Carbon Accounting Programme

Baringa

CATAPULT Energy Systems

Operationalising a Carbon Regulator

Report 3 - Summary

International Considerations for a Carbon Regulator

October 2024

Report produced by Baringa at the direction of Energy Systems Catapult

Please note this is a shortened version of Report 3 containing the Executive Summary and Recommendations. The full report can be downloaded from the project page: https://es.catapult.org.uk/project/operationaleising-a-carbon-regulator/

Part of the Carbon Accounting programme, funded by Innovate UK:

UKRI Innovate UK | CATAPULT Connected Places | CATAPULT Digital | CATAPULT Energy Systems | CATAPULT High Value Manufacturing | CATAPULT Satellite Applications

DISCLAIMER

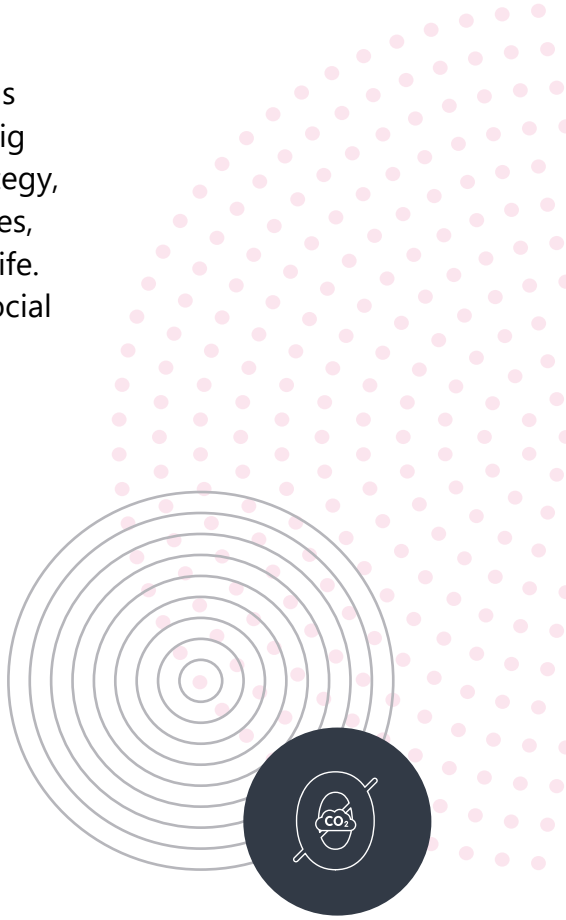
This report has been prepared by Baringa Partners LLP ("Baringa") at the direction of Energy Systems Catapult and has been designed to meet the agreed requirements of Energy Systems Catapult only and not any other requirements including those of third parties. This report may not be altered or modified without Baringa's prior written consent. No warranty is given by Baringa as to the accuracy of the contents of this report. This report should not be regarded as suitable to be used or relied upon by any party other than Energy Systems Catapult unless otherwise contractually agreed by Baringa and Energy Systems Catapult.

About Energy Systems Catapult

Energy Systems Catapult was set up to accelerate the transformation of the UK's energy system and ensure UK businesses and consumers capture the opportunities of clean growth. The Catapult is an independent, not-for-profit centre of excellence that bridges the gap between industry, government, academia, and research. We take a whole systems view of the energy sector, helping us to identify and address innovation priorities and market barriers in order to decarbonise the energy system at the lowest cost.

About Baringa

We set out to build the world's most trusted consulting firm – creating lasting impact for clients and pioneering a positive, people-first way of working. We work with everyone from FTSE 100 names to bright new start-ups, in every sector. You'll find us collaborating shoulder-to-shoulder with our clients, from the big picture right down to the detail: helping them define their strategy, deliver complex change, spot the right commercial opportunities, manage risk or bring their purpose and sustainability goals to life. As a Certified B Corporation®, we've proven that we've built social and environmental good into every bit of what we do.



Contents

Carbon Accounting Programme

Baringa

Executive Summary

Reliable and trustworthy emissions data is essential to the functioning of a Net Zero economy. National carbon accounting policies can drive the adoption of consistent standards, which in turn encourage disclosure of accurate and interoperable emissions data. The existing regulatory landscape is increasingly setting more stringent requirements relating to carbon accounting. Without effective international coordination, there is a risk of further complicating the landscape with diverging standards.

In this report, we identify international considerations for a Carbon Regulator and implications for UK exports based on a review of national policies. Firstly, this report considers the national policies of a select group of countries chosen based on their trade proximity to the UK[1]. Secondly, the report outlines key considerations for a Carbon Regulator based on a review of international coordination initiatives across industrial sub-sectors[2]. Finally, the report identifies opportunities for a Carbon Regulator to play a leading role in promoting international alignment in carbon accounting to support UK industry.

Review of national policies

Approaches to carbon accounting in national policies, such as methodology and boundary requirements, are predominantly set on a case-by-case basis. Due to limited coordination across regulators and governments, this leads to inconsistent practices in the carbon accounting landscape and limits a 'whole systems' view of emissions both at national and international levels. Additionally, there is no clear best practice to inform approaches to set up an effective carbon accounting regulatory framework.

Existing national policies, both in the UK and internationally, present several challenges to consistent and accurate emissions reporting that a Carbon Regulator should have knowledge of, including:

- There is a lack of harmonisation of methodologies in carbon accounting policies. This increases the administrative burden for reporting entities, creates inconsistency in corporate emissions disclosures, and limits the comparability of low-carbon products.

[1] The countries assessed were Australia, Canada, China, the European Union, France, Germany, Japan, Netherlands, Switzerland, and the United States of America. The report focuses on disclosure policies such as EU CBAM, in addition to claims, procurement, carbon markets and transition plan policies.

[2] The sectors assessed were Aluminium, Automotive Manufacturing, Cement, Chemicals, Glass, Iron & Steel, Pharmaceuticals, and Refined Oil.

- There is an absence of digital tools based on standardised data management frameworks to support exchange of interoperable emissions data.
- There exist multiple governance structure(s) to manage and verify accuracy of emissions disclosures and ensure compliance.

Governments are increasingly implementing more prescriptive carbon accounting regulation as the importance of emissions data in investment decisions grows. However, limited coordination results in inconsistency and incomparable reported emissions data. A Carbon Regulator could facilitate international coordination by supporting the UK government and regulators to develop effective carbon accounting policies aligned to international trends, informing best practices, and identifying existing gaps. This will promote the harmonisation of a complex international landscape and reduce potential risks for UK companies with disparate reporting requirements.

Another key challenge for a Carbon Regulator to consider is the lack of interoperable digital tools across the carbon accounting landscape. This hinders access to comparable emissions data within industrial supply chains. While digital reporting platforms are increasingly being established, there is no globally accepted standard for collecting, storing, and sharing GHG emissions data[3]. A Carbon Regulator could promote standardisation across reporting tools, working with international forums to align best practices and facilitate effective data sharing among stakeholders, including UK exporters, suppliers, customers and regulators.

Varied governance structures to deliver carbon accounting regulation provide potential learnings for operationalising a Carbon Regulator and highlight key international actors with whom government could coordinate. A Carbon Regulator may also observe where divergence in governance introduces complexity into the landscape, for instance, in carbon accounting verification processes. The Catapult has previously proposed that the accreditation of third-party verifiers could be a function of a Carbon Regulator[4]. Due to the variation in reporting requirements, current international verification requirements tend to be policy specific, driving further inconsistencies across the landscape. A Carbon Regulator could play a role in standardising verification processes in the UK and enhance credibility in the assurance of verified UK industry emissions data to other regulators.

[3] The EU presents an example of best practice with the European Single Electronic Format (ESEF), which standardises the electronic reporting of financial information, including sustainability-related information, by companies within the EU.

[4] Energy Systems Catapult. Operationalising a Carbon Regulator – Report 2: Review of Existing Regulatory Landscape.

Limited coordination across regulators and governments leads to inconsistent practices within the international carbon accounting

Review of international coordination initiatives

The international coordination landscape is complex, involving various actors and mechanisms to improve emissions data interoperability for the transition to Net Zero. This paper proposes that a Carbon Regulator should stay informed about these initiatives to align the UK's carbon accounting regulatory framework with best practices, and support industry through international engagement. Coordination initiatives primarily aim to promote standardised methodologies, facilitate data sharing, and foster collaboration to ensure consistency and accuracy in carbon accounting practices globally. They predominantly provide cross-sectoral guidance to accommodate diverse business needs. They also promote the uptake of digitalisation, primarily via reporting platforms to enhance transparency and traceability across supply chains. In recent years, there are increasing efforts to:

- Establish detailed and consistent sector-specific emissions measurement and reporting guidance, prioritising Scope 3 and product-level reporting[5].
- Improve harmonisation of existing low-carbon product standards to reduce confusion for buyers, especially in the data required to establish emissions thresholds for low-carbon products.
- Leverage the purchasing power of industry and governments to accelerate a market for low-carbon products.
- Develop tailored, technology and process specific pathways that companies can use to establish their own transition plans in alignment to the goals of the Paris Agreement.

These efforts primarily address specific high-emitting industrial sectors with large global trade volumes, political decarbonisation interest, and relatively standardised production pathways, i.e., Iron & Steel, Cement and Aluminium. Gaps in current initiatives include limited sectoral coverage, lack of interoperability in technology ecosystem, and lack of action on governance, specifically verification processes. These gaps exacerbate the key challenges UK industry faces when navigating the carbon accounting policy landscape.

[5] The GHG Protocol defines Scope 3 emissions as all indirect emissions (excluding indirect emissions from the generation of purchased energy) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

The UK is one of the global leaders in international coordination efforts in the carbon accounting landscape, influencing the objectives and outcomes of many initiatives. A Carbon Regulator, with the support of other UK government agencies, could facilitate international engagement. The objective of the engagement would be to maximise the effectiveness of these initiatives, to enhance national capabilities, to address the system-wide challenges of carbon accounting, and support UK industry to navigate a less complex landscape.

Implications for UK exports

Based on our review of the international landscape, the following key risks for UK industry were identified:

- **Administrative burden** – Reporting entities face increasing costs of compliance due to varied reporting requirements, with a higher burden on SMEs who have more limited resources to navigate requirements.
- **Inaccurate emissions reporting** – Credibility of UK industry reported data could be impacted due to use of multiple reporting approaches, insufficient guidance on how to apply emissions measurement methodologies to sector-specific processes, and inconsistent verification processes.
- **Reduced customer demand** – Increasing demand for exporters to satisfy disparate information requests from buyers, often without support of interoperable digital solutions to facilitate exchange of emissions data.
- **Limited credibility of UK low-carbon exports** – Lack of alignment on criteria in existing low-carbon product standards impacts the credibility of this market and creates confusion for procurement decision makers where claims on materials with same purpose differ.
- **Limited access to finance** – Growing need for industrial firms to demonstrate sustainability performance to financial institutions, transparently and consistently, to avoid losing investment. Limited interoperable digital tools in place to assist obliged entities.

Recommendations for international engagement

There are opportunities for the UK to strengthen its international engagement to ensure a Carbon Regulator can provide assurance for the credibility of UK industry-reported data while mitigating the risks for reporting entities and ensure ongoing competitiveness of UK exports globally. We have set out these recommendations for engagement below.

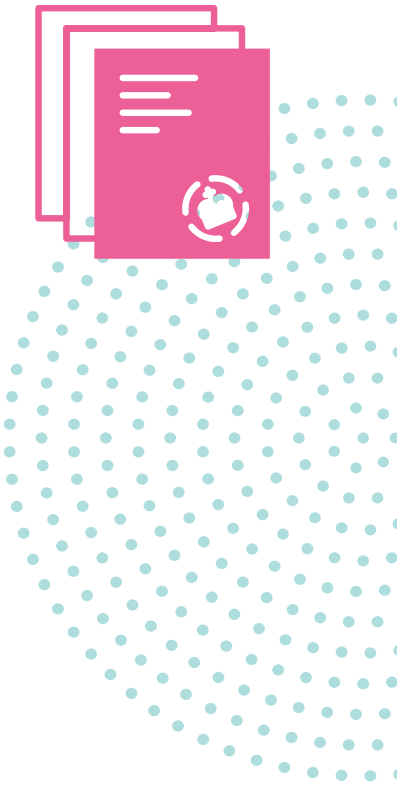
1. **The design and development of national policies requires international engagement to promote harmonisation of standards and avoid additional hurdles for reporting entities.**

2. **Enhanced coverage of sector-specific carbon accounting resources across international landscape is required to address diverse emissions reporting needs, promote accurate data collection, and enable effective sustainability measures for industry.**

3. **Improved exchange of interoperable emissions data acrosss global industrial value chains requires multi-stakeholder promotion of open source digital platforms and/or digital infrastructure based on standardised data model for storing and sharing GHG emissions data.**

4. **Improved coordination to promote standardisation of accreditation requirements for verification bodies to the international community and provide assurance of credibility of UK verified industry emissions data.**

5. **UK green claims policies, such as the Green Claims Code, should ensure the on-going competitiveness of UK exports by considering the criteria outlined in international low-carbon product standards and claims**



To effectively implement the proposed recommendations, a Carbon Regulator would require a mandate that allows for ongoing international engagement, which is currently lacking across existing carbon accounting regulatory frameworks. Allocating resources for international engagement within the scope of a national regulator would present challenges that require further investigation. Other areas of Government, such as the Department for Business and Trade need to support a Carbon Regulator in engaging in the international landscape, to align with Government priorities on international trade and low carbon economic activities.

1. Operationalising a Carbon Regulator - Project Context

The Innovate UK funded Carbon Accounting programme is led by High Value Manufacturing Catapult in collaboration with Connected Places Catapult, Digital Catapult, Satellite Applications Catapult, and Energy Systems Catapult.

The programme makes the case for a policy and regulatory environment that:

- Supports creating a comprehensive UK framework for greenhouse gas (GHG) emissions, with agreed standards and tools for accounting, tracking, and reporting GHG emissions through supply chains to accelerate industrial decarbonisation.
- Unlocks investment and creates an environment where UK industry excels on the global stage as a destination for low carbon manufacturing.

As part of this programme, Energy Systems Catapult is reviewing the policy and regulatory environment needed to support a data driven Net Zero economy. Credible, science-based emissions data will be essential to inform investment and innovation decisions for industry and the wider economy. Regulation is an important part of the policy toolkit to help standardise reporting practices and increase the credibility of emissions data.

1.1 Our Proposal for a Carbon Regulator

Crucial to the standardisation of carbon accounting practices is the development of a regulatory framework that sets requirements on the gathering and reporting of emissions data as it travels through supply chains. We have previously proposed the introduction of a body charged with responsibility for economy-wide oversight of carbon accounting practices and MRV[11]. We refer to this proposed body as a 'Carbon Regulator'.

A Carbon Regulator would be an independent body, either set up as a new institution, or by extending the mandate of an existing organisation, or it could be a group of bodies working together in a more coherent way.

Reliable and trustworthy emissions data will be essential to the functioning of a Net Zero economy. Economy-wide regulatory oversight can provide clarity, and innovation-friendly regulation can ensure a level playing field for innovators, cut investment risks, and build investor, business and consumer confidence. It can also support:

- **Streamlined reporting** – reducing the administrative burden of reporting emissions and promoting a single source of emissions disclosure. Doing so also establishes a consistent source to be propagated for different carbon accounting use cases (e.g. Life Cycle Assessments and Corporate Reporting). This can only be enabled by the regulation of data best practice and the effective coordination of digitalised reporting and accounting software.
- **Credible emissions data** – regulation can help maintain the integrity of a system, while driving demand for credible, scientifically-backed methods for measuring emissions. This has advantages, including:
  - Providing investors with confidence that the decarbonisation projects they support have a material effect on emissions reduction.
  - Supporting the third-party verification of emissions disclosures.
  - Standardising reporting methodologies where appropriate.
  - Assuring that all carbon accounting adheres to an agreed set of principles.

[6] In our previous reports, we make a clear distinction between MRV (the monitoring, reporting and verification of emissions at their source) and how emissions are then accounted for in different use cases – both functions require regulatory oversight.

- **A transition to improved emissions data** – Over time, regulation can improve access for SMEs and other consumers of emissions data to more comparable and complete data sets. During the transition, regulation can also safeguard organisations from unjust penalisation for gaps in their emissions data by phasing in requirements for different businesses sizes, while encouraging a shift towards improved emissions inventories.
- **A level playing field for competition** – Independent regulation can mitigate conflicting carbon intensity claims between competing products and services (e.g. construction materials). This can empower climate-conscious consumers and purchasing behaviour, promote fairer competition and help businesses and sectors identify where best to target innovation for Net Zero.

There are already carbon accounting regulations and regulators (e.g. the Environment Agency is responsible for the UK Emissions Trading Scheme (UK ETS)), but they are disparate and specific to individual policy mechanisms. As a result, there is no consistent, economy-wide oversight for carbon accounting and MRV of emissions.

The complexity of carbon accounting related regulation may increase with the implementation of a Carbon Border Adjustment Mechanism (CBAM), which the UK Government have confirmed will be in place by 2027. The government is also exploring whether there is a role for voluntary product standards, that could pave the way for future mandatory product standards. In doing so, it pointed to developing a new emissions reporting framework that would aim to maximise the use of existing data and minimise additional industry reporting burdens.[7] In Government consultation responses, there was also strong support for an independent regulator to verify product embodied emissions.

The complexity of carbon accounting related regulation may increase with the implementation of a Carbon Border Adjustment Mechanism (CBAM), which the UK Government have confirmed will be in place by 2027. The government is also exploring whether there is a role for voluntary product standards, which could pave the way for future mandatory product standards. In doing so, it pointed to developing a new emissions reporting framework that would aim to maximise the use of existing data and minimise additional industry reporting burdens. In Government consultation responses, there was also strong support for an independent regulator to verify product embodied emissions.

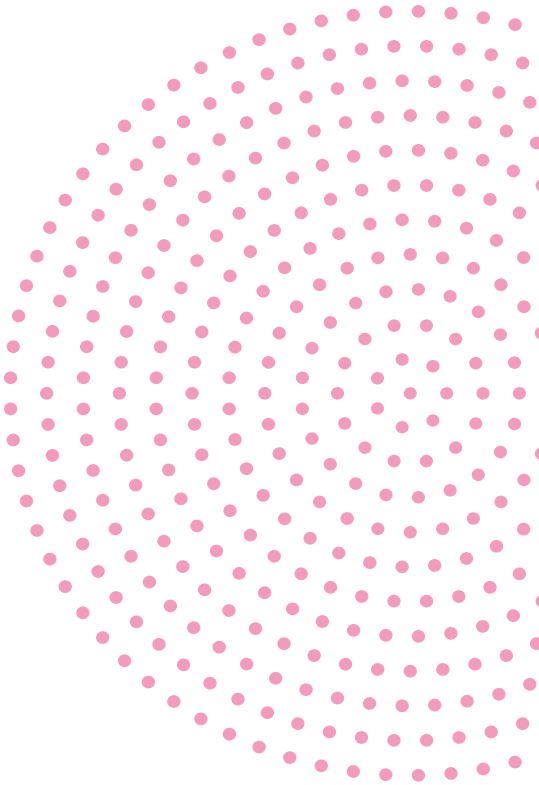
[7] DESNZ and HMT (2023). Addressing carbon leakage risk to support decarbonisation: Summary of consultation responses and government response. https://assets.publishing.service.gov.uk/media/657c7fbd95bf65000d7190cb/2023_Government_Response_-_Addressing_Carbon_Leakage_Risk.pdf

This report is the third in a series of reports providing context on the regulatory foundations we propose are needed to support a Net Zero economy. We have focused on the following areas:

- Identifying approaches to regulatory design and delivery, drawing on insights from existing regulated sectors and interviews with regulatory experts. This is the focus of the first report in this series: Operationalising a Carbon Regulator – Learning from Other Sectors[8].
- Understanding the existing landscape of carbon accounting regulation in the UK, which is the focus of the second report in this series: Operationalising a Carbon Regulator – Review of the Existing Regulatory Landscape.
- Reviewing international considerations for a Carbon Regulator, including opportunities for a Carbon Regulator to play a leading role in promoting international alignment and export requirements on UK industry. This is the focus of this report.
- The fourth and final report in this series will look to dive deeper into specific gaps in regulation and what practical steps could be taken to fill these gaps. We aim to publish this report in early 2025.

At the heart of our research, we aim to capture a wide range of stakeholder views. For this report we have conducted a series of interviews with regulatory experts, industry stakeholders, and representatives from NGOs, research institutes and academia.

[8] The project website, where we will publish links to relevant publications in this series can be found here: https://es.catapult.org.uk/project/operationaleising-a-carbon-regulator/



2. International Engagement – Recommendations

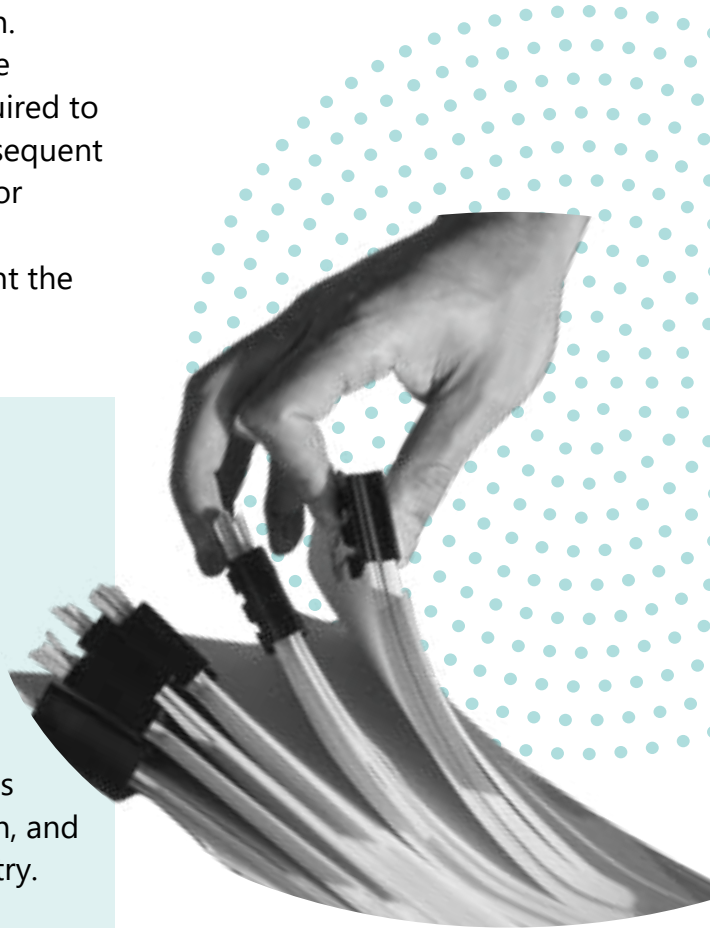
2.1. Overview of Recommendations

This section identifies opportunities for the UK Government to promote international alignment in carbon accounting for industry, supported by a UK Carbon Regulator. A Carbon Regulator can utilise its position as a first mover in the regulatory landscape to promote the credibility of UK low carbon industry and demonstrate the value of having nationally coordinated carbon accounting regulations, supported by a clear strategy for low carbon economic activity. The opportunities presented build on the understanding of the practicalities of operationalising a well-regulated carbon accounting framework explored in previous reports.

To effectively implement the proposed recommendations, a Carbon Regulator would require a mandate that enables continuous international engagement to improve coordination. Allocating resources for international engagement within the scope of a national regulator would present challenges, which warrant further exploration. Support from other areas of Government, such as the Department for Business and Trade will likely be required to support these recommendations. Therefore, the subsequent section outlines potential engagement approaches for the UK within the international landscape, including proposed action for a Carbon Regulator to implement the recommendations.

Recommendations

1. The design and development of national policies requires international engagement to promote harmonisation of standards and avoid additional hurdles for reporting entities.
2. Enhanced coverage of sector-specific carbon accounting resources across the international landscape is required to address diverse emissions reporting needs, promote accurate data collection, and enable effective sustainability measures for industry.



3. Improved exchange of interoperable emissions data across global industrial value chains requires multi-stakeholder promotion of open-source digital platforms and/or digital infrastructure based on a standardised data model for storing and sharing GHG emissions data.
4. Improved coordination to promote standardisation of accreditation requirements for verification bodies to the international community and provide assurance of credibility of UK verified industry emissions data.
5. UK green claims policies, such as the Green Claims Code, should ensure the on-going competitiveness of UK exports by considering the criteria outlined in international low-carbon product standards and claims.

2.2. Recommendations

Recommendation 1

The design and development of national policies requires international engagement to promote harmonisation of standards and avoid additional hurdles for reporting entities.

How to achieve this

Harmonisation of carbon accounting standards refers to the process of aligning different methodologies and reporting requirements to create more consistent approaches for: (1) measuring and reporting GHG emissions; (2) defining thresholds for low-carbon products.

This involves coordinating with regulators, industry, and other key stakeholders, within and outside the UK, to align on methodologies for emissions measurement and low-carbon product or production standards, especially where gaps driving incompatible reporting exist. Active multi-stakeholder engagement enhances the effectiveness of carbon accounting policy to drive industrial decarbonisation while ensuring fair competition practices. Collaboration across policy makers, affected stakeholders, and experts enables adoption of credible, scientifically backed methods for measuring emissions while minimising likelihood of pushback from industry.

Who to engage with

- **IEA, ISO, UNIDO, WBSCD,** and **WRI** are currently leading international coordinating efforts to address gaps in carbon accounting standards across industry. These organisations facilitate multi-stakeholder engagement by creating opportunities for participation from the private and public sector, through direct participation and / or consultation.
  - IEA hosts several initiatives, including the Climate Club, which aims to build international collective understanding of comparable and interoperable standards, including both emissions accounting methodologies and definitions for what constitutes 'near zero emissions'.
  - The IDDI, hosted by UNIDO, works to standardise carbon assessments, initially by developing a standardised methodology for reporting on embodied carbon through the steel and cement value chains.
  - ISO is responsible for the development and update of the widely-adopted ISO standards for carbon accounting, including ISO 14064 which provides guidance at the organisation level for measurement and reporting of GHG emissions and removals.
  - WRI and WBSCD are responsible for the development and update of the GHG Protocol.
  - WBSCD also hosts the Partnership for Carbon Transparency (PACT) which developed the Pathfinder Framework as an open-source framework to provide clear guidance for carbon accounting along value chains. Given the global reach of such organisations, such frameworks are likely to be widely adopted.
  - WRI also works very closely with local partners and government affiliated agencies to maximise climate policy impact. Taking a position to not be a standard setting body, WRI makes policy recommendations based on what standards are being developed globally[9].

[9] Insight from stakeholder interviews with intergovernmental organisation.

- These initiatives encourage engagement across policy makers, industry, and other relevant stakeholders to map existing carbon accounting standards, establish consensus on best-practice methods for measuring emissions, and define low-carbon products.
- **Monitor progress and direction of travel from ISSB, EFRAG, and GRI** who are working closely to coordinate the sustainability requirements in their respective standards, i.e., IFRS S1 & S2 (which recently incorporated the TCFD framework and announced same intent with the Transition Plan Taskforce), European Sustainability Reporting Standards, and the GRI standards.
- **Consult with global industry bodies in hard-to-abate industrial sectors**, including international trade associations and industry leaders in carbon accounting, to effectively identify corporate challenges in applying existing emissions measurement and reporting methodologies. This will enable carbon accounting standards to be developed with information from industry experts, reducing burden on firms to meet GHG reporting requirements. Buy-in from affected stakeholders will improve the scale of adoption of internationally set carbon accounting standards.

Rationale for the recommendation

There is a lack of harmonisation of carbon accounting standards across the UK's major trading partners. Current carbon accounting standards use various emissions measurement methodologies, allowing for different interpretations. This particularly applies to sector-specific rules, product-specific rules, and emission factor databases. This leads to:

- Lack of consistency and comparability of GHG emissions data.
- Gaps in sector-specific guidelines for emissions measurement, especially for product-level and Scope 3 emissions reporting.
- Lack of standardised definitions for low-carbon industrial products.
- Interchangeable application of emissions factor databases despite difference in measure of activity, i.e., similar use of LCA (measure of value chain activity),

EEIO (measure of economic activity), and combustion emissions factors (measure of technical activity).

- Growth of a "fake marketplace for competing standards"[10]. Governments are increasingly being incentivised to have ownership of emissions measurement standards. This is leading to an increase in the variety of methods used to measure emissions, but it is not resulting in a significant improvement in the accuracy of reporting.

Improving harmonisation of global carbon accounting standards will reduce the administrative burden on UK industry by reducing the number of disparate requirements

Improving harmonisation of global carbon accounting standards will reduce the administrative burden on UK industry by reducing the number of disparate requirements with which companies need to comply. Harmonisation should also facilitate consistent emissions reporting and monitoring for both companies and their stakeholders.

The UK can establish itself as a leader amongst regulators by taking the lead in improving the compatibility of carbon accounting standards. This will not only enhance the credibility of emissions data but also enable governments to aggregate company emissions data effectively. Such efforts are crucial for establishing nationally determined contributions and advancing global climate action.

Recommendation 2

Enhanced coverage of sector-specific carbon accounting resources across international landscape is required to address diverse emissions reporting needs, promote accurate data collection, and enable effective sustainability measures for industry.

How to achieve this

G7 member states, including the UK, play a substantial role in ongoing international coordination initiatives, exerting major influence over these programs' objectives and results. The UK could leverage its existing influence to ensure advancements in carbon accounting across industrial supply chains, achieved through international coordination initiatives, align with the UK's long-term climate goals.

[10] Insight from stakeholder interview with academic research institute.

As such, the sectoral coverage of sector-specific resources should increase, focusing on: (1) Establishing robust MRV requirements for industrial sub-sectors that currently lack best-practice guidelines for carbon accounting, such as Glass and Pharmaceuticals; (2) Improving emissions measurement standards for high-emitting UK industrial sectors facing gaps in supply chain coverage (i.e., Refined Oil) and product-specific guidance (i.e., Chemicals).

Who to engage with

- **Leverage current engagement with IEA and UNIDO, specifically through their WPID and IDDI initiatives**, which provide a platform for governments to accelerate industrial decarbonisation by establishing standardised methodologies for emissions reporting and definitions for low-carbon products.
    - Given the UK government is currently a part of IDDI as co-lead, the UK can use this position to influence the initiative's direction and objectives, including increasing coverage of industrial sub-sectors in future activities in alignment to UK industrial decarbonisation strategy. A Carbon Regulator could also coordinate with sector regulators and the wider government to share understanding of UK industry challenges to meet disclosure requirements to maximise value of these initiatives to companies.
- **Engage with global industry bodies to promote UK industry's adoption of credible resources from international organisations such as RMI, TfS, and Ipieca**. These organisations are currently leading efforts in the global landscape to improve interoperability of emissions data in the Chemicals and Refined Oil sectors. Active engagement in such initiatives will allow UK to address gaps currently hindering that sector's industrial decarbonisation while improving alignment on best-practice between UK and international firms.

Rationale for the recommendation

It is valuable to have detailed guidance for sub-sectors to address industry-specific challenges to emissions measurement and reporting because applying sector-agnostic emissions measurement methodologies to specific industrial processes presents challenges. Currently, development of sector-specific carbon accounting standards

with cradle-to-gate supply chain and emissions coverage is concentrated in Iron & Steel, Cement, and Aluminium sectors. This leaves gaps in best-practice guidelines for emissions measurement in industrial sub-sectors with lower global trade volumes[11], such as Glass, and have complex production pathways, such as Chemicals. Additionally, in Oil & Gas the existing frameworks focus on measuring and reporting upstream methane emissions.

The lack of relevant sector-level guidance and standards, particularly Scope 3, MRV and PCR guidance, may hinder a firm's ability to identify emission hot-spots across its supply chain and progress towards reducing those emissions. This may lead to:

- Reduced customer demand for highly carbon intensive products and increased demand for vendors with more accurate supplier-specific emissions data. This is particularly relevant for exports of UK goods covered by EU CBAM and industries with increasingly sustainability-conscious consumers, who may be willing to pay a green product premium today and in the future.
- Reduced access to financing, if firms are unable to adequately demonstrate achievement of emissions reduction targets to investors. However, it is worth noting that liquid international capital markets may mitigate this risk as not all financial institutions will have emissions reduction targets.

The UK has an opportunity to leverage its influence in existing international coordination initiatives to ensure a larger share of its high-emitting industrial sectors have tailored guidelines to help these sectors accelerate decarbonisation based on sector-specific processes and value chains.

Recommendation 3

Improved exchange of interoperable emissions data across global industrial value chains requires multi-stakeholder promotion of open-source digital platforms and/or digital infrastructure based on a standardised data model for storing and sharing GHG emissions data.

[11] CDP. Corporate questionnaire alignment with environmental frameworks and standards - CDP

The lack of relevant sector-level guidance and standards, particularly Scope 3, MRV and PCR guidance, may hinder a firm's ability to identify emission hot-spots across its supply chain

How to achieve this

The UK can advance the use of technology systems to facilitate the seamless exchange of emissions data across industrial supply chains, promoting transparency while setting a global standard to improve sustainable supply chain management practices. Existing approaches to promote the use of digitisation for effective GHG emissions data management focus on: (1) establishing platforms for environmental reporting; (2) developing open access data standards to enable the exchange of emissions data across technology platforms and stakeholders throughout the value chain. With specific and consistent principles on data sharing in open access data standards, government can also address industry competitiveness concerns due to disclosure of company-sensitive information.

Who to engage with

A UK Carbon Regulator could collaborate and support organisations playing a key role in building a technology ecosystem for emissions reporting. This will allow the UK to identify opportunities to scale effective digital carbon accounting solutions while promoting international alignment.

Examples of relevant actors identified in this study include:

- **CDP**, a non-profit which runs an environmental disclosure system for companies, cities, states, and regions. CDP aligns their corporate questionnaire with the most relevant frameworks and standards, such as Task Force on Climate-Related Financial Disclosures (TCFD) and GRI standards, to support entities disclosing information against the different market and regulatory demands[12].
- **WBSCD, host of the PACT initiative**, developing a network for the exchange of supplier-specific product carbon footprint (PCF) data (Pathfinder Network)[13].
- **RMI, specifically the Climate Intelligence workstream**, supporting the establishment of open-source data platforms for emissions reporting. RMI's engagement with policy makers focus on calls for inputs with a focus on standardising data[14]. RMI also engages with civil

[12] CDP. Corporate questionnaire alignment with environmental frameworks and standards - CDP

[13] WBSCD. Pathfinder Framework: Guidance for the Accounting and Exchange of Product Life Cycle Emissions.

[14] Insight from stakeholder interview with intergovernmental organisation.

society experts, major buyers, suppliers, and industry non-profits globally, providing the UK with access to relevant information from across the supply chain to improve carbon accounting.

- **The Open Group**, a non-profit leading the development of open GHG data management standards through the Open Footprint Forum. Members range from major corporations, small to medium-size businesses, government organisations and consortia, and universities[15].
- **The London Metal Exchange (LME) hosts an ESG data platform, LMEPassport**, for suppliers to store sustainability credentials for LME-listed metals, including aluminium. This is done in collaboration with producers and standards bodies around the world to improve access to comparable and verified sustainability information[16].
- **Carbon Accounting Alliance (CAA)** brings together carbon accounting providers who offer accounting services, datasets, and digital platforms to support companies calculating their carbon footprints and promote consistency in carbon accounting methodologies.
- **Major UK exporters and large buyers of UK exports**, prioritising those with supplier information requests driven by mandatory disclosure requirements like EU CBAM. A UK Carbon Regulator could consult with stakeholders affected by lack of transparency in supply chain emissions data to create high impact, useful digital solutions.

Rationale for the recommendation

There does not currently exist a globally accepted standard for collection, storage and sharing of GHG emissions data for industrial production. There are increasing digital platforms for reporting GHG emissions data, such as CDP, which are valuable tools for annual reporting. However, the lack of a common data protocols for emissions reporting is a barrier to the compatibility between existing digital platforms. Their focus on corporate-level reporting also overlooks the potential for more actionable insights based on product-level data, which could assist companies in making operational decisions to reduce carbon emissions.

[15] The Open Group. The Open Footprint Forum. Open Footprint® Forum | www.opengroup.org

[16] London Metal Exchange. LMEPassport. LMEpassport | London Metal Exchange

This makes it difficult for:

- Companies to report their GHG emissions data in a consistent manner.
- Regulators to access, analyse and aggregate company emissions data efficiently.
- Customers with GHG emissions disclosure requirements to access supplier-specific information.
- Buyers procuring low-carbon materials to make timely, informed purchasing decisions.
- Investors to access climate-related information for all business activities to make timely, informed sustainable investment decisions.
- Third-party organisations, such as academia and the Climate Change Committee, to hold UK accountable for climate targets.

A digital infrastructure to facilitate the interoperability of emissions data will result in greater transparency of how not only firms, but also UK industrial emissions are progressing towards emissions reductions targets. Greater transparency of emissions data will also support the firm's financers who are increasingly requiring quality emissions data and climate-related information from their clients. Additionally, the amount and type of data required to obtain accurate emissions reports is sensitive to company operations and raises concerns on competitiveness across firms. A Carbon Regulator can support government to provide assurance for companies around the use of company data by promoting presumed open data principles within the carbon accounting regulatory framework.

Recommendation 4

Improved coordination to promote standardisation of accreditation requirements for verification bodies to the international community and provide assurance of credibility of UK verified industry emissions data.

How to achieve this

This involves coordinating with regulators and other key private sector stakeholders, within and outside the UK, to:

- Agree on accreditation requirements to conduct carbon accounting audits as a qualified verification body,

ensuring alignment with existing international processes and standards such as ISO 14065[17].

- Ensure that any verification requirements, such as accreditations provided by a Carbon Regulator to third-party verifiers, are considered adequate to meet international standards for UK exports. This would prevent industry from having to undergo verification processes twice, potentially against two different methodologies.

Who to engage with

- **Coordinate with the Carbon Accounting Alliance (CAA) and the United Kingdom Accreditation Service (UKAS) to develop and uphold an internationally recognised professional qualification for carbon accounting verification.** CAA brings together carbon accounting providers who offer accounting services, datasets, and digital platforms to support companies calculating their carbon footprints and promote consistency in carbon accounting methodologies. Working with government, UKAS have accredited several verification bodies under ISO 14065[18].
- **Consult with national accreditation bodies** such as COFRAC in France and other regulators such as US EPA to obtain acceptance of accreditation requirements under professional qualification.
- **Monitor voluntary schemes developed by the private sector, NGOs and trade associations** aiming to provide carbon accounting certifications for verification bodies, e.g., AEE's Certified Carbon Auditing Professional program. Such schemes could influence direction of verification standards internationally. Engagement would ensure global alignment as the carbon accounting policy landscape matures.

Rationale for the recommendation

Existing national policies do not provide detailed and consistent accreditation requirements for verification bodies to qualify to perform carbon accounting audits.

The most common standard stated in policies for the carbon accounting verification process is ISO 14064-3, which provides guidance for verifying and validating GHG statements. Meanwhile there is limited reference

[17] ISO 14065 defines requirements for bodies that validate and verify GHG statements. It can be used as a basis for accreditation and other forms of recognition in relation to the impartiality, competence, and consistency of validation and verification bodies.

[18] Validation & Verification Body Accreditation (ukas.com)

to standards like ISO 14065, which directly address accreditation requirements for verification bodies. Regulators are developing varied accreditation requirements for verification bodies to support firms to comply with national disclosure policies. This is currently achieved primarily through national registration of verification bodies based on fulfilment of eligibility criteria set out in regulation, such as practical auditing experience or a Certified Public Accountant (CPA) qualification.

By developing a professional qualification or accreditation programme for carbon accounting verification that builds on existing international standards, such as ISO 14065, and maintains acceptance by other countries' regulators, the UK can be a leader in promoting standardisation of carbon accounting verification requirements. Streamlining accreditation requirements for verification of GHG statements will reduce administrative burden for UK industry mandated to verify emissions data across multiple jurisdictions with disparate requirements. Additionally, it will reduce the challenge of inaccurate emissions tracking resulting from a lack of standardisation of carbon accounting standards.

Recommendation 5

UK green claims policies, such as the Green Claims Code, should ensure the on-going competitiveness of UK exports by considering the criteria outlined in international low-carbon product standards and claims[19].

How to achieve this

To consider the criteria in international standards and claims, the UK Carbon Regulator would need to:

- Maintain awareness of carbon accounting requirements under relevant international standards and claims policies;
- Work with other regulators, industry and other key stakeholders to identify gaps or barriers in existing low-carbon product definitions;
- Coordinate with relevant government bodies, such as the Competition and Markets Authority (CMA), to ensure UK claims policies align with global best-practice and

[19] The UK Green Claims Code, in effect from 20 September 2021, was developed by the Competition and Markets Authority to outline principles that companies making environmental claims need to adhere to, to ensure they are properly substantiated and do not mislead consumers.

increase harmonisation of methodologies for defining low-carbon products;

- And support UK government to develop sector strategies to maintain competitiveness of UK exports as low-carbon product market grows.

Who to engage with

A UK Carbon Regulator could support government to account for and monitor international standards, NGOs, and regulators developing carbon accounting requirements for low-carbon products and production such as:

- IEA and UNIDO, specifically their WPID and IDDI initiatives which provide a platform for governments to engage in establishing standardised definitions for low-carbon products.
- RMI, one of the founding partners of the international coalition responsible for running the Mission Possible Partnership (MPP). Its Industrial Transition Accelerator is mapping low emissions products standards for six key materials including cement, steel, aluminium with the aim to harmonise existing standards and reduce confusion of stakeholders mainly government and buyers[20].
- Regulators across the UK's major trading partners, including the US EPA, developing national benchmarks for low-carbon products as criteria for public procurement are being developed.
- International organisations taking a role as standard setting bodies in industrial sub-sectors, such as ResponsibleSteel which outlines requirements for responsible processing and production of steel and ASI which set requirements for the responsible production, sourcing, and stewardship of aluminium.

Rationale for the recommendation

Accounting for the lifecycle of a product or service is the primary carbon accounting principle in existing claims policies such as the EU Green Claims Directive. However, there is a notable lack of specificity in emissions measurement and reporting requirements for companies to comply with this principle, which increases the challenges that firms face in complying with these directives

[20] Insight from stakeholder interview with non-profit initiative.

consistently. This may also lead to application of an inappropriate GHG accounting method, in turn driving poor decision making for producers, customers and regulators. For example, a consequential approach can provide information on the potential emissions resulting from a future product. Inaccurate application of the attributional method in this scenario can mislead companies into implementing actions that lower their entity's attributed emissions while inadvertently increasing global emissions[21,22].

Development of international low-carbon products and production standards is mostly occurring in the Iron & Steel, Cement and Aluminium sectors, but the standards are not always harmonised. Additionally, there is no best-practice guidance for companies operating in other high-emitting industrial sub-sectors such as Chemicals and Glass on how to manufacture low-carbon products. Both factors make it more difficult for UK companies to develop credible low-carbon products.

To ensure the future competitiveness of UK exports, it is important that future UK policy considers the international carbon accounting requirements for "green products" to ensure that UK products are not perceived as less sustainable, potentially reducing international demand. The UK can significantly improve its effectiveness in policy-led actions to combat greenwashing by establishing consistent carbon accounting requirements and best practice guidelines under claims policies. Robust guidelines enable UK companies to accurately measure and report their environmental impact, to promote transparency, accountability, and trust among consumers and stakeholders, and to strengthen the UK's position as a leader in sustainable practices.

Development of international low-carbon products and production standards is mostly occurring in the Iron & Steel, Cement and Aluminium sectors, but the standards are not always harmonised. Additionally, there is no best-practice guidance for companies operating in other high-emitting industrial sub-sectors such as Chemicals and Glass on how to manufacture low-carbon products. Both factors make it more difficult for UK companies to develop credible low-carbon products.

[21] Matthew Brander (2021). The most important GHG accounting concept you may not have heard of: the attributional-consequential distinction.

[22] Energy Systems Catapult (2022). Carbon Accounting in Industry: Learning From the South Wales Industrial Cluster to Develop a Consistent and Coherent National Framework.

To ensure the future competitiveness of UK exports, it is important that future UK policy considers the international carbon accounting requirements for “green products” to ensure that UK products are not perceived as less sustainable, potentially reducing international demand. The UK can significantly improve its effectiveness in policy-led actions to combat greenwashing by establishing consistent carbon accounting requirements and best practice guidelines under claims policies. Robust guidelines enable UK companies to accurately measure and report their environmental impact, to promote transparency, accountability, and trust among consumers and stakeholders, and to strengthen the UK’s position as a leader in sustainable practices.

Acronyms

ACCU – Australian Carbon Credit Units

A-PACT – Automotive Partnership for Carbon Transparency

ASI – Aluminium Stewardship Initiative

AVR – Accreditation and Verification Regulation

CAA – Carbon Accounting Alliance

CBAM – Carbon Border Adjustment Mechanism

CCC – Climate Change Committee

CMA – Competition Markets Authority

CSRD – Corporate Sustainability Reporting Directive

EEIO – Environmentally Extended Input-Output

EERS – Emissions and Energy Reporting System

EFRAG – European Financial Reporting Advisory Group

EPA – Environmental Protection Agency

ESEF – European Single Electronic Format

ESRS – European Sustainability Reporting Standards

ETS – Emissions Trading Scheme

FCA – Financial Conduct Authority

FMC – First Movers Coalition

FRC – Financial Reporting Council

GCCA – Global Cement and Concrete Association

GGIRCA – Greenhouse Gas Industrial Reporting and Control Act

GHG – Greenhouse Gas

GRI – Global Reporting Initiative

ICCA – International Council of Chemical Associations

IDDI – Industrial Deep Decarbonisation Initiative

IEA – International Energy Agency

ISSB – International Sustainability Standards Board

LCA – Life Cycle Assessment

LME – London Metals Exchange

MEE – Ministry of Ecology and Environment, China

MPP – Mission Possible Partnership

MRV – Monitoring, Reporting and Verification (of emissions)

NRG – National Greenhouse and Energy Reporting

PSSI – Pharmaceutical Supply Chain Initiative

SMEs – Small Medium Enterprises

SECR – Streamlined Energy and Carbon Reporting

PCR – Product Category Rules

RMI – Rocky Mountain Institute

TCFD – Taskforce on Climate-Related Financial Disclosures

TfS – Together for Sustainability

TPT – Transition Plan Taskforce

UNIDO – United Nations Industrial Development Organisation

WBSCD – World Business Council for Sustainable Development

WPID – Working Party on Industrial Decarbonisation

WRI – World Resources Institute

Net Zero Carbon Policy

CATAPULT Energy Systems

Energy Systems Catapult

7th Floor, Cannon House,
18 Priory Queensway,
Birmingham, B4 6BS

es.catapult.org.uk
@energysyscat

Baringa

6th Floor
62 Buckingham Gate
London, SW1E 6AJ

baringa.com
enquiries@baringa.com

Part of the Carbon Accounting programme, funded by Innovate UK:

UKRI Innovate UK · CATAPULT Connected Places · CATAPULT Digital · CATAPULT Energy Systems · CATAPULT High Value Manufacturing · CATAPULT Satellite Applications