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Economic Study on Carbon Leakage and Mitigating Measures - Aviation

Fields marked with * are mandatory.

Introduction and background

Thank you for participating in this survey, which is part of a study that has been commissioned to a consortium led by TISPT, in partnership with Panteia, Oeko-Institut and Würzburg University. This study aims to provide a comprehensive assessment of the risks associated with carbon leakage and a potential loss of competitiveness, as well mitigating measures, for the aviation sector. As the EU advances its ambitious climate goals under the European Green Deal and the 'Fit for 55' package, legislation such as the EU Emissions Trading Scheme (EU ETS) Directive and the ReFuelEU Aviation Regulation introduce carbon and compliance costs that may impact business decisions in these sectors. Additionally, the European Commission proposal to revise the EU Energy Taxation Directive may induce costs by phasing out tax exemptions of fuels used in aviation.

The study will evaluate how these policies influence operational and strategic choices within aviation transport, including switching of carriers for conducting a journey, switching of routes triggered by consumer demand shifts, refueling patterns and investment decisions. For the purposes of this study, a journey is defined as the route travelled by a passenger and/or a good from its point of departure until reaching the final destination. By identifying key risks (if any) and proposing effective mitigating strategies (where relevant), the study will support the European Commission's efforts to ensure environmental objectives are met while maintaining fair competition and economic sustainability.

The Intergovernmental Panel on Climate Change (IPCC) defines carbon leakage as "the increase in CO2 emissions outside the countries taking domestic mitigation action divided by the reduction in the emissions of these countries". Carbon leakage occurs when climate policies are not uniformly adopted across the globe and companies relocate operations to jurisdictions with less stringent climate policies to avoid associated costs. This relocation results in a shift of emissions without necessarily altering the overall climate impact, though undermining a jurisdiction's own efforts to reduce emissions. According to the IPCC, "it has been demonstrated that an increase in local fossil fuel prices resulting, for example, from mitigation policies may lead to the re-allocation of production to regions with less stringent mitigation rules (or with no rules at all), leading to higher emissions in those regions and therefore to carbon leakage. Furthermore, a decrease in global fossil fuel demand and resulting lower fossil fuel prices may lead to increased fossil fuel consumption in non-mitigating countries and therefore to carbon leakage as well".

The aviation sector may potentially face a heightened risk of carbon leakage due to its operational flexibility and global nature, allowing routes and operations to shift across borders. This could manifest through a diversion of air traffic if passengers and carriers opt for stopovers in non-EU hubs with lower carbon costs, or without SAF mandates.

These evasion strategies and associated emissions can ultimately lead to an increase in global GHG emissions, undermining the EU's climate goals if other countries do not adopt environmental policies as ambitious as those of the EU (e.g. the Fit for 55 legislation). Understanding these dynamics is crucial for designing policies that minimise unintended consequences while effectively reducing emissions in line with EU climate targets.

The relevant EU pieces of legislation for this project are:

- Regulation (EU) 2023/2405, ReFuelEU Aviation Regulation (more info)
- Regulation (EU) 2023/956, CBAM Regulation (more info)
- Directive 2003/87/EC and 2023/959, EU ETS (more info)
- Directive 2003/96/EC, EU ETD revision proposal (more info)

This **survey** is designed to collect valuable insights from **aviation stakeholders** to support the assessment of carbon leakage risks and potential loss of competitiveness linked to climate policies. The survey also aims to gather stakeholders views on possible mitigating measures.

The survey will take approximately 20-30 minutes to complete

At the end of the survey, you will have the opportunity to upload any documents containing evidence you think could be useful for the study.

Your participation is essential in shaping a well-informed and balanced analysis.

Your **privacy** is important to us. This survey is conducted in compliance with the **General Data Protection Regulation** (GDPR). All responses will be processed securely and used solely for research purposes related to the assessment of carbon leakage and competitiveness in the aviation and maritime sectors. Your data will not be shared with third parties beyond the research team. Participation is voluntary, and you may withdraw at any time without consequences. By proceeding, you confirm that you have read and agree to the terms of this survey.

☑ I accept your Terms

About your organisation

Are you part of a European organisation?

- (•) Yes
- ( ) No

* Which EU Member State is your organisation from?

BE - Belgium

* Which type of stakeholder group does your organisation belong to?

Minimum 1 selection(s)

- [ ] Air transport authority
- [ ] Independent supervisory authority
- [ ] Air carrier
- [ ] Manufacturer
- [ ] Association
- [ ] Airport owner
- [ ] Airport operator
- [x] Environmental organisation
- [ ] Academia and research
- [ ] Other

About you

* Contribution privacy settings for attribution of views

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- (•) Public

* First name

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Section 1: Potential impacts of environmental measures

In section 1, you are asked to provide estimations of the impact of EU ETS and ReFuelEU Aviation on different metrics, based on your judgement, knowledge, or other sources. For the three questions below, please consider the implementation of each environmental policy/mechanism independently from the others.

For this section, please assume that the EU ETS applies only to flights within the European Economic Area (EEA), in line with the current EU ETS Directive (i. e. assume the current scope).

Please describe the expected change (%) due to the implementation of the EU ETS

	2030	2040	2050
Conventional fuel costs	%	%	%
SAF costs	%	%	%
Ticket costs	% 17	%	%
Passenger demand at EU routes/hubs	%	%	%
Passenger demand at non-EU routes/hubs	%	%	%
SAF R&D costs	%	%	%
	%	%	%

Costs of drawing up new and/or amending air services agreements			
Reporting costs	%	%	%
Costs for businesses due to administrative obligations	%	%	%
Other costs (please specify in the next cell)	%	%	%

Please elaborate on your rationale behind the provided values

Assuming that the EU carbon price be ca. 150 EUR/tCO2 in 2030, it is estimated that the add-on price on the ticket due to the EU ETS be 21.2 EUR/pax for a one-way flight from Brussels to Athens (source; p25-26). Taking the assumption that all these being equal an average ticket price remains at 103 EUR for a one-way flight from Brussels to Athens (average for 2024 - did not find average data for 2022, year of the comparison performed by Ricardo in their study; source), this would result in an increase of ca. 17%.
Source: https://carbonmarketwatch.org/publications/the-eus-and-icaos-diverging-ambitions-to-reduce-aviations-climate-impacts/
Source: https://www.farecompare.com/flights/Brussels-BRU/Athens-ATH/market.html

Please describe the expected change (%) due to the implementation of the ReFuelEU Aviation Regulation

	2030	2040	2050
Conventional fuel costs	%	%	%
SAF costs	%	%	%
Ticket costs	%	%	%
Passenger demand at EU routes/hubs	%	%	%
Passenger demand at non-EU routes/hubs	%	%	%
SAF R&D costs	%	%	%
Costs of drawing up new and/or amending air services agreements	%	%	%
Reporting costs	%	%	%

Costs for businesses due to administrative obligations	%	%	%
Other costs (please specify in the next cell)	%	%	%

Please elaborate on your rationale behind the provided values

Section 2: Case study verification

In section 2, please rate how likely you find the scenarios as reactions to the introduction and enforcement of the aforementioned legislation.

Section 2.1: Current impact of carbon leakage

In this sub-section, please provide your views on whether there has been any carbon leakage due to the aforementioned decarbonisation legislation (incl. EU ETS) applicable until 2024 or due to other elements in the aviation sector (please only consider whether there has been any impact until 2024).

Please rate the current impact of carbon leakage for the following scenarios, considering only the implementation of EU ETS for aviation:

	No impact	Moderate impact	Strong impact
* Scenario 1: Switching of air carriers (from EU to non-EU carriers) for conducting a journey (air passenger transport).	◉	○	○
* Scenario 2: Switching of air carriers (from EU to non-EU carriers) for conducting a journey (air cargo transport).	◉	○	○
* Scenario 3: Switching of routes or destination (from the EU to non-EU countries) triggered by shifts in consumer demand (air passenger transport).	◉	○	○
* Scenario 4: Switching of hubs (from the EU to non-EU countries) (air passenger transport).	◉	○	○
* Scenario 5: Switching of hubs (from the EU to non-EU countries) (air cargo transport).	◉	○	○
* Scenario 6: Fuel economic tankering (air passenger transport).	◉	○	○
* Scenario 7: Fuel economic tankering (air cargo transport).	◉	○	○

* Are there other scenarios you think will be relevant, regarding the assessment of current carbon leakage impacts?

There is not enough empirical evidence to support that carbon leakage has occurred as a result of the EU ETS in the aviation sector in the period up to 2024. Already in the European Commission's Impact Assessment in 2006 on the introduction of aviation emissions in the EU ETS, it had found it "unlikely to significantly affect the respective competitive positions of operators." This was also a primary result of the European Commission's Impact Assessment on the Fit for 55 measures, which stated "there is no evidence of carbon leakage at present for aviation".
As such, we do not think there are any further scenarios that could be relevant since we do not see evidence that carbon leakage has happened thus far due to the EU ETS.
Source: https://climate.ec.europa.eu/document/download/602e9b73-f962-4cc8-b8b9-361014e62e20_en?filename=sec_2006_1684_en.pdf
Source: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=SWD:2021:603:FIN

* To what extent have EU decarbonisation measures affected Union airport's passenger traffic? Please provide the reasons for your response.

We do not think EU decarbonisation measures affected Union airports' passenger traffic since we do not see evidence that carbon leakage has happened thus far due to the EU ETS.

* Have any EU airport hubs been more impacted (if at all) by carbon leakage? If yes, please provide examples and the rationale for your response.

We do not think some Union airports' passenger traffic has been more impacted than others since we do not see evidence that carbon leakage has happened thus far due to the EU ETS.

* Have you noticed any market shifts or customer preferences towards non-EU operators or hubs? Please provide examples or data, if available.

We have not noticed any market shifts or customer preferences towards non-EU operators or hubs since we do not see evidence that carbon leakage has happened thus far due to the EU ETS.

Please provide further information on the identified (past and current) impacts of carbon leakage, namely the drivers for the shift (if any) in emission.

To complement on the non-observation of carbon leakage thus far due to the EU ETS, "It is important to highlight that competition issues opposing European airlines to third-country carriers today are not at all related to the implementation of climate measures in Europe. Competition issues rise for example from giving market access to carriers that are more heavily subsidised, such as gulf carriers (Etihad Airways, Qatar Airways, and Emirates) that set artificially low prices and unfairly compete with European airlines." (T&E's study, 2023) Source: https://www.transportenvironment.org/uploads/files/TE-Aviation-competitiveness-and-carbon-leakage-Briefing-2023-UPDATED-12-10-23.pdf

* To what extent (if at all) have passengers and consumers been impacted by carbon leakage?

We do not think passengers and consumers have been impacted by carbon leakage since we do not see evidence that carbon leakage has happened thus far due to the EU ETS.

Section 2.2: Potential risk for carbon leakage in the short- to medium term (2025-2050)

In this sub-section, please rate how likely you find the future scenarios as reactions to the introduction and enforcement of the aforementioned legislation (incl. EU ETS and ReFuelEU Aviation) applicable (please consider the period 2025-2050 in your assessment).

Switch to non-EU destination:

	Very unlikely	Unlikely	Neutral	Likely	Very likely
* Scenario 1: French leisure passenger changing a holiday in Greece for a holiday in Turkey.	◉	○	○	○	○
* Scenario 2: German leisure passenger changing a holiday in the Canary Islands for a holiday in Morocco.	◉	○	○	○	○

Are there other scenarios of switching to non-EU destinations you think could be relevant?

No

Please provide further information on the potential risk for carbon leakage in the scenarios considered.

The European Commission's Impact Assessment in 2006 on the introduction of aviation emissions in the EU ETS provides insightful elements on this question (here, p55):
"Changing the geographical scope: effect on tourism:
Section 5.3.6 pointed out that tourism in the EU is essentially driven by EU citizens. It also concluded that the extra costs introduced by aviation's incorporation into the EU ETS under a scenario of all departing flights were very limited. This means that the cost differential between choosing a tourist destination within the EU and one outside the EU would not be expected to be very large. However, it was acknowledged that there is a greater risk for regions whose tourism receipts depend almost completely on inbound air travel. For these regions, any risk of EU citizens significantly increasing the extent to which they choose to holiday in, for example, Turkey instead of the Greek islands, would likely be eliminated if the scope of the scheme was changed from all departing flights to being all departing and arriving flights. This is because there would no longer be any cost difference between arriving in an EU country and arriving in a non-EU country. Consequently, any risk would clearly be increased if the scope of the scheme was changed from all departing flights to intra-EU flights only. At this point, there would be the largest possible cost difference between arriving in an EU country and arriving in a non-EU country"
As per the Commission's own impact assessment, not only is the risk of carbon leakage limited for EU aviation, but extending the scope of the EU ETS to all departing flights would make up for the type of carbon leakage risk highlighted in this section. In its assessment next year, we expect Commission to find CORSIA to be failing to meet its objectives - as CMW's study (here and here) commissioned to Ricardo shows for now. We therefore expect the European Commission to not postpone the 'stop the clock' provision - at least on departing flights - that has been excluding extra-EEA flights since the 2010s until now and thereby to extend the EU ETS scope to all departing flights. In this context, we do not expect any carbon leakage risk

consisting in a switch from an EU to an non-EU destination. This is not to mention that destination choice is not only based on the cost of the flight, but also the culture and attractions at the destination, the cost of hotels and food or the availability of childcare.
Source: https://climate.ec.europa.eu/document/download/602e9b73-f962-4cc8-b8b9-361014e62e20_en?filename=sec_2006_1684_en.pdf
Source: https://carbonmarketwatch.org/publications/eu-ets-vs-corsia-which-better-navigates-the-turbulence-of-the-climate-crisis/
Source: https://carbonmarketwatch.org/publications/the-eus-and-icaos-diverging-ambitions-to-reduce-aviations-climate-impacts/

Section 2.2: Potential risk for carbon leakage in the short- to medium term (2025-2050)

Switch stopover from an EU hub to a non-EU hub:

	Very unlikely	Unlikely	Neutral	Likely	Very likely
* Scenario 1: (Passengers) Change of stopover location from EU hub (Lisbon) to non-EU hub, for travel to Brazil	◉	○	○	○	○
* Scenario 2: (Passengers) Change of stopover location from EU hub (Madrid) to non-EU hub, for travel to Latin America	◉	○	○	○	○
* Scenario 3: (Passengers) Change of connecting EU hub (by EU carrier) to non-EU hub, for travel to Southeast Asia.	◉	○	○	○	○
* Scenario 4: (Freight) Connections by road and air from an EU hub (by an EU carrier) vs direct long-haul connection with a non-EU carrier and a stop in a non-EU hub.	○	○	◉	○	○

Are there other scenarios regarding the switch of a stopover from EU to non-EU you think could be relevant?

No

Please provide further information on the potential risk for carbon leakage in the scenarios considered.

As per T&E's study (2023), risks of carbon leakage are limited to 3% of the total emissions savings brought by FF55 measures by 2035. Instead of reducing emissions by 38.4 MtCO2, emissions are reduced by 37.2 MtCO2 by 2035, equivalent to the annual emissions of 10 coal-fired power plants.
Despite the climate measures, there will be 24% more passengers travelling through EEA airports in 2035 compared to 2018.
The growth in traffic at airports located in countries with less stringent climate policies is primarily inherent to

the aviation market and is only marginally influenced by the implementation of climate measures in Europe. Solutions exist to make climate measures even more effective and reduce this limited carbon leakage. They include reducing the price gap between SAF and fossil kerosene or better regulating access to the European market by non-European airlines through ASA.
While any amount of carbon leakage is undesirable, it only weakens the objective of climate measures when the extent of carbon leakage exceeds the CO2 savings resulting from this measure.
Source: https://www.transportenvironment.org/uploads/files/TE-Aviation-competitiveness-and-carbon-leakage-Briefing-2023-UPDATED-12-10-23.pdf

To what extent will EU decarbonisation measures affect Union airport's passenger traffic? Please provide the reasons for your response.

T&E's study (2023) finds that EU hubs would see significant growth in passenger traffic (ca. + 25%) despite decarbonisation measures between 2018 and 2035 (cf. table 1, p7-8). These measures would only reduce the EU hubs' growth in passengers compared to what they would have been in a no decarbonisation measure scenario.
https://www.transportenvironment.org/uploads/files/TE-Aviation-competitiveness-and-carbon-leakage-Briefing-2023-UPDATED-12-10-23.pdf

Which EU airport hubs will be more (if at all) vulnerable to carbon leakage?

T&E's study (2023) finds that EU hubs rather located on close to the borders of the EEA would be more vulnerable to carbon leakage compared to hubs located closer to its centre. Stockholm and Warsaw airports are more impacted than Frankfurt and Amsterdam, for instance, in 2035 (cf table 3, p11). Yet, airports with high transfer passenger shares like the two latter could also be concerned more than other airports - again, if the risk were actually observed. As per the data provided in this study, the risk of carbon leakage remains very limited.
Source: https://www.transportenvironment.org/uploads/files/TE-Aviation-competitiveness-and-carbon-leakage-Briefing-2023-UPDATED-12-10-23.pdf

Section 2.2: Potential risk for carbon leakage in the short- to medium term (2025-2050)

Switch to non-EU carrier:

	Very unlikely	Unlikely	Neutral	Likely	Very likely
* Scenario 1: (Passengers) Direct connection to Asia with an EU carrier vs journey with a connecting flight by a non-EU carrier	○	○	◉	○	○
* Scenario 2: (Passengers) African carrier operating non-EU long-haul commercial passenger flights and fifth-freedom (short-haul intra-EU and long-haul) passenger flights to/from the EU.	◉	○	○	○	○
*					

Scenario 3: (Passengers) Asian carrier operating long-haul commercial passenger flights to/from the EU and fifth-freedom (short-haul intra-EU and long-haul) passenger flights to/from the EU.	○	◉	○	○	○
* Scenario 4: (Freight) Direct connection to Asia with an EU carrier vs journey with a connecting flight by a non-EU carrier.	○	◉	○	○	○

Are there other scenarios regarding a switch to a non-EU carrier you think could be relevant?

Please provide further information on the potential risk for carbon leakage in the scenarios considered.

For Scenario 1 we have selected 'Neutral'. This is a scenario that may happen as a response to cost increases that result from EU climate measures. However, whether this is likely or unlikely depends on the price flexibility of customers (customers who can afford expensive tickets to Asia may be less likely to notice cost differences) and the extent to which passengers value travel time. According to T&E's 2023 study, the risks of carbon leakage are limited to 3% of the total emissions savings brought by the Fit for 55 measures by 2035. This shows that while more passengers may transfer at non-EU airports to avoid the extra costs associated with the EU's climate measures, the carbon leakage impacts will remain limited when put into perspective with the carbon savings that come from the climate measures.
Scenarios 2 and 3 also appear unlikely, with Scenario 2 more unlikely than Scenario 3 since Asian countries are likely to have better access to fifth-freedom flights on intra-EU routes due to Open Skies agreements already in place with countries such as Singapore, Thailand and Malaysia. However, even for Asian airlines, it seems unlikely that with the higher cost of flying in Europe due to the EU ETS and REFuelEU that they would want to operate more intra-EU flights.
For Scenario 4, we see the risk of carbon leakage as less likely for freight aviation than for passenger aviation due to the demand for faster, direct goods delivery, as well as the lower price sensitivity for cargo aviation. Further factors also limit the likelihood of carbon leakage occurring in the freight sector, such as the fact that cargo routes have to follow the main trade routes and the fact that the cargo market is smaller and therefore more restricted in alternative routes than the passenger sector.
Source: https://www.transportenvironment.org/uploads/files/TE-Aviation-competitiveness-and-carbon-leakage-Briefing-2023-UPDATED-12-10-23.pdf

Section 2: Case study verification

If possible, please list the routes where EU legislation has or is expected to have the greatest impact on operational costs, competitiveness, or fuel choice (e.g. Europe to Southeast Asia, Transatlantic).

If EU climate legislation caused carbon leakage or affected competitiveness then it would be on routes from Europe to Southeast Asia, since these routes most likely to be impacted by nearby hubs outside of the EEA, such as Istanbul, Dubai, Abu Dhabi and Doha, that could be used for transfer flights.

Can you suggest any additional aviation routes that are particularly vulnerable to carbon leakage?

* To what extent (if at all) are passengers and consumers expected to be impacted by carbon leakage?

It should again be noted that carbon leakage is unlikely to occur. If it were to occur, then passengers and consumers could be misled about the sustainability of EU aviation, if emissions are increasing elsewhere.

Section 3: Definition of loss of competitiveness

The study includes assessment of the impacts of different environmental EU policies on competitiveness in the EU aviation sector

How would you define loss of competitiveness in the EU aviation sector?

Loss of competitiveness must be based on developments in relative market shares, not on developments in EU passenger growth. If EU carriers lose out on relative market share to third country carriers that could be considered a loss of competitiveness. If EU carriers are not able to continue on their rapid growth trajectory that should not be considered a loss of competitiveness. It must be remembered that net-zero aviation by 2050 is simply not possible with the industry's rapid growth projections (see T&E's recent study).
Source: https://www.transportenvironment.org/articles/down-to-earth

* Do you foresee an impact on the competitiveness of the EU aviation market due to decarbonisation policies (e.g. shift in passenger or freight demand due an increase in costs)? Please provide examples or data, if available.

In 2023, T&E conducted an analysis of projections in passenger traffic at EEA and non-EEA airports, which found that the shift of passengers from EEA to non-EEA hubs as a result of the EU's decarbonisation measures will be limited, contrary to industry claims. As already mentioned in a previous answer, growth at EEA airports remains strong even with the Fit for 55 measures, with an average of 24% passenger traffic growth in 2035.
Growth at non-EEA airports is indeed strikingly rapid by comparison. However, the extent to which this rapid growth can be attributed to climate measures in the EU is limited. Passenger traffic at Istanbul would increase by 73.4% in 2035 compared to 2018 if no climate policy measures had been introduced in the EU. This only increases by a further 3.1% with the introduction of the Fit for 55 measures. In Dubai airport passenger traffic would increase by 60.8% in 2035 anyway in 2035 if no EU climate measures were introduced and actually decrease by 1.9% with the EU's Fit for 55 measures. This suggests the implementation of EU climate measures will not lead to a shift of European demand to non-EEA hubs. Rather a range of other factors need to be considered to explain the rapid growth at hubs such as Istanbul and Dubai, such as the heavy subsidisation of gulf carriers such as Etihad Airways, Qatar Airways and Emirates, which has often been mentioned as a key long-standing concern by EU/European airlines when it comes to loss of market shares and lower fares by gulf carriers.

* What are the main drivers that would motivate a change in passengers' choice (i.e. triggering a shift in passenger demand)?

Several factors must be considered when analysing what motivates a passenger to change their travel choice, of which price is only one. Other factors that come into play are convenience (such as the distance

separating a passenger's home from the airport), airline service quality, perception of airline loyalty and the willingness to extend travel time.

* Do you foresee an impact on the competitiveness of the EU aviation market from factors other than EU decarbonisation policies (e.g. different levels of operating costs, fuel prices, investment in the modernisation of airports, etc.)?

As highlighted in a previous answer, the rapid growth at airports in Istanbul, Dubai and Doha will happen regardless of whether there are EU climate policies in place or not. This is because of long-standing competition issues in the aviation market, often mentioned by EU airlines well-before the extension of the ETS, that have arisen from giving market access to heavily subsidised gulf carriers, such as Etihad Airways, Qatar Airways and Emirates that can set artificially low prices due to their state subsidisation. This places them in unfair competition with European airlines.
In terms of fuel prices, IATA's Jet Fuel Price Monitor shows that jet fuel is cheapest in the Middle East. For the week ending 14th March 2025, jet fuel prices in the Middle East were at $81.86 per barrel, compared to $88.38 per barrel in Europe. This gives airlines operating from this region, such as Etihad and Qatar Airways a further advantage.
Finally, the difference in operating costs is not just due to EU climate measures, but also due to the closure of the Russian airspace which has led to extended flight lengths and higher fuel costs, wage increases and higher maintenance costs.
All of these factors must be considered in an assessment of the competitive distortion caused solely by EU climate measures.
Source: https://www.iata.org/en/publications/economics/fuel-monitor/

Section 4: Identification and evaluation of policy measures aimed at reducing the risk of carbon leakage

Based on an identification of the potential risk for carbon leakage in various case studies (see above), potential mitigating measures have been identified and will be analysed within this project to reduce any risk for carbon leakage found in the case studies. This encompasses the introduction of new policies or the extension/adjustment of existing EU policies. Each policy measure will be subject to a feasibility assessment.

In this section, we ask you to assess these various mitigating measures using a multi-criteria analysis (MCA), evaluating the potential impact and feasibility of the proposed measures. Your opinion on these measures will feed into our feasibility assessment.

Section 4: Identification and evaluation of policy measures aimed at reducing the risk of carbon leakage

Measure 1 - Extension of CBAM to the aviation sector

The Carbon Border Adjustment Mechanism (CBAM) was introduced to mirror the EU ETS in May 2023 to mitigate the risk of carbon leakage and strengthen the effectiveness of the EU ETS. As the EU raises its climate ambition and less stringent environmental and climate policies prevail in some non-EU countries, there is a strong risk of carbon leakage. The CBAM will support the EU's increased climate ambition and ensure that climate action is not undermined by production relocating to countries with less ambitious policies. To drive deeper emission reductions while addressing the risk of carbon leakage, the EU introduced CBAM.

A potential application of CBAM in the aviation sector requires adjustments from the current set up for stationary installations. For aviation, CBAM could be applied to routes currently not covered by the aviation EU ETS. This would mean that a carbon price, equal to the ETS allowance price in the EU, would be applied to the complete journey of the passenger or transported good (from departure to final destination). Potential costs of CORSIA or costs from other carbon pricing schemes in third countries will be considered on such routes.

Suitability of extending CBAM to transport services to address carbon leakage risks	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	○	○	○	◉	○
* The proposed measure is socio-economically feasible	○	○	○	○	◉
* The proposed measure is politically feasible	○	○	◉	○	○
* The proposed measure is legally feasible	○	○	◉	○	○
* The proposed measure is technologically feasible	○	○	○	◉	○

Additional remarks:

A lot of (unspelt out) parameters for the functioning and scope of a CBAM for aviation would be decisive factors in determining whether the measure ticks the boxes above so it is hard to judge the ability of a CBAM that is so briefly described in meeting the abovementioned criteria.
If a list of routes deemed at risk of carbon leakage is established, with reliable data demonstrating such risk and a certain degree of significance, it would build a better case for the measure to be shaped as an environmental measure protecting against the risk of carbon leakage rather than a protectionist measure (cf. debate on legitimacy and legality of the CBAM for its original scope). These aspects could determine the political and legal feasibility of the measure.
Regarding the scope, if the CBAM was extended to routes currently not covered by the EU ETS, that could mean covering extra-EEA routes - both inbound and outbound - for which carbon leakage risk is deemed the highest, eg flights to/from Southeast and East Asia. The coverage could mean requiring the payment of CBAM certificates calculated based on the weekly average EU ETS carbon price times the CO2 emissions emitted.
Taking the example of a direct flight from Schiphol to Hong Kong, the operator would be required to pay a carbon price for the flight's emissions and the same with a Hong Kong - Schiphol flight. Such coverage would make up for a first possible form of carbon leakage risk (cf. Section 2.2 "switch to non-EU destination").
A difficulty would arise with addressing indirect flights (with a stopover), where there is a risk of switching

from an EU to a non-EU hub, eg a flight from Schiphol to Hong Kong with a stopover in Istanbul. This is because the operator operating both legs of the flights may not be the same. Also, some passengers may indeed fly both legs to a final destination (here, Hong Kong), while other passengers may stop and stay in Istanbul. Here, the measures in place should ensure that all emissions (from Schiphol to Istanbul to Hong Kong) are priced in the former case and only emissions from Schiphol to Istanbul are priced in the latter case. It may be hard to track whether passengers actually stay in Istanbul or if they booked two flights separately (Passport/Visa information as well as Passenger Name Record (PNR) could be used). Yet, we understand from airports that passengers are unlikely to do this, as airlines typically sell their services as a single legal transaction; ie if a passenger books each segment separately, they risk losing the guarantee of luggage transfer and compensation rights for missed connections. While the first leg of the flight could be priced with the application of a carbon price on its emissions, the remainder should then be priced too by requiring either the operator to pay for the carbon price on emissions of the flight between Istanbul and Hong Kong (if single legal transaction comprises both legs) or the passenger to pay an additional surcharge on the first leg of the flight, corresponding to the carbon price applied to emissions of the second leg (eg if waiting time at stopover is less than 24h).
In the vast majority of cases, the measure would not deprive people of an essential service and would not disproportionately affect the most vulnerable, considering that most flights are taken by the wealthiest share of the population (cf, among others, Gössling et al. 2020).

Section 4: Identification and evaluation of policy measures aimed at reducing the risk of carbon leakage

Measure 2:
An EU levy would be created that applies to all departing flights from the EEA where the level of the levy is based on the final destination (similar to the ticket tax for passengers in Germany). This means that levy is lower/higher for shorter/longer distances covered by the passenger or freight. It could further be differentiated by economy and business class. The revenues generated would go into an EU fund (to decarbonise aviation, or to compensate for SAF prices).

Creation of an EU climate levy linked to an EU fund	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	○	○	○	◉	○
* The proposed measure is socio-economically feasible	○	○	○	○	◉
* The proposed measure is politically feasible	○	◉	○	○	○
* The proposed measure is legally feasible	○	○	○	◉	○
* The proposed measure is technologically feasible	○	○	○	◉	○

Additional remarks:

An EU climate levy applying to emissions from all flights departing from the EEA would complement the carbon pricing scope for aviation and help the EU to address and cover its fair share of aviation's emissions, in a context where no international scheme addresses them in a way that is aligned with the Paris Agreement. Considering an EU carbon pricing (the EU ETS) already exists and that it already partially

covers aviation's emissions, extending the EU ETS to extra-EEA flights should be privileged over the EU levy.
An issue would arise regarding the coordination between the existing scope of the EU ETS applying to intra-EEA flights and this new EU levy applying to all flights departing from the EEA. One solution could be to exempt from the levy the flights that are already covered by the EU ETS scope, ie flights departing from the EEA and landing in the EEA (intra-EEA flights).
For the same reasons as those outlined for measure 1, the social element would not be an issue. However, while the EU climate levy could address some carbon leakage risks in the way that measure 1 could (cf. measure 1 answer), it would not address risks of switching to non-EU hubs—yet measures could be taken to avoid this (cf. measure 1 answer).
While WTO rules may be barriers to unrolling measure 1, EU rules may represent obstacles to the rolling out of measure 2, depending on how a levy is legally framed. If a tax, then its adoption at EU level may be much more complex (cf. Council's unanimity rule). The fact that is solely focuses on one sector, ie aviation, could potentially make it slightly more politically feasible than the ETD reform (cf. measure 6).
Considering that emissions per passenger across classes (economy, business, first) are multiplied by a factor of 3 to 4, the EU climate levy should price emissions per passenger by taking into account the respective flight class.
Regarding revenues, while some of the proceeds generated by the levy on flights from an EU Member State to a third country should support the decarbonisation of the aviation sector (eg compensation of price gap between efuels and kerosene or zero-emission aircrafts), a portion should also flow to most vulnerable States to help them decarbonise and adapt to climate change. Making decarbonised options cheaper will best help to address carbon leakage risks.

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Measure 3
A SAF levy would be introduced to departing flights with the funds used to compensate for the price gap between fossil kerosene and SAF in face of the ReFuelEU Aviation Regulation obilgations for departing flights.

A levy on sustainable aviation fuels	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage and/or loss of competitiveness	○	○	◉	○	○
* The proposed measure is socio-economically feasible	○	○	○	◉	○
* The proposed measure is politically feasible	○	◉	○	○	○
* The proposed measure is legally feasible	○	○	◉	○	○
* The proposed measure is technologically feasible	○	○	○	◉	○

Additional remarks:

The SAF levy would be similar to an EU climate levy (measure 2) since it would likely take the legal shape of a tax at EU level and apply to all departing flights. It should, though, be determined depending on the emissions generated by flights (like measure 2 or the EU ETS) - and not apply as a fixed price level (eg X EUR per flight) - ideally, consider flight classes like measure 2. Based on the name, the intention would certainly be to support all SAF - while we know that SAF require different levels of funding and they clearly don't all justify support prioritisation; only truly low-carbon carbon and scalable SAF, ie, efuels, should be supported.
Similarly to measure 2, EU rules may represent obstacles to the rolling out of this SAF levy, depending on how a levy is legally framed. If a tax, then its adoption at EU level may be much more complex (cf. Council's unanimity rule). Considering an EU carbon pricing (the EU ETS) already exists and that it already partially covers aviation's emissions, extending the EU ETS to extra-EEA flights should be privileged over the EU levy.
For same reasons as those outlined for measure 1, the social element would not be an issue. However, while a SAF levy could address some carbon leakage risks in the way that measure 1 could address them (cf. measure 1 answer), it would not address risks of switching to non-EU hubs - yet, measures could be taken to avoid this (cf. measure 1 answer).
Regarding revenues, like for measure 2, while some of the proceeds generated by the SAF levy should support the decarbonisation of the aviation sector eg by compensating the price gap between efuels and kerosene, a portion should also flow to most vulnerable States to help them decarbonise and adapt to climate change. Making decarbonised options cheaper will best help to address carbon leakage risks.

Section 4: Identification and evaluation of policy measures aimed at reducing the risk of carbon leakage

Measure 4

According to forecasts of EU ETS prices, and work conducted by the Committee of Aviation and Environmental Protection (CAEP) in ICAO, the difference between the prices of EU ETS allowances and CORSIA offset units may remain significant in short-term. However, increased stringency of CORSIA, increased demand for allowances due to the higher quantity which needs to be offset, and applicability of additional constraints may reduce this difference. Any ICAO mechanism post 2035 might have characteristics different than the current CORSIA. Alternatively, an absence of a global system may lead to a patchwork of regional and national measures, which in theory could become linked, leading to comparable results in a more fragmented and inconsistent way.
This measure seeks to examine effective methods of ensuring uniform carbon pricing across different global aviation routes to reduce the incentives for carbon leakage on different routes, for passengers and cargo.

Similar levels of carbon pricing on different global routes	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	○	○	◉	○	○
* The proposed measure is socio-economically feasible	◉	○	○	○	○
* The proposed measure is politically feasible	◉	○	○	○	○
* The proposed measure is legally feasible	○	◉	○	○	○

* The proposed measure is technologically feasible	○	○	◉	○	○

Additional remarks:

From the paragraph above, it is hard to understand what the actual proposed measure (4) is. Is it the continuation of CORSIA until and post 2035 the current rules on credit eligibility, or with more stringent rules? Is it a new ICAO measure? Would it be a cap and trade system, with a declining cap reaching zero by 2050, or would it be an offsetting scheme?
Quite clearly, we expect the European Commission to find CORSIA as it is to fail in meeting the Paris Agreement objectives in its report in July 2026, considering the results of our recent study's findings (here and here). As such, based on the EU ETS Directive, we expect the European Commission not to renew the 'stop-the-clock' derogation on flights departing from the EEA and thereby covering those routes under the EU ETS.
At CMW, we strongly advocate for multilateralism to address climate change at the global level where possible and relevant, as our involvement in the UNFCCC, the IMO or the ICAO can demonstrate. Ideally, countries find consensus - and we help them to do so - on efficient measures at the international level. Yet, so-called global 'measures' cannot and should not be used as a motive to delay climate action as has been done in the past, for instance at the ICAO. CMW has long refuted the compatibility of CORSIA with the EU's climate goals and the Paris Agreement objectives. After being tasked in 1996 to address international aviation emissions, the ICAO took 20 years to develop its scheme. The 10th anniversary of the agreement on CORSIA is in sight, yet the scheme doesn't aspire to carbon neutrality for the sector and doesn't even include any emission reduction target. Considering the two lost decades it took ICAO to develop its ill-designed scheme and a further 10 years to implement it (CORSIA becomes "compulsory" only in 2027), who can tell how long it will take for the UN agency to confront the reality that its mechanism is entirely off track from what climate science, its own Long Term Aspirational Goal (LTAG), and Paris Agreement targets demand — quite something for a sector that is nimbly, yet unfairly, escaping taxation, too.
On many occasions, the EU has been a global regulatory leader and an inspiration source for other countries and international organisations in setting norms, not least in climate space. When urgently required change stalls after decades of efforts, it is most logical for the EU to continue leading by stepping up in ambition and implementing reform - here, by completing the very partial carbon pricing of its aviation emissions under its EU ETS - which may influence the improvement of global schemes at some point in the future.
Therefore, while the continuation of CORSIA is likely feasible from a technological, legal and socioeconomic point of view, its single existence without any complementary climate measure becomes worthless when it is very unlikely to deliver on a climate ambition level required both to align with ICAO, EU climate targets, and Paris Agreement objectives and to be able to address carbon leakage risk for the EU aviation sector.
Source: https://carbonmarketwatch.org/publications/eu-ets-vs-corsia-which-better-navigates-the-turbulence-of-the-climate-crisis/
Source: https://carbonmarketwatch.org/publications/the-eus-and-icaos-diverging-ambitions-to-reduce-aviations-climate-impacts/
Source: https://carbonmarketwatch.org/publications/addressing-aviation-emissions-under-the-eu-emissions-trading-system/
Source: https://te-cdn.ams3.cdn.digitaloceanspaces.com/files/2010_09_icao_grounded.pdf
Source: https://www.transportenvironment.org/uploads/files/tax_gap_report_July_2023-1.pdf

Section 4: Identification and evaluation of policy measures aimed at reducing the risk of carbon leakage

Measure 5

From January 2027 onwards, there will be no free allocation for aviation in the EU ETS - except a limited supply for the uptake of SAF. The European Commission namely introduced an eligible fuels support mechanism which will run from 2024 to 2030 to support the uptake of sustainable aviation fuels (SAF) (Art. 3c (6), 2003/87/EC). The mechanism entails the use of 20 million EU ETS allowances to support commercial aircraft operators using eligible fuels on routes covered by the EU ETS - except where they are derived from fossil fuels. Aircraft operators can apply for free allocation to cover part of, or the entire, price difference based on the quantity, the type and the uplifting location of batches of eligible aviation fuel used. This measure would encompass either the limited and targeted provision of freely allocated allowances to airlines (e.g. on certain journeys prone to carbon leakage), or the use of free allowances for the uptake of SAF through the eligible fuels support mechanism (e.g. introducing a new support category for SAFs within the mechanism being used on routes prone to carbon leakage).

Provision of targeted EU ETS allowances	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	○	○	○	○	◉
* The proposed measure is socio-economically feasible	○	○	○	○	◉
* The proposed measure is politically feasible	○	○	○	○	◉
* The proposed measure is legally feasible	○	○	○	◉	○
* The proposed measure is technologically feasible	○	○	○	◉	○

Additional remarks:

Measure 5 as outlined in the above text does not clearly choose between two very different policy pathways: 1) continuation of free allowances for airlines operating routes deemed at risk of carbon leakage and 2) reform of the 20M allowance SAF scheme to reprioritise free allowances for airlines using SAF on routes deemed at risk of carbon leakage.
The assessment of the measure in the table above assumes that option 2) is considered and not 1).
The former option (1) would mean continuing with a policy that has, for decades, delayed climate action and the energy transition in sectors covered under the EU ETS (be it aviation and other sectors like heavy industry - see here, here, here, here, and here). Again, while carbon leakage risk for the aviation sector has until now never been proven (cf Section 2), the industry benefited from a waiver from carbon pricing for years (with, on average, half of unpaid allowances amongst those surrendered over the last decade - putting COVID crisis years 2020 and 2021 aside). Reasonably, EU institutions finally agreed on phasing these out under the last EU ETS reform in 2023. Reintroducing those would go against this agreement reached in 2023 and against the understanding and consensus that free allowances can no longer be a part of the EU's climate regulatory landscape (the introduction of the CBAM on some first industrial goods fully aligns with this vision) as they went against the polluter-pays principle, induced windfall profits and delayed climate action (cf. links to sources provided just above). Therefore, considering the above, it is of utmost importance that no single free allowance be provided to airlines, with no green strings attached, as a tool to address carbon leakage risk, even in a limited and targeted manner. If actually observed, carbon leakage risk can and should be addressed by other measures suggested in this survey.
The latter option (2) would certainly require the extension of the SAF scheme in size (volume of allowances) and duration (beyond 2030 and at least until 2040) as both extensions are required to fund more efuels, beyond any potential need to address carbon leakage risk anyways. These extensions could indeed also be

foreseen to address a potential carbon leakage risk, if observed, by allocating, in a targeted manner, a share of allowances specifically to airlines using efuels on routes deemed at risk of carbon leakage. The focus should indeed be on efuels - which are genuinely sustainable since they are low or zero carbon and scalable, unlike biofuels, for instance. This window under the scheme could ensure, for instance, that all routes deemed at risk of carbon leakage risk get 100% compensation for the cost gap between efuels and kerosene.
We expect this measure - again, based on option 2) - to be socioeconomically, technologically, politically, and legally feasible for the reasons explained in other parts and above. Its approach to making decarbonisation cheaper via SAF/kerosene cost gap compensation enables it to address carbon leakage risk in a targeted way while accelerating and supporting decarbonisation of the sector.
Source: https://carbonmarketwatch.org/2019/10/18/taxing-carbon-at-the-eu-border-only-if-free-pollution-permits-go/
Source: https://carbonmarketwatch.org/2022/12/18/final-deal-on-eu-carbon-market-ets-gives-heavy-industry-a-free-pass-at-the-expense-of-households-and-taxpayers/
Source: https://carbonmarketwatch.org/2023/12/22/polluting-for-free-during-a-climate-crisis-update-of-the-eu-ets-free-allocation-rules/
Source: https://carbonmarketwatch.org/2021/12/17/eu-must-stop-subsidising-polluters-with-hundreds-of-billions-in-free-emissions-allowances-green-groups-demand/
Source: https://carbonmarketwatch.org/2023/12/22/faq-the-eu-ets-for-aviation-explained/
Source: https://carbonmarketwatch.org/publications/eu-ets-vs-corsia-which-better-navigates-the-turbulence-of-the-climate-crisis/

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Measure 6

Energy taxes on aviation fuels and/or a value added tax would be applied to all international flights. The proposed revision of the Energy Taxation Directive by the Commission will serve as the starting point to assess whether it could be modified and tailored to carbon leakage protection. The European Commission proposed to revise the EU Energy Taxation Directive which may induce costs by phasing out tax exemptions of fuels used in intra-EU maritime transport and aviation.

Potential changes to the taxation system	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	○	○	○	◉	○
* The proposed measure is socio-economically feasible	○	○	○	○	◉
* The proposed measure is politically feasible	◉	○	○	○	○
* The proposed measure is legally feasible	○	○	◉	○	○
* The proposed measure is technologically feasible	○	○	○	◉	○

Additional remarks:

The proposed reform of the Energy Taxation Directive would have potential in incentivising the use of green fuels in the maritime and aviation sectors as opposed to the use of oil-based fuels like today, with a higher minimum taxation rate for oil-based fuels and a minimum taxation rate for green fuels.
However, it should be kept in mind that the transition proposed to raise the minimum taxation rate for oil-based fuels is very progressive and is clearly too long to enable to required uptake of green fuels at scale in the early 2030s, which could then lead to cost reductions.
Besides, the minimum taxation rates are only a minimum won't necessarily create good taxation harmonisation across the EU Member States.
Finally, the ETD revision is the last of the Fit for 55 package files, proposed in 2021 and still not closed. It suffered - and still does - from significant delays with Member States, required to agree unanimously, unable to agree on a consensus, similarly to measure 2.
The latest compromise proposal suggested an even longer transition period for the increase of the minimum taxation rate for oil-based fuel, further diminishing the ambition, and thus, impact of the measure.
For the same reasons as those outlined for measure 1, the social element would not be an issue. However, while measure 6 could address some carbon leakage risks in the way that measure 1 could (cf. measure 1 answer), it would not address risks of switching to non-EU hubs—yet measures could be taken to avoid this (cf. measure 1 answer).

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Measure 7:
As part of the ReFuelEU Aviation flanking measures, the EU is investing in projects in third countries to progress SAF production and availability at global level, across all regions. A significant scaling up of global production and uptake of SAF in all the regions is necessary to achieve ICAO's Long Term Aspirational Goal (LTAG) of a net zero aviation sector by 2050 and to implement the SAF Global Framework agreed at CAAF/3. The projects are being implemented by ICAO and EASA. As a key step, the EU is investing EUR 4 million in a recently launched ACT-SAF project focused on a mix of feasibility studies and capacity building projects in India, Morocco and Egypt and other 11 African nations. Helping to ensure mid-term production and availability of SAF especially in third countries located geographically close to the EU would reduce the risk of significant differences in price of the fuel mix between those in the EU and in third countries and consequently reducing the risk of carbon leakage. Furthermore, the EU is actively engaged in the development of the global sustainability criteria for SAF within ICAO. Having global deployment of SAF types with high GHG reduction potential would also reduce the risk of carbon leakage.
This measure seeks to examine the extent to which increased investment in capacity building projects in non-EU countries translates to the development of SAF polices and SAF production projects and could constitute an effective measure to mitigate carbon leakage.

Capacity building in third countries	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	○	◉	○	○	○
* The proposed measure is socio-economically feasible	○	○	◉	○	○
* The proposed measure is politically feasible	○	◉	○	○	○

* The proposed measure is legally feasible	○	○	○	◉	○
* The proposed measure is technologically feasible	○	○	◉	○	○

Additional remarks:

CMW warmly supports the EU's efforts to support countries in building infrastructure for SAF and increasing their uptake. Theoretically, and if led to an extent where SAF uptake is indeed significant—or at least comparable to the effects of EU SAF mandates and EU ETS price in additional costs for airlines—such measure 7 could have the potential to reduce the risk of carbon leakage.
Considering the still-existing barriers to developing SAF in Europe, seeing FIDs for such projects, and the threatened prospect of seeing the SAF mandates met by fuel suppliers, it is likely that barriers at least as significant exist in third countries—if not more. Therefore, while the support given is welcome, there is some uncertainty around the potential of the measure to address carbon leakage risk—if observed—in an isolated manner. There could be political opposition to focusing EU efforts on SAF production outside the EU, when the focus should be on securing an EU production of SAF.

Section 4: Identification and evaluation of policy measures aimed at reducing the risk of carbon leakage

Measure 8

Whilst ideally a risk of carbon leakage could be addressed through direct references to binding commitments to mirror environmental endeavours in each other's territories, the likelihood of a third country agreeing to this in an Air Services Agreement (ASA) is minimal, given the EU's level of advancement. This measure aims to examine the extent to which ASA the EU could be altered to consider various environmental measures to prevent carbon leakage. This may include, inter alia, a graduated scale of measures based on their likelihood to be agreed upon or commitments to multilateral measures, both binding and recommended. Potential measures should also avoid the risk of causing one party to be in breach of the overall ASA.

Potential measures in Air Services Agreements	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	○	○	○	○	◉
* The proposed measure is socio-economically feasible	○	○	○	◉	○
* The proposed measure is politically feasible	○	○	◉	○	○
* The proposed measure is legally feasible	○	○	○	○	◉
* The proposed measure is technologically feasible	○	○	◉	○	○

Additional remarks:

A 2022 legal analysis commissioned by T&E showed that it is legally possible to restrict Air Service Agreements (ASAs) to prevent carbon leakage. This would be an effective measure to enforce higher environmental standards in third countries. This would likely be most feasible if the amendments to the ASAs

were coordinated at EU level, rather than separately for each Member State.
Source: https://www.transportenvironment.org/uploads/files/Legal-report-on-the-possibilities-to-restrict-foreign-air-services-with-the-purpose-to-prevent-carbon-leakage.pdf

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Measure 9

While promoting the strengthening of CORSIA, the new eligible fuels support mechanism (mentioned under measure 5 above) would be extended (but not amended) beyond 2030. Please rate the potential likelihood of this measure being feasible, taking into account the aspects pointed out below.

Promote strengthening of CORSIA and extend SAF allowance mechanisms beyond 2030	Very unlikely	Unlikely	Neutral	Likely	Very likely
* The proposed measure has potential to be effective and efficient in achieving its goal of reducing risk of carbon leakage	◉	○	○	○	○
* The proposed measure is socio-economically feasible	○	○	◉	○	○
* The proposed measure is politically feasible	○	◉	○	○	○
* The proposed measure is legally feasible	○	◉	○	○	○
* The proposed measure is technologically feasible	○	○	◉	○	○

Additional remarks:

As mentioned in response to measure 4, CMW does not expect any kind of global measure implemented by ICAO to be effective. The eligible fuels mechanism under CORSIA allows airlines to be exempted from purchasing offsets, but CORSIA offsets are so cheap that there is hardly an incentive to use more SAF globally to avoid paying for the offsets.

Section 4: Identification and evaluation of policy measures aimed at reducing the risk of carbon leakage

* What advantages and disadvantages do you foresee in the implementation of the aforementioned measures?

The advantages and disadvantages of each measure have been commented on in the ‘Additional remarks’ section below each measure. Overall, out of the proposed measures in this survey, CMW would most support the use of a CBAM-like mechanism or the targeted use of SAF allowances on routes at risk of carbon leakage - if that risk is observed and proven. For political unfeasibility reasons we find the SAF levy and Energy Taxation Directive proposals to be the weakest. Furthermore, any global measure implemented by ICAO would likely not be ambitious enough or not implemented by enough states to be effective.

* Are there any other measures, or combination of measures, that could further assist in mitigating the risk of carbon leakage as a result of environmental measures in the aviation sector?

One measure that was not included would be to use the opportunity of the upcoming revision of the EU ETS in 2026 to introduce carbon leakage mitigation measures. Under this revision, all departing flights could be included under the EU ETS. If all departing flights were included then carbon pricing could be adapted on routes deemed to be at risk of carbon leakage by adding a multiplier which factors in the total carbon price and REFuelEU related costs of the entire route. This would be similar to measure 1, but implemented under the existing EU ETS legislation instead of under the CBAM, allowing for REFuelEU costs to also be taken into account. This also allows the EU to use an existing measure (i.e. the ETS) rather than creating a mechanism from scratch, as would be the case for an EU levy, which can take several years.

* Considering the additional measures you propose, what advantages and disadvantages do you foresee for their implementation and their impact on the aviation sector?

The major advantage is that the revision of the EU ETS will happen in 2026, so there is a quick policy opportunity to include carbon leakage prevention measures. It also using an already-existing scheme rather than creating one from scratch and would not protect against the risk of carbon leakage at the expense of climate ambition (like free allowances would - cf. measure 5 option 1).

* What are the main barriers to implementing these policies? (e.g. cost, industry buy-in, regulatory complexity)

The main barriers could be lack of buy-in from industry and 3rd (destination) countries but most importantly the lack of political will/courage of EU institutions to face those.

Section 5: Case study data collection

In this section, we ask you to indicate your ability and willingness to contribute to the study through the supply of some relevant metrics. We acknowledge that not all topics may be relevant to your organisation. Please note that any data you supply will only be treated in aggregate form, and we are willing to conform to non-disclosure agreements where needed.

We additionally acknowledge that you may not be directly able to supply this information. In case you indicate the 'Able to provide at a later date' option, we will follow up with you on this topic through email, after the survey has been completed.

* Average fuel cost (for example per route, per passenger-kilometre, or per tonne-kilometre of cargo, in €)

- ○ Able to provide now
- ○ Able to provide at a later date
- ○ Unable to provide
- ○ Uncertain whether able to provide
- ◉ Not relevant to my organisation

* Average market share for (a) key hub(s) in your operations (in €)

- ○ Able to provide now
- ○ Able to provide at a later date

- ○ Unable to provide
- ○ Uncertain whether able to provide
- ◉ Not relevant to my organisation

* Average load factor of your carriers
  - ○ Able to provide now
  - ○ Able to provide at a later date
  - ○ Unable to provide
  - ○ Uncertain whether able to provide
  - ◉ Not relevant to my organisation

* Average airline operating costs
  - ○ Able to provide now
  - ○ Able to provide at a later date
  - ○ Unable to provide
  - ○ Uncertain whether able to provide
  - ◉ Not relevant to my organisation

* Average regulation administrative charges for staff involved (e.g. staff involved when implementing new measures)
  - ○ Able to provide now
  - ○ Able to provide at a later date
  - ○ Unable to provide
  - ○ Uncertain whether able to provide
  - ◉ Not relevant to my organisation

* Average regulation monitoring and inspection costs
  - ○ Able to provide now
  - ○ Able to provide at a later date
  - ○ Unable to provide
  - ○ Uncertain whether able to provide
  - ◉ Not relevant to my organisation

* Specify which alternative fuels are used in your operations, and how much % of your total fuel usage consists of alternative fuels
  - ○ Able to provide now
  - ○ Able to provide at a later date
  - ○ Unable to provide
  - ○ Uncertain whether able to provide
  - ◉ Not relevant to my organisation

Do you have access or recommendations to additional data or studies on carbon leakage risks for the identified routes or hubs? Please share details or links.

Section 6: Definition of carbon leakage

At the beginning of the survey, we introduced a definition of carbon leakage according to the IPCC definition. In your view, would you define carbon leakage differently?

The IPCC definition of carbon leakage is a good one to use. The most important thing to consider when defining carbon leakage is that only the additional increase in emissions outside of the area where there are climate measures are included.

Closing remarks

Thank you for taking the time to complete this survey.

Your input is invaluable in helping us assess the risks of carbon leakage and competitiveness in the aviation sector. Your responses will contribute to shaping informed and effective policy measures.

In case of questions and remarks, please contact lucas.montenegro@tis.pt and rita.filipe@tis.pt.

If you wish to add further information or comments - within the scope of this questionnaire - please feel free to do so below. Please feel free to upload a concise document, such as additional evidence supporting your responses or a position paper. The maximum file size is 10MB. The document serves as additional background reading to better understand your position.

* Would you be willing to participate in further stakeholder consultations?

- (●) Yes
- ( ) No

* Please leave us an email address:

bastien.bonnet@carbonmarketwatch.org

Contact

Contact Form