BRIEFING - MARCH 2026

Boosting aviation decarbonisation through the revision of the EU ETS

Scope extension, revenue generation and the use of SAF and contrail allowances under the EU ETS

Summary

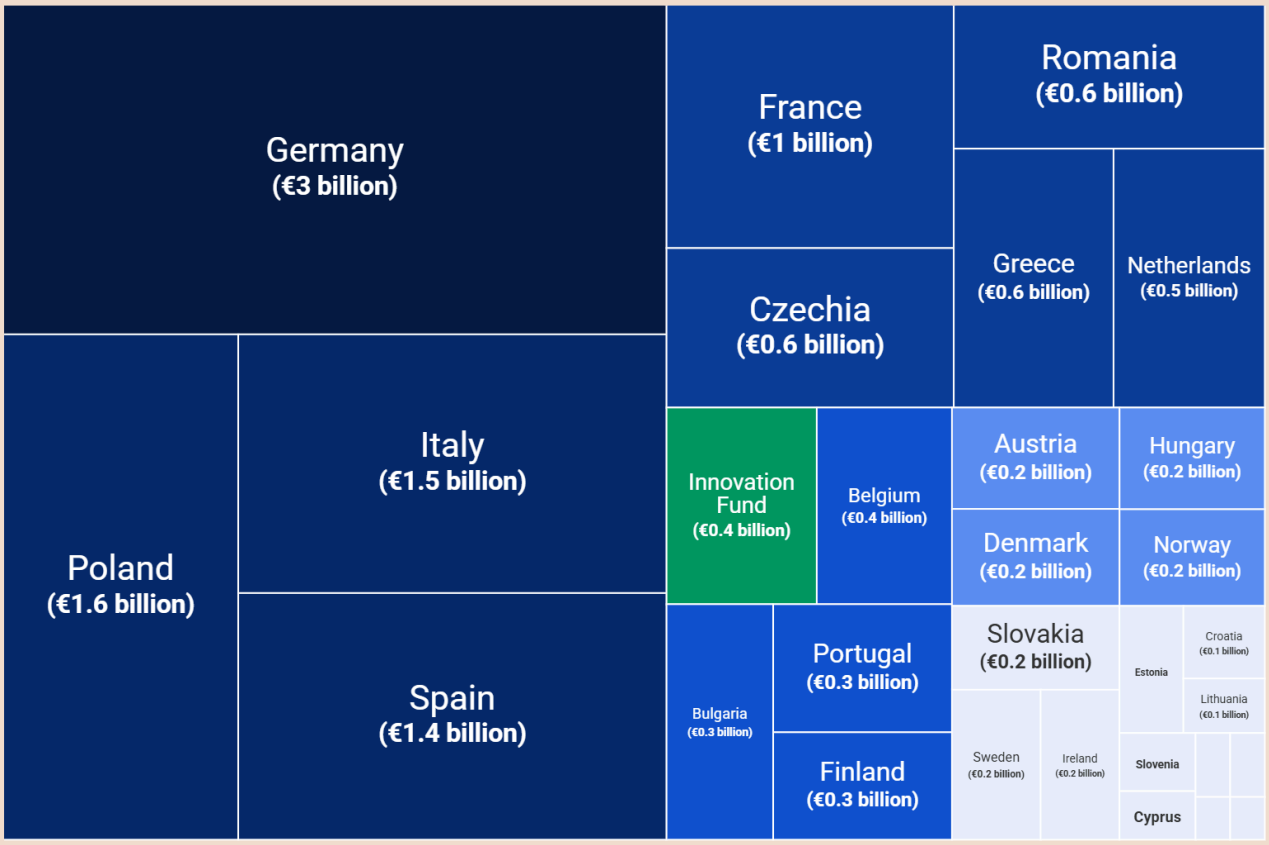
By July 2026, the European Commission is due to submit an Impact Assessment on whether more policy action is needed to tackle the emissions of extra-EEA flights. These flights are not currently covered by the scope of the EU Emissions Trading System (ETS).

Subject to the outcome of the Commission's assessment a new legislative proposal could be put forward to include all departing flights under the scope of the EU ETS. This briefing outlines the benefits of such a scope extension in terms of extra revenues available for Member States, as well as the way in which such a policy change could be leveraged to support green aviation industrialisation in Europe - namely the uptake of Sustainable Aviation Fuels (SAFs) and contrail avoidance. Indeed, **the extension of the ETS to departing flights represents a smart industrial policy for Europe: the EU can reinvest billions in extra revenues into the decarbonisation of its sector, rather than relying on an international offsetting scheme with little to no environmental benefits.**

Scope extension and revenue generation

With a full carbon market scope, Member States could receive nearly €14 billion from aviation in 2030

Revenues generated under the EU ETS scheme for aviation, broken down by Member State



Source: T&E analysis (2026) • OAG data (departing flights from Europe), GMK Center ETS prices and Member States' auction shares (Commission Decision 2020/2166)

In its current form, the EU ETS covers only a fraction of European aviation emissions. Because the system is limited to flights within Europe, it applies to about 64 Mt of CO_2. Expanding the carbon market to include all flights departing the EU would bring an additional 80 Mt of CO_2 into the system.

The EU ETS for aviation generated around €3 billion in revenues in 2024. If departing flights had been included, revenues could have reached an additional €7 billion. Coverage gaps also remain for private aviation. Under the current design, 67% of emissions from private flights are not included in the carbon market.

T&E recommends that the EU extends the ETS to flights departing the EEA and includes all private flights in a full scope ETS, in order to boost revenues for the decarbonisation of the aviation sector.

EU-wide market intermediary for e-SAF

Currently, a share of EU ETS aviation allowances feed the Innovation Fund, including the Hydrogen Bank (H2B) - designed to support renewable hydrogen production through fixed premiums under competitive bidding. But its auction design has driven unrealistically low subsidy bids, undermining project bankability. Over one-third of supported capacity has already withdrawn, and no e-SAF projects have secured funding, as aviation lacks a dedicated window.

T&E calls upon the European Commission to reform the Hydrogen Bank. Funded by ETS revenues, it should host a market intermediary for e-fuels, running double-sided auctions to provide long-term revenue certainty for producers and manageable price risk for buyers. Supported by part of ETS aviation revenues, the intermediary should be operational by 2027-28 to deliver a credible pathway for scaling e-SAF.

Reform of the SAF allowances

Under the current regulation, the EU has earmarked allowances - called *SAF allowances* - to incentivise airlines to use SAFs by partially closing the price gap with conventional kerosene. 20 million allowances were set aside between 2024 and 2030.

Yet, the mechanism falls short of supporting long-term offtake agreements and revenue certainty needed for e-kerosene. As e-SAF is unlikely to be available before 2030, almost all SAF allowances will flow to bio-SAF. Moreover, allowances are allocated *ex-post*, annually and on a first-come-first-served basis, offering airlines little certainty and undermining the mechanism's ability to unlock investment in scalable e-SAF production.

In order to boost the uptake of e-SAFs, T&E recommends that the SAF allowances are reformed, by extending them in time and in amount to give more visibility to SAF producers. Importantly, 50% of SAF allowances should be earmarked for e-SAF and support for HEFA-SAF should be phased out. The price coverage for the different types of fuels can be reduced. T&E data shows that with such reforms, the supported e-SAF volumes should be around five times higher than in a scenario that simply extends the current mechanism in time without further adjustments. Furthermore, the Commission should move away from an *ex-post* system to an *ex-ante* allocation to give more long-term certainty to airlines and e-SAF producers.

Non-CO_2 emissions: MRV scope extension and introduction of contrail allowances

Contrails - the white lines in the sky left by aircraft - contribute to global warming in a way that is comparable to aviation's CO_2 emissions. Most contrails are short-lived and disappear within a few

minutes. However, if a plane flies through regions with very cold and humid air, contrails can stay in the atmosphere for hours and form clouds that act like a giant blanket. Contrail avoidance - e.g. tweaking the flight paths of just a handful of flights to avoid contrails - is a low-cost climate fix that places a negligible burden on both industry and passengers. Yet airlines currently have no incentive, positive or negative, to perform contrail avoidance.

A small, positive incentive would change this. By encouraging airlines and their third-party flight planning software providers to onboard the tools to enable contrail avoidance, the EU would overcome a major hurdle in contrail avoidance. By covering small running costs, the EU would encourage airlines to perform contrail avoidance, without being unfairly penalised for the extra jet fuel they burn.

A voluntary incentive mechanism designed to support contrail avoidance for flights departing and incoming the EU could eventually avoid an estimated 20–40 million tonnes of CO_2 equivalent annually. It would utilise a small fraction of EU ETS revenues (maximum €50 million annually or 1.5% of ETS revenues) over a 3–5-year period.

Contrail avoidance will be further supported by the automatic extension of reporting requirements. From 2027 onwards airlines will have to report the non-CO_2 effects of all flights departing and incoming Europe, compared to the current, limited scope intra-EEA flights only. This will allow further data gathering, especially for long-haul flights.

T&E recommends allocating a dedicated, yet small, share of EU ETS allowances to incentivise contrail avoidance via a new mechanism called *contrail allowances*.

1. EU ETS extension: a smart industrial policy

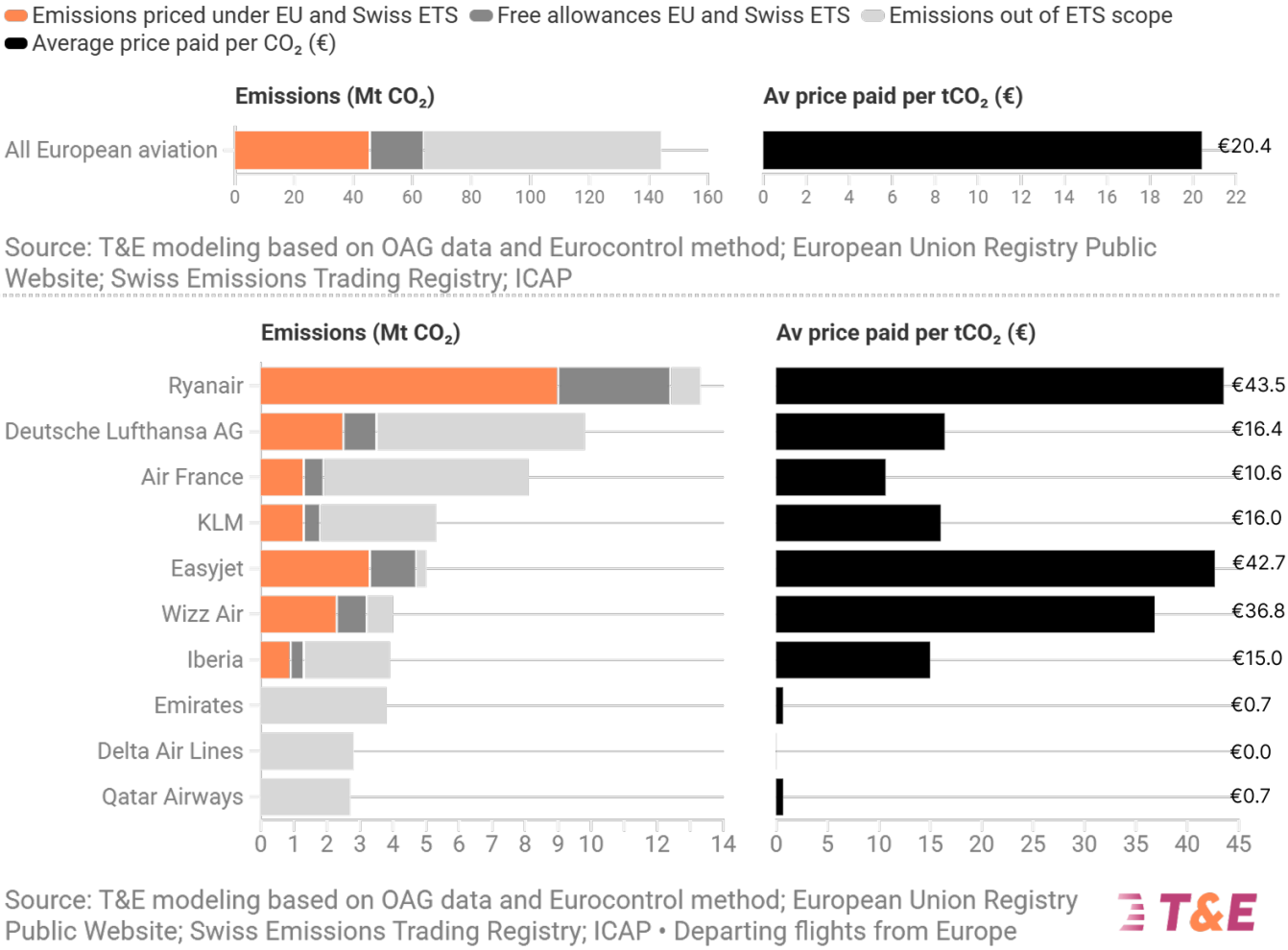
The EU ETS is a cap and trade system under which EU power and industry companies have to buy allowances to pay for their CO_2 emissions. The amount of allowances in the system gradually decreases over time to ensure that overall EU emissions decrease.

Aviation has been included in the EU ETS since 2012. However, in order to allow the UN aviation agency ICAO time to develop its international offsetting scheme (CORSIA), extra-EEA flights were excluded. During the last review of the legislation in 2022, the EU decided once again to extend this exemption until the start of 2027. As a result, the EU ETS system covered only 64 Mt of CO_2 emissions in 2024 (this covers emissions from EU and Swiss administered airlines). If the EU and Swiss ETS were applied to all departing flights, more than 80 Mt of supplementary CO_2 emissions would have been covered. Taking this and free allowances into account, 70% of CO_2 emissions were not covered by the European carbon market in 2024.

As a result, despite the start of the free allowance phase-out in 2024, the estimated effective price for a tonne of CO_2 for airlines (i.e. the price of a tonne of CO_2 by accounting for free allowances and unpriced emissions) was €20 per tonne in 2024. This compares to an average price of carbon under the whole ETS of €64. The graph below shows the average price per tonne of carbon paid by the top polluting carriers in 2024.

Nearly two third of aviation emissions remain unpriced in 2024

Paid emissions and **free emissions**



Source: T&E modeling based on OAG data and Eurocontrol method; European Union Registry Public Website; Swiss Emissions Trading Registry; ICAP

Source: T&E modeling based on OAG data and Eurocontrol method; European Union Registry Public Website; Swiss Emissions Trading Registry; ICAP • Departing flights from Europe

Because of the restricted scope and the distribution of free allowances, legacy carriers like Lufthansa and Air France did not fully pay for their emissions: 74% and 83% of their emissions, respectively, remained unpriced in 2024. Low-cost carriers like Ryanair and easyJet paid much more per tonne of carbon for their flights. Meanwhile, third-country airlines such as Emirates and United Airlines, which produce emissions similar to European carriers, paid even less. Despite having similar levels of emissions, these non-European airlines are benefiting from lower carbon costs, given that they operate a majority of extra-European flights. This highlights the need for the EU to ensure that emissions from all long-haul carriers departing from Europe are included in the EU ETS. That would ensure a fairer regulatory framework between carriers (long-haul vs short-haul and EU vs non-EU) and contribute to better implementation of the polluter pays principle.

Relying on CORSIA to cover two-thirds of EU aviation emissions is concerning from an environmental perspective. First, the scheme relies on offsets with questionable environmental integrity and therefore cannot deliver on reducing the aviation sector's emissions. Second, CORSIA only applies to the growth in aviation emissions (above a baseline of 85% of 2019

emissions). This means that it will cover just 26% of EU aviation's CO_2 emissions by 2035. Furthermore, there are still serious questions remaining about whether key aviation markets will actually participate in CORSIA: Russia, China, Brazil, India and the USA have not currently implemented CORSIA into national law. As it stands, the scheme will enable airlines and governments to falsely claim sustainability at a low cost rather than investing in real decarbonization levers.

The European Commission has been tasked to assess the effectiveness of CORSIA by July 2026. This assessment will be based on two conditions. Firstly, whether ICAO has strengthened CORSIA by 31 December 2025 in line with the long-term aspirational goal of meeting the Paris Agreement temperature targets. And secondly, whether states participating in CORSIA represent 70% of international aviation emissions. If these conditions are not met, then the Commission should propose to extend the scope of the EU ETS to cover all departing flights. At the most recent ICAO General Assembly in September 2025, no measures were introduced to strengthen CORSIA. And the 126 Member States that committed to participating in CORSIA from 2024 account for 66% of global CO_2 emissions.

The 2026 review of the EU ETS presents a real opportunity to finally cover the EU's most polluting flights and clear necessary revenues to invest in decarbonization technologies.

Including private jets in the EU ETS

Private jets have a disproportionate impact on the environment: they emit 5 to 14 times more CO_2 per passenger-kilometre than commercial flights. European private jet emissions have soared in recent years, faster than commercial aviation emissions. Private jets, owned and used by the wealthy, should be fairly taxed according to the polluter pays principle, and contribute proportionally to their users' means to investments in cleaner flight technologies. Despite that, under the EU ETS, 67% of emissions from private jets in the EU are exempted from carbon pricing. This is because airlines or planes fall below the coverage thresholds for aircraft mass, yearly emissions and flight numbers. Secondarily, this is because a large share of private jets fly to and from outside the EEA, routes that are excluded from the ETS scope today.

T&E recommends including private jets into the ETS, pricing them for both departing and incoming flights. This would mean removing the *de minimis* threshold, which equals to 670 kilotonnes of emissions under the current scope and 2 million tonnes under the full scope.

Another means available to Member States is including private jets and business aviation into the newly created ETS2 - the separate "cap-and-trade" system designed to curb carbon emissions from fuel combustion in road transport, buildings, and small industries. Such is the case in Austria, where the extension of ETS2 applies to recreational planes and small

business jets with a mass of less than 5,700kg or emitting less than 1 kt CO_2/ year or 10 kt CO_2/year in case of commercial operators. Inclusion of private jets in the ETS2 presents some drawbacks: given the price per tonne of carbon will be smaller in ETS2, private jets would not be priced at an adequate level. It is therefore preferable for private aviation to be covered under the ETS1, alongside commercial aviation.

In a scenario where the EU ETS for aviation is not extended to cover private flights, T&E recommends Member States to include them in the ETS2, and to cover all flights departing and incoming Europe.

1.1 Generating revenues for national budgets

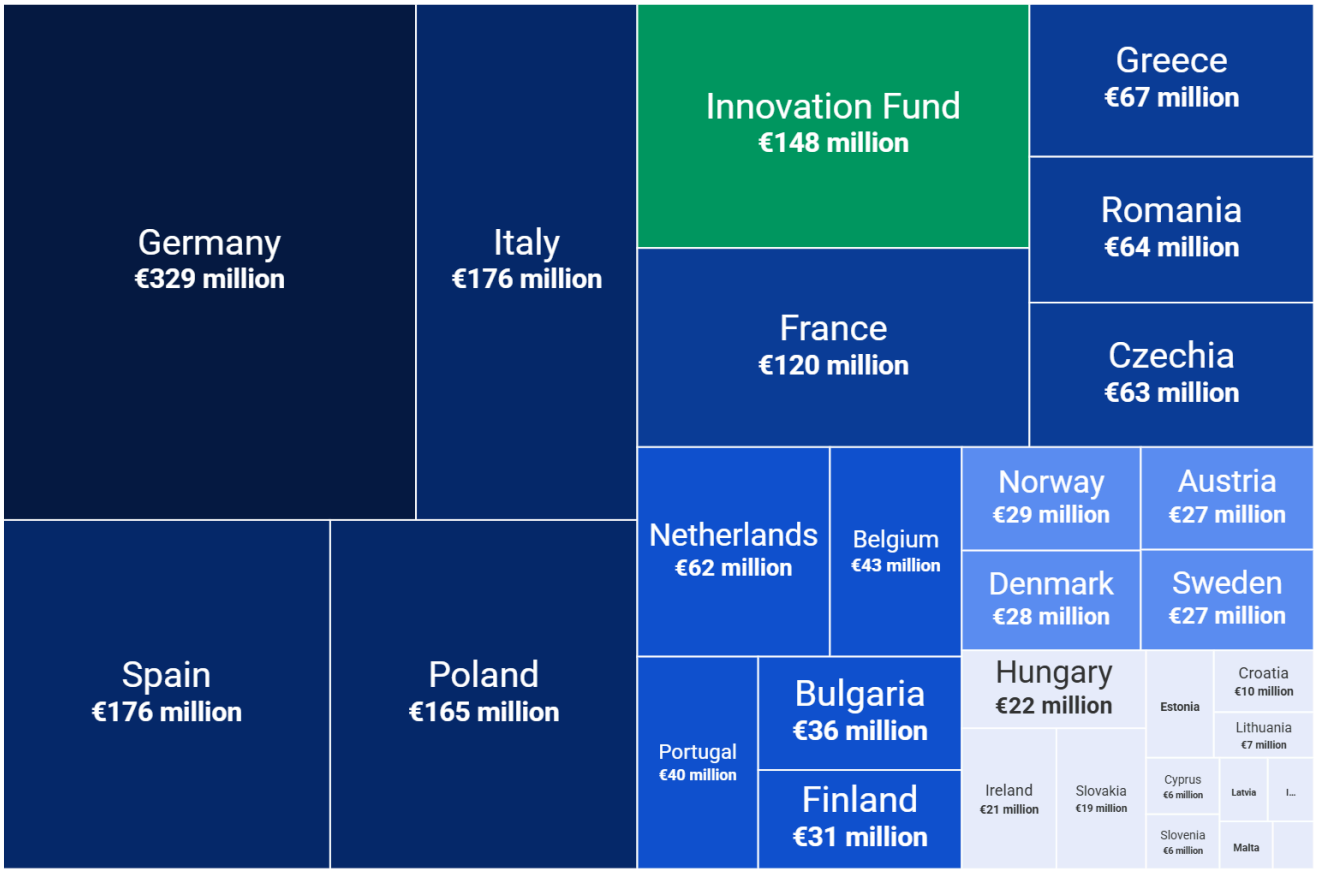
Besides being in line with the polluter-pays principle and encouraging gradual emissions reductions through the linear reduction factor, the European carbon market generates revenues for the green transition.

In 2024, the sector paid €3 billion under the EU ETS schemes, as only 32% of emissions were priced. That is only a third of the €9.3 billion that could have been generated, had the scheme applied to all departing flights. As such, extending the scope of the European carbon market could have unlocked a further €6.3 billion that could fuel the green transition of Europe's aviation industry.

The main beneficiaries of a scope extension would be EU Member States. Of the €3 billion paid by airlines in 2024, EU-27 Member States received nearly €1.7 billion from auction revenues. Countries with strong aviation sectors already benefit from the largest shares: Germany, Spain, Italy, Poland and France are among the top recipients under the current scope.

In 2024, Member States received nearly €1.7 billion from aviation carbon market revenues

Revenues generated under the EU ETS scheme for aviation, broken down by Member State

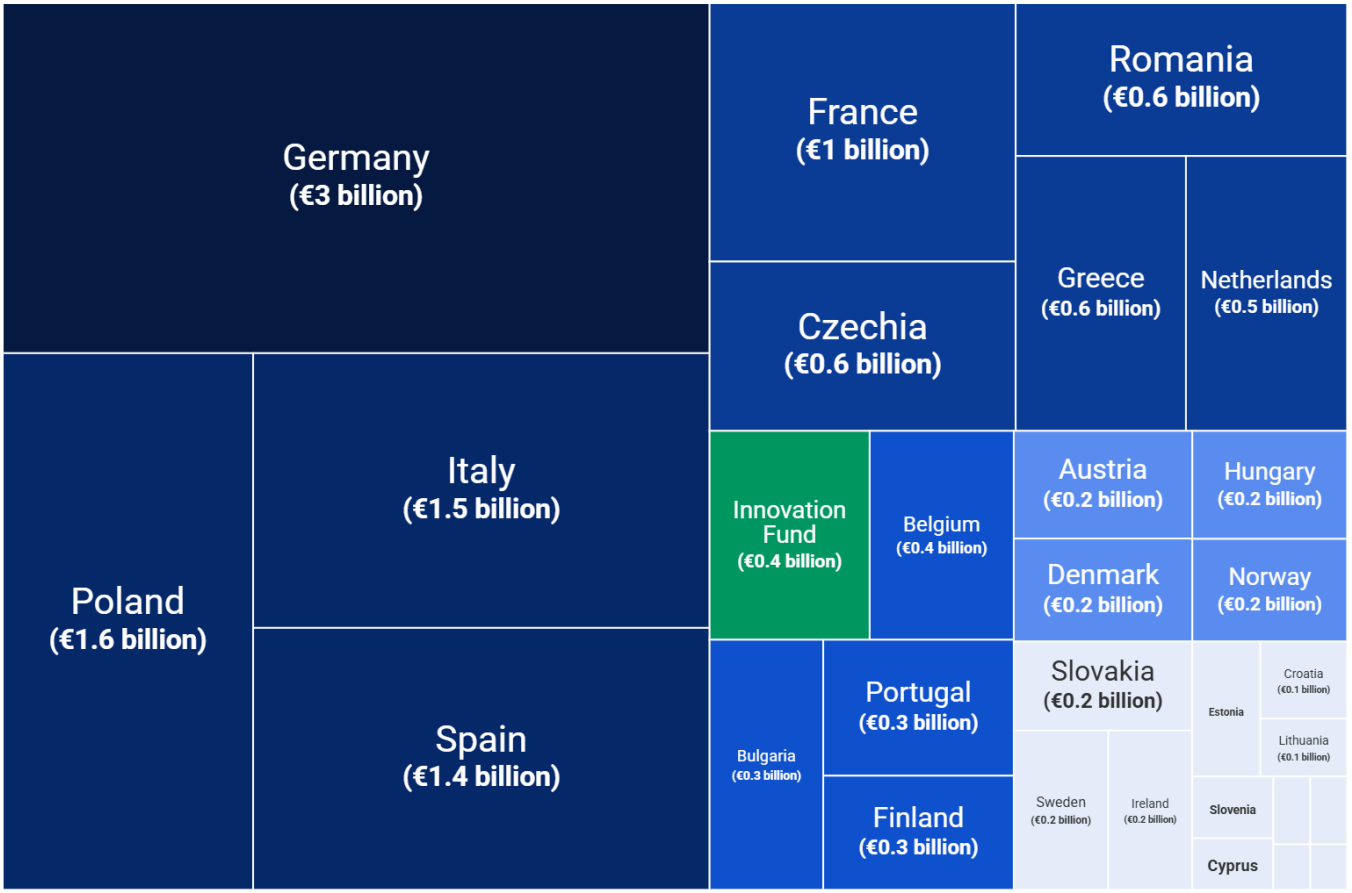


Source: T&E analysis (2026) • OAG data (departing flights from Europe), GMK Center ETS prices and Member States' auction shares (Commission Decision 2020/2166)

Looking ahead to 2030, with an extended carbon market scope (e.g. flights departing the EEA), total revenues could rise to nearly €14 billion a year in 2030, a near tenfold increase driven by market growth, the phase-out of free allowances and an expansion of the carbon market's geographic and operational scope.

With a full carbon market scope, Member States could receive nearly €14 billion from aviation in 2030

Revenues generated under the EU ETS scheme for aviation, broken down by Member State



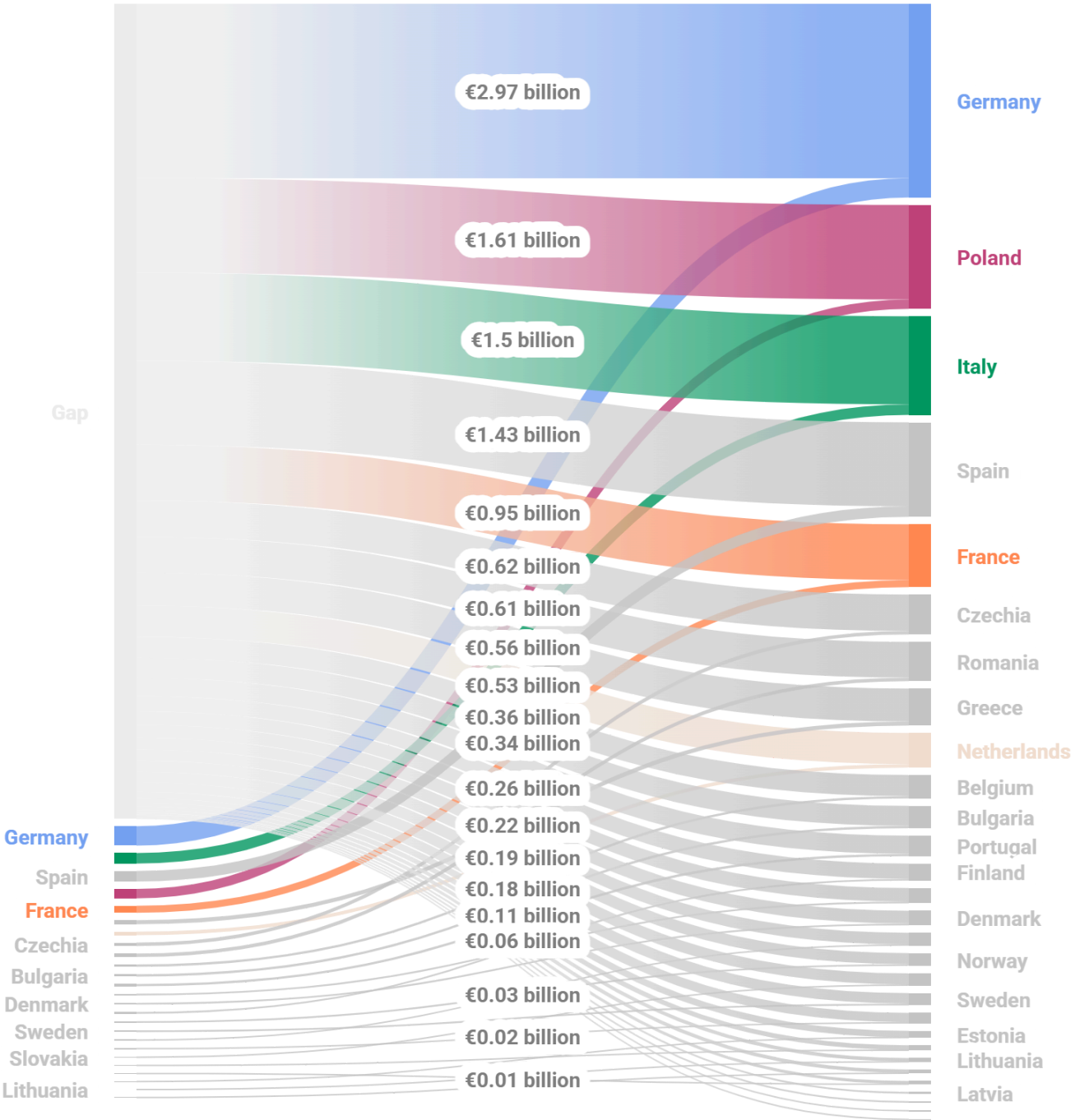
Source: T&E analysis (2026) • OAG data (departing flights from Europe), GMK Center ETS prices and Member States' auction shares (Commission Decision 2020/2166)

This expansion would deliver outsized gains for some Member States relative to the size of their aviation market. Poland, for instance, would become the second-largest beneficiary of ETS revenues from aviation. Likewise, countries such as Czechia, Romania and Greece would also see substantial gains.

This is because revenues from general and aviation-specific allowances are redistributed to Member States using different criteria. Countries like Poland and Czechia hold higher auction shares of general allowances, as these are based on historical emissions from industrial installations, not aviation emissions. As a result, a scope extension that drives higher demand for general allowances by airlines disproportionately benefits these countries.

Scope extension and market growth would unlock substantial new revenues to Member States in 2030

Revenues generated under the EU ETS scheme for aviation, broken down by MS (€ billion)



Source: T&E modeling based on Member States' auction shares (Commission Decision 2020/2166), OAG data (EEA departing flights), GMK Center ETS prices

These revenues represent a significant and growing public climate fund. While part of these revenues should support aviation's transition, they must be used strategically to accelerate zero-emission solutions: above all by scaling up sustainable aviation fuel production and

incentivising contrail avoidance. With the revision of the EU ETS, the European Commission has an opportunity to transform the carbon market into a leading industrial policy instrument to boost the decarbonisation of the aviation sector.

2. Using the EU ETS to boost made-in-Europe SAFs

2.1. Spurring SAF uptake through a European-wide double-sided auction mechanism

- **The Hydrogen Bank has inadequately supported e-SAF**

Before EU ETS aviation revenues are distributed to Member States, money is set aside for the Innovation Fund. Under the Innovation Fund, the Hydrogen Bank (H2B), was designed to support renewable hydrogen production through fixed premiums under competitive bidding. The goal was to reward the most cost-effective projects. However, this auction design led bidders to understate their actual support needs to win, resulting in a "race to the bottom" on subsidy levels. Indeed, the first two H2B calls yielded average subsidies of respectively €0.45/kgH_2 and €0.63/kgH_2, far below the estimated production cost of €5–11/kgH_2.

On top of that, aviation did not benefit from a dedicated call. E-kerosene projects can apply to the general scheme, but the combination of very high upfront capital needs and the cost-efficiency criterion makes it almost impossible for them to compete. As a result, no e-SAF project has been awarded support.

As negotiations on the future of the Hydrogen Bank and the structure of the next MFF are ongoing, T&E calls for a reform of the Hydrogen Bank to better support e-SAF. As stipulated ahead of the Sustainable Transport Investment Plan (STIP), we urge the European Commission to upgrade the existing Hydrogen Bank mechanism.

- **Introducing a European-wide market intermediary for e-SAF**

In particular, we believe the Hydrogen Bank could be an adequate EU tool to be reformed to host a market intermediary for e-fuels, as announced in STIP. The market intermediary would act as both a trader and an auction platform for aviation (and maritime) e-fuels. This entity would run double-sided auctions (DSAs), i.e. purchase fuel from producers under long-term contracts, providing the revenue certainty needed for project financing, and resell it through shorter-term contracts (3-5 years) to airlines/shipping companies and/or fuel suppliers, enabling them to manage their price risk. Producers would bid for the minimum price at which they are willing to sell, while buyers would bid for the maximum price they are willing to pay. The intermediary would cover the gap between these bids, using its budget to ensure transactions can take place. This structure creates competitive pressure on both sides, narrows the price gap, reduces the subsidy requirement, and results in transparent price signals that can support the emergence of a liquid e-fuels market. Because the intermediary holds the long-term contracts

with producers and the short-term sales contracts with buyers, it reduces counterparty risk for developers and provides flexibility to buyers who may be reluctant to lock in decade-long agreements.

We believe the intermediary could be funded by earmarking e.g. 25% of the ETS - using both shipping and aviation revenues. It would represent a cumulative budget of €24 billion for shipping (€30 billion if the shipping ETS is extended to include small ships with less than 5,000 gross tonnage) and around €13 billion for aviation (€38 billion if the aviation ETS scope is extended to include extra-EEA flights) between 2030 and 2039. For a more exhaustive analysis of potential volumes supported, see our reply to the STIP consultation.

T&E urges the European Commission to set up the intermediary as early as 2027-8, learning from the lessons of the one or two pilot auctions taking place this year under H2 Global, thanks to the money pledged by Member States participating in the e-SAF Early Movers Coalition.

The current ETS framework already provides broad flexibility to use Innovation Fund revenues for competitive bidding mechanisms, including two-sided contracts for difference with reflows and multiannual commitments. **This suggests that a double-sided auction structure could in principle be accommodated without a fundamental revision of the Directive.** Nevertheless, if needed to remove any residual ambiguity, for instance regarding provisioning limits or the precise contractual design, targeted and limited amendments could be considered to provide additional legal certainty.

2.2 Redesigning the SAF allowance system

- **Weaknesses of the current SAF allowances system**

The SAF allowances (established in Article 3c(6) of the EU ETS Directive 2003/87/EC and operationalised through Commission Delegated Regulation (EU) 2025/723) are designed to incentivize airlines to use SAF by bridging the price gap between SAF and conventional kerosene. Whilst the system has merits, in its current design, and for the reasons explained below, the SAF allowances fail to facilitate the long-term offtake agreements and revenue certainty that e-kerosene projects need.

SAF is already zero-rated under the ETS, meaning airlines don't have to surrender emissions for the use of SAF. On top of that, **a dedicated pool of 20 million "SAF allowances" was put in place to reward the use of SAF between 2024 and 2030.** These 20 million allowances translate to a subsidy of €1.6 billion over seven years (assuming a carbon price of €80/t). They are intended to cover part of the price difference between SAF and conventional jet fuel.

The coverage varies based on the type of SAF used. For biofuels (HEFA), 50% of the price differential is covered, and for advanced biofuels, the coverage is 70%. For e-kerosene, that coverage reaches 95% of the price differential (50% in the case of synthetic low-carbon fuels). While this is a very strong incentive to use e-SAF, the fact that e-SAF will most likely not be

available on the market before 2030 considerably reduces the potential subsidies for this fuel. Yet, this is a nascent market which requires support more acutely than other types of SAF due to its lack of commercial maturity and high production costs. As of February 2026, none of the 40+ large-scale e-SAF projects developed across Europe had managed to reach a final investment decision (FID).

It is highly likely that all the subsidies available between 2024 and 2029 will support bio-SAF, as this will be the only type of SAF commercially available. E-SAF should reach the market in 2030, but by then the allowances might already be exhausted.

Furthermore, the way allowances are distributed does not provide airlines with enough visibility on whether they will receive support for their use of SAF. This is because allowances are distributed *ex-post* (the airline needs to buy and use the SAF to receive the support first), on an annual and first-come-first-served basis.

All-in-all, in their current design, the SAF allowances fail to unlock the long-term offtake agreements that project developers need in order to secure investments, and therefore fail to help the e-SAF market develop.

- **Redesign of the SAF allowances**

As a consequence, T&E recommends the following changes to the SAF allowance mechanism to better support e-SAF, the most scalable and sustainable type of fuel:

1. **Extension of the mechanism in time:** In its current design, the SAF allowance mechanism runs out in 2030. Whilst this has already helped to support HEFA-SAF in 2024 (1.3 million allowances already distributed, supporting a total of 170 kt of SAF), other types of fuels, such as advanced biofuels and e-SAF, received no support because they are not yet readily available on the market. The success of these types of fuels depends on the signing of longer offtake agreements and long-term market visibility. With a cut-off date of 2030, the SAF allowance mechanism does not provide this security. This is why **T&E recommends an extension of the SAF allowance mechanism until 2034,** in line with article 3c(6) of the ETS directive. This would give airlines the prospect of being financially supported for up to 7-8 years, covering at least a substantial duration, if not the full duration, of the long-term offtake agreements required by e-SAF or advanced biofuel producers.

2. **Earmarking SAF allowances for certain fuel types:** Different fuels receive different types of support, but there is no specific earmarking for e-SAF. As a result, the allowances could be used exclusively for biofuels if e-SAF is not available on time or if airlines fail to purchase it. Given the European Commission has strongly emphasised the need to create a European e-SAF industry, the SAF allowances should also prioritise these fuels. The aim for the future should be to shift the support towards the more sustainable and also more expensive fuel types. Hence, **T&E recommends earmarking for e-SAF and advanced biofuels through sub-quotas within the allowance reserve**.

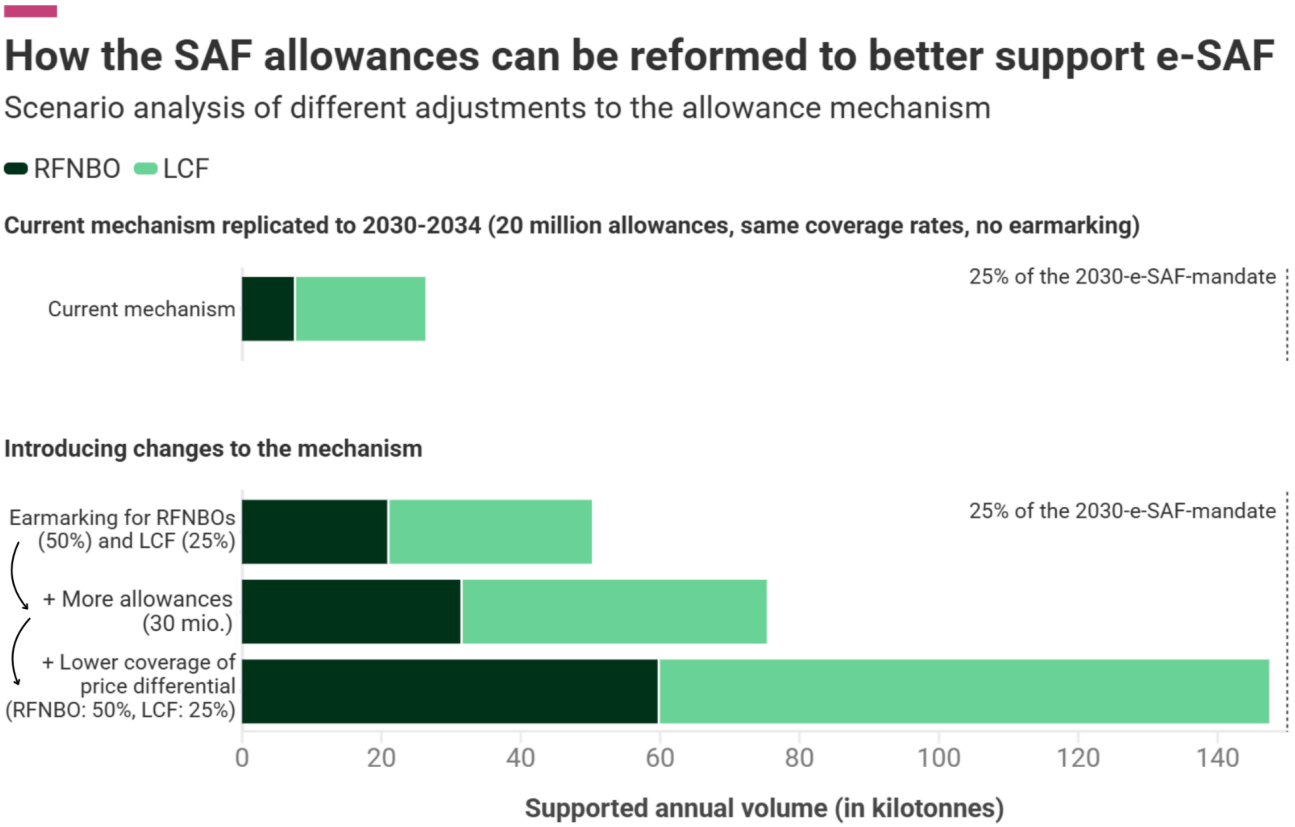
Provided that all operators using the same fuel category face identical eligibility and allocation conditions, this does not raise unequal treatment concerns; differentiation between SAF pathways can be objectively justified by transparent criteria such as higher production costs or distinct investment profiles and is therefore not unlawful.

From 2030, **half of the allowances should be set aside for RFNBOs and the other half being equally shared between low-carbon fuels and advanced biofuels**, while support for HEFA-SAF would be phased out. This approach would be coherent with the objective of avoiding over-subsidisation and **preventing long-term subsidy dependency for HEFA fuels,** which are already commercially available at scale and typically supplied at a comparatively moderate premium. Public support should be progressively redirected towards fuel pathways that still face significant cost gaps and investment risks, rather than entrenching support for mature technologies.

3. **Increasing the amount of allowances:** Should the mechanism be extended in time (e.g. until 2034) this would necessarily entail an additional amount of allowances needing to be distributed. While a scenario with 20 million new allowances would just renew the current scope of the mechanism, an increased amount of **30 million new allowances** would allow it to support more substantial volumes of SAF.

4. **Lowering the price differential coverage per type of fuel:** In its current design, the price differential coverage of different types of fuels is very generous, from 50% for HEFA fuels, going up to 95% for e-SAF. Such coverage rates necessarily limit the amount of SAF that can be supported. Lowering the coverage support to e.g. 50% for e-SAF, 25% for low-carbon fuels and advanced biofuels and phasing out HEFA support entirely would enable support for more volumes in 2030.

With the four conditions outlined above (extension of the scenario in time, earmarking for e-SAF, increasing the amount of allowances and lowering of the coverage per type of fuel), **the volumes of e-SAF supported could be around five times higher than in a scenario that simply extends the current mechanism in time without further adjustments**. Supporting up to 150 kilotonnes of e-SAF per year would cover approximately 25% of the volumes needed to meet the 1.2% e-SAF sub-mandate and together with a double-sided auction mechanism this could support a substantial share of the total volumes needed.



Source: T&E, EC 2025 • Only fuels counting towards the e-SAF sub-mandate are displayed. Details on assumptions for different scenarios in the annex.

5. ***Ex-ante* allocation of SAF allowances**: The current *ex-post* system does not provide airlines with certainty or visibility that they will receive the subsidy at the end of the year. This means they are unlikely to enter longer-term agreements with SAF producers, particularly for e-SAF. Moving towards an *ex-ante* system could resolve that. Operators would register or notify credible forward SAF commitments (e.g. a binding offtake agreement), and this would serve as a means of securing forward entitlement or priority access to SAF allowances. Firm SAF offtake agreements are, in principle, better placed to demonstrate the seriousness and plausibility of future SAF use than non-binding instruments, such as memoranda of understanding or letters of intent. Currently, the ability to introduce these forward commitments under the SAF allowance mechanism remains limited. Firm offtake agreements cannot, on their own, justify advance allocation, volume earmarking, or preferential treatment within the capped reserve. An *ex-ante* system would instead convert forward SAF commitments into a legal basis for entitlement to secure support within the same compliance cycle in which the reservation is submitted. Questions around economic advantage and State aid considerations would need to be resolved and a legislative amendment of the ETS Directive would be required. But the benefits for SAF deployment and investment certainty - particularly the most expensive types of SAF - would be immense. It would transform the SAF allowance system to a mechanism supporting both the supply (SAF producers) and the demand (airlines) in an adequate manner.

Introducing a made-in-Europe clause in the SAF allowances?

Europe must prioritise made-in Europe SAF. While the origin of SAF receiving subsidies cannot be tracked, available data for SAF overall shows that more than 40% of the total SAF supplied in the EU in 2024 was imported - meaning the EU ETS funds subsidised SAF originating from outside of Europe. This begs the question whether the "buy European" or "made-in-Europe" logic, which is increasingly being articulated in recent EU industrial and climate legislation, could apply here.

Making SAF allowance support depend on whether the fuel is produced in the EEA or imported does not change how the ETS support system works. It affects who benefits from it along the SAF supply chain. If eligibility or the level of support depends on where the fuel is produced, similar fuels could be treated differently simply because of their origin.

When imported fuels are placed on the EU market and used for ETS compliance, treating them differently based on origin would raise concerns under EU internal market rules, especially the principles of free movement of goods and non-discrimination. This applies whether imported fuels receive less support or are excluded altogether.

If the EU wanted to favour EEA-produced SAF under the ETS, this would require a clear political decision by EU decision-makers. It would need to be part of a broader industrial or strategic policy. T&E calls on the European Commission to consider this option - including, for instance, as part of its Industrial Accelerator Act - to support the development of a strong domestic SAF industry in the face of foreign competition.

3. Using the ETS to spur action on non-CO_2 emissions

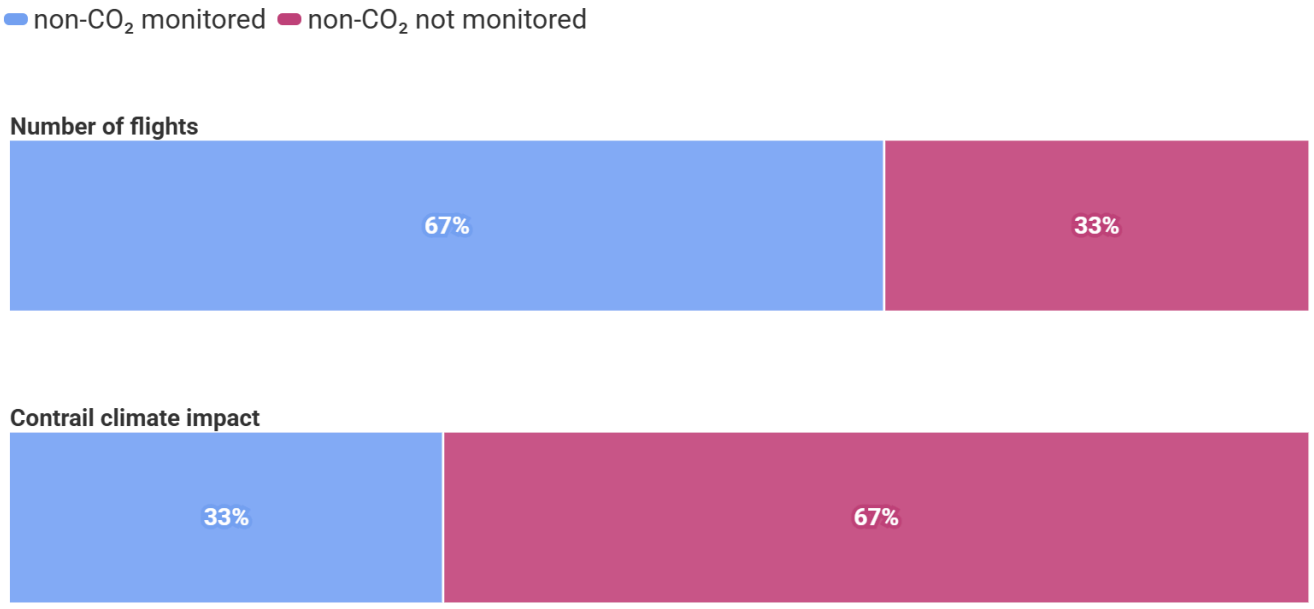
Contrails - the white lines in the sky left by aircraft - contribute to global warming in a way that is comparable to aviation's CO_2 emissions. Most contrails are short-lived and disappear within a few minutes. However, if a plane flies through regions with very cold and humid air, contrails can stay in the atmosphere for hours and form clouds that act like a giant blanket.

3.1. Automatic extension of the non-CO_2 monitoring scheme

The Non-CO_2 MRV implementing regulation introduced in 2025 is a scheme under which airlines have to report their non-CO_2 aviation effects for intra-EEA flights and EEA flights departing to Switzerland and the UK. Due to intense political pressure, the scope of the scheme - originally intended for all flights incoming and departing the EEA - was reduced and airlines were allowed a two year derogation for intra-EEA reporting only. The long-haul flights currently excluded from the MRV are responsible for two thirds of the contrail-induced warming covered by the MRV.

67% of contrail climate impact is excluded from the reduced-scope non-CO_2 MRV framework

Share of flights and contrail warming monitored in reduced-scope non-CO_2 MRV, covering intra-EEA flights and flights to Switzerland and the UK



Source: T&E (2024), based on data by Teoh et al. (2024) and OAG (2024) for the year 2019

The reporting requirement automatically extends to all flights from 2027 onwards. The non-CO_2 MRV serves as a solid tool to advance scientific understanding of aviation's full climate impact. Therefore, T&E calls for the automatic expansion of the MRV reporting to long-haul flights to be maintained, as a unique opportunity to gather further data and advance scientific research.

3.2. Introducing contrail allowances

- **No existing incentives to tackle contrails**

Contrail avoidance - e.g. redirecting a small percentage of flights to avoid contrail formation - is a low-cost climate fix that places a marginal burden on both industry and passengers. Yet airlines currently have no incentive, positive or negative, to perform contrail avoidance.

Contrail avoidance can lead to minor fleet-wide fuel and time penalties (~0.1%) and additional maintenance, ATC, and labour costs (~0.05%). Integrating contrail forecasts into flight management systems also involves a one-time technology and training cost for airlines.

Although contrail avoidance is by far the cheapest option to reduce aviation's warming impact, being several orders of magnitude cheaper than other levers, the small non-zero cost means there is currently no business case for starting trials and gradual implementation of avoidance manoeuvres.

- **A simple solution: incentivising airlines with dedicated ETS allowances**

By encouraging airlines and their third-party flight planning software providers to onboard the tools, the EU would overcome a major hurdle: airlines integrating contrail avoidance in their operations. With an incentive scheme that covers the cost of contrail avoidance for airlines, the EU would encourage trials, necessary to involve the whole ecosystem and to build operational know-how. The incentive should reward an airline's capacity to avoid contrails, and proper usage of their avoidance tools. This will encourage the desired behaviour by airlines without making them responsible for variables (e.g. weather, air traffic control) that are outside their control.

- **Setting up the contrail allowance scheme using ETS allowances**

We calculate that it would cost **€50 million annually for the EU to incentivise all flights landing or departing from EU airports** to reduce contrail warming by 35%. This amount should come from free EU ETS allowances **(circa 1.5% of current airline contributions to the ETS)**.The size of the incentive should be a fixed percentage of airline costs based on fuel burn. By default, this mechanism would only apply to carriers emitting more than 10,000 tCO_2/annum in the ETS, but small operators flying within Europe could be considered for inclusion.

- **Climate benefits: 20 - 40 million tonnes of CO_2 equivalent annually**

Such a measure would entail 0.12 million tonnes of additional CO_2 emissions annually, due to the extra fuel burn from airlines when avoiding contrails. But reducing contrail warming for flights incoming and departing the EU by 35% would generate a climate benefit of 20 – 40 million tonnes CO_2 equivalent (GWP100) annually - outweighing the additional CO_2 emissions more than 100 times.

- **A scheme based on airlines capex and opex expenditures**

The conditions to receive the incentive should be as simple as possible to encourage compliance. This can be achieved with two portions: capex (one-off) and opex (running cost).

Capex: To claim the capex allowance, an airline must demonstrate that a valid contrail forecast was integrated into their flight planning tool, or another flight management tool. It covers (part of) one-time change costs. It must enable computer-optimised flight planning at a scale appropriate for that airline.

Opex: To claim the operational expenditure, an airline would disclose the total fuel for the flights on which they trialled the tool, of which they would receive 0.15% in ETS allowances. This is based on simulations that estimate the total running cost from contrail avoidance under normal parameters at below 0.15% fleet-wide fuel burn.

Robust verification of the opex-use is necessary. For instance, third-party verifiers would review internal policies or training documents to verify good faith intent. Verifiers would also be called upon to check airline claims.

- **Governance of the scheme**

An appropriate regulatory body, for example Eurocontrol or EASA, should determine the criteria governing what is considered a valid contrail forecast, in consultation with the Member States. This will determine what is a 'valid contrail forecast tool'. Accredited third party verifiers should be called upon to ensure the accuracy of all claims, including the number of flights on which the forecast was used, for example through checks of flight data for avoidance flights.

- **Conclusion**

To conclude, T&E calls upon the European Commission to use the opportunity of the EU ETS revision in 2026 to put in place a mechanism that incentivises airlines to systematically perform contrail avoidance by using free ETS allowances to cover a part of the cost of contrail avoidance manoeuvres. This would be a world-first scheme that would set Europe on the right path towards meaningful action.

4. How to address the minimal risks of carbon leakage?

- **Defining carbon leakage**

Carbon leakage occurs when policy measures to decrease emissions in one region lead to an increase in emissions somewhere else. In Europe, when applied to the aviation sector, this refers in particular to the potential increase in emissions as a result of passengers choosing to make transfers at non-EEA airports or choosing destinations outside of the EEA due to increased ticket prices within the EEA. Passengers 'escape' EU climate measures, thereby leading to higher emissions than intended by the policy and the growth of airlines in regions not regulated by similar climate policies.

A recent study commissioned by T&E to CE Delft has shown that previous industry assessments of carbon leakage have overestimated the actual value. This is due to the way in which carbon leakage was defined. There are three possible ways to define carbon leakage:

1. Total emissions of the indirect route;
2. Emissions outside the scope of EU climate measures;
3. Additional emissions from the indirect route vs. the direct route.

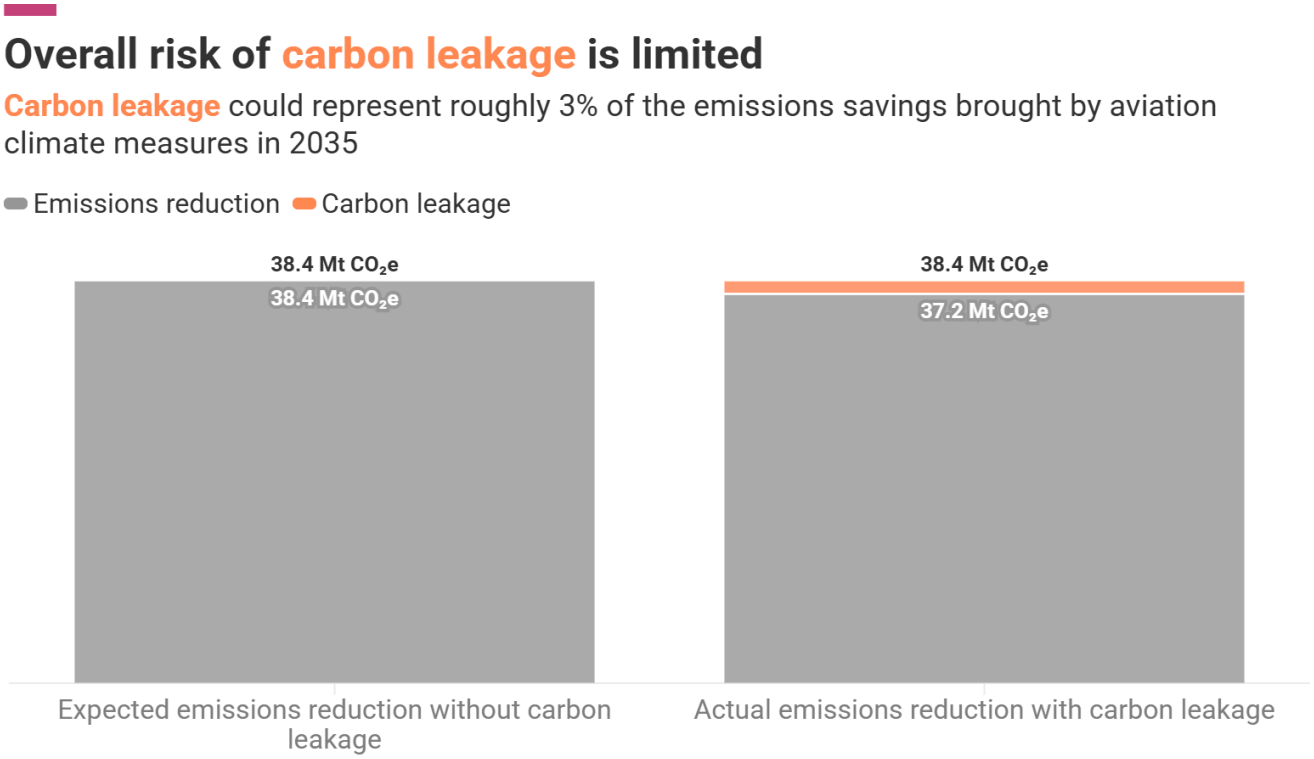
The IEA and IPCC definitions clearly state that estimations of carbon leakage should only take into account the increase in emissions outside of the region where there are climate measures. For aviation, this would be in line with Option 2. Crucially, previous aviation stakeholder assessments of carbon leakage have used a different definition of carbon leakage. Namely, they define carbon leakage as the total emissions of the indirect route i.e. Option 1. This definition is not relevant to determine the actual carbon leakage caused, since it includes emissions that are still within the scope of the EU's climate measures. This means that what

these studies are measuring is actually shifts in emissions, not leaked emissions, meaning their estimations of carbon leakage are over-inflated.

In addition, many of the relevant sector's publications do not just address carbon leakage but also 'business leakage'. This describes European airlines losing passengers to non-EEA airlines due to the potential competitive disadvantage caused by EU climate measures and other factors. This focuses more on the competitive and economic impacts of EU climate measures and other factors rather than the environmental impacts of extra emissions. Addressing carbon leakage will help to manage such a phenomenon, but the bulk of this issue appears to rather be linked with the open sky agreements signed by the EU with third-countries, that heavily jeopardize European carriers, as well as the distortive competitive effects stemming from state-backed business models of certain carriers, whose operations benefit from substantial public financial support, thereby creating structural imbalances in market conditions to the detriment of EU-based airlines.

- **A minimal risk of carbon leakage with Fit for 55 measures**

Analysis suggests that the risk of aviation's carbon leakage undermining EU climate policies is minimal. In fact, a 2023 T&E study found that the risks of carbon leakage as a result of the Fit for 55 (FF55) measures (i.e. ReFuelEU and EU ETS) are limited to 3% of the total emissions savings brought by the measures in 2035. Although ideally no emissions savings would be lost to carbon leakage, the amount is so minimal that it is evident that the FF55 measures have an overwhelmingly net positive effect on emissions reductions.



Source: T&E (2026)

Although the overall risk of carbon leakage is limited, there are certain routes where carbon leakage may occur. This includes flights towards South East Asia where there is a possibility of avoiding EU climate measures by adding an extra stopover in hubs like Istanbul, Doha and Dubai. Policy measures destined to address carbon leakage must therefore be **targeted towards these routes specifically**.

- **Policy measures to tackle carbon leakage**

Any EU measure introduced must be legally defensible, proportionate, administratively feasible and respectful of existing aviation treaties. Importantly, measures should be embedded within **existing EU legislation, such as the EU ETS,** to ensure the problem is tackled as soon as possible, rather than waiting for a new policy instrument.

Two policy measures following the above criteria come to light: introducing targeted increased carbon pricing under the EU ETS on routes at risk of carbon leakage or targeted use of SAF allowances under the EU ETS to routes at risk of carbon leakage.

1. **Targeted carbon pricing (between airport pairs):** This measure would involve applying a differentiated carbon price on routes where there is a risk of evading EU climate measures. Contrary to the proposal of using SAF allowances (explained below), which will provide a "discount" on the direct routes at risk, this option would increase the price of the stop-over route via a non-EEA hub.

   A legal analysis commissioned by T&E finds that the best way for this targeted carbon pricing measure to be designed is for it to be between airport pairs. This means a differentiated carbon price would be applied to flights between specifically designated airport pairs, typically linking an EU/EEA hub to a non-EU airport where the risk of carbon leakage is demonstrably high.

   The mechanism could be integrated into the existing EU ETS framework. An amendment would need to define the concept of a 'designated high-risk airport pair', establish the criteria and authority for designation and provide for differentiated compliance obligations.

2. **Targeted use of SAF allowances:** this mechanism would adapt the existing allowances so that they can be allocated on routes shown to be at high risk of carbon leakage. This effectively lowers the price of flying on these routes, reducing the incentive for passengers to fly via nearby non-EEA hubs to evade EU climate measures.

   Legally, this approach can be included as an amendment to the ETS Directive or its delegated acts. The current SAF allowance reserve is route-neutral. Enabling route-differentiated allocation would necessitate amending Delegated Regulation (EU) 2025/723 and revising the ETS Directive to create an explicit legal basis for conditional, route specific support. Some changes would need to be made to the

Monitoring, Reporting and Verification framework and the Union Registry, but - if well designed - these administrative adaptations are not insurmountable.

- **Conclusion**

To conclude, carbon leakage must not be used as an excuse to weaken EU climate measures. Overall, carbon leakage is limited and does not justify less ambition on EU measures. Even on routes where carbon leakage may be more likely, previous analyses have overestimated the actual carbon leakage value by using the wrong definition of carbon leakage. The European Commission needs to define a **methodology** to identify which routes are at risk of carbon leakage. This methodology must be objective, transparent and proportional in order to minimise risk of retaliation. Once specific routes have been defined, **existing policy frameworks should be used** to adjust pricing on these routes. This could be done by targeting carbon pricing on specific routes or by targeting the use of SAF allowances.

5. Conclusions and recommendations

The EU ETS presents a unique opportunity to both boost national budgets and to incentivise the uptake of green aviation technologies and contrail avoidance. T&E therefore recommends:

1	Expand the EU ETS to cover all departing flights from 2027, instead of continuing to rely on CORSIA.
2	Include private jets into a full scope ETS (e.g. departing and incoming flights), removing the *de minimis* emissions threshold.
3	Upgrade the Hydrogen Bank into a European-wide double sided auction mechanism to boost the uptake of e-SAF. Allocate e.g. 25% of aviation ETS revenues to the market intermediary.
4	Reform the SAF allowances in order to better support e-SAF by extending the mechanism in time and amount; earmarking allowances for e-SAF and advanced biofuels; phasing out support for HEFA-SAF; reducing the price coverage of the different types of fuels; and by moving away from an *ex-post* allocation to an *ex-ante* system.
5	Automatically expand the scope of the non-CO_2 MRV to cover departing and incoming flights, to better the understanding of aviation's full climate impact.

6	Introduce an incentive scheme for airlines called *contrail allowances* using ETS revenues, to support airlines to perform contrail avoidance manoeuvres.

Further information

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Annexes

Distribution of ETS aviation revenues between Member States

We outline how to calculate the fiscal revenues that EU Member States receive from aviation under the Emissions Trading System (EU ETS) for 2025 and 2026. The methodology accounts for the transition from specialized aviation allowances to general allowances and the phase-out of free allocation to airlines.

Revenues from aviation allowances

The first component of a Member State's aviation revenue comes from allowances directly originating from the aviation cap. We base our analysis on the aviation-specific carbon market cap defined by EU law. This cap determines the total number of aviation allowances available each year, covering flights within the European Economic Area, and is set by Directive 2003/87/EC and Commission Decision 2020/2166.

For 2025, the estimated gross cap is 27.6 million allowances. This is calculated by applying the 4.3% linear reduction factor to the 2024 baseline of 28.8 million allowances set by Commission Decision 2023/1575.

From this gross cap, we must subtract three aviation specific non-auctioned quantities: free allocations, SAF allowances, and Innovation Fund allowances.

Starting with the free allocation, following the EU's revised rules, free allocation for aviation is being phased out gradually. Airlines will receive 50% fewer free allowances in 2025 compared to 2023, dropping to zero in 2026. This will increase the volume auctioned and the auction revenue that Member States receive from aviation in 2025 and following years. We use these free-allocation shares in our calculations.

The 2023 revision introduces a SAF support scheme within the carbon market. It set aside 20 million allowances until 2030 for aircraft operators to incentivise the uptake of sustainable aviation fuels. The European Commission reported that the first year of application, 2024, the support amounted to about 1.3 million allowances, approximately €100 million, distributed between 53 operators. We distribute the remaining allowances evenly over the six-year period, around 3.1 million allowances per year.

In addition, the revised carbon market allocated further 5 million allowances from the aviation sector to the EU Innovation Fund. These reserved allowances are subtracted from the aviation cap and are not auctioned directly. Following the same approach as above, we distributed these allowances evenly over the six-year period, for a total of around 0.7 million allowances per year. The revenues from Innovation Fund allowances are eventually distributed to Member States through project funding, though this distribution mechanism falls outside the scope of our analysis. As such, our estimates can be considered a lower bound of total aviation-related revenues flowing to Member States.

After deducting free allowances, sustainable aviation fuel reserve and Innovation Fund allowances, the remaining aviation allowances are auctioned.

ETS aviation allowances (million EUAAs)	2024	2025	2026
Aviation cap	27.56	26.23*	24.90*
Free allowances	17.57	11.71	0
SAF allowances	1.30	3.11*	3.11*
Innovation Fund allowances	1.99	0.50*	0.50*
Total auctioned aviation allowances	**6.70**	**10.90**	**21.28**

** T&E forecasts*

ETS auction aviation allowances (2024-2026)

Revenues from general allowances

Because the aviation cap is consistently set below the actual emissions of the industry, airlines are net importers of allowances from the general industrial and maritime pool. We therefore must attribute a portion of general auction proceeds to the aviation sector to reflect this economic demand.

We calculate the difference between the total CO_2 emissions of flights covered by the carbon market and the gross aviation cap for that year. Given that intra-EU aviation verified emissions reached roughly 62.6 million tonnes in 2024 and continue to rise, this shortfall is a major driver of aviation's total fiscal contribution.

From this gross cap, we subtract the non-auctioned share. Although airlines are not eligible for free allowances for the part of general auction revenue attributed to aviation, they acquire their allowances from the general carbon market cap, of which only 57% are auctioned. In practice this means that only 57% of the allowances bought by airlines will generate revenues for Member States.

We then allocate a share of the remaining revenues to the Innovation Fund. Under current rules, 80 million carbon market allowances that would otherwise be auctioned by Member States are earmarked for the Innovation Fund over 2024-2030. We assume these are evenly distributed across the period, around 11.5 million allowances per year. To estimate aviation's contribution to the Innovation Fund, we first calculate aviation's share of additional allowances relative to all auctioned allowances under the carbon market cap. We then apply this share to the 11.5 million allowances allocated to the Innovation Fund per year to estimate aviation's contribution for that year. The corresponding revenues are then subtracted from total aviation carbon market revenues distributed among Member States.

We finally allocated 4.5% of total aviation-related carbon market revenues to the Modernisation Fund (MF). We distributed these revenues to the benefitting Member States according to the distribution keys provided in Annex IIb of the ETS regulation.

ETS general allowances (million EUAs)	2024	2025	2026
Over-the-cap aviation emissions	34.68	38.45*	41.50*
Auction share	57%	57%	57%
Innovation Fund allowances	0.29	0.34*	0.40*
Modernisation Fund allowances	1.56	2.69*	2.91*
Total auctioned general allowances	**17.92**	**18.88**	**20.35**

** T&E forecasts*

ETS auction general allowances (2024-2026)

We calculate total revenues from carbon market allowances by multiplying the net number of auctioned allowances for a given year by the forecasted carbon market price for that year. For example, for the year 2026, we assumed an ETS price of €85/tonne CO_2, based on a consensus forecast by the GMK center. These projections are based on the median of various forecasts of expert groups, research institutes and companies that take into account EU ETS market dynamics.

Revenues from ETS aviation allowances	2024	2025	2026
ETS auction price (€/t CO_2)	€ 65	€ 72	€ 85
Revenues from aviation allowances (million €)	**€ 549**	**€ 830**	**€ 1,922**
Revenues from general allowances (million €)	**€ 1,123**	**€ 1,491**	**€ 1,892**

Revenues from ETS allowances (2024-2026)

We allocate auctioned revenues to Member States using the shares specified by EU law. In particular, Commission Decision 2020/2166 sets Member State auction shares for general allowances in Annex I and for aviation allowances in Annex II. This takes into account adjustments to the distribution key due to the Solidarity Mechanism, under which 10% of revenues are set aside for solidarity purposes and redistributed to beneficiary Member States.

Country	EUA %	EUAA %	Country	EUA %	EUAA %	Country	EUA %	EUAA %
Austria	1.55%	2.12%	France	6.09%	11.28%	Malta	0.11%	0.60%

Belgium	2.57%	2.88%	Germany	22.29%	15.86%	Netherlands	3.73%	4.29%
Bulgaria	2.68%	0.96%	Greece	3.82%	5.22%	Poland	13.00%	2.96%
Croatia	0.52%	0.77%	Hungary	1.53%	0.97%	Portugal	1.93%	3.89%
Cyprus	0.29%	0.70%	Ireland	1.04%	1.93%	Romania	4.77%	1.86%
Czechia	5.02%	1.02%	Italy	10.52%	12.30%	Slovakia	1.60%	0.16%
Denmark	1.39%	2.59%	Latvia	0.20%	0.54%	Slovenia	0.49%	0.13%
Estonia	0.85%	0.27%	Lithuania	0.43%	0.44%	Spain	9.52%	14.90%
Finland	1.86%	2.14%	Luxembourg	0.12%	0.35%	Sweden	0.90%	3.72%

Overview of Member States' auction shares during the period 2021-2030

The total revenue a Member State can attribute to the aviation sector is the sum of the direct revenue from the aviation cap and the attributed revenue from the general market shortfall.

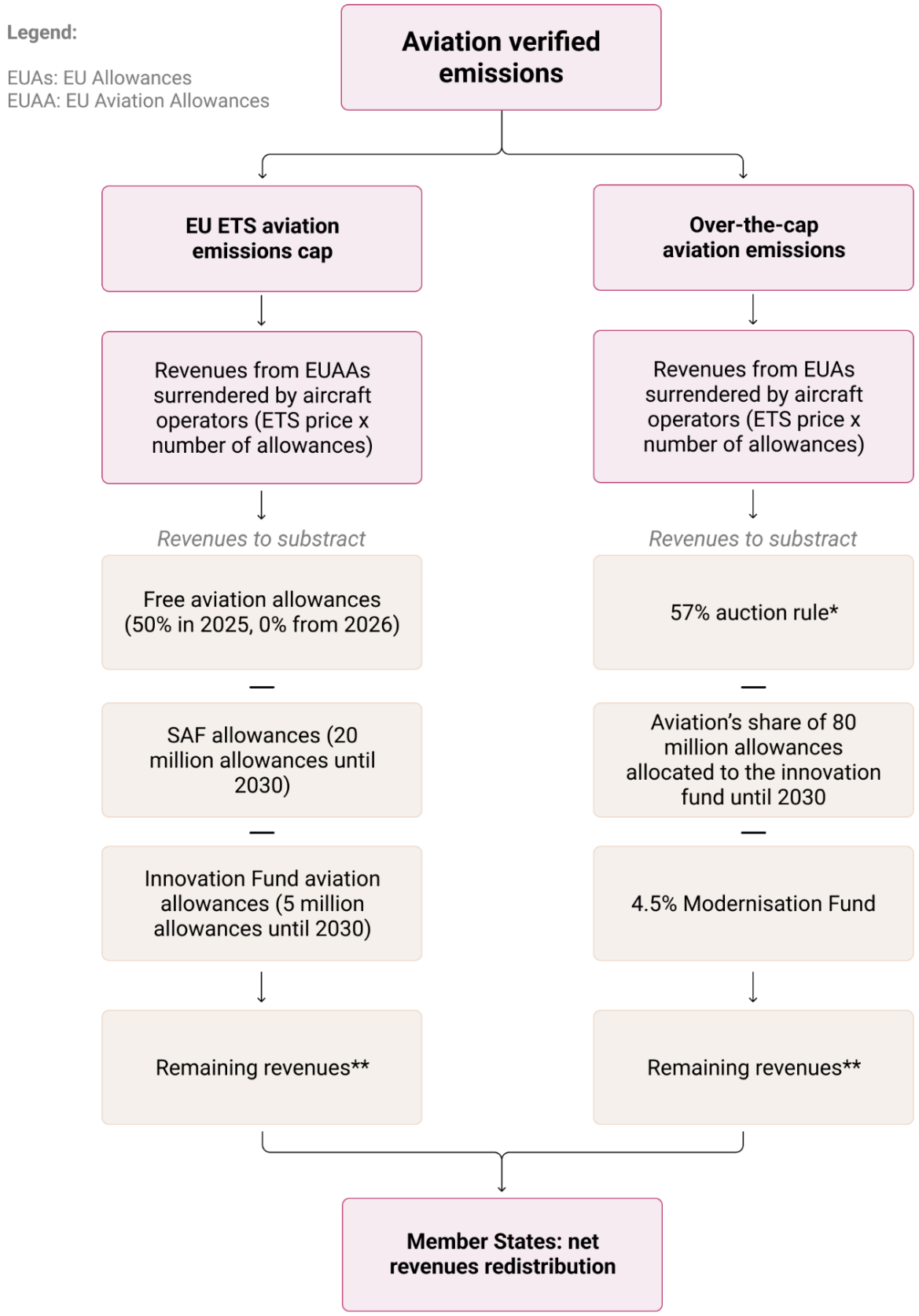
For 2026, this total is expected to reach its highest level since the sector's inclusion in the carbon market. This peak is caused by the convergence of zero free allocation for airlines and a tightening cap, which forces higher demand for auctioned allowances at market prices.

Emissions of aviation sector and paid allowances	**2024**	**2025**	**2026**
Intra-EU aviation emissions (Mt of CO_2)	**62.24**	**64.68***	**66.41***
Aviation cap (Mt of CO_2) and percentage of total intra-EU emissions (%)	27.56 *(44%)*	26.23* *(41%)*	24.90* *(37%)*
Aviation ETS allowances auctioned (million EUAs) and percentage of total intra-EU emissions (%)	6.70 *(11%)*	10.90* *(17%)*	21.28* *(32%)*
Over the aviation ETS cap emissions (Mt of CO_2) and percentage of total intra-EU emissions (%)	34.68 *(56%)*	38.45* *(59%)*	41.50* *(63%)*
Other sectors auctioned allowances used by aviation (million EUAs) and percentage of total intra-EU emissions (%)	17.92 *(29%)*	18.88* *(29%)*	20.35* *(31%)*
Total EU27 aviation emissions (Mt of CO_2)	**141.77**	**146.82**	**150.74***

** T&E forecasts*

Overview of ETS-paid emissions and their relative share of total EU aviation emissions (2024-2026)

Methodological map of aviation ETS revenue distribution to Member States



Source: T&E analysis. * ETS Directive, Art. 10. ** Allocated based on Member State auction shares set out in Commission Decision 2020/2166

SAF allowance calculations

For modeling the different scenarios of SAF allowance calculations, several assumptions had to be made. Firstly, we assume that the current scope of SAF allowances is used up before 2030 and we then propose to replicate the idea of SAF allowances to the time frame 2030 to 2034.

For this, the assumption is made that allowances are equally spread across five years between 2030 and 2034. This gives a good benchmark on how high the support in 2030 (when the new round of allowances would start) would be in an ideal scenario. In practice, the money is likely used more towards the end of the time period when more e-SAF gets available. The fuel demand in 2030 is estimated to be 50 Mtoe.

The assumed price for one allowance is 75 €/t of CO2 and the different fuel prices used in our calculations are as follows:

- e-SAF (RFNBO): 8465 €/t
- e-SAF (LCF): 6078 €/t
- Advanced biofuels: 2987 €/t
- Biofuels: 2085 €/t
- Fossil fuel price: 939 €/t

Starting with replicating the current mechanism to 2030, we assume that, without further adjustments, around two thirds of the money would be used for biofuels and the remaining third would be equally split between RFNBOs and LCF. This is in line with the ReFuelEU e-SAF sub-target, which implies that around one third of SAF is expected to come from synthetic fuels. Without earmarking within the SAF allowances, this is a reasonable baseline scenario. In this scenario, 20 million allowances are renewed and the coverage of the price differential for the different fuels is relatively high, ranging from around 50% for HEFA and LCF fuels to 70% for advanced biofuels, and up to 95% for e-SAF (first row of the chart).

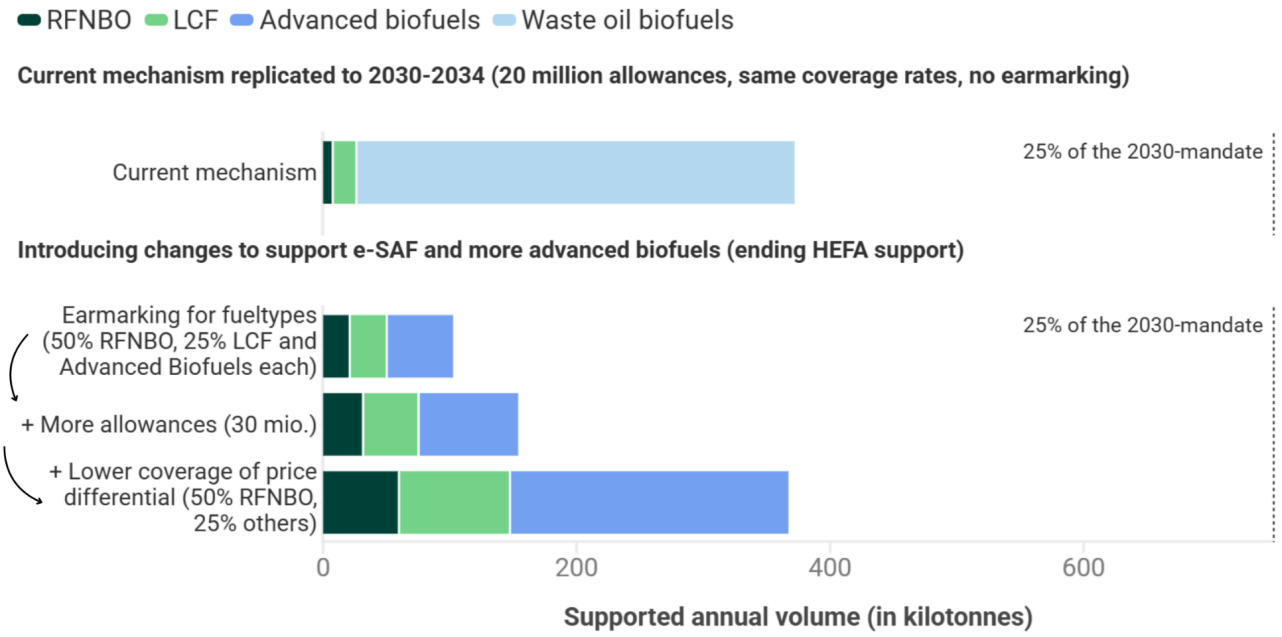
For introducing an earmarking, firstly the assumption of a HEFA-SAF support phase-out is taken. Additionally, the aim of supporting RFNBOs noticeably is taken into account and half of the allowance money is set aside for them. The remaining half is supposed to be split equally between LCF and Advanced Biofuels (second row of the chart).

On top of earmarking money for certain fuel types, the assumption of an increased amount of SAF allowances (30 million) is made (third row of the chart).

In addition to the already discussed measures, it is crucial to lower the coverage of the price differential for the different fuels. We put the RFNBO support down to 50% and the support rates for LCF and Advanced Biofuels to 25% each (fourth row of the chart).

How the SAF allowances can be reformed to better support advanced biofuels and e-SAF

Scenario analysis of different adjustments to the allowance mechanism



Source: T&E, EC 2025 • All eligible fueltypes are displayed. Due to HEFA phase-out, no support of biofuels in new scenarios.