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Executive Summary

E.1. The UK faces significant challenges and opportunities in aligning its trade policy with net-zero emissions goals. Utilizing the Multi-Regional Input-Output (MRIO) model[2], the UK has been identified as a net importer of carbon emissions, highlighting the nation's role in global climate change through its consumption patterns and the importation of goods with embedded carbon emissions.

E.2. Research indicates that R&D expenditure is inversely related to carbon emission intensity in high-income countries, yet this relationship is not mirrored in middle-low income countries. In these nations, innovation may lead to an increase in emissions, presenting a paradoxical scenario where advancements may exacerbate carbon leakage and negatively impact global emission reduction efforts.

E.3. The UK's trading environment is currently navigating the complexities of Brexit and changes in global trade, for example, the introduction of the US Inflation Reduction Act and the EU's Carbon Border Adjustment Mechanism (CBAM). Exiting the EU without agreements over some significant issues has caused difficulties, for instance the absence of on Sanitary and Phytosanitary (SPS) agreements has necessitated health inspections for animal and plant-based products. Brexit has also seen a re-orientation of UK trade away from the EU and, in particular, a worsening of the trade balance with the EU.

E.4. A culture of agreeing trade deals as quickly as possible meant that those negotiations have facilitated an ad hoc approach which has seemingly failed to incorporate the country's ambitious net zero targets into the process. In short, the negotiations seem to have occurred without reference to any unified guiding principle relating to the achievement of those net-zero targets. This has produced some outcomes that pose a potential threat to that wider agenda, for instance in opening the UK market to food produced at lower environmental standards, the Australia trade deal threats the capacity of the UK to move towards a more sustainable and environmentally-friendly model of farming. Whilst this emphasis on speed is understandable, given the imperative to

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[2] The MRIO model is a complex economic tool that quantifies the interdependencies between regions by tracking the flow of goods and services and reveals how economic activities and environmental impacts are interconnected across borders.

replicate and improve on EU trade deals as fast as possible, it also risks establishing problematic precedents for future negotiations, thus jeopardizing the net-zero target.

E.5. The effectiveness of environmental policies, such as the EU's Carbon Border Adjustment Mechanism (CBAM) and emissions trading schemes, for instance the UK's post-Brexit Emissions Trading Scheme, is contingent upon the development of precise measurement, reporting mechanisms, and regulatory quality. However, the UK's measurement of its carbon footprint is undermined through exclusions, for example emissions from the production of imported goods and services or UK residents and UK businesses registered abroad.

1. Trade and Net-zero

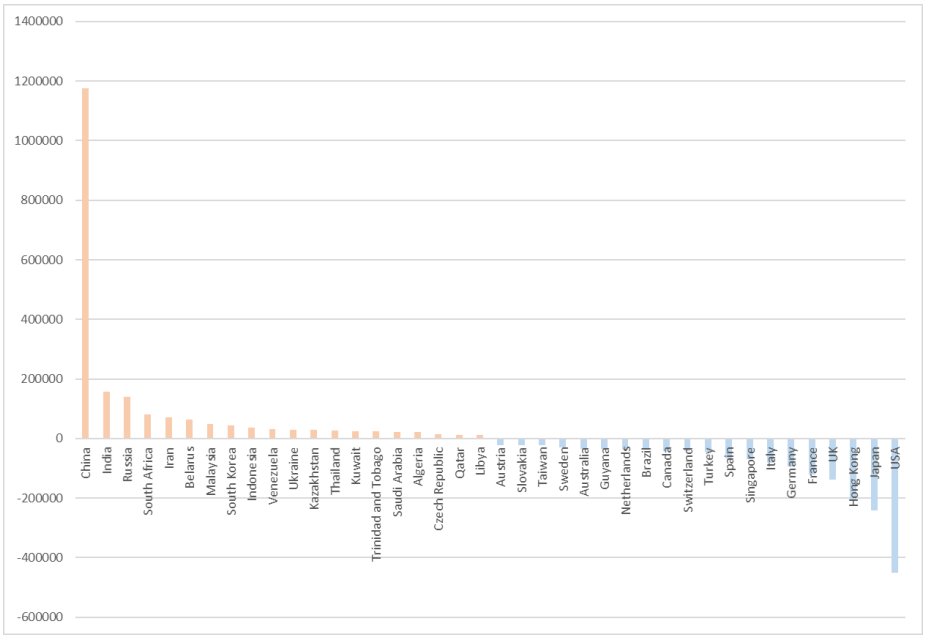


Figure 1 Countries/regions of top twenty positive and negative carbon footprint (kt)

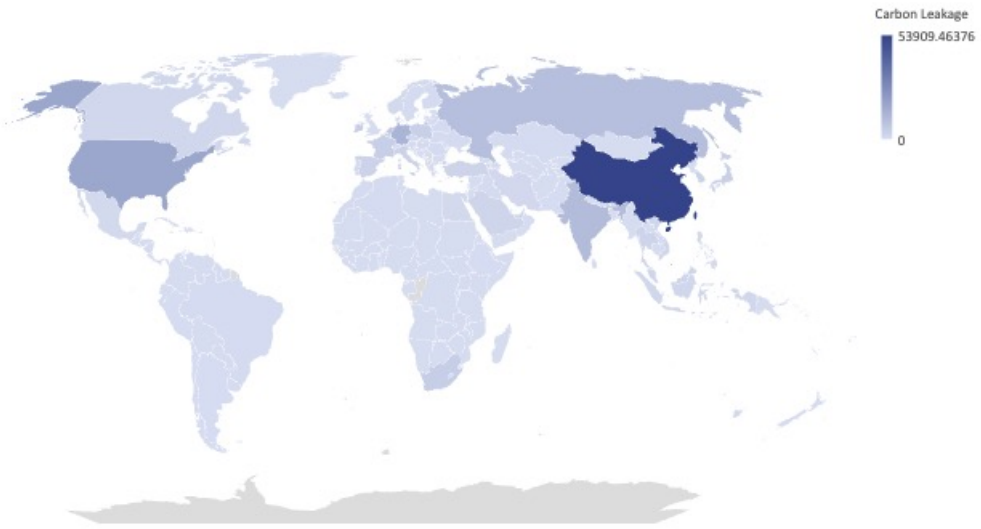
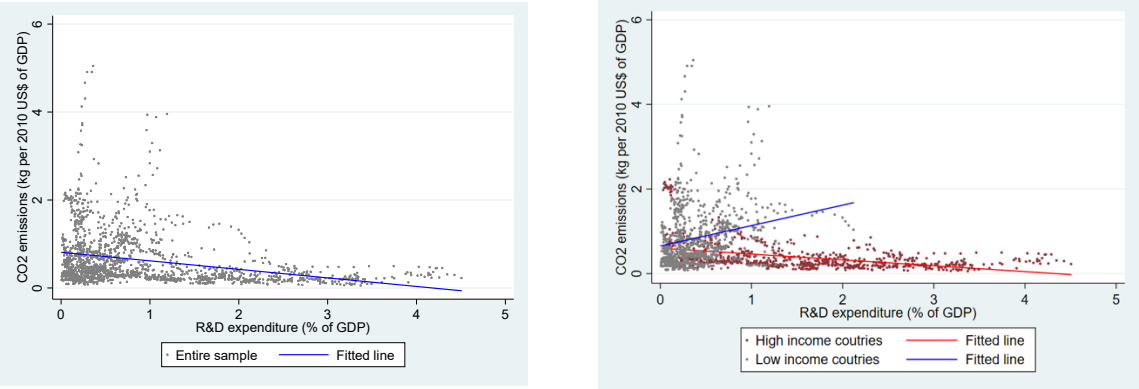


Figure 2 UK's carbon leakage in kt (Darker shades indicate higher levels of carbon leakage)

1.1 Utilizing the MRIO model, our analysis identifies the UK as a net importer of carbon emissions. This approach quantifies each nation's carbon footprint, accounting for international trade, and clarifies the UK's contribution to global climate change through its consumption and importation of carbon emissions (carbon leakage). See Figures 1 and 2.



(a) Entire sample

(b) High income vs. middle-low income countries

Figure 3 Plots between Carbon emissions (kg per 2015 US$ of GDP) and R&D expenditure (% of GDP).

1.2 Figure 3 - Plot (a) demonstrates that R&D spending overall lowers carbon emission intensity. Yet, as indicated by plot (b), while R&D efforts reduce CO_2 emissions in high-income countries, they paradoxically increase emissions in middle-low income nations, affirming that innovation's effectiveness in emission reduction is income-dependent, and there is a carbon leakage issue. Worse still, such carbon leakage is distorting the innovation system, resulting in less developed countries devoting their innovative efforts to carbon-intensive industries, jeopardizing global efforts in the reduction of carbon emissions.

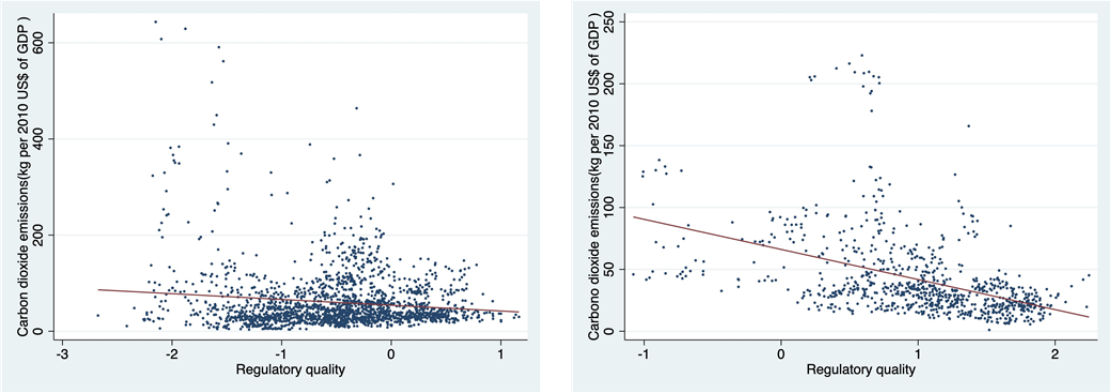
1.3 Although regional trade agreements (RTAs) boost trade and economic output among member countries, they also contribute to a rise in global carbon emissions due to increased fuel consumption, economic output, and distortion of innovative efforts.

2. UK’s Trading Environment and Its Current Trading Policy

2.1 The UK's trading policies are navigating challenges posed by Brexit and shifting international trade dynamics. Brexit has introduced some significant non-tariff barriers; for example, without a SPS agreement, the UK has faced significant hurdles in agri-food exports. Businesses are now obliged to pre-notify imports of plants, animals and high-risk food and feed. Overall, UK businesses have complained about a proliferation of customs and safety checks. Such developments have meant that UK now trades with the EU on less favorable terms than other non-EU European countries such as Norway (which is incorporated within the single market) or Switzerland (which has a substantive diversity of bilateral trade agreements with the EU). Furthermore, Post- Brexit, the level

of the UK trade openness, estimated through the value of its imports and exports relative to its GDP, has declined in comparison to other G7 countries.

2.2 The prospect of such problems with EU trade and the urgency of ensuring that a variety of countries did not impose substantive tariffs on UK exports necessitated the rapid securing of trade deals. Often such agreements did not adequately integrate environmental standards for imports or net-zero targets into the relevant treaty.



(a) Relationship between regulatory quality and CO_2 emissions

Low- and middle- income countries

(b) Relationship between regulatory quality and CO_2 emissions

High-income countries

Figure 4 CO_2 emissions per capita GDP and regulatory quality

2.3 The EU has made strides with its CBAM, the success of which hinges on the development of accurate measurement and reporting mechanisms and regulatory quality. Evidence suggests that higher regulatory quality correlates with lower carbon emissions (Figure 4). The UK lags in this aspect, particularly as its current domestic emissions accounting systems currently fail to consider emissions related to imported goods.

2.4 A cohesive trade strategy that unites various government departments and specifies how net zero targets might be embedded into future trade deals could offer substantial benefits. The UK's current approach risks creating precedents that make net zero much more difficult to achieve, precisely because environmental agendas are not always at the core of the negotiations. In particular, issues might arise through the UK's membership of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) because environmental standards are generally lower in those countries. For instance, through agricultural regulations that permit the use of pesticides banned in the UK. Such intensive farming methods obviously having negative impacts on the drive to net zero.

3. Recommendation – How can UK's trade policy further help with its goals for net zero?

3.1 Forge a Unified Green Trade Policy:

- Formulate a comprehensive green policy within the Department for International Trade to support sustainable domestic and international practices.

- Introduce a guiding unified principle in achieving net-zero targets in negotiation so as to uphold strict environmental standards across all trade negotiations and agreements, reinforcing the UK's commitment to high environmental standards.

3.2 Leverage International Collaboration and Policy Enhancement:

- Enhance climate policies through initiatives like carbon taxes and international carbon pricing, ensuring fair competition and alignment with global efforts to curb emissions.
- Effectively leverage various networks and associations such as Indian Ocean Rim Association and the G20 to address environmental issues in trade.

3.3 Innovate and Compete in Green Technologies and Recognize and Capitalize on Net-Zero Opportunities:

- Strike a balance between aligning with international mechanisms like the EU's CBAM and fostering UK-specific competitive advantages in clean technologies and industries to spur innovation and job creation.
- Reframe net-zero targets as catalysts for green trade opportunities, job creation, and sustainable growth, ensuring prompt action to establish new supply chains and maintain the UK's competitive edge in the evolving green economy.

3.4 Develop Robust and Fair Carbon Accounting:

- To enhance the effectiveness of its climate policy, the UK could consider aligning (partially) with the EU's CBAM. Such alignment could enable businesses to adapt more seamlessly to cross-border trade requirements and may provide pricing benefits due to a synchronized adjustment cost structure.
- Develop a clear understanding of the complexities of the supply chain to establish an accurate carbon footprint, the approach should be sector-specific, bottom-up, rather than relying on border control, and/or taxes.
- Contribute to the creation of international carbon accounting systems that accurately assign environmental responsibilities, e.g. quantifying the extend of carbon leakage, and integrate Scope 3 emissions into the UK's framework to include the full spectrum of consumption-based emissions.

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