

WORKING PAPER

Where Technical Meets Political: The Complexity of the EU CBAM in Northern Ireland

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Abstract

The European Union Carbon Border Adjustment Mechanism will influence UK-EU trade, raising particular issues regarding Northern Ireland (NI). We analyse EU CBAM-related NI issues in four scenarios in terms of whether the UK and the EU link their Emission Trading Schemes (ETS) and whether the UK has an EU-style CBAM. Our research covers direct emissions and indirect emissions (i.e., electricity market), with its importance evidenced by economic data. Relinking the UK and EU ETSs and establishing an EU-style UK CBAM would be the best way to resolve the complications the CBAM creates for NI. The alternative of using the Stormont Brake to prevent the implementation of the EU CBAM in NI would be significantly less satisfactory.

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Non Technical Summary

The European Union (EU) is poised to start the transitional period of its Carbon Border Adjustment Mechanism (CBAM) on 1 October 2023. The EU CBAM will influence UK-EU trade. This paper sheds light on the particular issues regarding Northern Ireland. It points out that Northern Ireland (NI) raises the most complex of UK-EU trade issues in the EU CBAM era and discusses both ideal and suboptimal solutions to facilitate seamless trade and effective climate cooperation.

The EU's CBAM aims to complement the existing EU Emissions Trading System (ETS) to prevent carbon leakage, which means the movement of production and associated emissions abroad where emissions are not charged. The EU CBAM will cover six emission-intensive industries – cement, iron and steel, aluminium, fertilisers, electricity and hydrogen – and internalise carbon emission fees into imported goods in these industries, thus discouraging EU manufacturers from relocating their factories abroad to avoid the EU's carbon emission cost.

The CBAM will become fully operational in 2026. During the transitional period between 1 October 2023 and 1 January 2026, the EU importers falling within the six industries have to declare annually the volume of imported goods and the amount of emissions they embody (embedded emissions). Foreign exporters need to inform the EU importers of the relevant data and have it verified independently. After the transitional period, the EU importers must purchase and hand over the corresponding number of CBAM certificates in addition to their reporting obligations.

Goods destined for NI but that risk subsequently entering the EU customs union will suffer unnecessary CBAM measures at Northern Irish ports. This impact will be relatively greater on those third-country goods (non EU or GB) for which the UK duty is less than the EU's by three percentage points because they must all go through the red lane (i.e., are subject to EU customs tariffs). This effect may cause a trade diversion from those not wanting to pay the EU CBAM costs. The UK Government has yet to establish an EU-style CBAM to exempt imported goods into Northern Ireland from the EU CBAM and thus avoid the spill-over effect of the EU CBAM on the NI market.

Moreover, we find that the NI Protocol (now the Windsor Framework) splits the electricity market in NI into wholesale and retail parts. This meant that NI electricity producers must purchase EU ETS allowances for the carbon emissions they generate and thus should get an exemption from the EU CBAM credits, although they still bear administrative fees related to identifying and reporting emissions. However, NI manufacturers must purchase UK ETS allowances to cover indirect emissions for the electricity they consume in their production processes.

To measure the economic significance of the EU CBAM's implications for the NI market, we estimated NI's exports and jobs associated with the EU CBAM-regulated industries. We find that NI's total exports of regulated products to the EU are estimated at £348m (to the Republic, £333m), accounting for approximately 5.8% of NI's total goods exports to the EU (and 10.1% of exports to the Republic). This amount is not insignificant. In addition, we find that in 2021 around one-quarter of employees in the industries that produce regulated products in NI are linked to exports to the EU (23% for the Republic). This implies that around 1100 employee jobs are vulnerable to disruption by the EU CBAM and almost all these jobs (1001 out of 1091) are related to exports to the Republic of Ireland.

We further analyse this EU CBAM-related NI issue in four scenarios in terms of whether the UK and the EU link their ETS and whether the UK has an EU-style CBAM. We find that the EU could apply CBAM measures at the Irish Sea border on non-EU goods destined for NI to prevent smugglers from illegally transporting them into the EU market via the checkpoint-less NI border. What is more, we find that extending the application scope of the EU CBAM could adversely affect the daily lives of NI citizens. Relinking the UK-EU ETS and establishing an EU-style UK CBAM would solve this issue.

Finally, we point out that the Windsor Framework's Stormont Brake is a suboptimal solution to the EU CBAM-related-NI issue. The Stormont Brake could suspend the implementation of the EU CBAM (a new EU regulation that the EU probably wants to add to Annex II of the Windsor Framework) on non-EU goods entering Northern Ireland at NI ports. Nevertheless, the UK Government will face conflicting interests between securing the well-being of NI citizens and contributing to reducing global carbon emissions as well as disturb EU-UK relations.

The European Union (EU) is poised to start the transitional period of its Carbon Border Adjustment Mechanism (CBAM) on 1 October 2023. The EU CBAM will influence UK-EU trade. This Working Paper sheds light on the particular issues it raises regarding Northern Ireland. We point out that Northern Ireland raises the most complex of UK-EU trade issues in the EU CBAM era and discuss both ideal and suboptimal solutions to facilitate seamless trade and effective climate cooperation.

Introduction to the EU CBAM

Negotiators of the European Council and Parliament reached a provisional agreement on CBAM on 13 December 2022 and signed the final CBAM regulation ([final regulation](#)) on 10 May 2023. The EU is, therefore, ready to run its CBAM from [1 October 2023](#), at which time it will be the first and only operational CBAM applied internationally. The mechanism aims to complement the existing EU Emissions Trading System (ETS), which is intended to reduce EU carbon emissions by incorporating the cost of carbon into the price of imported goods in selected sectors and thus help to reduce overall emissions emanating from EU consumption and use of goods. The EU ETS, a cap-and-trade system established in 2005, uses price signals to encourage EU producers in [a number of sectors](#)

^[1] to decarbonize their production processes by requiring them to obtain allowances for any emissions, selling those allowances and [gradually phasing down the number of allowances on the market](#). EU manufacturers thus bear higher emission costs than foreign producers which introduces the risk of carbon leakage - the movement of production and associated emissions to countries where emissions are not charged. At present, to avoid this outcome, EU member states are required to allocate free allowances to specific industry sectors in order to achieve a level playing field between EU and foreign producers in the EU market. Free allowances eliminate the pressure on EU emission-intensive industries to adjust (although incentives remain), thus hindering the EU's emission reduction plan.

The EU CBAM will provide an alternative approach to reducing carbon leakage. [Covering six emission-intensive industries - cement, iron and steel, aluminium, fertilisers, electricity and hydrogen](#) - the EU CBAM will level the playing field between EU and non-EU manufacturers in these industries, thus allowing the EU to phase out the free ETS allowances allocated to the corresponding local companies and more effectively reducing emissions.

The CBAM will become fully operational in 2026. During the transitional period between 1 October 2023 and 1 January 2026, EU importers falling within the six industries to which CBAM applies have to declare annually the volume of imported goods and the amount of emissions they embody (embedded emissions). Foreign exporters need to inform the EU importers of the relevant data and have it verified independently. After the transitional period, the EU importers must purchase and surrender the corresponding number of CBAM certificates in addition to their reporting obligations. The price of CBAM certificates is the average of the closing prices of EU ETS allowances on the common auction platform for each calendar week (see Article 21 of the final regulation). If EU importers cannot obtain information on emissions from exporters, they should surrender credits based on a default emission value. The default values shall be set at the average emission intensity of each exporting country for each of the goods (other than electricity), increased by an appropriate markup (See the CBAM regulation, Articles 4.1 and 4.2 of Annex IV). When reliable data for the exporting country cannot be applied for a type of good, the default values shall be based on the average emission intensity of a certain percentage of the worst-performing EU ETS installations for that type of good.

The EU will determine how to calculate the default value in this scenario during the transition period. At the same time, the EU will consider the methodology to calculate the indirect emissions of cement, fertilisers, and electricity (i.e., carbon emissions from the electricity used to produce the goods) and assess the possibilities of extending the scope to other goods at risk of carbon leakage, including organic chemicals and polymers. The EU will also explore quantifying the indirect emissions in some precursors and downstream products ([See European Parliament's Press Releases](#)).

The EU CBAM will consider the carbon price already paid by producers in the country of origin of imported products.^[2] EU importers will surrender credits after deducting the amount of abatement costs already paid. This means that the UK, which currently has a similar ETS price to the EU, will not face high charges unless UK and EU emissions prices diverge. However, exporters will still bear the administrative costs of the CBAM, such as identifying and reporting carbon emissions embedded in their products. So far, only goods imported from European Economic Area countries and Switzerland that participate in or link their ETSs to the EU's, are exempted from all CBAM charges and administrative requirements.

It is worth noting that the EU CBAM rules do not specify who will actually bear the cost of the imported products' embedded emissions. [Article 20 of the final regulation](#) entails that EU importers are responsible for purchasing and surrendering CBAM credits. Yet, this provision does not prevent them from shifting the cost of CBAM credits to exporters (i.e., foreign producers). EU importers and foreign exporters will share this cost through commercial negotiations and may pass it back to producers or consumers. Who eventually bears the cost of the CBAM will vary from market to market according to market conditions.

The EU CBAM and Northern Ireland

Although the UK Government has opened a consultation about setting up a UK CBAM, it has yet to decide whether it will do so. As with the EU CBAM, the potential UK CBAM would aim to prevent carbon leakage. The UK already has an Emissions Trading Scheme, based on the EU scheme, including free allowances. If the UK were to establish a CBAM, it would regulate the cost of carbon emissions embedded in the goods imported by UK importers so that the cost of carbon emissions from these goods would be the same as the cost of carbon emissions from domestic products. Applying the same carbon cost for domestic and imported products would eliminate the incentive for UK producers to outsource or move their production or supply chains to countries with lower carbon costs, thereby preventing carbon leakage in the UK.

It is worth noting that bilateral trade between the UK and the EU will probably not cause carbon leakage in either direction, regardless of whether the UK establishes its own CBAM. With separate ETSs, the price of carbon emissions varies between the EU and the UK. The UK ETS price is currently significantly lower than the EU's due to the UK's energy policy.^[3] However, unless persistent differences between them emerge, EU and UK producers are unlikely to find it worthwhile to change their production and supply chains. From the climate perspective, a UK CBAM's value is to prevent carbon leakage in the UK market towards countries with very low or zero ETS prices.

However, climate action is not the only reason why the UK should have an EU-style CBAM. After the introduction of the EU CBAM, the UK Government should establish such a CBAM to avoid the spill-over effect of the EU CBAM on the Northern Ireland market. Without it, the border issue between the UK and the EU in Northern Ireland may affect the regular trade flow of non-EU goods (including those from third countries) into Northern Ireland. The UK and the EU announced the Windsor Framework, which has replaced the previous Protocol on Ireland/Northern Ireland (NI Protocol), to create a green lane in which simplified customs procedures and no customs tariffs apply on qualifying goods imported into Northern Ireland (NI) from Great Britain (GB) and third countries. But not all goods can go through the green lane under the Windsor Framework, because those 'at risk' of moving into the Republic will have to use the red lane.^[4] Those destined for Northern Ireland but in the red lane will suffer unnecessary CBAM measures. This impact will be relatively greater on those third-country goods for which the UK duty is less than the EU's by three percentage points because they must all go through the red lane.^[5] This effect may cause a trade diversion from those not wanting to pay for the extra cost of customs procedures related to the red lane.

Impact of Divided Northern Ireland Electricity Market on the EU CBAM Costs

The NI Protocol split the electricity market in Northern Ireland into wholesale and retail parts. Wholesale electricity trading refers to purchasing electricity from generators through auctions by electricity suppliers. Article 9 of the NI Protocol includes Northern Ireland in the EU wholesale electricity single market.^[6] In other words, because Northern Ireland is part of the EU single wholesale electricity market, its electricity producers must purchase EU (not UK) ETS allowances for the carbon emissions they generate.

According to [figures published by the Northern Ireland Statistics and Research Agency for 2021](#) , Northern Ireland exported £148.3 million worth of electricity to the Republic of Ireland (this is all of Northern Ireland's electricity exports). The exported electricity is on a wholesale basis - namely, electricity retailers in the Republic supplied by electricity generators in Northern Ireland. As noted above, the EU CBAM applies to the sale of wholesale electricity from Northern Ireland to the Republic of Ireland, but effectively at a zero rate because Northern Ireland's electricity generators have already paid for the carbon emissions of the exported electricity at the price of EU ETS allowances.

While Northern Ireland's wholesale electricity market is an integral part of the EU single market, Northern Ireland's retail electricity market is part of the UK market. The latter involves suppliers directly selling electricity to consumers (producers and households) located in Northern Ireland. Therefore, producers of goods subject to the ETS in Northern Ireland must purchase UK ETS allowances to cover indirect emissions for the electricity they consume in their production processes. When cement, fertiliser and electricity (the three products subject to the EU CBAM indirect emissions charge) enter or have the potential to enter the Republic of Ireland from Northern Ireland, therefore, it would make the most sense for importers in the Republic to purchase EU CBAM credits at a quantity that deducts the indirect emissions costs already paid in the UK, which, as explained above were paid at the EU ETS price. However, it remains unclear how the European Commission will deal with this issue.

The application of the EU CBAM – how big an issue for Northern Ireland?

The EU will levy CBAM credits on cement, steel, aluminium, fertiliser, retail electricity and hydrogen when these CBAM-targeted goods enter the EU, including via Northern Ireland. Just as Article 5(1) of the NI Protocol requires that goods brought into Northern Ireland from outside the Union, including Great Britain, that risk subsequently entering the EU customs union are subject to EU customs duties, so, too, they will be subject to CBAM-levies.

This section briefly discusses the possible economic significance of this development; the full analysis is available in the Appendix. The calculations are necessarily rather approximate, but they suggest that, from an economic perspective, the issue is not insignificant.

We first estimate Northern Ireland's exports of regulated products to the EU and the countries adhering to the EU ETS (the EU+ refers to the EU countries plus Iceland, Liechtenstein, Norway and Switzerland), and to the Republic of Ireland - shown in Table 1. Assuming that Northern Ireland has the same shares of regulated products in exports to the EU+ and to the Republic as the UK overall, the export values of regulated products by Standard International Trade Classification (SITC) division can be estimated from the product of Northern Ireland's total exports in each division, shown in Column 4, and the UK's shares. Summing the exports of each product in Column 5 (6), Northern Ireland's total exports of regulated products to the EU+ (to the Republic) are estimated at £348 (£333) million, accounting for approximately 5.8% (10.1%) of Northern Ireland's total goods exports to the EU+ (to the Republic). This amount is significant.

Table 1: Northern Ireland's exports to the EU+ and to the Republic by SITC Division in 2021

SITC Code	SITC Division	Regulated products	NI's total export value (£ million)	Estimated export value of regulated products to the EU+ (£ million)	Estimated export value of regulated products to the Republic (£ million).
(1)	(2)	(3)	(4)	(5)	(6)
27	Crude Fertilizers and Crude Minerals	Cement; Fertilizers	38.9	11.7	1.7
28	Metalliferous Ores and Metal Scrap	Iron and Steel	108.1	0.001	0
35	Electric Current	Electricity	148.3	148.3	148.3
52	Inorganic Chemicals	Fertilizers; Hydrogen	10.7	0.4	0.3
56	Fertilizers	Fertilizers	17.2	12.5	16.4
66	Non-Metallic Mineral Manufactures, nes	Cement	99.1	2.3	4.9
67	Iron and Steel	Iron and Steel	81.7	74.4	64.2
68	Non-Ferrous Metals	Aluminium	12.1	1.2	1.3
69	Manufactures Of Metal, n.e.s.	Iron and Steel; Aluminium	202.2	97.5	95.4
Total			718.3	348.3	332.5

Source: See Appendix

To estimate how many jobs derive from these regulated exports, we start from Northern Ireland's employment and gross value added by Standard Industrial Classification (SIC) division. We convert the gross value added to gross output using 2019 UK input-output tables, assuming the UK-wide ratio between gross value added and gross output applies in Northern Ireland. We then allocate the SITC export data in Table 1 to SIC divisions and calculate its ratio to gross output in each division. The number of employee jobs can be calculated by applying the (export/gross output) ratio to the number of employees in each division. The result is given in Table 2. This suggests that around one-quarter (23%) of employees in the industries that produce regulated products in Northern Ireland were linked to exports to the EU+ (to the Republic) in 2021; that implies that around 1100 employees are vulnerable to disruption by the EU CBAM. Almost all of these jobs (1001 out of 1091) are related to exports to the Republic of Ireland.

Table 2: Number of employees vulnerable to the EU CBAM in Northern Ireland in 2021

Regulated products	SIC code	Number of employees	Number of employees involved in regulated product exports to the EU+ (share of total employment in the SIC division %)	Number of employees involved in regulated product exports to the Republic (share of total employment in the SIC division %)
Fertilizers	2015	55	42 (76)	40 (73)
Cement	233 and 2351	106	43 (41)	30 (28)
Iron and steel; Aluminium	241, 242, 2442, 251 and 252	3854	910 (24)	845 (22)
Electricity	3511	370	96 (26)	96 (26)
Total		4385	1091 (25)	1001 (23)

Source: See Appendix

Potential Trade Issues Arising from the EU CBAM in Northern Ireland: Smuggling, Carbon Leakage, and EU Customs Measures

There are no checkpoints between Northern Ireland and the Republic of Ireland. For customs purposes, goods from outside the EU need to apply EU customs measures at the Northern Ireland border if they risk transferring to the Republic of Ireland. Similarly, these goods will be subject to CBAM measures.

To address the customs issues with imports from GB, the NI Protocol establishes a border between GB and NI on the Irish Sea. The NI Protocol allows the EU to impose customs measures on GB goods that may subsequently enter its market after being exported to Northern Ireland. Article 5(2) of the NI Protocol requires the UK-EU Joint Committee (the Joint Committee) to consider several factors to determine whether non-EU goods entering Northern Ireland would be at risk of subsequently entering the EU market. One of these factors is the incentive for undeclared entry, particularly that resulting from the duties payable under Article 5(1) (i.e., EU customs duties). If the EU considers that GB goods may move to the EU after entering Northern Ireland to circumvent the EU CBAM, the EU could argue for imposing CBAM measures on these goods at the Irish Sea border. The Joint Committee will discuss this issue and the Stormont Brake may be triggered. The latter allows 30 Members of the Legislative Assembly of Northern Ireland to initiate, and the UK Government to adopt, the suspension of new (or amended or replaced) EU Regulations - regulation added to Annex II of the NI Protocol (now the Windsor Framework).^[7]

Arguably, the Windsor Framework controls the risk of goods from GB moving to Northern Ireland. The efficacy of this arrangement relies on Northern Ireland's local regulations and border spot checks, though. UK decision-makers should be alert to possible future disputes. The following analysis takes into account such potential issues and also looks at the impact of the EU CBAM on Northern Ireland's imports of third-country goods in different scenarios. The situation will vary depending on whether the EU and the UK link their ETS and whether the UK establishes an EU-style CBAM. We examine four scenarios:

1. The UK and the EU do not link their ETS, and the UK has no CBAM.
2. The UK and the EU do not link their ETS, and the UK has an EU-style CBAM.
3. The UK and the EU link their ETS, and the UK has no CBAM.
4. The UK and the EU link their ETS, and the UK has an EU-style CBAM.

Scenario 1: The UK and the EU do not link their ETS, and the UK has no CBAM, i.e., the status quo.

After Brexit, the UK separated its ETS from the EU's, so producers in the two regions bear different emissions costs. If the UK ETS price is significantly lower than the EU ETS price for a long time, smugglers may seek to bring goods made in the UK across the Northern Ireland border into the EU market which could cause carbon leakage from the EU. In such a case, the EU would have good reason to impose CBAM measures at the Irish Sea border on goods from GB at risk of moving to the EU market after entering Northern Ireland. It may also wish to explore how to levy the CBAM on regulated goods produced in Northern Ireland and sold in the Republic. The UK ETS price has fallen significantly since March 2023, and EU-UK ETS prices are now further apart than ever.^[8] This scenario is relevant only in the event of a long-lasting significant difference between EU-UK ETS prices. The fluctuation of EU-UK ETS prices in the short term would be unlikely to generate much carbon leakage in the EU.

Undoubtedly, the EU would need to develop a legal basis to implement CBAM measures on the GB-NI border in the hypothesised case. The CBAM is not an actual customs duty; the difference in carbon price caused by the EU CBAM will not automatically move goods from the green lane to the red lane. The EU CBAM itself is a new regulation; Article 13(4) of the NI Protocol accordingly requests the EU, if it plans to add the CBAM to the NI Protocol, to let the Joint Committee make the decision. Since the Windsor Framework, the Joint Committee can no longer make such a decision without hearing the Northern Ireland Assembly. Presumably, the UK Government would wait for the feedback of the Stormont Assembly. If the Stormont Brake is triggered and finally ratified by the pre-veto scrutiny process (which has yet to be designed by the UK Government), the UK Government could suspend the new EU CBAM rule in Northern Ireland. Thus, the Joint Committee is deprived of the decision-making power. This is based on the Windsor Framework: Paragraphs 65 and 68 discuss the relationship between the Stormont Brake and the Joint Committee, where the two signatories commit that the Joint Committee cannot adopt a new EU rule in Northern Ireland without cross-community support. The only caveat is that the UK Government can exceptionally overturn the decision of suspending the new EU rule in question made through the pre-veto scrutiny process in some circumstances, where it demonstrates that that rule cannot create a regulatory border between GB and Northern Ireland.^[9]

Nevertheless, implementing the EU CBAM in Northern Ireland will likely create a regulatory border at Northern Ireland ports for GB goods. The impact of CBAM measures on Northern Ireland citizens' daily lives remains to be examined, though. Northern Ireland citizens may have different feelings about the actual effect. Anyway, once the UK Government adopts the Stormont Brake, Article 13(4) of the NI Protocol allows the EU to take remedial measures (i.e., safeguard measures^[10]). Paragraph 66 of the Windsor Framework also recognises this point.

If the UK has no CBAM at its border, exporters from third countries (those outside GB and the EU) with no carbon pricing could try to export to the UK in order to circumvent the EU CBAM charges. If the EU believes that non-EU goods imported into GB could be smuggled into the EU market via Northern Ireland, the EU would have good reason to impose CBAM measures on these goods at the Irish Sea border. After all, the UK Government cannot ensure that smugglers will not bring these goods to the EU market.

It is worth noting that integrating so-called scope 3 emissions (those embedded in inputs) into the EU CBAM will significantly complicate the current scenario.^[11] Such an impact merits further analysis, but, we put the issue aside for now because the EU has yet to give a clear plan to extend the EU CBAM to scope 3 emissions.

Scenario 2: The UK and the EU do not link their ETS, and the UK has an EU-style CBAM.

As with the first scenario, if the UK and EU do not link their ETS, the UK and EU would have to negotiate whether to apply CBAM rules to GB domestically produced goods based on subparagraph (d) of the fourth paragraph of Article 5(2) of the NI Protocol. The difference between the second and first scenarios is that the UK is now assumed to have established an EU-style CBAM. In this case, non-EU goods imported into the UK would bear the same emissions costs as those made in the UK, but the EU may still argue for invoking subparagraph (d). As with applying this provision to goods made in GB, the UK and the EU would negotiate whether to impose CBAM measures at the Irish Sea border on third-country goods that may enter the Republic of Ireland via the checkpoint-less Northern Ireland border.

Scenario 3: The UK and the EU link their ETS, and the UK has no CBAM.

If the UK and EU were to link their ETSs, producers in both places would bear the same emission costs. In this scenario, under EU CBAM rules that exempt goods imported from countries that participate in or link their ETSs to the EU's, EU importers would not be required to pay CBAM credits for imports of products made in the UK. But customs requirements and procedures would still apply as they do now. Circumventing the EU CBAM levies would be impossible in this case. Hence, the EU has no reason to argue for extending the application scope of the EU CBAM to GB domestically produced goods by invoking subparagraph (d) of the fourth paragraph of Article 5(2) of the Northern Ireland Protocol.^[12] In other words, even if the EU considers that somebody may smuggle GB domestically produced goods into the EU market via Northern Ireland, it cannot impose CBAM measures on these goods at the Irish Sea border.

As with the first scenario, since the UK has not established its own CBAM and the price of goods from most countries does not include similar emission costs to EU ones, the EU would also have good reasons to impose CBAM measures at the Irish Sea border on third country goods entering Northern Ireland via GB.

Scenario 4: The UK and the EU link their ETSs, and the UK has an EU-style CBAM.

The difference between the fourth and third scenarios is that, in the fourth, the UK is assumed to have established its own CBAM which mirrors that of the EU. In this case, the price of goods imported into the UK will contain the same emissions costs as UK products. In addition, as the UK and EU have linked their ETS and, by extension, their CBAMs, non-EU goods imported into the UK will bear identical emissions costs to EU ones. As with the third scenario, there is no legitimate reason for the EU to invoke subparagraph (d) of the fourth paragraph of Article 5(2) of the NI Protocol to apply the EU CBAM to goods made in the UK. What is more, there is also no legitimate reason for the EU to invoke subparagraph (d) of the fourth paragraph of Article 5(2) of the NI Protocol to apply CBAM measures to non-EU goods imported into the UK because these goods bear the same emission costs as EU ones. Therefore, in the fourth scenario, the EU should not extend the application scope of the EU CBAM to non-EU goods destined for Northern Ireland, either for goods from GB or from third countries. Assuming that the UK CBAM mirrors the EU CBAM in its sectoral coverage, this option will best facilitate seamless trade in Northern Ireland.

In sum, analysis of these options reveals that relinking the UK-EU ETSs and establishing a UK CBAM that mirrors the EU CBAM is the ideal solution to the Northern Ireland issue.

The Stormont Brake: A Sub-optimal Solution to the Northern Ireland Issue

The Windsor Framework's Stormont Brake provides a suboptimal solution to resolving potential CBAM-related trade friction in Northern Ireland. The Windsor Framework allows 30 Members of the Legislative Assembly (MLAs) from two or more political parties of Northern Ireland to sign a petition to initiate the Stormont Brake. If the pre-veto scrutiny process confirms eligibility for activating the Stormont Brake, the UK Government can implement the Brake to suspend immediately the EU CBAM measures targeting non-EU goods (i.e., GB and third-country goods) destined for Northern Ireland.

One may be concerned about the applicability of the Stormont Brake in this case, which relies on identifying new EU rules. The EU and the UK agreed and declared the Windsor Framework before the promulgation of the final EU CBAM regulation. The EU CBAM rules are, therefore, new for the UK as a whole. In any case, it is defensible that any EU orders extending the scope of its CBAM rules to those goods qualified for the green lane will essentially change the previous EU regulation and constitute a new rule.

Launching the Stormont Brake includes a pre-veto scrutiny process, which the UK Government needs to establish through consultations with all stakeholders. The UK Government said that the pre-veto scrutiny process would be similar to a consultation procedure, where all stakeholders examine whether new EU rules severely affect Northern Ireland citizens' daily lives and if there is a severe effect, trigger Stormont Brake. In [the CITP Briefing Paper on the Stormont Brake](#), Zhao proposed that the UK Government could create a third-party dispute settlement system (i.e., an ad-hoc arbitration tribunal) for the pre-veto scrutiny. We believe that this ad-hoc arbitral tribunal could review the compliance conditions for the activation of the Stormont Brake with due regard to the impact that its use may have on the prevention of carbon leakage. The ad-hoc arbitration tribunal could follow the proportionality principle. This principle, widely used in national court judgements and international arbitration, requires that a decision should secure a legal value with minimal prejudice to the conflicting one.^[13] In this way, an ad-hoc arbitration tribunal could find a balance between supporting the UK's international reputation and ensuring Northern Ireland citizens' well-being, thus appropriately addressing the conflicting interests.

Conclusion

The Working Paper examines the impact of the EU's CBAM on the EU-UK trade, focusing on the Northern Ireland issue. The EU will implement its CBAM from 1 October 2023. During the transition period (1 October 2023 -1 January 2026), EU importers will be responsible only for reporting the number of imported goods and their embedded emissions. Bilateral trade between the UK and the EU will likely not cause much carbon leakage in the UK, regardless of whether the UK establishes its own CBAM. Only if the UK ETS price remained significantly below the EU price for an extended period would the danger of significant UK-EU leakage arise. But the CBAM also creates significant issues in Northern Ireland, which we examined in this Working Paper:

- 1: First, the NI Protocol splits the electricity market in Northern Ireland into two parts. Northern Ireland's electricity producers must purchase EU (not UK) ETS allowances for the carbon emissions they generate and thus should get an exemption from the EU CBAM credits, although they still bear administrative fees related to identifying and reporting emissions. However, electricity retailers in Northern Ireland must purchase UK ETS allowances to cover indirect emissions for the electricity they consume in their production processes because Northern Ireland's retail electricity market is outside the EU single market.
- 2: The EU will levy CBAM credits on cement, steel, aluminium, fertiliser, retail electricity and hydrogen when these CBAM-targeted goods enter the EU or potentially enter the EU via the checkpoint-less Northern Ireland border.
- 3: Also, the impact of the EU CBAM could be quite significant: 5.8% (10.1%) of Northern Ireland's total exports to the EU (and to the Republic) are regulated products, and one-quarter of employees in the industries that produce regulated products are vulnerable to CBAM effects.
- 4: The Northern Ireland border issue would influence the operation of the CBAM and cause trade problems between Great Britain and the EU. The EU could apply CBAM measures at the Irish Sea border on non-EU goods destined for Northern Ireland to prevent smugglers from illegally transporting them into the EU market via Northern Ireland. This applies to both GB and third-country-produced goods.
- 5: The Windsor Framework's Stormont Brake could suspend the implementation of the EU CBAM on non-EU goods entering Northern Ireland. Yet, the UK Government will face conflicting interests between securing the well-being of Northern Ireland citizens and contributing to reducing global carbon emissions as well as risk disturbing EU-UK relations.
- 6: Extending the application scope of the EU CBAM could adversely affect the daily lives of Northern Ireland citizens. Relinking the UK-EU ETS and establishing an EU-style UK CBAM is the ideal solution to the Northern Ireland issue.

Appendix

The Economic Significance of the EU's CBAM in Northern Ireland

This appendix shows how we provide informative content to decide whether the issues over Northern Ireland and the EU CBAM are quantitatively significant. First, we estimate Northern Ireland's exports of the products regulated in the EU's CBAM to the EU countries and to the Republic of Ireland, which because of the land border and the Northern Ireland Protocol has a unique relationship with Northern Ireland. We then show employment in Northern Ireland in the industries that produce these products. Finally, we estimate the amount of that employment that actually derives from exports to the EU+ and to the Republic of Ireland. It is important to note from the outset that there is a good deal of approximation in this process, but we believe that it nonetheless has reasonable information content.

Northern Ireland's exports

Estimating Northern Ireland's exports of regulated products to the EU+ or to the Republic of Ireland requires identification of the products. The CBAM is defined in terms of the Combined Nomenclature (CN) whereas Northern Ireland's export data is recorded using the Standard International Trade Classification (SITC), and then only at an aggregated (2-digit - Division) level. We map CN codes to SITC codes at a disaggregated level and then, for UK exports to the EU+ and to the Republic of Ireland in 2021, calculate the share of exports of regulated products within each SITC 2-digit division. Assuming that Northern Ireland has the same share as the rest of the UK and combining regional trade data from the Northern Ireland Statistics and Research Agency (NISRA), we can estimate the value of regulated products Northern Ireland exported to the EU+ and to the Republic of Ireland in 2021.^[14]

Table 1 maps the regulated products from the CN classification to SITC codes and shown in parentheses, their corresponding shares of the UK's exports to the EU+ at each SITC division. Each regulated product (except Electricity and Hydrogen) enters at least 2 divisions. Regulated products account for between 0.00012% and 100% of the UK's exports to the EU+ within each division.

Table 1: The shares of regulated products at SITC 2-digit level in the UK's exports to the EU+ in 2021

Regulated Products	CN Code	CN Code	SITC code (regulated-products shares of UK's exports to the EU)
Iron and Steel	72; 26011200; 7301, 7302, 730300, 7304, 7305, 7306, 7307, 7308, 730900, 7310, 731100, 7318, 7326	Except 72022, 72023000, 72025000, 72027000, 72028000, 72029, 7204	28 (0.00012%); 67 (95.2%); 69 (52.5%)
Cement ^[15]	25070080, 25231000, 25232100, 25232900, 25233000, 25239000	250700 includes 25070020 and 25070080	27 (30.5%); 66 (2.4%)
Fertilisers	28080000, 2814, 28342100; 3102, 3105	Except 31056000	52 (8.1%); 56 (73.8%); 27 (30.5%)
Aluminium	7601, 7603, 7604, 7605, 7606, 7607, 7608, 76090000, 7610, 76110000, 7612, 76130000, 7614, 7616		68 (15.3%); 69 (52.5%)
Electricity	27160000		35 (100%)
Hydrogen	28041000		52 (8.1%)

The data comes from World Integrated Trade Solution ([World Integrated Trade Solution \(WITS\) | Data on Export, Import, Tariff, NTM \(worldbank.org\)](#)). The regulated products in the CN codes come from the EU CBAM regulation ([EUR-Lex - Ares\(2023\)4079551 - EN - EUR-Lex \(europa.eu\)](#)). We use the correspondence table from United Nations Statistics Division ([UNSD — Classifications on economic statistics](#)).

Table 2 reports Northern Ireland's total exports in each related SITC division, the share that went to the EU+, and the estimated export value of regulated products in 2021 based on the data from the NISRA. Column 5 tells us that out of the 9 divisions, more than 90% of NI's exports went to the EU+ in 7 divisions (excluding the two with the smallest export amounts, i.e., SITC 52 and 68 division). Assuming that Northern Ireland has the same shares of regulated products in each SITC division of exports to the EU+ as the UK, shown in Column 6, we can estimate the export value of regulated products from Northern Ireland to the EU+ by using the product of Columns 4, 5 and 6. Northern Ireland's total exports of regulated products to the EU+ are estimated at £348 million, accounting for approximately 5.8% of Northern Ireland's total goods exports to the EU+. This is not an insignificant amount.

Table 2: Northern Ireland's exports to the EU+ by SITC Division in 2021

SITC code	SITC division	Regulated products	NI's export value (£ million)	Shares of NI's exports to the EU+ in NI's exports of the division (%)	Regulated-products' export shares in UK's exports to the EU+ (%)	Est export value regulated products (£ million)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
27	Crude Fertilizers and Crude Minerals	Cement; Fertilizers	38.9	98.9	30.5	11.7
28	Metalliferous Ores and Metal Scrap	Iron and Steel	108.1	95.5	0.00012	0.00
35	Electric Current	Electricity	148.3	100.0	100.0	148
52	Inorganic Chemicals	Fertilizers; Hydrogen	10.7	51.8	8.1	0.4
56	Fertilizers	Fertilizers	17.2	98.4	73.8	12.5
66	Non-Metallic Mineral Manufactures, n.e.s	Cement	99.1	95.7	2.4	2.3
67	Iron and Steel	Iron and Steel	81.7	95.6	95.2	74.4
68	Non-Ferrous Metals	Aluminium	12.1	64.0	15.3	1.2
69	Manufactures Of Metal, n.e.s.	Iron and Steel; Aluminium	202.2	91.8	52.5	97.5
Total			718.3			348

The data comes from Northern Ireland Statistics and Research Agency NISRA (UK Regions Imports and Exports of Goods by Country and World Region ([nisra.gov.uk](https://www.nisra.gov.uk))) and regulated-products export shares are calculated by using the data from World Integrated Trade Solution (WITS).

Table 3 shows the value of Northern Ireland's exports of regulated products to the Republic of Ireland in 2021. We still assume that Northern Ireland has the same shares of regulated products in each SITC division of exports to the Republic as the UK, to compute the export value of regulated products. With its different basis, this calculation is not perfectly consistent with Table 2 because the estimated export values of regulated products to the Republic are larger than those to the EU+ (SITC divisions 56, 66 and 68). Since Northern Ireland and the Republic of Ireland share a land border, the trade of regulated products seems likely to be easier than between the rest of the UK and the EU+, so we give preference to Table 3 for the Republic of Ireland figures. However, these numbers are not dominant in computing the total export value of regulated products. In addition, 100% of Northern Ireland's exports go to the Republic of Ireland in the electricity division.

Northern Ireland's total exports of regulated products to the Republic are estimated at £333 million, the sum of the products of Columns 3, 4 and 5, accounting for approximately 10.1% of Northern Ireland's total goods exports to the Republic. This large portion shows that regulated products are important in Northern Ireland's exports to the Republic of Ireland. If the EU CBAM applies, Northern Ireland's exports to the Republic of Ireland could be impacted significantly. The impacted exports might also raise other issues, like smuggling.

Table 3: Northern Ireland's exports to the Republic of Ireland by SITC Division in 2021

SITC code	Regulated products	NI's export value (£ million)	Shares of NI's exports to the Republic in NI's total exports (%)	Regulated-products export shares in UK's exports to the Republic (%)	Estimated export value of regulated products (£ million)
(1)	(2)	(3)	(4)	(5)	(6)
27	Cement; Fertilizers	38.9	96.3	4.5	1.7
28	Iron and Steel	108.1	2.6	0.0	0.0
35	Electricity	148.3	100.0	100.0	148.3
52	Fertilizers; Hydrogen	10.7	45.1	6.7	0.3
56	Fertilizers	17.2	97.7	97.5	16.4
66	Cement	99.1	90.5	5.5	4.9

The data comes from NISRA (UK Regions Imports and Exports of Goods by Country and World Region (nisra.gov.uk)) and regulated-products export shares are calculated by using the data from World Integrated Trade Solution (WITS).

Northern Ireland's employment

If the EU CBAM impacts the exports of Northern Ireland, jobs in related industries might be impacted. Thus, we now try to estimate the number of jobs that could be vulnerable. First, we roughly map the regulated products to the UK Standard Industrial Classification (SIC) by matching the product definitions in the CN code in CBAM and in the UK SIC codes. Note, however, that the mapping is only approximate because there are fundamental differences between the two classifications. For example, SIC code 241 refers to the group of manufactures of basic iron and steel and of ferro-alloys, but the EU CBAM includes only ferro-chromium and ferro-nickel for ferro-alloys. Based on the data from NISRA, Table 4 shows the number of employees^[16] employed directly in the

industries that produce regulated products (excluding hydrogen, because it should be in the class SIC code 2011 referring to the manufacture of industrial gases where hydrogen is just one of 20 gases, and we don't know how much it accounts for in this class). Overall, more than 4,300 employees are directly involved in the sectors producing regulated products in Northern Ireland in 2021, accounting for 0.56% of its total employment. In terms of direct jobs, these figures are the upper bound of the number of jobs vulnerable.

Table 4: Number of employees in the groups or classes producing the regulated products in Northern Ireland in 2021

Regulated products	SIC code	Number of employees
Fertilizers	2015	55
Cement	233 and 2351	106
Iron and steel	241, 242, 251 and 252	3,854
Aluminium	2442, 251 and 252	
Electricity	3511	370
Total		4,385

The data comes from NISRA ([BRES Publication and Tables 2021 | NISRA \(nisra.gov.uk\)](#)).

Identifying vulnerable jobs

The next step is to try to determine how much of the employment in Table 4 is driven by exports to the EU+ and to the Republic of Ireland, and hence vulnerable to disruption by EU CBAM. Unfortunately, because the data are so scarce, this has to be done indirectly and approximately. First, we convert the gross value added in each SIC division in Northern Ireland to gross output using 2019 UK input-output tables, assuming the ratio between gross value added and gross output of UK applies in Northern Ireland. Table 5 records the ratio and estimated gross output of each of Northern Ireland's related divisions in 2021. It is worth noting that the gross value-added data is reported for divisions 19-20 together while our target is division 20 only. To be consistent, we compute the UK ratio for the combined two divisions to compute the estimated gross output.

Table 5: Estimates of gross output for SIC divisions producing the regulated products in Northern Ireland in 2021

SIC code	SIC division	UK ratio between gross output and GVA (2019)	NI GVA (2021 in £ million)	Estimates of gross output for NI (2021 in £ million)
19 and 20	Manufacture of coke, refined petroleum and chemicals	4.18	293	1,225
23	Manufacture of other non-metallic mineral products	2.56	370	947
24 and 25	Manufacture of basic metals and fabricated metal products	2.32	751	1,742
35	Electricity, gas, steam and air conditioning supply	4.20	700	2,940

UK input-output tables for 2019 are used, which are the latest, provided by the ONS (<https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltablesindustrybyindustry>). The gross value-added data comes from Office for National Statistics and NISRA ([Regional gross value added \(balanced\) by industry: all ITL regions - Office for National Statistics](#)).

We then map our estimates of regulated products exported to the EU+ to each SIC division and compute the shares of regulated products exported to the EU+ in the gross output of each division - shown in Table 6. Finally, we estimate the number of employees involved in regulated product exports to the EU+ by using the shares and total number of employees in each division. Table 7 reports that between 43 and 910 employees in each division are involved in regulated product exports to the EU+.

Table 6: Share of exports of regulated products to EU+ in each SIC division for Northern Ireland in 2021

SIC code	Regulated products (SIC code)	Estimated export value of regulated products (£ million)	Estimates of gross output for NI (2021 in £ million)	Share of exports of regulated products in gross output of each SIC division (%)
19 and 20	Fertilizers (2015)	18.75	1,225	1.53
23	Cement (233 and 2351)	8.15	947	0.86
24 and 25	Iron and steel (241, 242, 251 and 252); Aluminium (2442, 251 and 252)	173.10	1,742	9.94
35	Electricity (3511)	148.30	2,940	5.04

All numbers are from authors' calculations.

Table 7: Number of employees related to regulated product exports to EU+ in each SIC division for Northern Ireland in 2021

SIC code	Regulated products (SIC code)	Number of employees in NI	Share of exports of regulated products in each SIC division (%)	Number of employees involved in regulated product exports
19 and 20	Fertilizers (2015)	2,798	1.53	42
23	Cement (233 and 2351)	5,024	0.86	43
24 and 25	Iron and steel (241, 242, 251 and 252); Aluminium (2442, 251 and 252)	9,160	9.94	910
35	Electricity (3511)	1,923	5.04	96

To estimate the number of jobs related to regulated products exported to the Republic of Ireland, we use the same method. Table 8 and 9 show the results of the process.

Table 8: Share of exports of regulated products to the Republic in each SIC division for Northern Ireland in 2021

SIC code	Regulated products (SIC code)	Estimated export value of regulated products (£ million)	Estimates of gross output for NI (2021 in £ million)	Share of exports of regulated products in each SIC division (%)
19 and 20	Fertilizers (2015)	17.55	1,225	1.43
23	Cement (233 and 2351)	5.75	947	0.61
24 and 25	Iron and steel (241, 242, 251 and 252); Aluminium (2442, 251 and 252)	160.90	1,742	9.23
35	Electricity (3511)	148.30	2,940	5.04

All numbers are from authors' calculations.

Table 9: Number of employee jobs related to regulated product exports to the Republic in each SIC division for Northern Ireland in 2021

SIC code	Regulated products (SIC code)	Number of employee jobs	Share of exports of regulated products in each SIC division (%)	Number of employee jobs involved in regulated product exports
19 and 20	Fertilizers (2015)	2,798	1.43	40
23	Cement (233 and 2351)	5,024	0.61	30
24 and 25	Iron and steel (241, 242, 251 and 252); Aluminium (2442, 251 and 252)	9,160	9.23	845
35	Electricity (3511)	1,923	5.04	96

The data of the third column comes from NISRA ([BRES Publication and Tables 2021 / NISRA \(nisra.gov.uk\)](#)).

Table 10 displays the comparison between the number of employee jobs related to regulated product production and how much of this employment is driven by exports to the EU+ and to the Republic of Ireland. Around one-quarter of the total employment in industries that produce regulated products in Northern Ireland were linked to exports to the EU+ in 2021, and thus vulnerable to disruption by the EU CBAM, which is around 1100 employees. Calculated in terms of direct jobs only, these figures are the lower bound of the number of jobs vulnerable.

Table 10: Number of employee jobs vulnerable to the EU CBAM in Northern Ireland in 2021

Regulated products	Number of employee jobs	Number of employee jobs involved in regulated product exports to the EU	Number of employee jobs involved in regulated product exports to the Republic
Fertilizers	55	42	40
Cement	106	43	30
Iron and steel; Aluminium	3,854	910	845
Electricity	370	96	96
Total	4,385	1,091	1,001

The data of the second column comes from NISRA ([BRES Publication and Tables 2021 / NISRA \(nisra.gov.uk\)](#)). Other numbers are from authors' calculations.

Interpretation

The numbers in Table 10 indicate that the impact of the EU CBAM on the related industries' employment in Northern Ireland is potentially significant. Policymakers should pay attention to the potential damage to employment in Northern Ireland that being outside the EU CBAM may cause. Also note that because of the Passport Union between the UK and the Republic of Ireland, workers affected within these industries might cross the border, which could inhibit the ability of industries in Northern Ireland to recover in the future.

Footnotes

^[5] See Annex I and Annex II of the Directive 2003/87/EC of the European Parliament and of the Council of 12 October 2003 (2020 consolidated version).

^[6] Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 Establishing a Carbon Border Adjustment Mechanism, Article 9.

^[7] See UK Government Cuts Cost of Polluting in Latest Anti-Green Move, Financial Times, available at <https://www.ft.com/content/dfa3b6dc-e00c-4d9a-b155-a419845a39e4?emailId=3aa18> (last accessed 11 August 2023).

^[8] To know more details, please read Xinyan Zhao's CITP Briefing Paper on the Introduction of the Windsor Framework.

^[9] See <https://www.gov.uk/guidance/check-if-you-can-declare-goods-you-bring-into-northern-ireland-not-at-risk-of-moving-to-the-eu#processing>.

^[10] This article invokes two EU Directives: Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) and Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC.

^[11] Xinyan Zhao, The Stormont Brake – What Can We Learn from the Swiss-EU Relationship? CITP Briefing Paper, available at </publications/the-stormont-brake-what-can-we-learn-from-the-swiss-eu-relationship> (last accessed 11 August 2023).

^[12] See <https://ember-climate.org/data/data-tools/carbon-price-viewer/>.

^[13] See the Windsor Framework: a new way forward, paras. 65 and 68.

^[14] See Protocol on Ireland/Northern Ireland, Article 16.

^[15] Scope 3 emissions potentially includes all indirect emissions that occur in the upstream (e.g., mining) and downstream activities of an organisation.

^[16] Paragraph (d) of the fourth paragraph of Article 5(2) of the Northern Ireland Protocol states that: Before the end of the transition period, the Joint Committee shall by decision establish the criteria for considering that a good brought into Northern Ireland from outside the Union is not at risk of subsequently being moved into the Union. The Joint Committee shall take into consideration, inter alia: [...] (d) the incentive for undeclared onward movement into the Union, in particular incentives resulting from the duties payable pursuant to paragraph 1.

^[17] Legal values are what a legal text aims to protect. The most common legal values include freedom, justice, and human rights.

^[18] To prove this method is reasonably good, we did it for the UK. The estimated numbers turned out very close to the numbers directly from UK Customs.

^[19] We use the data for the subheading 250700 to estimate the related export share. However, 250700 includes two subdivisions, 25070020 and 25070080, of which only 25070080 is considered in the EU CBAM.

^[20] This is an underestimate of jobs because self-employment is excluded. However, in UK data, the numbers of employees and total employment are the same in most of the affected groups, and very close in others.