POLICY BRIEF ON BEHALF OF WWF

## EU ETS Carbon Leakage:

# How to Remediate Disincentives within the Current System of Free Allocation

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Forum Ökologisch-Soziale Marktwirtschaft

On behalf of

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## Imprint

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## About FÖS

Forum Ökologisch-Soziale Marktwirtschaft (FÖS) has been researching and disseminating information about the potential and benefits of environmental fiscal reform (EFR), the application of market-based instruments (MBI) and the removal of environmentally harmful subsidies for more than twenty years. FÖS is widely recognized among policy-makers, NGOs, companies, and trade unions for its expertise in fiscal instruments, environmental and climate policy and foremost for its capacity to evaluate and develop policy proposals in the field of EFR. Over the last years FÖS has led and participated in numerous research projects and has a proven track record in the development, analysis, and evaluation of environmental policies

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# EU ETS Carbon Leakage: How to Remediate Disincentives within the Current System of Free Allocation

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## Executive Summary

The free allocation of allowances in the European Union Emissions Trading System (EU ETS) creates **significant disincentives** and prevents price signals to be passed on to most industrial installations. To address these shortcomings and ensure that the EU reaches its goal to become climate-neutral (net zero greenhouse gas emissions) by 2050, the European Commission proposed a revision of the EU ETS in its Fit for 55 package presented on July 14, 2021 (European Commission 2021a).

In this policy brief, we **evaluate the proposal to deal with carbon leakage by the European Commission** and point out **suggestions to counterbalance disincentives** in free allocation.

While the proposed carbon border adjustment mechanism (CBAM) would gradually reduce free allocation, many ETS sectors continue to benefit from free allocation during the introduction phase, resulting in a **continuation of free allocation**. We assume that free allocation will remain for most industrial installations in the EU ETS over the next years – and focus on the question on **how to reduce disincentives from free allocation and to accelerate the transformation of industry towards climate neutrality in the short and middle run**.

In summary, the **key points we propose to counterbalance disincentives** of the European Commission proposal and to provide sufficient incentives for industry to make **climate investments** in the short run are:

i. **EU COM proposes** to implement a Carbon Border Adjustment Mechanism (CBAM) where free allocation is completely phased out in 2035
   - **Our suggestion:** Removal of the overlap between CBAM and free allocation, while including all high emitting sectors in CBAM.

ii. **EU COM proposes** that companies must implement measures recommended in the energy audit report if they are economically feasible to obtain free allowances.
   - **Our suggestion:** Obligation to implement measures identified in an environmental/energy management system that is additionally supplemented with information on energy consumption related GHG emissions.

iii. **EU COM** defines economically feasibility through a pay-back time for the relevant investments not exceeding five years.
   - **Our suggestion:** The economic feasibility of investments should be calculated using the net present value method.

iv. **EU COM proposes** to reduce free allocation by 25% if the recommended measures are not implemented.
   - **Our suggestion:** Free allocations should be reduced substantially by 80%, if identified measures are not implemented.

v. **EU COM proposes** to review the benchmark definitions to ensure equal treatment of installations independently of the technology used.
   - **Our suggestion:** Adjustment of benchmark definitions to provide incentives for green technology by granting additional free allowances to zero-carbon installations and exempting them from the cross-sectoral correction factor.

vi. **EU COM** proposes to increase the maximum benchmark update rates from 1,6% to 2,5% as of 2026
   - **Our suggestion:** Increasing the maximum benchmark update rate to 2,5% immediately

The suggestions for improvement do not yet ensure a full decarbonization of the ETS industries. In the short term, the suggestions put installations on a path to decarbonization and ensure more substantial climate investments, but in the medium term, further policies are needed to reach climate neutrality. These include **a comprehensive policy mix** including a **robust CO2 price signal** that is not weakened by free allocation as well as additional policy measures that incentive more comprehensive **climate investments (e.g., CCfD)**. However, the suggested measures in combination may tackle existing disincentives of free allocation.

**Table 1: Overview EU COM proposal and suggestions for improvement**

| EU COM proposal | Suggestions |
|---|---|
| i. **CBAM** with free allocation **phased out in 2035** | - **Removal of the overlap** between CBAM and free allocation<br>- Including all **high emitting sectors** in CBAM |
| ii. Obligation to implement economically feasible **measures identified in energy audit report** | - **Extension** of environmental/energy management system with information on **GHG emissions** |
| iii. Five years maximum **pay-back time** for the obligatory measures | - Application of **net present value method** instead of pay-back time |
| iv. **Reduction** of free allocation by **25%** if the obligatory measures are not implemented | - **Reduction** of free allocation by **80%** if the obligatory measures are not implemented |
| v. **Review of benchmark** definitions to ensure equal treatment of installations | - **Adjustment of benchmark** definitions to provide incentives for using **green technology**<br>- **Additional free allowances** to zero-carbon installations<br>- Exemption from the **cross-sectoral correction factor** |
| vi. **Increase maximum benchmark update rate** to 2,5% as of **2026** | - Increasing the maximum benchmark update rate to 2,5% **immediately** |

Source: own depiction

# 1 The problem with free allocation

The European Union Emissions Trading System (EU ETS) is **one of the major instruments to meet the EU's climate target** and is set up to find the most cost-effective ways of reducing greenhouse gas emissions. Most industrial installations in the EU ETS are seen to be at significant risk of carbon leakage and thus **receive a share of their allowances for free**.

Free allocation, however, **distorts price signals** and reduces incentives for climate-friendly investments. Thus, the EU ETS **fails to spur investments** to accelerate the transformation of industry towards climate neutrality (DIW 2016).

In the coming years, under the Commission's proposal, this situation will not change significantly. The **greatest volume of free allocation (in € terms) will be distributed over the next decade**, despite the linear reduction of allowances and the continuous revisions of product benchmarks (Elkerbout 2022).

To ensure that the EU ETS passes on the full price signal to the industry and thus accelerates the decarbonization in the EU ETS sectors, **free allocation would have to be abandoned** and all emission allowances be fully auctioned. However, there is no majority for this in the European Parliament nor in the Council. Therefore, the existing system of the EU ETS must **be adapted and further developed** to reduce the present disincentives and provide incentives for the $CO_2$-intensive industries to further decarbonize their processes.

The revised proposal includes a **phase out of free allocation by 2035** as a carbon border adjustment mechanism (CBAM) is gradually introduced (European Commission 2021). However, to meet the climate targets in the industry, we need investments in climate protection measures and in new installations as soon as possible. The end of free allocation by 2035 is too late.

In this report, we focus on the question on **how to tackle disincentives from free allocation and to accelerate the transformation of industry towards climate neutrality in the short run.** Considering the proposal by the European Commission, we point out suggestions for improvement.

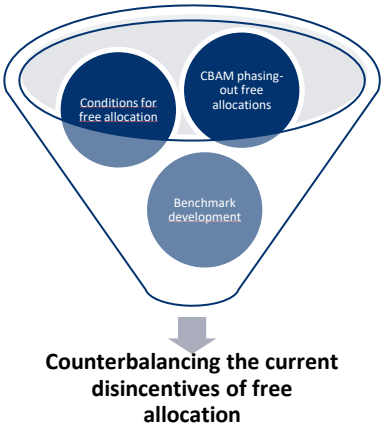
# 2 Three measures for a better carbon pricing signal in the industry

If free allocation remains and is amended according to the EU COM proposal, three measures should be implemented to counterbalance existing disincentives:

(Carbon Market Watch 2021)

1. An earlier and more comprehensive CBAM phasing-out free allocation
2. Tighter conditions for free allocation
3. A more stringent benchmark approach

**Figure 1: Three measures to counterbalance current disincentives**




Source: own depiction

These three measures complement each other:

1. A more comprehensive CBAM restores the price signal in affected sectors.
2. Tighter conditions for free allocation provide incentives to implement measures for greenhouse gas reductions in the absence of a price signal.
3. An adjustment of the current benchmarks is needed to avoid low carbon processes to drop out of the ETS boundaries and put zero-carbon producers at a competitive disadvantage.

The European Commission considers the three measures in its EU ETS proposal. In the next chapters, we evaluate the proposal and point out suggestions for improvement.

## 2.1 An earlier and more comprehensive CBAM phasing-out of free allocation

### 2.1.1 EU COM proposal

The European Commission proposes to implement a Carbon Border Adjustment Mechanism (CBAM) as a **measure to mitigate carbon leakage risks.**[1] Sectors covered by the

[1] For an overview of mechanism of proposed CBAM, see (Carbon Market Watch 2021; UBA 2021)

CBAM should no longer receive free allocation. For the first ten years of operation, a transitional period is planned with a gradual reduction of free allocation (EU COM Proposal Article 3h (12b)).

During the transitional period, a **CBAM factor reduces the free allocation** from 100% in the year the CBAM is introduced (2025), 90% in 2026 and reduces by 10% each year to reach 0% in the 10th year (2035) (EU COM Proposal Article 3h (12b)).

Following this proposal, the **free allocation is thus completely phased out in 2035** – and during the ten-year-transitional period, the affected sectors benefit from the CBAM as well as the (reduced level of) free allowances.

#### 2.1.2 Evaluation and suggestions for improvement

**Table 2: CBAM: evaluation and suggestions for improvement**

| Evaluation | Suggestions for improvement |
|---|---|
| ▪ Implementation of CBAM **is important to phase out free allocation and increase the price incentive of EU ETS**<br>▪ The overlap between CBAM and free allowances is not necessary, but hinders transformation of industry sector<br>▪ In the EU COM proposal, **important sectors** such as hydrogen and plastics **are missing** | ▪ **Overlap between CBAM and free allowances should be removed**<br>▪ The CBAM must **include all high emitting sectors** (e.g., hydrogen and plastics) |

Source: own depiction

The proposed implementation of a CBAM is important to **phase out free allocation** and to **increase the EU ETS price signal**. The auctioning of allowances further creates revenues for the EU, which can be used to support investments in climate-friendly plants in Europe. Free allowances, in comparison, create income for companies, which they can use freely – without need to invest in climate protection.

However, the EU COM proposal entails **two shortcomings** in the context of free allocation:

- **The overlap between CBAM and free allowances is counterproductive:** Free allowances create no additional incentives for the EU ETS industry to reduce their emissions. This overlap further delays the necessary transformation of the industry sector. Furthermore, the Impact Assessment attached to the EU COM proposal (European Commission 2021c) shows that there is no substantial risk of carbon leakage in the CBAM sectors if free allowances are phased out at the moment the CBAM is implemented.
  - ➢ Therefore, we propose to remove the overlap between CBAM and free allowances. Free allowances should be phased out as soon as the CBAM is implemented.
- **The EU COM proposes to include a limited number of sectors in the CBAM with the highest carbon leakage risk:** iron and steel, aluminum, fertilizers, and cement. Other, high emitting sectors (e.g., hydrogen and plastics) are missing – though the CBAM should represent an important instrument for EU climate policy.
  - ➢ Therefore, we propose to include all high emitting sectors in the CBAM.

## 2.2 Tighter conditions for free allocations

#### 2.2.1 EU COM proposal

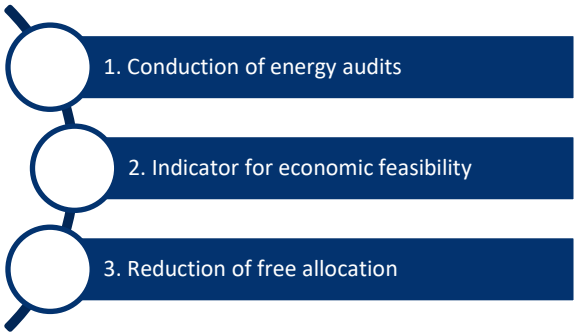
The EU Commission proposes to introduce additional conditions for receiving free allowances (EU COM proposal Article 3h(12a)).

- These conditions are limited to installations covered by the **obligation to conduct an energy audit** under Article 8(4) of Directive 2012/27/EU of the European Parliament and Council.
- From 2026 onwards, free allocation shall only be granted fully to installations if the recommendations of the audit report are implemented. The recommended measures are only obligatory if the pay-back time for the relevant investments does not exceed five years and the costs of those investments are proportionate.
- If the recommendations are not implemented, free allocation shall be reduced by 25%.
- Free allocation shall not be reduced if an operator demonstrates that it has implemented other measures which lead to greenhouse gas emission reductions equivalent to those recommended by the audit report (EU COM Proposal Article 3h(12a)).

#### 2.2.2 Evaluation and suggestions for improvement

Tighter conditions for free allocation are important to incentive investments in climate protection measures. Nevertheless, the Commission proposal falls short regarding three aspects:

**Figure 2: Free allocation conditions to be improved**




Source: own depiction

### 1. Improving energy audits

The European Commission proposes that the recommendations of the energy audit must be implemented as the condition for free allocation.

**Table 3: Improving energy audits: evaluation and suggestions for improvement**

| Evaluation | Suggestions for Improvement |
|---|---|
| ▪ The focus of the common norms (ISO 50001, EN 16247-1) lies on total energy efficiency - and **not GHG reduction** - so that the use of renewable energy has no significance<br>➢ To transform industry towards climate neutrality, a broader focus on decarbonization measures is needed | ▪ **In the short term:** The condition should be to operate a certified environmental/energy management system. In addition, a so-called greenhouse gas extension table (**GHG extension table**) is required, which is also regularly audited by an accredited energy auditor<br>▪ **Next step:** Focus on decarbonization/climate-neutrality plans (see proposals by Peter Liese and Michael Bloss)<br>➢ Promising approach to shift focus to decarbonization measures<br>➢ Only possible in medium-term – as the establishment of standardization processes/employees probably takes several years |

Source: own depiction

**Evaluation:**

According to Directive 2012/27/EU, energy audits should consider relevant European or international standards, such as EN ISO 50001 (Energy Management Systems), or EN 16247-1 (Energy Audits).

An energy audit according to DIN EN 16247-1 is carried out by an auditor to obtain information about the current energy consumption profile of a company.[2] It is suitable for systematically uncovering and evaluating the potential for energy savings – but does not explicitly support the continuous and sustainable improvement process like a DIN EN ISO 50001 energy management system. A DIN EN ISO 50001 energy management system provides a framework of requirements for establishing, managing, and improving energy efficiency and consumptions. It does not only identify savings potentials, but also implements them step by step (adelphi/Hochschule Niederrhein 2019a).

According to Article 8 of the EU Energy Efficiency Directive (EED) energy audits are mandatory for large companies in Europe since 2015. Linking the conditions for free allocations to energy audits has therefore the advantage that the system of energy audits is already widespread and well developed.

The problem is that those common norms focus on improving final energy efficiency – and not controlling primary energy consumption. Therefore, these energy audits provide little incentive for climate mitigation. Their focus lies on improving the current production methods while the use of renewable energy is not sufficiently promoted within the frameworks of DIN EN 16247-1 and DIN EN ISO 50001 (Nissen 2021).

To transform industry in the EU ETS sectors towards climate neutrality, a broader focus on incentives to decarbonize production processes is needed (see Figure 3).

**To provide incentives for the decarbonization of EU ETS sectors, the conditions for free allocation should therefore not only focus on the implementation of recommendations of existing audit reports.**

[2] For a comprehensive overview of the energy audit report process according to the guidelines of DIN EN 166247 - 1, see (BAFA 2020)

**Figure 3: Requirements for the transformation**

**Requirements for the transformation in the energy-intensive industry:**

Efficiency improvements play an important role in the decarbonisation of the energy-intensive industry. To reach the climate goals, the efficiency potential in industry must be further exploited by using the "best available technologies" in cross-sectional technologies such as drives, pumps or motors (Agora Energiewende/Wuppertal Institut 2019; BCG/BDI 2021).

However, massive changes are necessary in energy-intensive industry to reduce process and energy emission. In steel production in Germany, one third of the blast furnaces must be replaced by direct reduction plants by 2030 (BCG/BDI 2021).

In basic chemicals, ammonia and methanol production must be converted to green hydrogen and all fossil raw materials must be replaced by synthetic or bionic alternatives in the long term (BCG/BDI 2021). Depending on the specific decarbonisation path, the sugar industry must convert its plant fleet to biomass or electric boilers or upgrade existing biogas plants (FutureCamp/VdZ 2020).

In addition, all industrial (process) heat production must be converted to renewable energies – if possible (BCG/BDI 2021).

Source: own depiction

**Suggestions for improvement:**

- **In the short term: Including decarbonization into energy audits**

In the short term, we suggest that the existing energy management system and energy audit standards should be further developed to broaden the focus to decarbonization measures. In specific terms, the common norms should be supplemented with information on energy consumption related GHG emissions to extend the focus of energy audits from energy efficiency improvements to GHG reductions and thus ensure that substantial contributions are made. To do so, the implementation of a so-called greenhouse gas extension table (GHG extension table) should be required. This table should include information about the $CO_2$ emissions of a certain energy consuming process – as well as possible climate protection measures (Nissen 2021)[3]. The possible climate protection measures should be assessed for their economic viability. The verification of the completed GHG extension table should also be carried out by accredited energy auditors.

An amendment of the existing energy management systems with a GHG extension table does not have to be accompanied by a revision of any ISO standards. It is feasible to include the structure and needed information of the GHG extension table in the Directive 2003/87/EC. This will allow a **timely implementation**, as such an extension does not depend on a revision of ISO standards.

- **In the medium term: decarbonization plans**

As a next step, the focus might shift completely to decarbonization/ climate-neutrality plans – as proposed by Peter Liese[4] and Michael Bloss[5] (Bloss/et al. 2022; Liese 2022)

[3] The extension table in Nissen (2021) aims to extend the focus of ISO 50001 to renewable energies, to set $CO_2$ target values, and to report investment amounts for economically feasible measures. The extension table includes among other the following information: climate protection measures, energy savings per year [MWh/a], $CO_2$ reduction per year [t/a], investment scope, net present value of a measure

[4] According to Peter Liese (shadow rapporteur), a climate-neutrality plan should set out:

(a) measures and investments to reach climate-neutrality by 2050 at installation or company-level;

(b) intermediate targets and milestones to measure, by 31 December 2025 and by 31 December of each fifth year thereafter until 2050, progress made towards reaching climate-neutrality as set out in point (a);

(c) an estimate of the impact of each of the measures and investments referred to in point (a) as regards the reduction of greenhouse gas emissions

[5] According to Michael Bloss (shadow rapporteur), a Decarbonisation and Zero Pollution Action Plan should contain the following elements:

(a) targets, measures and investments to reduce scope 1 and 2 greenhouse gas emissions of the installation to zero by 2040

(b) measures and investments so taken to ensure full compliance with the WHO air quality guidelines

(c) measures taken so to ensure the installation complies with the strict BAT Associated Energy Efficiency Levels (BAEELs) and BAT associated emission levels set in Best Available Techniques Reference Documents, where a

**Figure 4: Proposals by Peter Liese and Michael Bloss**

**Proposal by Peter Liese:**

Peter Liese proposes a bonus-malus system for determining the share of free allocation. For installations whose greenhouse gas emissions are above the 10% most efficient installations in a sector or subsector in the EU in the years 2021 and 2022 for the relevant benchmark values, the number of free allowances shall be reduced by 25 % if no climate-neutrality plan has been established or if the milestones and targets in the installations' climate-neutrality plan have not attained. Conversely, installations whose greenhouse gas emissions are below the 10 % most efficient installations should receive an incentive in form of an additional free allocation (10% of the applicable benchmark value shall be given to those installations).

**Proposal by Michael Bloss:**

Michael Bloss proposes that by 30th June 2024 operators shall establish a Decarbonisation and Zero Pollution Action Plan for each of their installation for activities within the scope of the EU ETS. This plan shall be consistent with the objective of limiting global warming to under the 1,5-degree compared to pre-industrial levels, and to achieve zero-pollution. He further defines certain elements this plan would have to contain (see footnote 2). To implement those Decarbonization and Zero Pollution Actions Plans, the Commission shall set minimal content and format of the Plan (key performance indicators, milestones, targets, etc.) following a multi stakeholder consultation process.

Source: own depiction

Peter Liese's proposal leads to additional free allocation and would provide wrong incentives. The quantity of free allowances must be reduced, not increased. Furthermore, a bonus for installations whose greenhouse gas emissions are above the 10% most efficient installations in a sector or subsector would be a benefit for many installations without incentivizing further greenhouse gas reductions. If a bonus is implemented – this bonus should be restricted to zero-emission installations (see chapter 2.3.2). Still – his recommended focus on climate-neutrality plans instead of only energy efficiency methods is the right way forward.

Michael Bloss' proposed Decarbonization and Zero Pollution Action Plan shall contain targets, measures and investments to reduce greenhouse gas emissions of the installation to zero by 2040. Peter Liese's climate-neutrality plans, in comparison, shall contain measures and investments to reach climate-neutrality by 2050 at installation or company-level. Furthermore, the proposed Decarbonization and Zero Pollution Action Plan should be consistent with the Union's circular economy objectives – and safeguard the good chemical and ecologic status of EU waters. These aspects make the proposed Decarbonization and Zero Pollution Action Plan more ambitious than the proposed climate-neutrality plans.

This focus shift on decarbonization or climate-neutrality plans would incentivize investments in the decarbonization of EU ETS sectors, as such plans would not just identify measures that aim to improve the energy efficiency of an installation. However, the implementation of such a new system would take time. Currently, there is no standardized norm for climate-neutrality plans like the current DIN standards for energy management systems. On this basis, it would be difficult to derive a mandatory implementation of decarbonization measures for receiving free allocation. The establishment of standardized processes and the training of personnel (comparable to energy auditors) would probably take several years.

## 2. "Net present value" as an indicator for economic feasibility of investments

The European Commission proposes that investments should be interpreted as economically feasible if the payback time does not exceed five years and the costs of those investments are proportionate.

differentiation is made those shall refer to "new plant" standards;

(d) evidence on how the Plan is safeguarding the good chemical and ecological status of EU waters;

(e) evidence on how the Plan is consistent with the Union's circular economy objectives and the relevant action plan and the toxic free environment goal

(f) measures and investments ensuring anticipation of change through social dialogue, in particular through the re-skilling and up-skilling of potentially affected workers. Wherever possible, measures should be supported by Just Transition agreements negotiated between social partners, and where appropriate public authorities.

**Table 4: Economic feasibility of investments: evaluation and suggestions for improvement**

| Evaluation | Suggestions for Improvement |
|---|---|
| ▪ Pay-back time calculation **only takes into account cash flows that occur during the amortization period**. All other related cash flows, including payments that occur after the amortization period, are thus irrelevant<br>▪ This incompleteness has a **particular impact on long-term investment projects**, which generally include investments in energy efficiency or the use of renewable energies | ▪ **Net present value method** should be used as it also captures cash flows that occur after the amortization period of an investment<br>▪ The economic feasibility should be determined using the **European standard EN 17463**, Valuation of energy related investments (ValERI) (see carbon leakage regulation for Germany's national ETS (BECV)) |

Source: own depiction

**Evaluation:**

- The **pay-back time is not a good indicator** for the economic feasibility of energy efficiency investments. To determine the amortization date of an investment, the pay-back time calculation only considers cash flows that occur during the amortization period. All other related cash flows, including payments and especially profits in the form of energy savings through implemented energy efficiency measures that occur after the amortization period, are thus irrelevant (adelphi/Hochschule Niederrhein 2019b).

  This negatively impacts long-term investments, such as in energy efficiency or the use of renewable energies. The amortization method is thus unsuitable as a basis for decision-making on appropriate investments and should not be a legal requirement (adelphi/Hochschule Niederrhein 2019b).
- Furthermore, the **statement that the investment payments must be "proportionate" is superfluous.** If an investment shows a payback period of five years and thus also a positive net present value, then the investment payment is always proportionate (to the success of the investment) – an investment would only be disproportionality if the net present value would be negative. So if the economic feasibility of investment is calculated using the pay-back calculation or the net present value method, the criterion of "proportionality" is no longer needed.

**Suggestions for improvement:**

The economic feasibility of investments should be calculated using the **net present value method** instead of the incomplete pay-back calculation. In the case of an investment financed with equity capital, the net present value represents the value of the returns that exceed the underlying alternative investment. In the case of debt-financed measures, the net present value is to be understood as the surplus after the capital costs (interest and repayment of the loan) have been paid. Any net present value "> 0" indicates that the given investment generates an added value (adelphi/Hochschule Niederrhein 2019a).

Referring to the carbon leakage regulation of the German national emissions trading scheme (BECV), the economic feasibility should be determined based on the European standard EN 17463, Valuation of energy related investments (ValERI) (see § 11 (2) BECV) (Bundesgesetzblatt 2021).

### 3. Higher reduction rate as a penalty

The European Commission proposes that free allocation shall be reduced by 25% if the recommendations are not implemented.

**Table 5: Reduction rate: evaluation and suggestions for improvement**

| Evaluation | Suggestions for Improvement |
|---|---|
| ▪ Reduction rate of 25% **is too low to provide sufficient incentive** for firms to invest in climate-friendly measures | ▪ Free allocation should be **reduced by 80%** instead of 25% - if measures identified in the audit report are not implemented<br>➢ see carbon leakage regulation of Germany's national ETS (BECV)<br>➢ **reason:** better incentives to ensure that investments represent the precondition for free allocation |

Source: own depiction

**Evaluation:**

A reduction of free allocation by 25% **is too low to provide a sufficient incentive** for firms to make climate investments. The implementation of the audit recommendations would be perceived as an "add-on" to receive further free allocation rather than **a basic precondition** for free allocation.

**Suggestions for improvement:**

Following the German BECV, the share of free allocation should be reduced by 80% instead of 25% if measures identified in the audit report are not implemented. This is necessary to ensure that investments represent a real precondition for free allocation. Otherwise, the disincentives of free allocation remain prevalent, thus disrupting prices

signals and reducing incentives for climate-friendly investments.

## 2.3 A more stringent benchmark approach

### 2.3.1 EU COM proposal

The European Commission further acknowledges that the current system of product-specific benchmarks in the EU ETS provides a **disincentive for the deployment of breakthrough technologies** in energy-intensive industries.[6] The barriers that companies face when investing in low-carbon technologies is addressed by modifying the scope and benchmark definitions.

The European Commission therefore proposes to **review the benchmark definitions to ensure equal treatment of installations** independently of the technology used. The review of benchmark definitions aims to avoid low-carbon processes to drop out of the EU ETS boundaries and thus put zero-carbon producers at a competitive disadvantage. This approach is considered to maintain innovative installations in the EU ETS which in turn results in a reduction of benchmark values (EU COM Proposal explanatory memorandum p. 17).

The revised EU ETS proposal further includes an increase of **the maximum benchmark update rates from 1,6% to 2,5%** as of 2026 to better reflect the actual technological development in the majority of EU ETS sectors and avoid an excess supply of free allowances. This adjustment is considered to deliver a fairer and more transparent distribution of free allowances than a higher cut for all EU ETS sectors through the application of the cross-sectoral correction factor (EU COM Proposal Article Abs. 31).

### 2.3.2 Evaluation and suggestions for improvement

**1. Reviewing benchmark definitions**

**Evaluation**

The proposal of the European Commission to review the benchmark definitions is a first step to tackle the competitive disadvantage that some zero-carbon installations face.

**Table 6: Reviewing benchmark definitions: evaluation and suggestions for improvement**

| Evaluation | Suggestions for Improvement |
|---|---|
| ▪ The COM proposal to review the benchmark definition is a first step to **avoid low-carbon processes to drop out of the ETS boundaries** and thus put zero-carbon producers at a competitive disadvantage<br>▪ The COM proposal is **rather vague** – neither does it specify the **scope and timing** of a revision, nor does it mention any **specific adjustments** to benchmark definitions | ▪ We suggest taking the benchmark definition adjustment a step further and **provide incentives for using green technology** across all installations and thus shifting resources towards zero-carbon production<br>▪ One option: zero-carbon benchmarks<br>➢ Installations that produce zero-carbon goods (i.e., green steel) receive **additional free allowances** and are **exempted from the cross-sectional correction factor**<br>➢ The current cap of free allowances is not increased but rather **redistributed towards zero-carbon installations** |

Source: own depiction

Producers that want to switch to more efficient or carbon-free production processes face the problem that dropping out of the EU ETS boundaries results in a loss of revenues from free allocation. This effect is particularly significant for installations that already use efficient technologies that are below a benchmark. These producers receive more free allocation than they emit and sell additional allowances profitably on the market. If such producers lose additional revenues from free allocation, the costs of transforming their production processes increases and a barrier to investments in zero-carbon technologies occurs.

Installations that switch to low or zero-carbon technologies face the three following potential obstacles (EU COM Impact Assessment Report 4/4, p. 14/15) (European Commission 2021b):

➢ **Installations falling out of the scope of the EU ETS** by for example completely decarbonizing their production and thus no longer emitting

[6] Product-specific benchmarks are one factor determining the level of free allocation granted to installations. 54 ex-ante benchmarks reflect the average $CO_2$ emissions of the most efficient industrial installations in the ETS for different sectors. The 10% most efficient installations in a sector receive free allowances while the remaining installations must purchase allowances for their emissions (EU COM Impact Assessment Report 4/4, p. 10).

GHGs or falling below the thermal capacity threshold of 20 MW

- **Installations falling out of the system boundary definitions of a benchmark** because a few benchmark definitions and boundaries do not encompass less carbon-intensive production routes
- **Not all benchmarks with exchangeability of fuel and electricity correspond to sectors exposed to a genuine risk of carbon leakage** due to indirect emission costs, and the general limited maximum aid intensity for indirect cost compensation of 75%

**Figure 5: Examples of disincentives by benchmark definitions**

**Hydrogen**
An installation that switches its hydrogen production from a conventional natural gas-based process to an electrolysis process would fall out of the EU ETS and thus not receive free allowances. If an efficient fossil-fuel-based installation, for instance, already operates below the benchmark, additional revenues from selling surplus allowances would be lost. These forgone revenues would come on top of investment costs and thus hinder installations to switch to zero-carbon production.

**Steel**
The EU ETS defines six different benchmarks for steelmaking, including sintered ore, coke, hot metal, and Electric Arc Furnace (EAF) carbon steel. In comparison to installations with conventional blast furnaces production processes to which the coke and hot metal benchmarks apply, installations with EAF processes receive fewer free allowances as their processes are less-carbon intensive. A green steel producer would feasibly drop out of the EU ETS scope in total.

Source: own depiction, based on (Elkerbout 2022)

Overall, the current efficiency-based distribution of free allocation puts **climate neutral producers at a competitive disadvantage** and acts as a **barrier for companies to switch to low- or zero-carbon techniques** in some EU ETS sectors. Consequently, reviewing the current benchmark definitions is a necessary step to ensure an equal treatment of installations independently of the technology used. However, the proposal of the European Commission is rather vague - neither does it specify the scope and timing of a revision, nor does it mention any specific adjustments to the benchmark definitions.

### Suggestion for improvement

We suggest taking the adjustment of the benchmark definitions a step further and provide an additional incentive for using green technology across all installations. The number of free allocations should not be increased, but rather redistributed towards zero-carbon producers.

One option to actively support green technologies is the application of zero-carbon benchmarks developed by CEPS (Elkerbout 2022).

The zero-carbon benchmark approach proposes that installations that produce zero-carbon goods (i.e., green steel) receive **additional free allowances**. The number of additional allowances is determined by a **factor** that is multiplied to a benchmark value that likewise applies to other installations that produce the same good. For example, if an installation receives one free allowance per ton of a specific product, a zero-carbon producer may receive, for instance, 1.5 allowances per ton of climate-neutral product. Furthermore, climate neutral producers could be **exempted from** the application of the **cross-sectional correction factor** to ensure that the **incentive to switch to zero-carbon processes** remains while the total volume of free allowances will not be exceeded. Thus, **no additional free allowances are needed**, as the existing cap of free allowances is not increased but rather **redistributed towards zero-carbon installations** to explicitly benefit climate neutral producers and their competitiveness (for example see Figure 6).

Such a system of zero-carbon benchmarks could be applied to each industry sector. However, the following drawbacks need to be considered, when applying a such approach:

- **Crowding-out** of smaller sectors with lower technological uptake by larger sectors with higher technological uptakes if the application of the CSCF results in the most efficient installation in a sector that does not/cannot yet produce zero-carbon products no longer receiving free allocation (Elkerbout 2022).
- **Coherence** with other EU and national programs and the circumvention of dual funding (i.e., CCfD, Innovation Fund) must be assessed and ensured (Green u. a. 2021).
- **Time divergence** between high up-front costs that characterize novel abatement technology and the retroactively granted free allocation. If the diffusion of abatement technology is impeded by high upfront costs, retroactively rewarded free allocation does not primarily tackle the problem

of highly needed funding of transformation investments. Planning reliability by including future revenues from free allocation in a financing plan is further hampered if free allocation will likely be cut in the future (see Chapter 2.1).

**Figure 6: Example of zero-carbon benchmark: Salzgitter AG by 2033**

Salzgitter AG is **the 2nd largest steel producer in Germany** and is accountable for around 1% of German carbon emissions (8 Mio. t $CO_2e$).

From 2025 to 2033, Salzgitter AG plans to replace the existing blast furnaces with direct reduction plants and electric furnaces, thus **switching from coke to hydrogen**:

- By 2033, the complete switch to green steel production is planned, resulting in a $CO_2$-reduction of 95%
- The investment volume is estimated at around 3-4 Bn.€

| If current coke benchmark applies | |
|---|---|
| Emission-free steel (t) | 6.000.000 |
| Benchmark value | 0,271 |
| Number of free allowances | 1.302.000 |
| ETS Price (€) | 90 |
| Value free allocation (€) | 117.180.000 |
| Covered investment costs (4 Bn. €) | 2,93% |

Zero-carbon Benchmarks →

| If uniform higher hot metal benchmark applies, including a multiplication factor of 1.5 for zero-carbon production | |
|---|---|
| Emission-free steel (t) | 6.000.000 |
| Benchmark value | 2,576 |
| Number of free allowances | 15.456.000 |
| ETS Price (€) | 90 |
| Value free allocation (€) | 1.391.040.000 |
| Covered investment costs (4 Bn. €) | **34,78%** |

➔ A zero-carbon benchmark with a multiplication factor of 1.5 would **cover over 1/3 of the estimated investment costs** by free allocation.
➔ This would equal a significant contribution and cause a great shift of resources towards zero-carbon production.

Source: own depiction, based on (Salzgitter AG 2022)

## Increasing the maximum benchmark update rate

### Evaluation

The COM proposal to increase the maximum benchmark update rate is **key to reflect the actual technological development** in the majority of EU ETS sectors and thus to avoid an excess supply of free allowances.

**Table 7: Increasing the maximum benchmark update rate: evaluation and suggestions for improvement**

| Evaluation | Suggestions for Improvement |
|---|---|
| ▪ The COM proposal to increase the maximum benchmark update rate is **key to reflect the actual technological development** in the majority of ETS sectors as the application of historical emission data of 2016/17 does not reflect the current emission reduction potentials of installations and thus cause an **excess supply** of free allowances | ▪ Increasing the maximum benchmark update rate to 2,5% should be **implemented immediately** and not postponed until 2026<br>▪ The benchmark update rate should be based on **more recent emission data** to reflect the emission reduction potentials of installations more realistically and thus avoid an excess supply of free allocation |
| ▪ To assess whether the proposed adjustment of the maximum benchmark update rate to 2.5% is sufficient to better reflect the actual emissions of the different sectors, further **extensive modeling is needed** | |

Source: own depiction

Since Phase 4 of the EU ETS (2021-2030), the benchmark values are reduced by an annual rate. For the first period between 2021 and 2025, the benchmark update rate corresponds to the actual average efficiency increase of the 10% most efficient installations of a sector from 2007/2008 to 2016/2017. For the second period between 2026 and 2030, the update rate represents the corresponding efficiency increase from 2007/08 to 2021/2022. However, the annual benchmark update rates range from a **minimum of 0,2%** for sectors with lower technological uptake to a **maximum of 1,6%** for sectors with higher technological uptake.

The specific bandwidth in which the annual update rates must lie prevents an abrupt change in benchmark values, but also results in rates that do **not adequately reflect the actual emission levels of several EU ETS sectors**. For instance, the maximum annual update rate of **1,6% has**

**already been applied to 31 out of 54 benchmarks** for the first period of Phase 4. In other words, the average emission factor of the 10% most efficient installations in 2016/2017 is already lower than the updated benchmarks for the period from 2021 to 2025 in several sectors (EU COM Impact Assessment Report 1/4, p.44).

As a result, installations that are not among the most efficient also **receive a substantial number of free allocations** through the application of historical emissions data from 2007/2008 to 2016/2017. Benchmarks for production processes with notable GHG savings over the last years therefore just decrease by a maximum of 1,6%, which results in an **excess supply of free allowances**.

An increase of the maximum annual update rates would thus better reflect the actual emissions of the majority of sectors, while also reducing the total number of free allocations. However, assessing whether the proposed adjustment of the maximum benchmark update rate to 2.5% is sufficient to better reflect the actual emissions of the different sectors, **further extensive modeling** is needed.

### Suggestions for improvement

We suggest increasing the **maximum update rate to 2,5% immediately** and not postpone the adjustment until 2026. The actual emissions saving potential of installations should be reflected as quickly as possible and inefficient installations should **not continue to receive free allowances for several more years**.

In general, the benchmark system should be further improved so that benchmark update rates are **based on more up-to-date emissions data**. This way, only the most efficient installations of a sector will receive free allowances and an oversupply of installations with free allowances will be avoided.

# 3 Conclusion

The free allocation of allowances within the EU ETS prevents the price signal to be fully passed on to most industrial installations. This significantly **lowers the incentives to invest in climate-friendly measures** – and hinders the EU ETS from realizing its full potential as one of EU's main policy instruments to meet the EU climate target Plan.

In this policy brief, we **evaluate the proposal by the European Commission** and point out **suggestions to improve the current system of free allocation**. If free allocation remains in the EU ETS and is amended according to the revised proposal, three measures should be implemented:

1. An earlier and more comprehensive CBAM phasing-out free allocation
2. Tighter conditions for free allocation
3. A more stringent benchmark approach

These three **measures complement each other**. An earlier and more comprehensive introduction of a **CBAM restores the prices signal** in affected sectors if free allocation is phased out simultaneously. **Tighter conditions** for free allocation further provide **incentives to invest in climate-friendlier processes** during the transition period with no sufficient EU ETS price. The more stringent benchmark approach is needed to **avoid low carbon processes to drop out of the ETS** and put zero-carbon producers at a competitive disadvantage.

Our suggestions for improvement do not yet ensure a full decarbonization of the ETS industries. This would further require an **abandonment of the free allocation** and **a comprehensive policy mix** including a robust $CO_2$ price signal. However, the suggested measures in combination may tackle existing disincentives of free allocation.

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