



The Phantom Leakage

INDUSTRY WINDFALL PROFITS FROM
EUROPE'S CARBON MARKET 2008-2019

Policy briefing, June 2021



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Executive summary

Since its inception, the EU Emission Trading System (EU ETS) has been giving free allowances to most energy-intensive industries deemed at risk of carbon leakage. “Carbon leakage” refers to a hypothetical situation where companies transfer production to countries with weaker climate policies in order to lower their costs.

This policy briefing interprets the findings of an updated study by CE Delft that shows how energy-intensive companies in 18 European countries and the United Kingdom have massively profited from their pollution as a result of the carbon leakage rules.

The free allocation has led to companies profiting from the EU carbon market by up to 50 billion euros between 2008-2019. Iron and steel, cement, petrochemicals and refineries sectors made the biggest gains, while most of the profits were generated in Germany, the United Kingdom, France, Italy and Spain.

These free pollution permits represent a market failure within the EU ETS since the external costs of the carbon pollution are not internalised. Companies have no incentive to clean up their act, and citizens carry the cost of climate impacts. At the same time, by handing out free pollution permits EU governments forgo auctioning revenues which could have been spent on further climate action.

The review of the EU ETS is an opportunity to set this straight.

To avoid windfall profits and drive innovation, the upcoming revision of the carbon market rules should:

- End free allocation of pollution permits for energy-intensive industries to incentivise climate action in this sector
- Ensure that 100% of the auctioning revenues are invested in further climate action, just transition and international climate finance
- Support energy-intensive industries by dedicating a share of auctioning revenues for climate friendly industrial innovation and assist the frontrunners that want to invest in clean breakthrough technologies.

Background

The European Union Emissions Trading System (EU ETS) has been in operation since 2005 and covers about 45% of the EU’s total greenhouse gas emissions, originating from approximately 11,000 stationary installations and intra-European flights. Since 2013, power companies have been obliged to buy all their emission allowances from governments at auctions. Energy-intensive industries, deemed at a risk of ‘carbon leakage’ receive most of their allowances for free. Carbon leakage refers to a hypothetical situation where companies move their production – and pollution – to countries with no or weaker climate regulations. Since 2008, about 200 billion euros¹ worth of emission allowances has been handed out for free to heavy industry under the EU ETS.

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Between 2021 and 2030, another 6.5 billion emission allowances are foreseen to be handed out for free. This could represent another free pollution subsidy of over 300 billion euros. The review of the EU ETS is an opportunity to set this straight.

Heavy industry has made up to 50 billion euros windfall profits from the EU ETS

In economic theory, a windfall² profit is the abnormal or unexpected gain which companies make based on unforeseen scenarios.

Energy-intensive companies participating in the EU ETS receive the vast majority of their emission allowances for free, enough to cover over 95% of their actual emissions. However, if a company doesn't need the allowances received for free, it can sell them on the carbon market for profit.

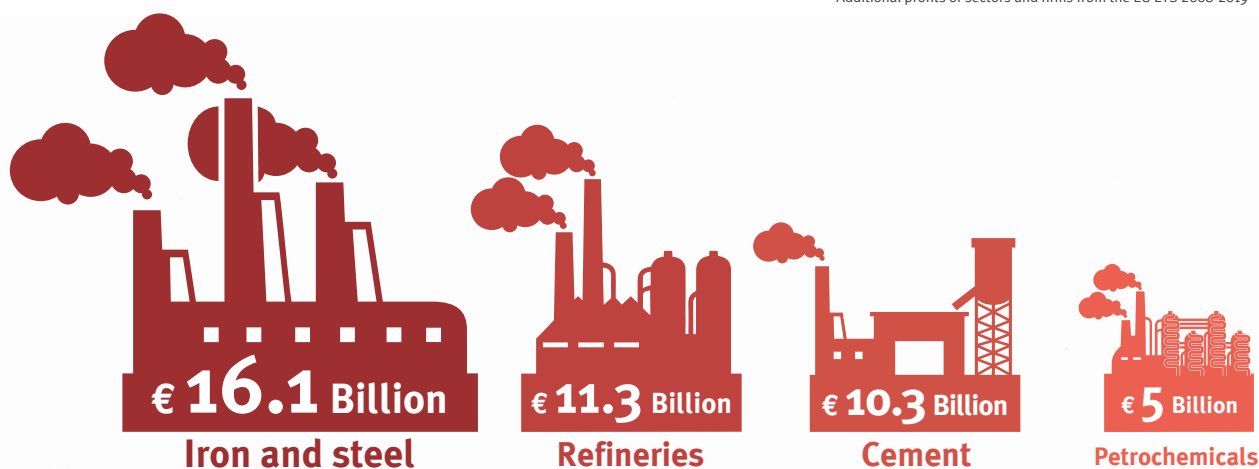
Free allowances therefore create an opportunity cost to the firm. According to economic theory, companies will take the market value of these allowances into account when making production decisions, and therefore the value of a freely obtained allowance tends to be reflected in the price of products. Passing through the value of the free allowances in product prices is a matter of rational economic behaviour. Moreover, if firms pass through the product price, the general price level of products in the same market will be increased – so even producers that did not intentionally pass through the costs are implicitly profiting from higher product prices. In conclusion, companies gain additional profits while their customers pay the price for freely obtained emission allowances.

The free allocation has led to companies profiting from the EU carbon market by up to 50 billion euros between 2008-2019. Iron and steel, cement, petrochemicals and refineries sectors made the biggest gains, while most of the profits were generated in Germany, the United Kingdom, France, Italy and Spain.

INDUSTRY WINDFALL PROFITS BY SECTOR IN MILLION EUR 2008-2019*

Sector	Windfall profits from surplus	Windfall profits from int. offsets	Windfall profits from average cost pass-through	Total windfall profits
Refineries	-1,800	630	12,460	11,300
Petrochemicals	600	320	4,010	5,000
Cement	3,000	610	6,630	10,300
Iron and steel	-710	850	16,000	16,100

* All figures (rounded) are taken from the CE Delft (2021) report: Additional profits of sectors and firms from the EU ETS 2008-2019

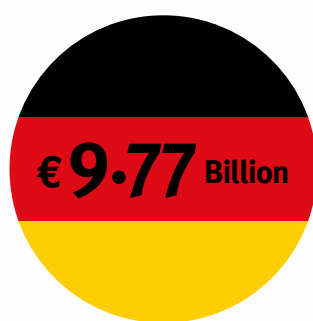


* All figures (rounded) are taken from the CE Delft (2021) report: Additional profits of sectors and firms from the EU ETS 2008-2019

INDUSTRY WINDFALL PROFITS PER COUNTRY IN MILLION EUR 2008-2019*

Country	Windfall profits from surplus	Windfall profits from int. offsets	Windfall profits from average cost pass-through	Total windfall profits
Austria	-743	80	1,790	1,130
Belgium	521	206	2,320	3,040
Czech Republic	24	76	1,350	1,450
Denmark	64	30	380	473
Finland	-114	55	984	924
France	87	250	5,150	5,490
Germany	-795	608	9,950	9,770
Greece	310	66	994	1,370
Hungary	-21	39	511	528
Ireland	154	23	188	365
Italy	240	332	5,055	5,630
The Netherlands	-41	194	2,730	2,880
Poland	-198	170	2,400	2,370
Portugal	188	56	731	975
Slovakia	206	65	1,202	1,470
Slovenia	4	5	73	82
Spain	1,360	317	3,804	5,480
Sweden	260	69	970	1,300
The United Kingdom	97	376	5,510	5,990
TOTAL	1,600	3,000	46,090	50,710

* All figures (rounded) are taken from the CE Delft (2021) report: Additional profits of sectors and firms from the EU ETS 2008-2019



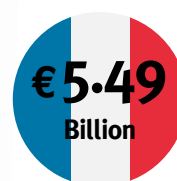
Germany



The United Kingdom



Italy



France



Spain

* All figures (rounded) are taken from the CE Delft (2021) report: Additional profits of sectors and firms from the EU ETS 2008-2019

How do windfall profits occur?

Under the EU ETS, windfall profits have been identified as profits generated in three ways: (i) Profits from surplus of free allowances; (ii) profits from using cheaper international offsets; (iii) profits from passing through (part of) the carbon costs to the customers.

Between 2008-2019, energy-intensive industries made windfall profits through these three ways as follows:

1. Surplus of free emission allowances

Between 2008 and 2012, industrial sectors received more emission allowances for free than they actually needed, and were able to sell their surplus for a profit on the market. This additional profit in that period amounted to more than 8 billion euros. Since 2013, the ETS rules slightly reduced the amount of freely allocated allowances to industries, and the overallocation of emission allowances, for certain sectors, ceased to generate such large profits. The shortage of free allowances was larger in the refinery sector while the overallocation is still very present in the cement sector today.

All in all, 37% of industrial installations did not receive enough allowances for free over the period 2008-2019 to cover their actual emissions. **This means that almost two thirds (63%) of industrial installations did not have to pay a single euro for their emission allowances over the period 2008-2019 and participated in the ETS for free or even made a profit.** In 2019 those installations emitted 201 million tons of CO₂.

The total amount of windfall profits generated by overallocation in the period 2008-2019 was, therefore, smaller albeit still significant. **Aggregated, this amounted to 1.6 billion euros.**

2. Use of cheaper international offsets for compliance (2008-2020)

Until 2011, companies could use cheaper international carbon credits from the Kyoto Protocol's market mechanisms to cover their emissions instead of EU allowances. These credits were generated under the Clean Development Mechanism (CDM) and Joint Implementation (JI). As the price of these credits was much cheaper than that of the EU emission allowances (EUA), companies used them for compliance, while selling their freely allocated EUAs on the market gaining additional profits.

Since 2012, international credits were no longer accepted for compliance within the EU ETS but could be exchanged for emission allowances. Companies could request the exchange of international credits for emission allowances up to a limited amount set by EU rules. Therefore, companies were able to exchange a credit of low value with an allowance of much higher value, thereby making additional profits. Since 2021, it is not possible to use international credits under the EU ETS anymore.

Between 2008 and 2012, 201 million allowances were used for international credit conversions, while for the 2013-2019 period, the amount was about 230 million allowances. All in all, **the conversion led to 3 billion euros of windfall profits.**

3. Carbon cost pass-through

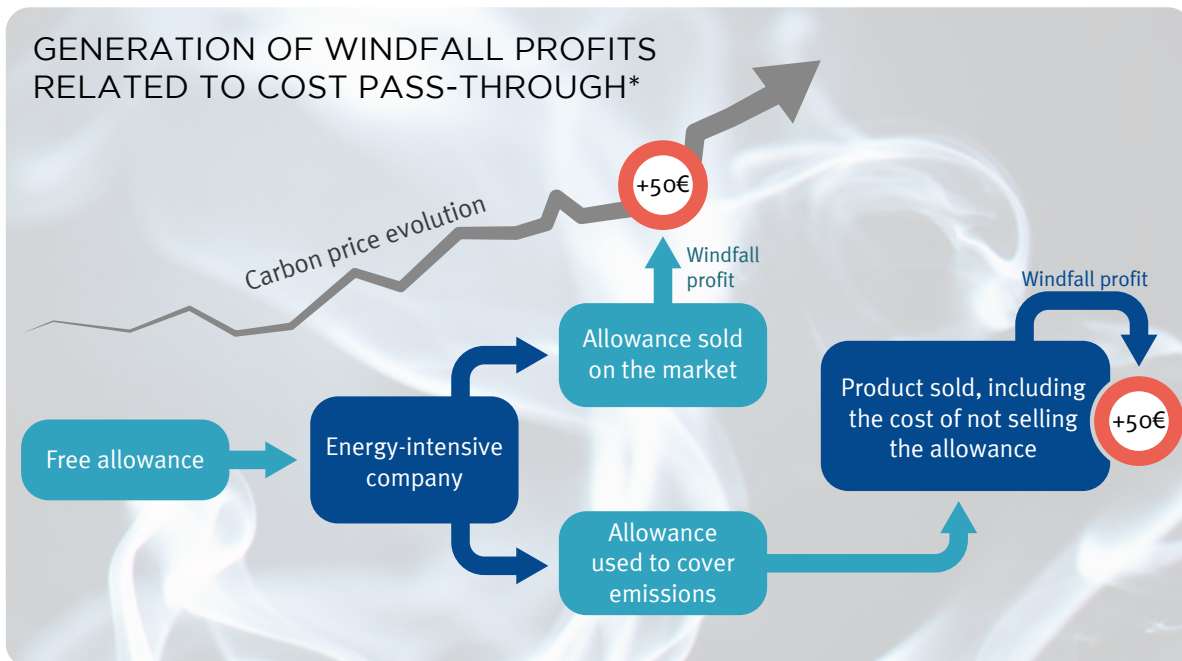
Even when allowances are allocated for free, most sectors are able to pass through (at least some of the) opportunity cost of these allowances into product prices.

This rational economic behaviour results in a shift of the cost of freely obtained allowances to the product price, which thus generates an additional profit for the company.

Several econometric studies³ have revealed that carbon prices are passed through into product prices for a range of products from cement, iron and steel, refineries, chemicals and building materials.

Between 2008 and 2019, European energy-intensive industries gained between 26 and 46 billion euros of additional profits from passing through the opportunity cost of freely obtained emission allowances.

Additional profits from cost pass-through were the most substantial in the iron and steel sector (12-16 billion euros) followed by refineries (7-12 billion euros) and cement (3-7 billion euros).



*Case for illustration – assuming linear demand and supply curves and perfect competition. Real pass-through rates may be lower or higher than 100%.

Why allow free pollution? – the “carbon leakage” myth

Free emission allowances are handed out to energy-intensive sectors like steel, cement and chemicals because under the current rules they are considered at risk of “carbon leakage”.

“Carbon leakage” refers to a hypothetical situation where companies transfer their production, or parts thereof, to countries with weaker climate policies to lower their production costs.

This topic has been hotly debated and studied in detail in academic literature since the start of the EU ETS in the early 2000s. There has, so far, been no compelling evidence that EU’s climate policies are forcing companies to move abroad and recent academic studies indicate that this is also unlikely to happen in the future:

- **No evidence of relocation due to the EU ETS so far:** In 2017, a study carried out by DIW Berlin⁴ concluded that ex-post research found no evidence of carbon leakage in European manufacturing sectors. Another study by the Florence School of Regulation,⁵ found that “to date there is no evidence of the EU ETS having had widespread negative (or positive) effects on the competitiveness of regulated firms, nor is there evidence of significant carbon leakage”.
- **No evidence of future “carbon leakage” risk:** Ex-ante modelling research into the topic also shows limited to no carbon leakage⁶ materialising. One study⁷ finds even that higher carbon prices in the EU ETS are associated with fewer emissions both in the EU and abroad, others⁸ indicate that severe negative effects on competitiveness under the current and near-future design of the scheme are unlikely.
- **Free allocation of allowances to industry could slow decarbonisation:** In a recent Special Report, the European Court of Auditors has found that free allocation to industry (and aviation) in Phase 3 (2013-2020) did not reflect the sectors’ ability to pass through costs and was insufficiently targeted. They recommended better targeting of free allocation (i.e. tiering free allocation and limiting it) and improving benchmark levels. The European Commission accepted these recommendations.⁹
- **Fewer countries to relocate to:** The number of countries and regions where companies could relocate their production to avoid climate policies diminishes greatly as the global efforts to tackle climate change increase. The Paris Agreement leveled the playing field across the global economy. Following Europe’s commitment to reaching climate neutrality by 2050, other major economies such as China, Japan and the US have pledged to drastically reduce their emissions by mid-century.
- **Industry pass-through carbon costs:** Industry sectors are not considered to be at risk of “carbon leakage” when they can pass on their carbon costs to their consumers. If costs can be passed through, then the risk of “carbon leakage” diminishes or disappears, depending on the percentage of pass-through. Previous impact assessments by the European Commission showed that all industrial sectors are able to pass through a significant part of the carbon costs. This means that industries have to bear only the remaining part of costs (i.e. the costs not passed through to customers) and are therefore at lower to no risk of “carbon leakage”.

Free emission allowances are a market and climate failure

The idea behind carbon pricing is that making polluting production more expensive for producers incentivises the uptake of cleaner production processes. The EU Emissions Trading System aims to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner by putting a cap on carbon emissions and allowing companies to trade emission allowances.

The introduction of free allocation created a market failure in the system. By receiving tradable allowances for free, companies are not fully exposed to the carbon price. This means that they do not internalise the cost of carbon emissions and therefore have a lower to no incentive to reduce their emissions.

Since 2008, over 200 billion euros worth of free emission allowances have been handed out to heavy industry and the aviation sector under the EU ETS. At the same time, emissions from industrial installations like steel, cement and chemicals continue to stagnate (less than 0.4% annual reduction since 2013) and those from aviation keep increasing (>4% annual increase since 2013). Despite auctioning being the default rule, more than 95% of industrial emissions are currently covered by free emission allowances. In contrast, emissions from the power sector - where free allocation is very limited - dropped by over 33% between 2012 and 2019.

Under the current rules, between 2021 and 2030, the EU industry will receive approximately 6.5 billion allowances for free - valued at over 300 billion euros (with an average CO₂ price of 50 EUR/t). This represents foregone auctioning revenues that could instead be recycled towards much-needed climate measures.

This large sum of money could and should be used better.

At least part of these revenues could be invested in industrial innovation to deploy clean breakthrough technologies, which is crucial to achieving the objective of climate neutrality by 2040 in line with Europe's responsibilities under the Paris Agreement.

Given the amount of funding required to make this happen, it is clear that the current public and private funding is insufficient to effectively drive the clean energy transition in the industrial sectors. Public investments in R&D, innovation and clean energy have slowly increased over the past years but not sufficiently.

The private sector has also contributed to clean research and innovation, providing around 75% of the EU investments. However, as shown in a recently published report by CDP (formerly the Carbon Disclosure Project),¹⁰ industries like steel and cement have spent very little on low-carbon investments in the last few years.

Mandating full auctioning of emission allowances and recycling auctioning revenues towards industrial innovation would greatly help support efforts to decarbonise industry.

It is clear that free allocation has not been effective in providing an incentive for industries to invest in cleaner production processes. Evidence on the occurrence of carbon leakage is also lacking. It is fair to conclude that free allowances have therefore not served much purpose so far besides generating additional profits to companies receiving them.

Review of the carbon market rules

Phase out free allowances

The upcoming revision of the EU ETS is an opportunity to strengthen the carbon market rules so that additional emission reductions can be achieved in line with reaching climate neutrality by 2050.

Given that the EU carbon market has so far failed to give heavy industry an incentive to decarbonise, in large part because of free allocation, it is paramount to put an end to these pollution subsidies.

The update of the carbon market rules in phase 3 already started tackling the problem of overallocation of free pollution permits, thereby reducing the windfall profits generated this way. However, as shown above, the cost pass-through of free emission allowances remains a big challenge and has caused by far the largest windfall profits even in recent years (2018 - 2019).

To make the system robust and effective, and apply the “polluter-pays principle”, the current trading phase should remove the possibility for industries to generate windfall profits.

Removing the free allocation of emission allowances would strengthen the carbon price signal and increase the incentive for industries to drastically reduce their emissions. By moving to full auctioning, industrial sectors would have to purchase all the allowances they need to cover their emissions on the carbon market and would no longer profit from the EU ETS. Companies would still forward their carbon costs to the consumers in the product price but would have to pay for the allowances themselves as well.

Carbon Border Adjustment as an alternative to free allocation

As part of the EU Green Deal, the European Commission is considering a Carbon Border Adjustment Mechanism (CBAM) to reduce the risk of carbon leakage, as an alternative to the existing measures under the EU ETS. This implies a phase-out of free allocation. Given the lack of evidence to support the theoretical risk of carbon leakage, neither the free allocation of pollution permits nor a CBAM are necessary tools for climate action. However, a CBAM is preferable to free allocation as it ensures that polluters pay for their emissions.

The introduction of a CBAM as a replacement of the free allocation would mean the end of windfall profits. In the opposite scenario instead, the implementation of a CBAM alongside free allocation would result in even larger windfall profits and thus dramatically reduce the effectiveness of the carbon price.

It is essential that if a CBAM is introduced, it goes hand in hand with a full and complete phase-out of free allowances for the sectors included in the border adjustment mechanism.

Conclusions and recommendations

The current EU emissions trading rules related to the free allocation of emission allowances have been detrimental to the climate and citizens. The exemptions to the polluter pays principle represent a market failure within the EU ETS. The pollution permits that are given away for free constitute subsidies as governments forego income and lose out on revenues from auctioning them. Companies have no incentive to clean up their act, and citizens carry the cost of climate impacts.

New data by CE Delft, commissioned by Carbon Market Watch, shows that energy-intensive industries in Europe have made up to 50 billion euros in windfall profits between 2008 and 2019 at the expense of taxpayers and consumers. The EU ETS, intended to make polluters pay, ends up paying the polluters. Worse still, the current rules could stall industry's emission reductions over the next 10 years, and jeopardise EU's efforts to reach climate neutrality before 2050.

Despite concerns that the current rules have not had the desired effects, between 2021 and 2030 another 6.5 billion emission allowances are foreseen to be handed out for free. This could represent another free pollution subsidy of over 300 billion euros. Support for innovative industry frontrunners is only a fraction of this.

The current review of the EU ETS provides an important opportunity to revisit the rules under which industrial sectors are able to receive free pollution permits.

To avoid windfall profits and drive innovation, Carbon Market Watch recommends that the upcoming revision of the carbon market rules:

- Ends free allocation of pollution permits for energy-intensive industries to incentivise climate action in this sector
- Ensures that 100% of the auctioning revenues are invested in further climate action, just transition and international climate finance
- Supports energy-intensive industries by dedicating a share of auctioning revenues for climate friendly industrial innovation and assists the frontrunners that want to invest in clean breakthrough technologies.

References

- 1 <https://cdn.odi.org/media/documents/11764.pdf>
- 2 For example, a windfall profit arises when prices of commodities like potatoes increase due to a supply-demand problem, and a trader who had previously hoarded potato in his/her warehouse can sell the stock at an abnormally high rate and make unexpected gains out of it.
- 3 Annex A, CE Delft report "Additional profits of sectors and firms from the EU ETS 2008-2019", 2021
- 4 H. Naegele & A. Zaklan, DIW Berlin (2017) "Does the EU ETS cause carbon leakage in European manufacturing?"
- 5 S. Verde, *Journal of Economic Surveys* (2020) "The impact of the EU Emissions Trading System on competitiveness and carbon leakage: the econometric evidence"
- 6 A.o. Branger, F. and P. Quirion (2014) 'Would border carbon adjustments prevent carbon leakage and heavy industry competitiveness losses?' *Ecological Economics*, Elsevier, vol 99: 29-39
Bruegel (2020), 'A European carbon border tax: much pain, little gain (<https://www.bruegel.org/wp-content/uploads/2020/03/PC-05-2020-050320v2.pdf>)
Condon, M. and A. Ignaciuk (2013) 'Border Carbon Adjustment and International Trade: A Literature Review', *OECD Trade and Environment Working Papers*, no.2013/06, Organisation for Economic Co-operation and Development
McKibben, W., A. Morris, P. Wilcoxon and W. Liu (2018) 'The role of Border Carbon Adjustments in a US Carbon Tax', *Climate Change Economics* vol 9(1)
- 7 Dechezleprêtre A, Gennaioli C, Martin R, Muûls M and Stoerk T (2021) Searching for carbon leaks in multinational companies. Centre for Climate Change Economics and Policy Working Paper No. 187
- 8 Eugénie Joltreau & Katrin Sommerfeld (2019) Why does emissions trading under the EU Emissions Trading System (ETS) not affect firms' competitiveness? Empirical findings from the literature, *Climate Policy*, 19:4, 453-471, DOI: 10.1080/14693062.2018.1502145
- 9 European Court of Auditors (2020), 'Special Report - The EU's Emissions Trading System: free allocation of allowances needed better targeting'
- 10 CDP report 2020 "Doubling down: Europe's low-carbon investment opportunity"

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