutiny under the Treaties (Section 3).*
- *Examine the risk of market distortions within the sectors and subsectors covered (Section 4).*
- *Present the current understanding of whether the scheme of free ETS allowances performs effectively for its intended purpose of reducing greenhouse gas emissions (Section 5).*
- *Provide an estimate of the amount and value of free allowances until their phasing out, both currently allocated and forecasted, to help determine the performance of the measure (Section 6).*

<sup>1</sup> European Commission, Climate Action “The EU Emissions Trading System” [\[link\]](#)

- *Estimate the impact of the free allowances on the EU's revenues as and when the Own Resources decision is adopted, bearing in mind provisions in that proposal to avoid an excessively regressive impact on contributions from the emissions trading (Section 7).*
- *Summarise how the proceeds of the ETS scheme feed into current EU funding (on- and off-budget instruments), including the monitoring and control systems in place for these instruments, in particular as regards parliamentary scrutiny, as well as any performance assessments being carried out or potential to develop one (Section 8).*
- *Formulate policy recommendations with a view to improving the transparency of the system (Section 9).*

Each of the research questions will be addressed in turn, followed by an Annex.

## 2. SUMMARY OF RELEVANT RECENT PRESS REPORTS

Recent press articles have claimed that the system of free allocation is flawed.<sup>2,3</sup>

Box 2: Claims made in two recent Le Monde articles

- The ETS is a “watered down” form of emissions control relative to the “original intention... to encourage companies to reduce their greenhouse gas emissions by making them pay when they exceed the ceilings announced to the authorities”.
- By providing a free allocation of allowances, the system removes any incentive for firms in polluting industries to reduce their greenhouse gas emissions.
- Firms receiving free allowances have sold many of those allowances for profit rather than surrendering those allowances to enable them to produce output.
- The system of free allocation favours incumbents with high-emissions-generating technologies over new entrants with more environmentally friendly technologies.

Some of these claims are incorrect; others are correct and well-known but obsolete; and others are of current relevance and may be important if true.

An ETS is not a “watered down” form of emissions control. An ETS is an emissions control system based on fixing the volume of permitted emissions rather than their price (e.g., through a carbon tax). It is also incorrect (at least in principle) to say that firms that receive allowances for free do not have incentives to reduce their greenhouse gas emissions. If such firms’ emissions are lower such that they do not need to surrender their permits in order to produce goods and services, they can sell their permits. The monies raised by selling permits instead of producing emissions are precisely the incentive to cut emissions. To that extent, the fact that firms that have received free allowances have sold them subsequently for profits is not an undesirable side-effect of the ETS. It is part of its core concept and constitutes the ETS working as intended.

However, in practice this is not the whole story and this brings us onto points from the articles that are correct and well-known but obsolete. First, it is true that in the early phases of the ETS the volume of permitted allowances was set at a level that in hindsight can be seen to have been excessive. Some

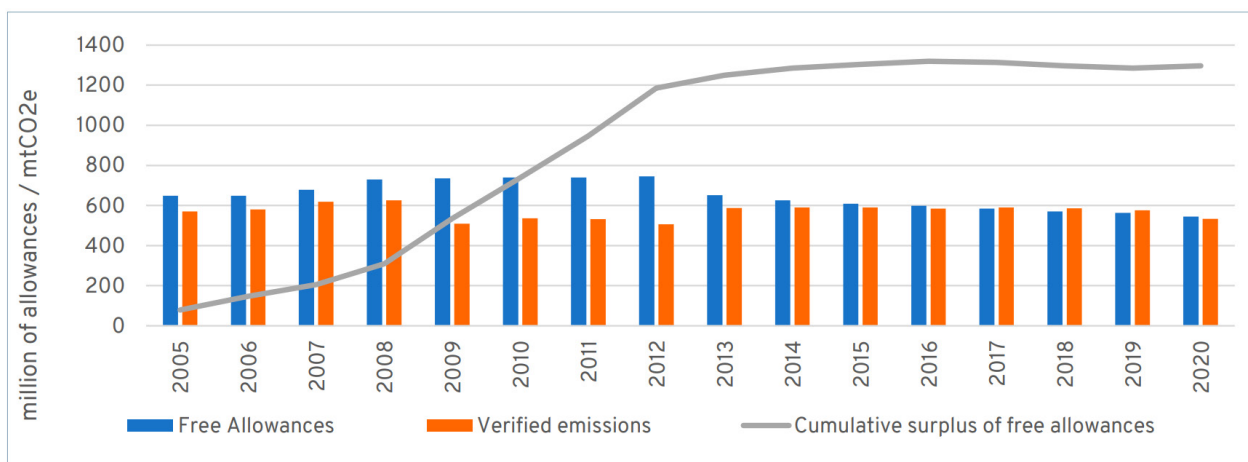
<sup>2</sup> Le Monde, 30/05/2023: Comment les entreprises polluantes ont transformé les quotas gratuits de CO<sub>2</sub> en un marché de plusieurs milliards d’euros. Le Monde, 31/05/2023: Quotas gratuits de CO<sub>2</sub> pour inciter les industriels à réduire leurs émissions : le fiasco du dispositif européen.

<sup>3</sup> We focus on the above articles, but others make similar points eg Carbon Market Watch “The Phantom Leakage” [\[link\]](#); Jacques Delors Institute “No more free lunch — Ending free allowances in the EU ETS to the benefit of innovation” Policy brief [\[link\]](#)

initial surplus was a necessary element of the system: since it was always intended that there would be a secondary market in allowances, it was necessary that the volume of allowances initially injected into the system was greater than the amount that was expected to be surrendered. Otherwise there would have been nothing to trade, markets would have been illiquid, and there would have been no observable market price of carbon to provide an economic signal to firms about how profitable it could be to reduce their emissions (and also no useful reserve price for the auctions). The data on which an accurate assessment of the allowances required either for surrender or liquidity could be based did not yet exist. And, given that the scheme was new, it was understandable that policymakers chose to err on the side of caution, seeking to ensure that firms had sufficient allowances to continue in economic production rather than the economy suddenly being disrupted by a new emissions scheme. Indeed, the very first phase of the scheme (2005-2007) was a pilot phase and although there was oversupply, Phase 1 credits could not be transferred over to Phase 2.

But even given these mitigating factors, in hindsight it is clear that allowance volumes provided in early phases of the scheme were excessive.<sup>4</sup> The Jacques Delors Institute estimates that between 2008 and 2020 industrial sectors were overallocated about ~1.1bn tonnes of allowances.

Figure 1: Verified emissions and free allowances given to industry



Source: Figure 1 of “No more free lunch — Ending free allowances in the EU ETS to the benefit of innovation”, Jacques Delors Institute • Policy brief [[link](#)]

One important reason why the total allowances provided were excessive was that the estimates for allowances required were based upon historic output trends, and during and after the Great Recession of 2008, and the subsequent period of what some economists refer to as “secular stagnation”, output growth has been much slower than was expected. That meant that firms required far fewer emissions allowances than had been expected, not because they were much more successful in increasing the emissions efficiency of their production but simply because they produced less than expected. An excess aggregate supply of allowances across the market meant that the price of emissions allowances was very low. This very low price meant that any theoretical incentive to cut emissions (even with free allocation) so as to sell emissions allowances on secondary markets was severely blunted.

These features of the market are well-known and long-established, and the way in which ETS allowances volumes are determined has changed in response, particularly in Phase 3. The system of

<sup>4</sup> Carbon Market Watch summarises the Phase 2 situation as follows. “Phase 2 (2008-2012) continued the use of NAPs [national allocation plans], but this time the overall cap was reduced and based on actual emissions data from Phase 1. Around 90% of all emissions under the EU ETS were still handed out for free, but the first auctions were held. International offsets were still allowed onto the market, and over 1 billion of these credits would enter the EU ETS by 2012. These international credits, an overgenerous cap and the effects of the financial crisis (when less economic output depressed emissions but the supply of EUAs not being adjusted) led to an enormous oversupply (reaching nearly 2.1 billion units in 2014).” [[link](#)].

national allocation plans (NAPs) used in Phases 1 and 2 was replaced with a single, EU-wide cap on emissions. The default mechanism for injecting allowances into the market became auctions instead of free allocation. Certain sectors (in particular electricity) ceased to receive free allowances (apart from some modernisation schemes). The rules for free allocation were tightened and harmonised. In 2015 a Market Stability Reserve mechanism was introduced, and from 2018 that began cutting the number of emissions available in the market. Other reforms have recently come into force, including the phasing out of free allocation in a number of sectors.<sup>5</sup>

Thus whilst the criticisms in the articles that there was over-supply of allowances and it blunted incentives to reduce emissions are correct, that is a point policymakers have recognised for a decade and more and policy has long since changed to address.

It is also undisputedly the case that as the price of carbon emissions has risen in recent years, partly as a result of a tightening of the allocation (and future allocation plans) and partly as a by-product of volatility in European energy markets, that has meant that stocks of allowances that firms had retained from earlier phases of excess allocation have become much more lucrative. But, once again, whilst that may tell us something about the weaknesses of the scheme in earlier phases, and may even illustrate some of the general risks of a cap-and-trade system versus a carbon tax, it does not tell us anything about failings of the system in its current, reformed, state.

There are, however, certain criticisms in the articles that, if substantiated, could be more pertinent to the current system and potentially illustrate weaknesses in it. In particular, it is alleged that the current basis of free allocation tends to subsidise incumbent high-emissions firms versus new entrants with lower emissions technologies – as illustrated in one of the articles by reference to new more environmentally-friendly cement manufacturers trying to enter the markets.<sup>6</sup>

One basis for free allocation to sectors is that firms would be unable to pass on the costs of buying allowances. However, if such an inability to pass on costs stems from the threat of competition from lower-emitting-technology producers, then the ETS – by keeping costs low for the higher-emitting firms through free allowances – would effectively be subsidising them to maintain their position against more environmentally-friendly rivals.

### 3. BENCHMARKING AND ALLOCATION OF ALLOWANCES

From Phase 3 (2013–2020), the European Commission has used benchmarking to establish the list of best performers (in terms of emissions), forming the basis for the distribution of free allowances to industrial emitters.<sup>7</sup> Product benchmarks are expressed in terms of greenhouse gas (GHG) emission intensity (tonnes of GHG emitted per tonne of product produced) and represent the performance of the 10 per cent most efficient installations covered by the EU ETS producing the product. There are currently 54 benchmarks (52 product and 2 so-called fallback approaches based on heat and fuel) which were developed by the Commission. For example, the benchmark for Coke is 0.217 allowances per tonne of coke produced (see Figure 2 below).<sup>8</sup>

<sup>5</sup> European Commission, Climate Action, EU ETS – revision for Phase 4, [\[link\]](#).

<sup>6</sup> Le Monde, 31/05/2023: *Quotas gratuits de CO<sub>2</sub> pour inciter les industriels à réduire leurs émissions : le fiasco du dispositif européen*.

<sup>7</sup> Benchmarks were introduced by the Commission Decision of 27 April 2011 (2011/278/EU), subsequently repealed by the Commission Delegated Regulation (EU) 2019/331.

<sup>8</sup> The 2021–2025 benchmarks for each product and the preliminary free allocation are presented in the European Commission update. See European Commission, DG Climate Action (2021). Update of benchmark values for the years 2021 – 2025 of phase 4 of the EU ETS [\[link\]](#).



Figure 2: Illustration of product benchmarks

**1. Product benchmarks without consideration of exchangeability of fuel and electricity**

Product benchmark	Average value of the 10 % most efficient installations in 2016 and 2017 (t CO <sub>2</sub> equivalents/t)	Benchmark value (allowances/t) for 2021-2025
Coke	0,144	0,217
Sintered ore	0,163	0,157
Hot metal	1,331	1,288

Source: European Commission Implementing Regulation (EU) 2021/447 of 12 March 2021

The benchmarks are based on the principle of 'one product = one benchmark'. This means that the methodology does not vary according to the technology or fuel used, the size of an installation or its geographical location. This helps to incentivise the use of carbon-efficient technologies to reduce emissions.

**3.1. Calculation of the benchmarks for Phase 4**

The fundamental methodology for calculating the benchmarks remains the same as for Phase 3, with an update of the data used.<sup>9</sup> For each product benchmark for the first part of Phase 4 (2021-2025), the average GHG intensity for each installation for 2016/17 was recorded and ranked, and the average of the 10 per cent most efficient installations calculated. These values were then subjected to historical annual reduction rates (from 2007/8 to 2016/17), and extrapolated out to 2022/23 to arrive at more up-to-date benchmarks for Phase 4. The historical annual reduction rates are capped between 0.2 and 1.6 per cent (or between 3 and 24 per cent over the 15-year period) to avoid large step-changes.

The European Commission calculated the benchmarks using sub-installation data received via the Competent Authorities across Member States.<sup>10</sup> There are a number of guidance documents available to Competent Authorities setting out e.g. the data that needs to be collected and its format, and the method for allocating free allowances to installations.<sup>11</sup> Member States were then responsible for calculating the allocations of free allowances across installations based on the Commission's benchmarks and the allocation methodology.

**3.1.1. Review and update of the benchmarks**

The current benchmarks will apply for the first part of Phase 4 (2021 – 2025), and will then be reviewed for the second part 2026-2030 in accordance with Article 10(a)1 – both in terms of the GHG intensity data used and the product boundaries. This is to ensure new carbon-efficient technologies are considered and incentives for emissions-reduction are maintained. Other provisions for review – including the question of carbon leakage – to ensure that the free allocation of allowances remains fully justified are provided for in Article 10(a) and Article 30.<sup>12</sup>

<sup>9</sup> See paragraph 3 of Commission Implementing Regulation (EU) 2021/447 Of 12 March 2021 [\[link\]](#); and European Commission, DG Climate Action (2021). Update of benchmark values for the years 2021 – 2025 of phase 4 of the EU ETS [\[link\]](#).

<sup>10</sup> Data on the installations eligible to receive free allowances and their emissions intensity are submitted by Competent Authorities in accordance with the National Implementation Measures (NIMs) set out in Article 14 of the Commission Delegated Regulation (EU) 2019/331. This is contrasted to the calculation of the Phase 3 benchmarks which relied on voluntary data provided by European sector associations.

<sup>11</sup> See for example European Commission, DG Climate Action (2019). *Guidance Document n°1 - General Guidance to the allocation methodology* [\[link\]](#); n°2 *Guidance on determining the allocation at installation level* [\[link\]](#); n°3 *Data collection guidance* [\[link\]](#).

<sup>12</sup> Directive 2003/87/EC Of The European Parliament And Of The Council of 13 October 2003, as amended [\[link\]](#).

### 3.1.2. Aviation allowances

Emissions allowances for aviation (applicable to flights between EEA States, Switzerland and the UK), are subject to a separate cap to industry, with 82 per cent currently allocated for free. The aviation benchmark is calculated by dividing the total annual amount of free allowances by the sum of airlines' verified tonne-kilometre data that aircraft operators submit to the Commission (i.e. historical emissions).<sup>13</sup> The latest revision of the EU ETS stipulates that free allocation in aviation will be phased out by 2026.

## 3.2. Allocation of free allowances

The benchmark value determines the number of free allowances per tonne of output produced each installation is entitled to. More emission-efficient installations will produce more output per tonne of CO<sub>2</sub> and therefore will require fewer allowances to meet their obligations than their less efficient peers (who may need to buy additional allowances if they do not receive enough for free). The allocation formula is explained in the Box below. The allocations for all installations are contained in Commission Decision 2021/C 302/01, and an example presented in the Annex.

### Box 3: Allocation of free allowances

The amount of free allowances an installation will receive is simplified in the equation below:

$$\text{Free allocation} = \text{Benchmark} * \text{Production data} * \text{Discount factors}$$

For the first part of Phase 4 this is based on each installation's average **historical production** for 2014-18 e.g. tonnes of output, multiplied by the relevant **product benchmark**. Two discount factors are applied where necessary: a downward adjustment is applied to sectors **not at high risk** of carbon leakage, and a **correction factor** is applied to different sectors to ensure that the total free allocation will not exceed the cap of the free allocated allowances.

## 3.3. Analysis of transparency and openness to scrutiny

The detailed data and calculations used by the Commission to construct the benchmarks are not publicly available, e.g. it is not possible to know which installations are in the top 10 per cent in each product area, and exactly how the positions have been calculated from submitted data. The key rationale is to protect confidential information about companies' technologies and cost bases to preserve competitiveness, in particular in relation to international competitors. More aggregated information e.g. the identity of the firms in the top 10 per cent could be relevant in understanding some basis of the benchmarks and would be less revealing. On the other hand, such information could facilitate collusive behaviour, whereby the top firms agree to withhold breakthrough technologies to keep benchmarks artificially high.

There is a public record of the amount of free allocation each company or installation receives (see the Annex), but not of the calculations made by Member States in the allocation of these free allowances. Having access to this information may help scrutiny of how allocations are made. It is unlikely that this information could provide much insight into the market position of individual companies, especially as it is based on historical production data (for Phase 4, 2014-18 production) rather than carbon intensity.

The treatment of certain industry benchmarks can be subject to qualitative assessment which is not transparent. For example, it has been decided that the benchmark value for "hot metal" – the output

<sup>13</sup> European Commission, Allocation to the aviation sector [\[link\]](#).



of blast furnaces and the main benchmark in the steel industry – will be subject to the lowest possible historical annual reduction rate of 0.2 per cent, and will not be affected by any updates to benchmark boundaries.<sup>14,15</sup>

Table 1: Summary of transparency of benchmarking process

Element of benchmarking process	Status
Data and calculations used by Commission to create product benchmarks.	Not publicly available.
Amount of free allocation across EU ETS installations.	Commission Decision 2021/C 302/01 <a href="#">[link]</a>
Data and calculations used by Member States to allocate allowances	Not publicly available, although allocation Guidance from Commission available <a href="#">[link]</a>
Decisions on benchmark evolution and updates.	Final decisions available (e.g. latest EU ETS revision <a href="#">[link]</a> and Updates <a href="#">[link]</a> but not underlying assessment.

Source: Own summary

## 4. RISK OF MARKET DISTORTIONS

Creating and addressing market distortions are central to the ETS and the system of free allocation. The ETS exists precisely in order to change or “distort” market outcomes from their unregulated equilibrium, so that market agents internalise the costs of the environmental harm carbon emissions cause – the “polluter pays” principle. Yet under a system of free allocation the polluter does not pay. Even insofar as a free allocation system does retain incentives on operators to cut emissions, it remains the case that society bears the costs of environmental damage caused by polluters that those polluters did not pay for.<sup>16</sup>

But if we consider the matter further, we see that free allocation itself exists to avoid the market distortions of carbon leakage – e.g. economic activity migrating outside the EU so firms unable to cut their emissions or pass on the costs of allowances can avoid paying the costs of acquiring such allowances. In this section we focus upon the risk unintended market distortions are created by the free allocation system and the system by which receipt of free allocation is determined.<sup>17</sup>

### 4.1. Some concerns are correct but have already been addressed

Some distortions still frequently raised in press discussions have already been addressed by changes to the ETS and the system of free allocation. For example, it is probably true that in early phases of the ETS the volumes of allowances offered in the system as a whole and via free allocation in particular were excessive, resulting in a carbon price that was too low (and thus left operators with inadequate incentives to reduce emissions) and created windfall profits to operators because they were based on obsolete forecasts of operators’ production.<sup>18</sup> This issue is, however, obsolete, as discussed in Section 2.

<sup>14</sup> Sandbag (2022), What’s new in the ETS trilogues? Benchmark revisions (or not) [\[link\]](#).

<sup>15</sup> Directive (EU) 2023/959 [\[link\]](#) and Directive (EU) 2018/410, Article 10a(2) [\[link\]](#).

<sup>16</sup> As The European Court of Auditors’ Report [\[link\]](#) puts it (p34): “Free allocation does not fit well with the polluter pays principle.”

<sup>17</sup> In the Annex we set out a “long list” of other potential market distortions that we considered but rejected as immaterial. In this main text, we focus upon those cases we consider of most interest and relevance.

<sup>18</sup> As The European Court of Auditors’ Report [\[link\]](#) puts it (p34): “In order to avoid windfall profits, the level of allocation needs to be aligned with operators’ production volumes.”

Another concern related to biomass. Biomass-burning emissions are not included when calculating annual emissions, yet installations that use biomass still receive free allowances. The problem was that not all biomass was in fact zero carbon. However, the EC has now agreed to apply the RED II sustainability criteria to all biomass.<sup>19</sup>

#### 4.2. Some concerns are correct in principle but of limited impact

There are certain concerns about distortions that appear to be correct but which we – based on our research among stakeholders and our analysis of the literature – regard as limited in their scale and implications. For example, in some production sectors,<sup>20</sup> indirect emissions from external inputs (and carbon savings from low-emission by-products) are not included in the benchmark calculations. Firms thus face an incentive to import certain inputs (e.g. coke) rather than producing these on-site in an integrated process (where the production counts towards direct emissions). Modelling by the Grantham Institute shows that a scope adjustment to include such indirect emissions can neutralise incentives to displace direct emissions with indirect emissions by internalizing the carbon cost of inputs. However, such adjustments can be complex and may have other consequences.<sup>21</sup>

This is a theoretical concern recognised by policymakers, identified in previous studies,<sup>22</sup> and continues to be accepted by academics. Yet the consensus view from our research among stakeholders was that, if this occurs at all, its scale is sufficiently small and the complexity of addressing it sufficiently large that it is not a priority.

More generally, using historical values to calculate installations' free allocation (rather than output-based allocation) mean that once benchmarks are set firms have an incentive to outperform them and retain the free allowance. This was the case in Phase 3 of the ETS. Some other ETSs use output-based allocations. However, a historic system could also cause distortions if 'outperforming' included production decisions that did not reduce emissions but rather played the system, like using inputs that don't count towards direct emissions.

A similar theoretical concern is recognised in respect of gaming. Firms may have an incentive to delay the introduction of technology changes or new investments so that their assessment for free allocation purposes is more favourable (akin to the timing distortion in economic regulation that rolling assessment used to seek to address). Again, we consider this a limited concern in practice and have not found evidence to suggest otherwise.

#### 4.3. Some concerns remain potentially material and have not been fully addressed

Insofar as benchmarks were based on production processes or intermediate inputs rather than end products, free allocation would provide a subsidy to processes that involve higher emissions relative to lower-emitting processes that produce the same end product. A widely-quoted alleged example is that steel might be produced using an electric arc furnace (EAF) at relatively low emissions or a blast furnace (hot metal benchmark) at higher emissions.<sup>23</sup> Free allocation to blast furnace-based firms

<sup>19</sup> European Commission (2022), Guidance Document: Biomass issues in the EU ETS. MRR Guidance document No. 3, Updated Version, 17 October 2022, p10 [\[link\]](#)

<sup>20</sup> Such as the steel sector which uses coke (a benchmarked product). See Zipperer, Sato and Neuhoﬀ (2017) "Benchmarks for emissions trading – general principles for emissions scope" [\[link\]](#).

<sup>21</sup> Zipperer, Sato and Neuhoﬀ (2017) "Benchmarks for emissions trading – general principles for emissions scope" [\[link\]](#).

<sup>22</sup> For Example, the European Court of Auditors' Report [\[link\]](#) states (p33): "Free allocation benchmarks currently do not fully account for indirect emissions in supply chain linkages."

<sup>23</sup> See for example Sandbag (2021) Why Free Allocation in the EU ETS must stop urgently [\[link\]](#); and Forum Ökologisch-Soziale Marktwirtschaft (FÖS) (2022) EU ETS Carbon Leakage: How to Remediate Disincentives within the Current System of Free Allocation, p13 [\[link\]](#)

allegedly therefore creates an economic distortion. A similar issue is the claim that free allocation could protect firms with environmentally damaging products or processes from potential competition from alternative suppliers with very different production processes, producing alternative more environmentally-friendly products. Closely related is the concern that free allocation may favour new production over recycling.

It is perhaps worth emphasizing that the above possibilities are consistent with one of the key criteria for the receipt of free allocation, namely that firms are unable to pass on costs to their customers. One reason a firm may be unable to pass on costs is that, if it did so, there would be new entry from a lower-cost alternative supplier or lower-cost alternative (or recycled) product (or supply-side substitution from a rival firm). If that actual or potential rival firm had a more environmentally-friendly product or process that did not attract free allocation, then the free allocation system would be subsidising environmentally-unfriendly incumbents at the expense of newer more environmentally-friendly rivals.

There are historic cases where benchmarks and free allocation have been revised in the light of newer more environmentally-friendly rivals arising,<sup>24</sup> and there are also specific provisions for the benchmarks and free allocation to be reviewed in anticipation of precisely this concern.<sup>25</sup> Furthermore, where a more environmentally-efficient rival entered a market for a product attracting free allocation, that new rival might receive free allocation according to the emissions benchmarks of existing higher-emitting firms, and thus be placed on a level playing field with them – effectively receiving a subsidy in the form of emissions allowances that it would not need and could therefore sell. Moreover, one reason for limiting free allocation reviews to pre-set intervals of a number of years is to enhance certainty (reducing regulatory risk) for investors.

These points notwithstanding, in our view there remains a concern that the system of revision is likely to be too slow and cumbersome to facilitate the timely removal of free allocation when alternative technologies arise, and that this is likely to become a more significant concern in forthcoming years, as years of research into more environmentally-friendly processes come to fruition, than it has been in the past when the scope for substitution may have been more limited. On the other hand, it is unlikely to be feasible or proportionate to continuously review all products and processes covered by the 52+2 benchmarks on the off-chance that some lower-carbon alternative has just become available and viable. This pragmatic reality informs our proposal in Section 9.

#### **4.4. Distortions that could arise in the event of too blunt or rapid a phasing out of free allocation or too much transparency**

Above we have focused upon distortions associated with the retention of free allocation. But it should also be recognised that some distortions could arise if the phasing out of free allocation is too blunt or too rapid. The most obvious of these arises because free allocation is itself intended to address potential distortions in the form of carbon leakage. The carbon border adjustment mechanism is intended to be an alternative mitigation mechanism as free allocation is phased out, but as we shall discuss in Section 9, aspects of that should be kept under review.

There is also the risk that efforts to enhance transparency further create distortions. There is a relationship between a firm's carbon emissions and its general production costs. Disclosing extensive details, publicly, of individual firms' carbon emissions could therefore *de facto* reveal details of firms'

<sup>24</sup> For example, the revised EU ETS Directive changes the hydrogen product benchmark to include all hydrogen produced through any means (including low-emission and renewable means). Thus these producers will also receive free allowances, and it will remove the disincentive for grey hydrogen producers to switch to renewable hydrogen production, as they will no longer face the dilemma of losing eligibility for any allowances under the ETS. See Directive (EU) 2023/959, Annex 1.

<sup>25</sup> For example, see Article 10a(1) of the consolidated Directive [\[link\]](#), and Section 3.1.1 above.

costs and production processes or intellectual property. Either EU firms could use these details to coordinate their price-setting; or non-EU firms could use these details to gain a competitive advantage over their EU rivals who would not have corresponding details on their non-EU rivals' costs. Excessive transparency could also increase firms' ability to game the system (e.g. by adjusting the timing of their emissions efficiency improvements – see above).

## 5. EFFECTIVENESS OF THE ETS AND FREE ALLOCATION

### 5.1. Underlying justification for the scheme of free allowances

Regardless of whether a carbon tax or cap-and-trade system is adopted as the mechanism of emissions control<sup>26</sup>, some provision for exemptions is generally considered necessary to ensure that the scheme is workable and acceptable to policymakers (and, by extension, industry), and does not lead to higher emissions abroad. Carbon-intensive industries that would struggle to pass on the costs of a carbon price and where low-carbon alternatives are very costly and/or slow to market require some form of protection to avoid unsustainable sector contraction or a level of carbon leakage that would significantly undermine the reduction in emissions. There is a view that carbon leakage is a sufficiently significant risk that a global carbon-price system is necessary to address it and that, in the absence of such a system, other measures like exemptions are required.<sup>27</sup> Other ETS around the world have free allocation, many to a far greater extent than the EU ETS (e.g. including power sectors).<sup>28</sup> Recent empirical analysis has found evidence to suggest that sectors considered at risk of carbon leakage by the European Commission do indeed operate in fiercely competitive markets and faced more difficult economic conditions after the introduction of the EU ETS.<sup>29</sup>

The system of free allocation is frequently criticised as providing limited if any incentives for firms to reduce their emissions, and of undermining the principle of 'polluter pays'. However, as discussed in Section 2, in principle free allocation will leave intact incentives for reducing emissions, since lower emissions mean that firms can sell their freely-allocated allowances.

The introduction of the carbon border adjustment mechanism (CBAM) is intending to address the key rationale for free allocation, namely the risk of carbon leakage. The aim is for this mechanism to enable the phasing out of free allocation in certain sectors by 2034.<sup>30</sup> The effectiveness of this will rely on sufficient international cooperation over climate change policy e.g. in imposing carbon costs.

### 5.2. The specific operation of the scheme of free allocation

There are other views relating to the specific application of the scheme of free allowances (such as the benchmarking approach or the scope for firms to sell free allowances for profit) and whether these tend to support or harm the meeting of environmental objectives. We discuss a number of these in Sections 2, 3 and 4.

In general, the fact that the free allowances have been allocated since Phase 3 on the basis of benchmarks created from the top 10 per cent most GHG-efficient installations provides incentives for

<sup>26</sup> See our discussion of cap-and-trade versus carbon taxation in Section 2.

<sup>27</sup> See for example Al Hussein and Khan (2023), The Case for a Global Carbon-Pricing Framework [\[link\]](#). The default method adopted in emissions trading is to grant free emission allowances to vulnerable sectors (e.g. in EU, California, China, Korea, and New Zealand) – see Zipperer, Sato and Neuhoff (2017).

<sup>28</sup> See ICAP ETS overview [\[link\]](#).

<sup>29</sup> Antoine Dechezleprêtre, Daniel Nachtigall, Frank Venmans (2023), The joint impact of the European Union emissions, *Journal of Environmental Economics and Management* 118 (2023) 102758.

<sup>30</sup> International Carbon Action Partnership (2023), EU adopts landmark ETS reforms and new policies to meet 2030 target [\[link\]](#).

decarbonisation. The use of benchmarks is widely accepted as an improvement on the system used in previous phases, when allocation was based on historical emissions.<sup>31</sup>

At the end of Phase 3, the European Court of Auditors investigated the effectiveness of the system of free allocation and found that on the whole the system is justified.<sup>32</sup> It did find however that the number of free allowances allocated to the industry and aviation sectors in Phase 3 was not always based on their ability to pass through costs, and that there was limited targeting of the free allocation of allowances for carbon leakage (sectors at risk of carbon leakage are all treated equally, compared to other systems like California/Quebec that specify low, medium and high risk).<sup>33</sup> The ECA recommended better targeting of free allowances based on carbon leakage and improving the methodology for setting benchmarks. The Commission's response accepted most of the ECA's recommendations, e.g. regarding sustainability criteria for biomass and the revision of the hydrogen benchmark in the revised Directive.<sup>34</sup> Our research among stakeholders suggests that the greater targeting of carbon leakage risk is not practicable, and will also be addressed by the introduction of the carbon border adjustment mechanism.

Some analysts consider that the over-allocation of free allowances in some sectors e.g. cement is still an issue, allowing firms to make windfall profits by selling allowances they do not need.<sup>35</sup> Others consider that the treatment of indirect emissions in supply chains could be tighter to prevent some installations from being able to reduce their apparent emissions intensity (but retain free allocation levels) by replacing direct (onsite) emissions with indirect emissions.<sup>36</sup> There is a more general recognised shortcoming in that the product benchmarks do well in incentivising carbon efficiency in existing processes, but that they are less suited to incentivising step-changes to new low-emitting technologies, by nature of the benchmark product boundaries. This is exemplified in the debate around the definition of the benchmarks for the steel industry, as discussed in Section 4. There are new, lower-emission production processes that can compete with the blast-furnace process of producing hot metal, but which have not yet been included in the hot metal benchmark (thus keeping the GHG intensity benchmark high). Firms are disincentivised from switching to these new processes as they would then be subject to a different – more stringent – benchmark. However, although the latest revision of the Directive<sup>37</sup> retains the existing hot metal boundaries, there is provision for these to be reviewed and we understand from the Commission that there is ongoing work at the Commission to amend these to include the new processes.

## 6. AMOUNT AND VALUE OF FREE ALLOWANCES

We estimate the amount and value of free allowances, both for the historical period and for the remaining period until they are completely phased out in 2034, as follows. First we obtain figures (part data, part assumptions – see below for more details) on the aggregate volumes of allowances added to the ETS each year, and the proportion of added allowances that are auctioned versus freely-allocated each year. We use estimates of the carbon price, under the currently-scheduled arrangement in which free allocation is phased out. We then consider two scenarios (explained below) for how the carbon

<sup>31</sup> See for example CAN Europe (2010), Position paper on benchmarking and allocation rules in phase III of the EU Emissions Trading System, as cited in ECA 2020 report.

<sup>32</sup> The audit question was “Did decisions on free Emissions Trading System allowances provide a reasonable basis to encourage the reduction of greenhouse gas emissions?” See ECA (2020) “The EU’s Emissions Trading System: free allocation of allowances needed better targeting” [\[link\]](#).

<sup>33</sup> Ibid, p24 – 30.

<sup>34</sup> Ibid, European Commission’s Replies.

<sup>35</sup> Carbon Market Watch (2021), The Phantom Leakage [\[link\]](#).

<sup>36</sup> Zipperer, V., Sato, M., and Neuhoﬀ, K. (2017), Benchmarks for emissions trading – general principles for emissions scope. GRI working paper.

<sup>37</sup> Directive (EU) 2023/959 [\[link\]](#)

price might be affected in a counterfactual world in which there were no free allocation. The cost of free allocation is assessed as the amount of freely-allocated allowances times the price each allowance would have in a counterfactual world in which there were no free allowances.<sup>38</sup>

Our specific assumptions for the phasing out of free allowances are as follows. For CBAM-affected sectors (initially 50 per cent of free allowances) the allowance rate drops from 100 per cent of its current benchmarked value to 97.5 per cent in 2026, then 95, 90, 77.5, 51.5, 39, 26.5, 14 and ultimately zero per cent. Other sectors at high risk of carbon leakage stay at 100 per cent until 2030, then we assume drop by 25 per cent each year until 2034. For low-risk sectors (currently 5 per cent of free allowances) the allowance rate drops from 100 per cent of its current value (30 per cent allowance) to 75 per cent in 2027, then, 50, 25 and 0 per cent. Aviation (2.8 per cent of free allowances) drops to 0 per cent in 2026.

## 6.1. Data sources and assumptions

In the Annex we set out various sources that give us data on the total allowances, the proportion of allowances that will be freely allocated and prices, year-by-year up to 2030 (with the exception of prices for which we have an average price from 2026-2030). Free allocation is scheduled to be phased out in certain sectors by 2034 and we have the phasing-out schedule for the proportion of freely-allocated allowances each year up to 2033 (falling to zero in 2034).<sup>39</sup> So we need assumptions on the volume of allowances and their price for 2031-2033.<sup>40,41</sup> The assumptions we use are as follows.

- The percentage rate of decline in aggregate allowances for 2031-2033 is the same as the average rate of decline from 2028-2030 (i.e. 4.4 per cent, annually).
- The average carbon price from 2031-2033 is the same as that for 2026-2030 (i.e. €100).

### 6.1.1. Scenarios for the impact of the absence of free allocation on carbon prices

We consider two scenarios for the impact of free allocation on carbon prices. Each scenario is a case of “Something stays the same”.

- In our first scenario the carbon price would be unaffected by the fact that some allowances are now sold at auction rather than allocated freely (“no market impact”).
- In our second scenario the total amount that firms purchasing allowances spend on new allowances is unaffected by the fact that more allowances are sold (“unit elasticity”).

Each case can be seen to be rather implausible, with the truth likely to lie between them. The assumption that the carbon price is unaffected by the absence of free allocation could be the result of one of (or a combination of) two key factors. First, it would happen if firms purchasing allowances rather than receiving them for free were able perfectly to pass on the additional costs of purchase to their customers. Second, it would happen if any fall in the carbon price would trigger additional economic

<sup>38</sup> In estimating the cost of free allocation of allowances below, we note that our calculation focuses purely on the cost in terms of foregone allowances revenues. If, for example, the absence of free allocation in 2015 had meant that firms that were in fact based in the EU that year would instead have been relocated outside the EU, that would have had further revenue implications, since those firms located outside the EU would not have been paying wages in the EU, nor paid VAT or business profits taxes. Workers would not have made their own GDP-generating purchases in turn and so on, with consequential “second-round” macroeconomic implications. On the other hand, absent those workers being employed by the EU-based firms that did in fact employ them they might have been employed by alternative firms that would have generated their own taxes and GDP. The exact implications of such processes is notoriously complex and uncertain and we do not attempt to assess it here.

<sup>39</sup> See the Annex.

<sup>40</sup> We observe that in this period, as we shall see in the graph below, the proportion of free allowances has fallen to quite low levels, so its quantitative contribution to overall impacts is fairly modest. Accordingly, modest errors in the assumptions made regarding allowances prices and total volumes would be expected to have only a small impact on aggregate results.

<sup>41</sup> We note that the prices we obtain here are prices under the currently-scheduled system in which some allowances are allocated freely until 2034. Below we shall set out our assumptions for counterfactual scenarios in which there were no free allocation.

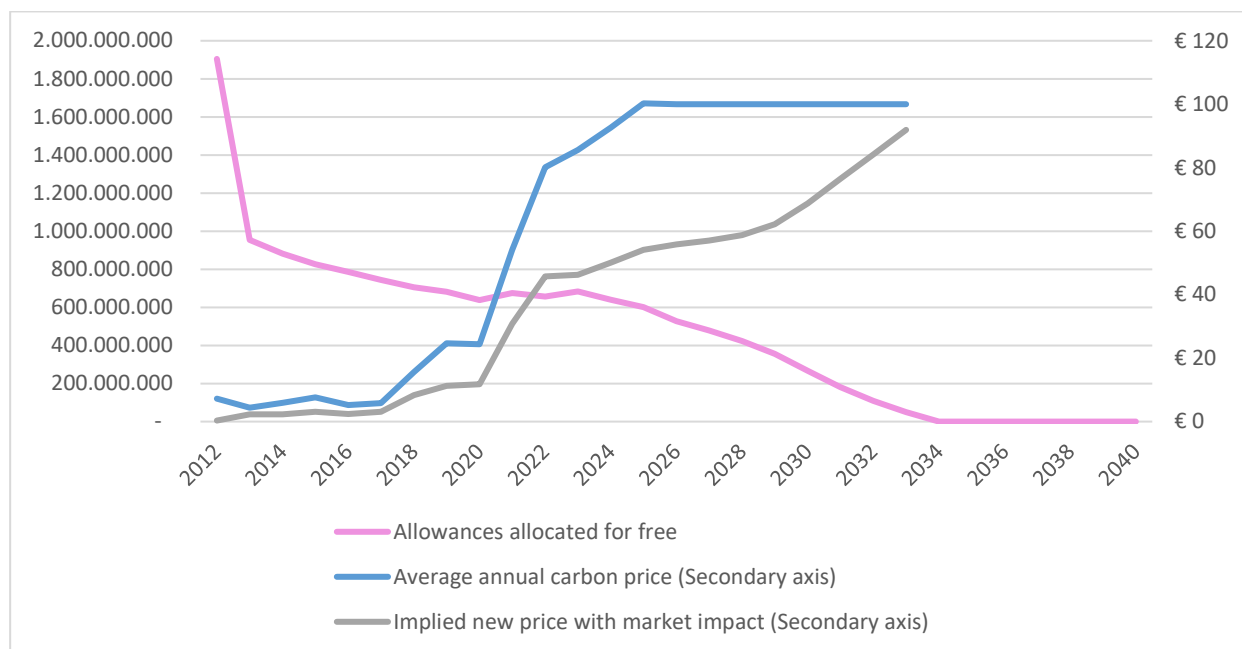


activity resulting in an additional purchase of allowances, bidding the price back up to the same level it would have in a world of free allocation. That these factors would result in no market impact on price is unlikely. In particular, a key criterion for being a sector in receipt of free allocation is that it is assessed that it is unlikely firms would be able to pass on the costs of purchasing allowances to their customers.

The assumption underpinning the second scenario is also rather strong. In this counterfactual scenario there are additional allowances offered for sale but firms in aggregate are unwilling to pay anything additional into the ETS to acquire them. The assumed result is that the same number of allowances as currently scheduled is injected into the ETS each year, but no more money is paid for them.

These limiting cases provide useful bounds for the analysis enabling us to make concrete calculations. Next we see how our two assumptions affect the assumed carbon price.

Figure 3: Free Allocation Volume versus Carbon Price, under two scenarios



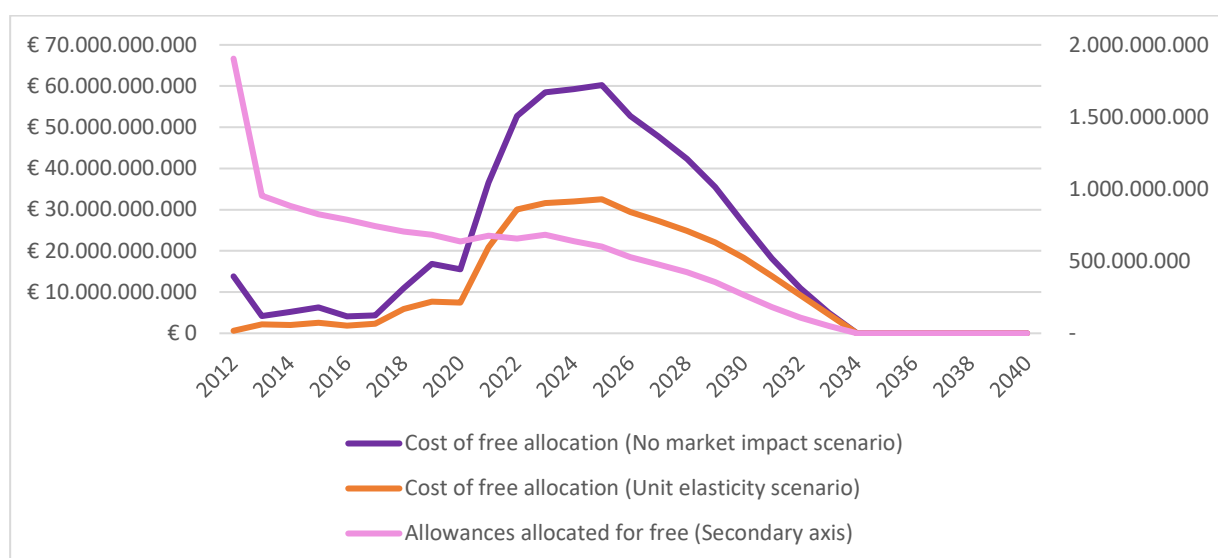
Source: Europe Economics' own calculations

The "Average annual carbon price" is the price both under the historic and forecast actual scenario and under our first scenario of no market impact of the absence of free allocation upon carbon prices. The other carbon price line is the prices if total amounts spent on new allowances each year were the same as occurs in the historic and forecast actual scenario. We can see that the gap between the two lines tends to fall away in later years as the forecast free allocation volumes fall towards zero.

## 6.2. Results

Using the data and assumptions above, we now present our results.

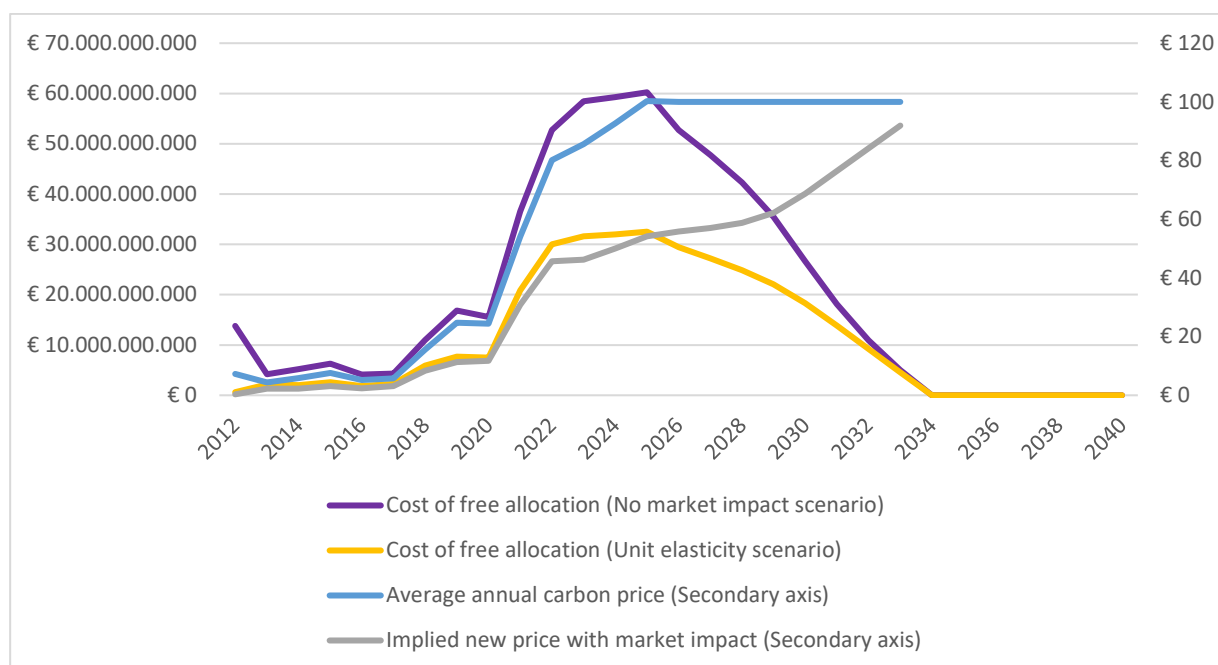
Figure 4: Cost of free allocation versus allowances allocated, under two scenarios



Source: Europe Economics' own calculations

We see that the cost of free allocation is currently at its historic high and is scheduled to go higher yet over the next couple of years, before falling away as the amounts of freely-allocated allowances falls. The following figure shows that the key reason the cost of free allocation is currently so high by historic standards is that carbon prices are now much higher than in the past.

Figure 5: Free Allocation Cost versus Carbon Price, under two scenarios



Source: Europe Economics' own calculations

If we take the mid-points of the impact scenarios ranges, the total cost of free allocation from the commencement of auctioning in 2012 until 2022 was €127bn. In addition, the total forthcoming cost over the remaining lifetime of the free allocation system (i.e. from 2023 to 2033 – zero free allocation begins in 2034) is estimated at €331bn. The former figure (€127bn) is 91 per cent of the value of allowances auctioned between 2012 and 2022. The latter figure (€331bn) is 58 per cent of the forecast value of allowances to be auctioned between 2023 and 2033.



## 7. IMPACT OF FREE ALLOWANCES ON EU REVENUES VIA OWN RESOURCES

In 2021 (updated in 2023), the European Commission proposed<sup>42</sup> three new sources of Own Resources revenue, including (a) revenues from emissions trading and (b) revenues generated by the proposed EU carbon border adjustment mechanism (CBAM). Together with revenues from profits from re-allocating multinationals to EU Member States, these measures are expected to generate around €36bn annually for the EU budget from 2028.<sup>43</sup>

**Revenues from emissions trading.** The Own Resources decision will mean that in the future 30 per cent of the revenue from the auction of ETS allowances (and the market value of allowances that Member States decide not to auction) will flow into the EU budget, rather than being transferred to national budgets. The Commission estimates that this will generate revenues for the EU budget of around €19bn per year on average over 2028-2030 (€7bn on average from 2024-2028).

**Carbon border adjustment mechanism.** The CBAM will put a carbon price on imports corresponding to what would have been paid had the goods been produced in the EU. It seeks to align the costs for CO<sub>2</sub> emissions of products imported from outside the EU with products produced within the EU that fall under the EU ETS, by requiring importers to have sufficient carbon allowances to cover the emissions embedded in those imported goods. (When goods are produced in jurisdictions that use a carbon price mechanism of their own, there is a deduction to avoid double counting so that only the net carbon emissions price is paid at the EU border.)

The Commission proposes to allocate to the EU budget 75 per cent of the revenues generated by this carbon border adjustment mechanism, estimated on average at around €1.5bn per year from 2028.

**Solidarity adjustment mechanism.** This mechanism was introduced to mitigate the regressive distributional impacts of the emissions trading-based own resource, introducing a maximum contribution for lower-income and carbon-intensive Member States and a minimum contribution for typically higher-income and low-carbon Member States.

### 7.1. Impact of free allowances on EU's revenues

To the extent that the free allocation of allowances reduces the allowances available for auction, this system reduces the share of funds available for Own Resource Revenue. The Own Resources revenue shares from emissions auctions and the CBAM estimated by the Commission implicitly take into account free allocation, as they only consider the value of auctioned allowances. By using our analysis from Section 6 we provide a view on the foregone value of Own Resources revenue linked to free allocation.<sup>44</sup>

#### 7.1.1. Revenues from emissions trading

In Section 6 we estimate the amount and value of forecast free allowances, which represent foregone auction revenue. The total forthcoming cost over the remaining lifetime of the free allocation system (i.e. from 2023 to 2033) is estimated at €331bn. A 30 per cent share of this equates to roughly €99bn, which can be considered the foregone Own Resources revenue as a result of free allocation.

<sup>42</sup> European Commission COM(2023) 331 final [\[link\]](#)

<sup>43</sup> In particular to repay the funds raised by the EU to finance the grant component of NextGenerationEU, and to finance the Social Climate Fund. See Factsheet (2023) [\[link\]](#).

<sup>44</sup> There are differences in our approach compared to the Commission's, namely that ours uses an updated (higher) carbon price, is over a longer time period, and does not include emissions related to the extended ETS (e.g. including maritime, buildings etc.), since there is no free allocation under that system and hence no revenue impact.

### 7.1.2. Revenues from the carbon border adjustment mechanism

The Own Resources revenues generated from the CBAM can be simply represented as follows:

$$\text{Revenues} = \text{scale of non-EU imports} \times \text{required emission allowances} \times \text{carbon price} \times 75\%$$

The European Commission estimates this at around €1.5bn a year from 2028. To assess the impact of free allowances on these revenues, we consider again the hypothetical scenario of there being no free allowances. As free allocation declines, the volume of non-EU imports may increase as producers relocate outside the EU (or cease production), depending on how effective the free allowance system was at preventing carbon leakage, and on the impact that higher-priced imports would have on EU industry.

In a hypothetical world with no free allowances, the scale of imports liable for the CBAM is likely to increase. Therefore, the revenues generated for Own Resources would be higher under a system of no free allowances than the Commission's estimation of €1.5bn per year. That would be tempered to some degree by a relative fall in the carbon price as a result of the cessation of free allowances, as described in Section 6.

To illustrate, the Commission's impact assessment on different CBAM measures found that an option (3) that had no free allocation of allowances generated €0.5bn more revenue a year than an option (4) that had phased-out free allocation.<sup>45</sup> Applying the 0.75 factor produces a negative impact on Own Resources of around €0.4bn per year with free allocation compared to without.

## 8. USE OF PROCEEDS OF ETS

In 2021, total auctioning revenues amounted to €31bn, of which €25bn went to Member States, and the remainder to the Innovation Fund and the Modernisation Fund.<sup>46</sup>

### 8.1. The Innovation Fund

The Innovation Fund is an EU instrument fully funded by external assigned revenues from EU ETS auctions. It aims to bring to the market solutions to decarbonise European industry and support its transition to climate neutrality while fostering its competitiveness. It funds projects (either through grants or competitive bidding) focusing on e.g. innovative low-carbon technologies and processes in energy-intensive industries.<sup>47</sup> The Innovation Fund is funded through an allocation of emission allowances, which it then auctions off over the years and retains the revenues thereof (the funds are therefore dependent on the carbon price). In the 2023 revision of the ETS the Innovation Fund was allocated a total of 530 million allowances,<sup>48</sup> equivalent to around €40bn between 2020 and 2030.

The Innovation Fund is managed overall by the European Commission, with input from a range of other bodies. It has documented application and award criteria for the projects it funds. The Commission must report annually to the Climate Change Committee, the EU Council and to the European Parliament on progress in implementing the Innovation Fund. The first Progress Report was published in 2022 and covers the use of funds and projects funded to date.<sup>49</sup>

<sup>45</sup> European Commission SWD(2021) 643, Figure 18 [\[link\]](#).

<sup>46</sup> European Environmental Agency, Use of auctioning revenues generated under the EU Emissions Trading System [\[link\]](#)

<sup>47</sup> European Commission Climate Action, What is the Innovation Fund? [\[link\]](#).

<sup>48</sup> See Directive 2003/87/EC Of The European Parliament And Of The Council of 13 October 2003, as amended [\[link\]](#).

<sup>49</sup> European Commission (2022), Innovation fund progress report: Report from the Commission to the European Parliament and the Council [\[link\]](#).

## 8.2. The Modernisation Fund

The Modernisation Fund is an EU programme to support 10 lower-income Member States<sup>50</sup> to meet 2030 energy targets by helping to modernise energy systems and improve energy efficiency, e.g. by focusing on renewable energy, energy networks and energy storage. The total revenues of the Modernisation Fund will amount to approximately €48bn from 2021 to 2030 – of this, around €28bn comes from allowances that beneficiary Member States have transferred to the Fund from their resources under Article 102(b) and 10c, and around €20bn comes from the auctioning of two per cent of the total EU ETS allowances from 2021 to 2030.<sup>51</sup>

The Fund is governed by the European Investment Bank, the European Commission, an Investment Committee and input from the 10 Member States, with documented guidelines for assessing and approving funded projects.<sup>52</sup> There is no legislative reporting or performance assessment requirement for the Modernisation Fund. However, third-party assessments do exist, such as the Climate Action Network assessment in 2023. This assessment found that the Fund is meeting its objectives, with some recommendations for improvements such as reducing the risk of gas lock-in stemming from the gas-based cogeneration projects which are strongly supported by the Fund, and the use of incentives to submit more demanding projects.<sup>53</sup>

## 8.3. Member States revenues

The majority of EU ETS auction revenues goes directly to Member States, with the majority (around 75 per cent) historically used for domestic climate- and energy-related purposes.<sup>54</sup> The Fit for 55 Package now requires Member States to use *all* auctioning revenues for climate change and energy purposes. This is considered an improvement addressing concerns around the transparency of Member State spending of auction revenues on climate projects – several Member States did not earmark their auctioning revenues for specific purposes, but instead attributed some or all of their revenues to a broad budget. The general budget could then be spent on activities related to both climate change and energy and on other purposes, and a direct link to auctioning revenues could not be made.<sup>55</sup>

Member States are requested to report annually on the amounts and use of the revenues generated, under the Regulation on the Governance of the Energy Union and Climate Action. The total figures are annually reported in the Carbon Market Report.<sup>56</sup> There is concern among some commentators that reporting transparency and definitions around Member States' spending of auction revenues and related reporting is insufficient, with some spending unhelpful or even counterproductive to carbon reduction.<sup>57,58</sup> The revised EU ETS Directive however does provide more detail on what constitutes 'spending on climate actions' which is considered helpful (see New Article 10(3)b of the ETS Directive).

Member States can also use revenues from auctions to grant State aid to compensate some electro-intensive industries for carbon costs arising from higher electricity prices due to power generators passing on the costs of allowances. This is a further form of carbon subsidy. This compensation is also monitored in the Carbon Market Reports. One of the transparency provisions in the EU ETS Directive specifies that Member States spending more than 25 per cent of their auction revenues on indirect cost compensation in any year must publish a report setting out the reasons why this amount was exceeded. In 2020, at least five Member States exceeded the 25 per cent limit.

<sup>50</sup> Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia.

<sup>51</sup> European Commission, The Modernisation Fund [\[link\]](#).

<sup>52</sup> The Modernisation Fund, Assessment guidelines [\[link\]](#).

<sup>53</sup> Climate Action Network (2023), Assessment of the Modernisation Fund two years into operation [\[link\]](#).

<sup>54</sup> European Environment Agency, Use of auctioning revenues generated under the EU Emissions Trading System [\[link\]](#).

<sup>55</sup> European Environment Agency, Use of auctioning revenues generated under the EU Emissions Trading System [\[link\]](#).

<sup>56</sup> See Carbon Market Report 2021 [\[link\]](#).

<sup>57</sup> WWF (2022), Where did all the money go [\[link\]](#).

<sup>58</sup> EcoLogic (2022), The use of auctioning revenues from the EU ETS for climate action [\[link\]](#).

## 9. POLICY RECOMMENDATIONS

### 9.1. Transparency of the determination of free allocation

In our view the transparency of the free allocation system appears to be broadly adequate. The methodology by which benchmarks are determined is clear and explicit and the benchmarks themselves are explicit and accessible, as is the allocation of free allowances across installations. It is true that there is no publicly available data or calculations of the benchmarks and which installations form the ten per cent in each product area. However, the publication of additional details of this sort could risk allowing too precise an estimation of individual firms' costs. That could in turn create two negative consequences.

- First, there could be harm to the competitiveness of these firms versus their international rivals, since those international players would have information about EU firms' costs without any corresponding knowledge by the EU firms about their international rivals' costs. Given that the risk of chasing activity outside the EU and thus creating carbon leakage is one of the central reasons the free allocation system exists at all, damaging competitiveness in this way would seem contrary to the goals of the scheme.
- Second, there could be some risk of facilitating tacit collusion amongst EU players. Large firms disclosing their costs to one another is generally regarded as a competition concern for precisely this reason.

We do, however, acknowledge that this residual transparency gap, even if it is justified by the above arguments, may facilitate other forms of non-transparency that could be of greater concern. For example, the process of determining the required emissions decline rates of different sectors under free allocation is inevitably (and arguably quite properly) a matter of political debate and the balancing of judgements. The transparency gap, even if justified, may have the side-effect of creating some non-transparency in this political process. That might mean that it is appropriate to apply particular scrutiny to the basis on which differentials in required decline rates are determined.

### 9.2. Minimising distortions and ensuring the EU does not forego revenues unnecessarily

Free allocation is due to be phased out by 2034 for sectors at high risk of carbon leakage which are part of the CBAM regime. There are no documented plans to phase out free allocation in other high-risk sectors. The current phasing-out schedule also anticipates that free allocation will end in sectors at low risk of carbon leakage by 2030. Furthermore, the existing system does contain some scope for the removal of free allocation from sectors currently receiving free allowances when new technologies emerge that allow the production of products with lower emissions or the production of alternative lower-emissions-requiring products, through the review of benchmark boundaries.

Nonetheless, our conclusion from the analysis this project has permitted is that those current arrangements for early removal of free allocation could potentially be improved and made more systematic. We foresee two elements to this.

- First, we offer the analogy of the EU's tariff suspension system. Under that framework, without there being a need for a comprehensive review of every tariff it is feasible for individual firms wanting to import products from outside the EU to argue that there is no EU producer of the product (or a close substitute thereof) and hence no EU firm for the tariff to be protecting. That enables the suspending of tariffs when they become obsolete, on a one-by-one basis. We accept that it would be infeasible to repeatedly and frequently conduct a review of relevant

product markets and the scope for more environmentally-friendly alternative producers to enter across all products and sectors that receive free allocation. However, in a similar way to the tariff suspension system it should be more feasible to have a system whereby an individual actual or potential producer can argue that it has a viable, credible and potentially profitable alternative production process or alternative product to those for which free allocation is currently provided with materially lower emissions, and thus that free allocation should be suspended for its rivals.

- The second, closely-related element is that the above free allocation suspension process could be fast-tracked for products arising from the Modernisation and Innovation funds.

### 9.3. How secure are the anticipated additional revenues from the phasing out of free allocation?

We conclude by highlighting a risk to EU revenues that we believe the Committee on Budgetary Control should be aware of and that we recommend should be the subject of regular review. In previous sections we have discussed the anticipated costs to EU revenues of the system of free allocation as it is phased out. The obverse side of that calculation is an anticipated gain of revenues as an increasing proportion of allowances are auctioned.

However, the timeline for phasing out free allocation assumes the securing and delivering of sufficient international cooperation over climate change policy to make the carbon border adjustment mechanism feasible and operative. If other international players do not enact their own policies to impose costs on emitters and do not accept the imposition of additional taxes at the EU's border (e.g. regarding them as tariffs), the introduction of the carbon border adjustment mechanism could come under political threat (e.g. by political interests that feared triggering a trade war of tit-for-tat tariff rises). Should political support for the carbon border adjustment mechanism come into question in this way, then the timeline of the phasing out of free allocation would also come into question and that, in turn, would mean that the anticipated EU revenues from additional allowances auctioning might not materialise.

We emphasize that we are not saying that we, at this stage, are forecasting such a scenario. However, we do believe that this is a risk that the Committee on Budgetary Control should be aware of and should keep under evaluation.

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## ANNEX

### Data sources for calculation of impacts on EU Budget

Table 2: Data sources for calculation of impacts on EU Budget

Variables	Source
Total allowances issued EU-wide	Article 1 of Commission Decision (EU) 2020/1722
Allowed and verified emissions	EU Emissions Trading System (ETS) data viewer (EEA)
Emission projections	EEA greenhouse gas projections (EEA)
One-off and linear reductions/increases in allowances issued	Article 9 of Directive 2003/87/EC
Percentages of allowances to be auctioned	Article 10a(5a) of Directive 2003/87/EC
CBAM free allowance reduction factors	Article 10a(1a) of Directive 2003/87/EC
Average auction price (EUR)	ICAP carbon market factsheet
Average secondary market price (EUR)	ICAP carbon market factsheet
Price forecasts	Reuters price forecasts (up to 2025) <sup>59</sup> ; Energy Monitor forecast for 2026-2030 <sup>60</sup>
Historical price and supply curves	EEX

### Potential Distortions Considered – Long List

The following are potential distortions created or addressed by the system of free allocation that were on our initial “long list” but our analysis concluded did not merit a full discussion.

- Distortions from favouring production over non-production (e.g. recycling) – the concern here is that free allocation could potentially create a distortion in favour of production as opposed to recycling or other forms of re-use.
- Distortions in favour of consumption of products in sectors receiving free allocation versus auctioned-sector products.
- Downstream distortions - as a second-round consequence of distortions in favour of higher-emitting products and technologies.
- Distortions between Member States – to the extent that distortions exist between sectors, and sectors are unevenly distributed across the EU.

<sup>59</sup> See [\[link\]](#)

<sup>60</sup> Energy Monitor (2023) “Carbon markets forecast to weather short-term price dips” [\[link\]](#).

## Free allocation tables

We present below an excerpt from Commission Decision 2021/C 302/01 on the free allocation for each installation for the period 2021-2025.<sup>61</sup>

Figure 6: Example of national allocation tables

### National allocation table for the period 2021-2025 pursuant to Article 10a of Directive 2003/87/EC

#### Member State: Belgium

Installation ID	Installation ID (Union registry)	Installation name	Operator name	Quantity to be allocated					Quantity to be allocated by installation
				2021	2022	2023	2024	2025	
BE000000000000760	760	Rain Carbon bvba	Rain Carbon bvba	88 287	88 287	88 287	88 287	88 287	441 435
BE000000000205511	205511	ARLANXEO Belgium nv	ARLANXEO Belgium nv	93 127	93 127	93 127	93 127	93 127	465 635
BE000000000000313	313	Taminco BVBA	Taminco BVBA	42 278	42 278	42 278	42 278	42 278	211 390
BE000000213010401	213010401	KRONOS EUROPE	KRONOS EUROPE S.A./N.V.	109 300	109 300	109 300	109 300	109 300	546 500
BE000000000000124	124	BP Chembel NV	BP Chembel NV	371 279	371 279	371 279	371 279	371 279	1 856 395

<sup>61</sup> See [\[link\]](#)





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This in-depth analysis for the Committee on Budgetary Control concerns the system used for the free allocation of emission allowances within the EU ETS. It reviews recent press criticisms of the free allocation system, reviews the transparency of the system and assesses the risk it creates unintended distortions. It estimates the cost of free allocation to the EU budget and how these proceeds might be spent. It concludes with three policy recommendations.

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