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Global Steel Decarbonisation: From complexity to coherence

Fundamentals of effective steel decarbonisation policy

July 2026

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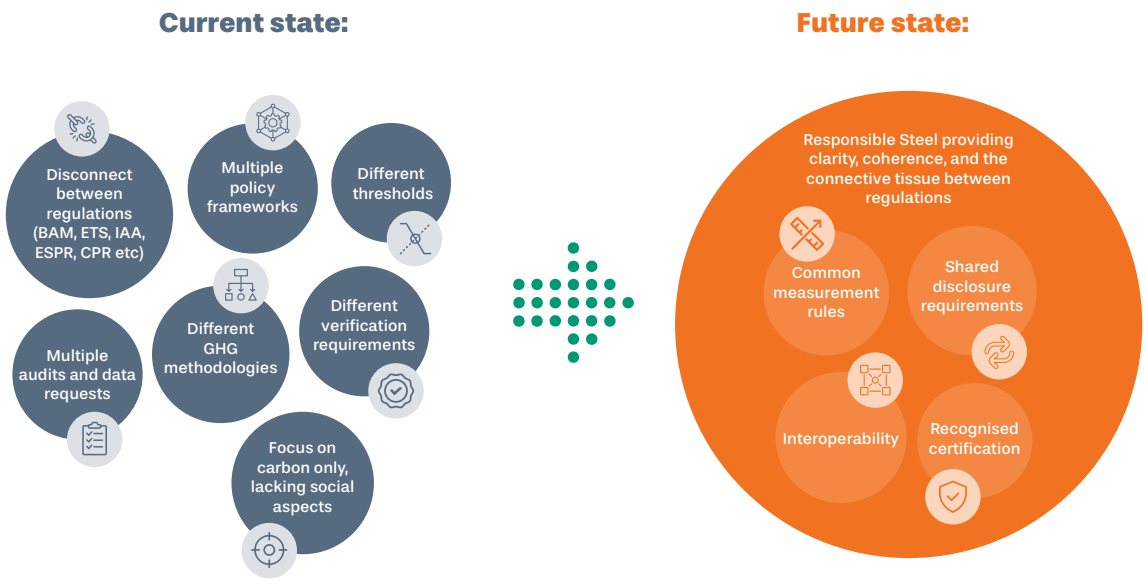
Executive summary

Steel decarbonisation is an urgent global necessity. From Berlin to Beijing, from Doha to New Delhi, governments are designing new policies to achieve this objective, whilst simultaneously supporting their own steel and manufacturing industries. The resulting proliferation of overlapping and sometimes contradictory regulations is creating fragmentation and complexity, undermining predictability, fair competition, hampering investment and trade, and ultimately slowing the transition to 'low-emission' steelmaking.

We cannot afford this inefficiency.

This paper offers a global review of steel decarbonisation and related policies, focused on an analysis of policies in two of the world's three largest steelmaking regions and consumer markets: India and the European Union (EU). We consider a range of policies intended to support the production of 'low-emission', responsibly produced steel, including instruments of both carrot and stick, and the rules and classifications these are based on.



We find that opportunities for synergies between policies are being missed due to a lack of policy coherence, both within the European and Indian policy frameworks and between them. A high-level and urgent commitment to improve both internal and inter-regional policy coherence is needed if timely steel decarbonisation is to be achieved.

We argue that verified interoperable data urgently needs to become common currency across carbon pricing, trade and product policy. We highlight the need to transform fragmented instruments into a single architecture of trust through independent certification. We demonstrate how such traceable and high-integrity data can enable fair market access by rewarding low-emission, responsibly produced steel, support lead markets through green public procurement and sustainable finance incentives, and integrate broader environmental, social, and governance (ESG) criteria into industrial policy.

We make recommendations for improvements in policy coherence, in relation to four specific aspects:

1. Coherence between trade and climate policy to mutually reinforce climate outcomes via domestic production and in international markets.
2. Alignment of public procurement specifications across multiple countries to collectively increase global demand for 'low-emission' steel, complementing the trade and steel decarbonisation policy drivers.
3. Integration of steel decarbonisation policy with other applicable ESG policies to ensure that the transition to low-emissions steel reinforces social and environmental standards and resilience in supply chains.
4. Alignment in the definition of an effective metric for 'low-emission' steel, taking into account the inherent constraints in scrap supplies.

We then champion technical interoperability between different measurement methodologies, metrics and verification systems:

1. Technically aligned and interoperable GHG measurements and metrics for steelmaking, including consistency on scrap metrics.
2. Steel product traceability via clear downstream chain of custody rules.
3. International recognition of reliable, independently certified data as one of the most immediately available tools for policymakers to deploy at low administrative cost.

Finally, we argue the need for **urgency** to be baked into the policymaker's approach, firstly through the use of existing international standards and certifications rather than reinventing the wheel. Alignment and interoperability is the new diplomacy of pragmatic decarbonisation policy, enabling coherence and preventing technical barriers to trade. Secondly, thresholds must be set at levels that both reward best-in-class and incentivise investment in deep decarbonisation, rather than rewarding 'business as usual' performance.

Implementing these recommendations would enable a consistent, coherent architecture of trusted data as an exchangeable currency across policies for concessionary financing, carbon pricing, trade, 'green procurement' and product labeling, turning policy ambition into credible delivery in the countries of the Global South and Global North.

If the goals of the Paris Agreement are to be met, the global steel industry must decarbonise within a generation. The measures proposed in this paper are straightforward to implement and will make a significant contribution to achieving that objective with the least burden. There is no time to waste.

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1. Introduction: The global challenge of steel decarbonisation

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In capital cities from Berlin to Beijing, from Doha to New Delhi, policymakers are struggling to meet the twin challenges of decarbonisation and support for their key industries. Steelmaking – strategically important but suffering from global overcapacity and low profit margins, and responsible for an estimated 8% of the world's GHG emissions – epitomises these challenges.

In the EU, policies for carbon pricing, border levies, sustainable finance, 'green' product labelling and public procurement are being rolled out in quick succession[1]. Each aims to drive down GHG emissions in steel and other industries. But the plethora of programmes and overlapping frameworks risk creating inconsistencies, administrative inefficiency, and reduced competitiveness instead of a smooth and reliable transition to a 'low carbon' economy.

Elsewhere, similar dynamics are unfolding. India – now the world's second-largest steel producer – is scaling up its own clean industry initiatives. Its Green Steel Taxonomy marks a pioneering step. But while the taxonomy provides a foundation, many stakeholders see the need for it to evolve into a more rigorous, ambitious and globally harmonised framework. Without such synchronisation, Indian steel risks facing punitive emission penalties in Europe, eroding competitiveness in one of its largest export markets. And Indian steel producers are calling on government to complement the taxonomy with other policy levers — carbon pricing clarity, concessional finance, scrap recycling incentives, and 'green' procurement standards — that can de-risk investments and accelerate decarbonisation.

In both jurisdictions, and indeed worldwide, the question is not whether to decarbonise steel, but how to do so while simultaneously supporting strategic industries, maintaining global competitiveness and addressing the generational threat of climate change.

The central argument of this paper is that key to meeting these challenges is an urgent need for improved policy coherence and strengthened technical interoperability across existing policies and underlying methodologies – nationally, regionally and internationally.

Fundamental to achieving this is the need to make more effective use of international standards and assurance mechanisms. Policymakers must move from today's fragmented national and regional approaches to an integrated system where the GHG emissions of producing a tonne of steel are measured and recognised in the same way, whether it's smelted and rolled in Odisha, Hebei or in the Ruhr.

We refer to this as policy coherence, within and between regions, covering carbon accounting rules, trade criteria, reporting standards, assurance and green finance.

1 These include, inter alia, the EU-ETS, the CBAM, updates to EU trade-defence instruments, the emerging Low-Carbon Steel Label and Ecodesign framework, and the EU Sustainable Finance architecture (Taxonomy, ESRS, SFDR, CSRD, CISAF), alongside strategic initiatives such as the European Steel and Metals Action Plan. Together, these form the core of the EU's Clean Industrial Deal and competitiveness agenda.

Coherence does not mean that policies in different countries or regions must be identical. It is not a 'one-size-fits-all' approach. It allows for public procurement rules, market incentives and trade measures to differ between jurisdictions, recognising the principle of *'equity and common but differentiated responsibilities and respective capabilities, in the light of different national circumstances*', enshrined in the Paris Agreement[2].

Coherence means that policies are designed to operate efficiently, in support of one another, rather than in conflict.

Achieving coherence requires countries to agree on aligned and technically valid GHG measurement rules and performance metrics for the steel sector, moving away from a 'not invented here' attitude to these fundamental, technical underpinnings of policy. It requires countries to recognise emissions data for steel and steel products when it has been reliably verified in accordance with these rules, and facilitate its interoperability with their own policy requirements.

We argue that such coherence, alignment and interoperability are readily achievable by making better use of existing tools of standards and certification.

We propose that the rewards of doing so would be transformational, allowing disparate policies within and between countries and regions to operate efficiently and effectively, minimising administrative friction, reducing costs for producers and manufacturers, and creating a stable and predictable environment in which genuine signals of steel decarbonisation can be recognised and rewarded.

2 Paris Agreement (2015)

What is 'low-emission' steel?

A key issue impeding current efforts to decarbonise steelmaking is the lack of agreed terminology and standardised definitions. Terms such as 'green', 'clean', 'low-carbon', 'lower-carbon', or 'low GHG' steel are used interchangeably, often without any clear definition. Measurements of 'carbon' or 'emissions' may or may not include GHGs such as methane, in addition to carbon dioxide; may or may not include the upstream emissions of raw material inputs, or the indirect emissions associated with power generation. In the case of 'green' steel, use of the term can conflict with well-established national and regional regulations for 'green' claims and product labelling.

An additional challenge is how to address the so-called 'scrap issue' – the fact that the steel sector is already highly efficient at recovering and recycling available scrap, so that wherever scrap is available, the majority[3] is already recovered and recycled into new steel, limiting the potential for additional global GHG emission reductions to be achieved by further increasing recycling rates. Since the availability of scrap is constrained by the volumes of steel that were historically produced, increased recycled content specifications remain a very limited lever for reducing the global GHG emissions of the steel sector. Although steel with a high scrap content has a low carbon footprint, its preferential use is unlikely to have a significant impact in reducing overall GHG emissions as the scrap it contains would have been recycled anyway. We address this issue explicitly in Section III of this report.

In this paper we use the term 'low-emission steel' generically, to describe steel that is *intended* to contribute to lower overall GHG emissions in line with a given policy or initiative, although the initiatives themselves may use other terms. We emphasise that our use of the term includes its application to steel which has lower emissions *when its scrap content has been taken into account*, and not only in relation to its carbon footprint.

We note that the lack of consistent GHG measurement rules and agreed metrics for the specification of 'low-emission' steel has serious consequences for the current efficacy of steel decarbonisation policies globally, and that an explicit recommendation of this paper is that this issue needs to be addressed.

3 worldsteel estimates that 85% of available scrap is currently collected and recycled: https://worldsteel.org/about-steel/raw-materials

Table 1: What is 'low-emission steel'

2. Steel decarbonisation policies: national, regional and global complexity

2. Steel decarbonisation policies: national, regional and global complexity

The global transition to a low carbon economy is accelerating, but policy approaches are often poorly integrated within and between jurisdictions. In this paper, we review steel decarbonisation and related industrial policies in the EU and India. Respectively the world's second- and third-largest producers of steel after China, these case studies are illustrative of the challenges facing policymakers in the Global North and the Global South.

In some ways, the policy contexts of Europe and India could not be more different. Europe has a stable population, high per capita Gross Domestic Product (GDP) and a mature steel industry, in contrast to India with its growing population, rising GDP and rapidly expanding steel sector. But steel is strategically important to both jurisdictions, as is their shared commitment to decarbonisation. Moreover, the success of policies in each is inherently linked through trade.

In this section, we first survey the fast-moving policy landscape in these two regions as it applies to the production, export and import of steel and steel products, together with some related international initiatives. Then, we provide a brief analysis of the inefficiencies these fragmented approaches create in terms of policy impact.

In the following chapters we propose remedies.

2.1 Europe

Nowhere is the complexity of industrial decarbonisation policy more apparent than in the EU, which, having begun its journey back in 2005 with the Emissions Trading Scheme, is now implementing an array of measures under its 'Green Deal' and 'Fit for 55' initiatives. The policy foundations were laid by the Draghi Report on European competitiveness and the Letta Report on the future of the Single Market, both of which call for a coherent industrial strategy.[4] It has developed further with the Clean Industrial Deal, which positions industrial transformation as a cornerstone of Europe's economic renewal, bolstered by the 2025 European Steel and Metals Action Plan, and the Industrial Acceleration Act. The Commission President's 2025 State of the Union address highlighted industrial decarbonisation and competitiveness as leading priorities for the EU executive, with a specific reference to steel as a strategic sector.[5]

Key elements of the evolving policy architecture include the following.

a. EU Emissions Trading System (EU ETS)

The EU ETS is the EU's foundational policy for combatting climate change, launched in 2005 to create the world's first major carbon market. It operates on a 'cap and trade' principle: a cap is set on the total amount of GHGs that can be emitted by covered installations — primarily in power generation, heavy industry, infrastructure, and intra-European Aviation – and companies receive or purchase emissions allowances within that cap. Companies

4 Draghi, M. (2024). The Future of European Competitiveness—A Competitiveness Strategy for Europe. https://commission.europa.eu/document/97e481fd-2dc3-412d-be4c-f152a8232961_en; Letta, E. (2024). Much more than a market. https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf.

5 Popkostova, Y. (2025). The State of the Union is Steel. Illuminem Thought-Leadership Voices. 20 September 2025. https://illuminem.com/illuminemvoices/the-state-of-the-union-is-steel

whose emissions fall below the cap can sell their surplus allowances to others, creating a financial incentive for emissions reduction. The cap is reduced over time, ensuring that total emissions fall. Free emissions allowances for steelmakers will be progressively phased out from 2026, ending completely by 2034.

b. EU Carbon Border Adjustment Mechanism (CBAM)

The CBAM is a trade policy designed to prevent 'carbon leakage' — the risk that companies relocate production to, or buy materials and products from, countries with weaker climate regulations, undermining the EU's emissions reduction efforts. It is thus intended to buttress increasingly stringent implementation of the EU-ETS, which would otherwise reduce the competitiveness of 'low-emission' goods produced within the EU compared with higher emission but cheaper imports.

From January 1, 2026, importers of iron and steel have been required to purchase CBAM certificates, effectively paying a carbon price on those imports. If a producer in a non-EU country has already paid a carbon price domestically, that amount can be deducted.[6]

The compliance regime specifies tight verification rules, together with punitive default values to be applied when embodied emissions have not been verified in accordance with those rules.

c. Steel Trade Defence Instrument

The EU's new Steel Trade Defence Instrument is a regulation agreed upon by the European Parliament and Council that has come into effect from 1 July 2026, replacing the steel safeguard measures on 30 June 2026.[7]

The instrument specifies 50% tariffs applicable to 30 categories of steel products above an annual tariff-free limit of 18.3 million tonnes. It also introduces a stringent 'melt-and-pour' rule of origin, requiring proof of where the steel was initially produced, to prevent trans-shipment via third countries. These moves aim to shield EU producers from global overcapacity and unfair trade practices, and to give them breathing room to invest in decarbonisation. However, they do not distinguish between high- and low-emission steel – both are treated identically for the purpose of quotas and tariffs.[8]

d. Industrial Accelerator Act (IAA)

Published on 4 March 2026 as a proposal, the IAA forms part of the EU's Clean Industrial Deal (CID) and designates steel as a priority sector within its broader framework, targeting energy-intensive industries. From 1 January 2029, publicly funded construction, infrastructure, and vehicle projects will be required to ensure that at least 25% of the steel used qualifies as 'low-emission' (referred to as 'low-carbon' steel).

The IAA envisages the establishment of an EU labelling system for such 'low-carbon steel'. The definition of low-carbon steel is not specified within the proposed regulation, but was delegated to the Ecodesign for Sustainable Products Regulation (ESPR) and Construction Products Regulation (CPR) in March 2026, where the issue remains unresolved (see below).

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6 Directorate-General for Taxation and Customs Union, 'CBAM successfully entered into force on 1 January 2026'. January 14, 2026. https://taxation-customs.ec.europa.eu/news/cbam-successfully-entered-force-1-january-2026-2026-01-14_en

7 https://ec.europa.eu/transparency/documents-register/detail?ref=COM(2025)726&lang=en

8 Popkostova, Y. (2025, September 20). The state of the union is steel. Illuminem Voices. Retrieved from https://illuminem.vercel.app/illuminemvoices/the-state-of-the-union-is-steel

e. Ecodesign for Sustainable Products Regulation (ESPR)

The ESPR entered into force in July 2024 and empowers the European Commission to set binding performance and information requirements for specific product categories (including iron and steel), addressing criteria such as durability, repairability, recyclability, energy efficiency, and the presence of substances of concern. A central element of the ESPR is the Digital Product Passport (DPP), which accompanies products and is intended to provide standardised data on their environmental sustainability as they pass through the supply chain.

A key discussion in relation to the application of the ESPR to steel products concerns the criteria used to define 'low-emission' steel. This has significance beyond the ESPR itself, as the resulting classification is likely to be adopted across other EU policy instruments, including public procurement frameworks and downstream product regulations.

f. Construction Products Regulation (CPR)

The EU CPR sets harmonised rules for marketing construction products within the EU Single Market, ensuring that materials such as concrete, steel, insulation, and adhesives meet consistent safety, performance, and environmental criteria. Originally introduced in 2011, the CPR was substantially revised in 2024 (Regulation EU 2024/3110). For steel specifically, the regulation requires manufacturers to draw up a Declaration of Performance and Conformity (DoPC) which must include embodied carbon data presented as an Environmental Product Declaration (EPD) aligned with EN 15804 standards.

g. Industrial Support and Finance

The EU aims to mobilise significant public and private capital to accelerate industrial decarbonisation and create lead markets for low-emission materials. The new Clean Industrial Deal State Aid Framework (CISAF) expands Member State flexibility to subsidise decarbonisation projects, while EU-level instruments such as the Innovation Fund, InvestEU, and the proposed Industrial Decarbonisation Bank channel resources into scaling clean production capacity and early-stage industrial transformation.[9] Several Member States and the Commission are exploring mandates for the specification of 'low-emission' steel in construction and infrastructure, signalling a shift towards guaranteed demand to reward investment in decarbonisation.

9 European Commission (2025). Framework for State Aid measures to support the Clean Industrial Deal (Clean Industrial Deal State Aid Framework). Communication. COM (2025) 3602.; European Commission (2025). Innovation Fund. https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund_en; European Union (2025). InvestEU Programme. – https://investeu.europa.eu/investeu-programme_en; European Commission (2025). Financing the clean transition. Instruments overview. https://commission.europa.eu/topics/competitiveness/clean-industrial-deal_en

These disparate measures – a subset of the EU's expanding industrial decarbonisation and competitiveness toolkit – all seek to accelerate the shift towards 'low-emission', high-quality steel production, yet they often operate in silos — with different rules, definitions, and data systems. Policy measures may or may not consider Scope 2 emissions; may or may not take account of upstream emissions associated with key input materials; may apply different scope boundaries; may or may not consider methane emissions; may or may not specify rules for allocating emissions between co-products (see Table 1). The consequence is that a GHG measurement referenced in one policy may not be comparable to or compatible with a GHG measurement referenced in another.

Moreover, there are tensions within and between policies with a focus on support or protection for European industries, and policies with a focus on decarbonisation – or both. The Steel Trade Defence Instrument (STDI), for example, does not distinguish between high- and 'low-emission' steel and could therefore limit market access for steel that Europe's climate policies otherwise seek to encourage. In contrast, the IAA aims to support both a steel 'Made in Europe' objective and a 'low-emission' objective. The European Joint Research Centre (JRC) has proposed thresholds for 'low-emission' steel which appear likely to allow most European produced steel to qualify, reducing costs for manufacturers, but also reducing incentives for emissions reductions. The CPR requires steel products to be accompanied by an Environmental Product Declaration (EPD) – but the specifications governing those declarations are not sufficiently defined or aligned to ensure comparability between similar products. Furthermore, since methodologies differ across all instruments, the datasets used for CPR or ESPR implementation are unlikely to be interoperable with the EU-ETS or CBAM (see Table 2).

Policy measure	'Low-emission' steel measurements and metrics
EU Emissions Trading System (ETS)	GHG emissions are measured on the basis of a strict site boundary – i.e. only the direct (Scope 1) emissions count, and the indirect emissions associated with energy use (Scope 2), and upstream (Scope 3) emissions are excluded. Therefore, methane emissions from the steel value chain are not included.
Carbon Border Adjustment Mechanism (CBAM)	The CBAM largely aligns its GHG measurement boundary with the EU ETS: for final steel products, only direct (Scope 1) emissions are required; iron and steel are not among the goods for which indirect (Scope 2) electricity emissions must be reported in the definitive phase. Scope 2 is, however, required for key precursors such as sintered ore and pig iron, whose embedded emissions — direct and indirect — carry forward into the final product. Coke is outside this precursor chain, since it is not itself a CBAM-listed good and therefore upstream methane emissions are excluded; sintered ore and ferro-alloys, unlike coke, are listed goods and are therefore included. Both pre- and post-consumer scrap are assigned zero embedded emissions under CBAM. The Commission's December 2025 legislative proposal (European Parliament and Council approval pending) moves to bring pre-consumer scrap into scope as a CBAM precursor to curb misreporting, but post-consumer scrap remains untouched.

Steel Trade Defence Instrument (STDI)	The STDI specifies a quota system for steel imports, with 50% tariffs to be applied to imported steel once the quota has been exceeded. There is no differentiation of tariffs for 'low-emission' steel.
Industrial Accelerator Act (IAA)	The EU's IAA, proposed by the Commission on 4 March 2026 but not yet enacted, would require — from January 2029 — that at least 25% of steel used in publicly funded construction, infrastructure and motor vehicle projects be 'low-emission' steel. Crucially for non-EU producers, the IAA imposes no EU-origin requirement on such steel: qualifying 'low-emission' steel may be sourced globally, unlike aluminium and concrete, for which EU-origin conditions also apply. Unlike the EU-ETS and CBAM, a 'scrap-variable' metric for classifying 'low-emission' steel has been proposed[10] (although whether this approach prevails is uncertain – see below), with the categorisation, measurement methodology, and threshold(s) delegated to the ESPR and CPR.
Ecodesign for Sustainable Products Regulation (ESPR)	Despite the reference to a 'scrap-variable' scale in the IAA, proposed ESPR metrics for 'low-emission' steel to date appear to be based on carbon footprint measurements. Under the most recent proposals to have been published at the time of writing, thresholds for 'low-emission' steel (Classes A or B) would be benchmarked against global production data, allowing most European produced steel to qualify as 'low-emission',
Construction Products Regulation (CPR)	The CPR to date has specified the use of product carbon footprint disclosures (in relation to GHG emissions), based on the application of the European standard EN 15804 + Annex 2. The standard takes a life cycle approach to GHG measurement, including consideration of direct (Scope 1), energy indirect (Scope 2) and upstream (Scope 3) emissions. Recent changes to the CPR treat the recycled content of steel as a reportable environmental parameter, but do not specify consistent rules for its measurement[11]

Table 2: 'Low-emission' steel measurements and metrics in a selection of European policy initiatives.

10 https://single-market-economy.ec.europa.eu/document/download/9bc8eb85-4d43-4025-be7b-c86b9f3648ec_en?filename=Proposal%20establishing%20measures%20for%20industrial%20capacity%20and%20decarbonisation%20in%20strategic%20sectors%20.pdf pp 20

11 https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2026-03/StudyonReCoSteel_March%202026_0.pdf

2.2 India

India is going through a transformative phase of industrialisation. It is now the world's second-largest producer of steel, with capacity projected to expand further from 180 to 300 million tonnes (MT) by 2030, supplying home as well as export markets. At the same time, the Indian government is committed to achieving net-zero emissions by 2070, with interim targets to be met by 2035. To achieve this, it must decouple rapid economic growth from carbon emissions. The steel sector currently contributes 12% of India's national emissions, and decisions taken this decade will set India's steelmaking pathway and its climate impacts for generations to come. It is a time of opportunity and risk.

As is the case in Europe, the Indian government has identified steelmaking as a critically important sector in relation to both industrial development and decarbonisation, and has developed a range of industrial decarbonisation policy initiatives applicable to it.

India's Green Steel Initiative is the government's overarching effort to decarbonise the sector. Led by the Ministry of Steel, it encompasses several interconnected policy wrappers: the 'Greening the Steel Sector in India: Roadmap and Action Plan' (the 'Green Steel Action Roadmap') released in September 2024; the Green Steel Taxonomy launched in December 2024; and the forthcoming National Green Steel Mission. Together, these and other related components aim to create a domestic market for 'low-emission' steel, strengthen India's competitiveness as global regulations like the EU's CBAM take effect, and reduce India's own carbon footprint.

These initiatives are summarised below, with their approaches to GHG measurement and metrics for characterising 'low-emission' steel summarised in Table 3.

a. Green Steel Taxonomy

The Indian Green Steel Taxonomy is a classification framework developed by the Government of India following the CCTS MRV to define what qualifies as 'low-emission' steel.[12] In the absence of global definitions, it was the first national policy to make such specifications, setting a basic threshold of 2.2 tCO_2/t crude steel [13], compared to a current average for India of 2.5 tCO_2/t, and a global average emission intensity of 1.9 tCO_2/t.

b. Green Steel Action Roadmap

India's Green Steel Action Roadmap describes a comprehensive, long-term decarbonisation strategy for Indian steelmaking, covering the use of hydrogen-based Direct Reduced Iron (DRI), Carbon Capture Utilisation and Storage (CCUS) for Blast Furnace-Basic Oxygen Furnaces (BF-BOFs), expanded scrap/Electric Arc Furnace (EAF) use, and efficiency measures such as waste-heat recovery and digital optimisation.

The roadmap targets a reduction in emissions intensity from 2.54 to 2.20 tonnes of CO_2 per tonne of crude steel by 2029–30.

The roadmap recognises the financial challenges that must be met to achieve implementation, and envisages policy support from green public procurement, low carbon production linked incentives, and support for renewable energy generation, amongst other measures.

12 Press Information Bureau. (2024, December 12). Union Minister of Steel and Heavy Industries, Shri H.D. Kumaraswamy, releases India's Green Steel Taxonomy. PIB Delhi. Retrieved from https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2083839

13 Indian Ministry of Steel, 12 December 2024, & India e-Gazette, 23 December 2024

c. National Green Steel Mission (NGSM)

India's NGSM is a programme being prepared by the Ministry of Steel, aimed at helping the steel industry reduce carbon emissions and progress towards India's net-zero target by 2070. It is a comprehensive plan that includes: production-linked incentives to encourage the production of 'low-emission' steel; renewable energy incentives; mandates for government agencies to purchase green steel, green hydrogen pilot projects; and initiatives to encourage steel scrap recycling to reduce coal consumption in steelmaking.

The NGSM builds on the foundations laid by the Green Steel Taxonomy and the Green Steel Roadmap and will be complemented by a Green Steel Public Procurement Policy from 2028, requiring minimum amounts of green steel in government projects.

d. Carbon Credit Trading Scheme (CCTS)

India's CCTS is a market-based mechanism introduced under the Energy Conservation (Amendment) Act 2022 that replaces the older Perform, Achieve, and Trade (PAT) scheme and establishes the Indian Carbon Market (ICM).

The scheme is designed to decarbonise India's most energy-intensive industries by putting a price on GHG emissions, as well as being intended to enable Indian companies to demonstrate compliance with external carbon pricing schemes such as the CBAM. Iron and steel were brought into CCTS scope through a June 2025 notification, covering over 253 additional industrial installations with FY 2023–24 as the baseline. Steel producers face emission intensity reduction targets of 2–3% in 2025–26, tightening to 4–6% by 2026–27.

The revised draft notification, issued by the Ministry of Environment, Forest and Climate Change on 26 June 2026, is subject to a 60-day public consultation before the iron and steel sector's emission-intensity targets are finalised under CCTS.[14]

India has launched an ICM Portal, with formal trading in Carbon Credit Certificates, denominated at 1 tCO_2e, expected to start later in the year.[15]

Policy measure	'Low-emission' steel measurements and metrics
Carbon Credit Trading Scheme (CCTS)	The scheme applies a gate-to-gate emissions boundary, covering direct combustion and process emissions alongside indirect emissions from purchased electricity and heat – broadly aligning with Scope 1 and Scope 2, with no upstream Scope 3 accounting.

14 https://moef.gov.in/storage/tender/1783408897.pdf

15 https://www.indiancarbonmarket.com/

Green Steel Taxonomy	The Taxonomy's MRV methodology is built directly on the CCTS, adopting BEE's 'Detailed Procedure for Compliance Mechanism under CCTS' (July 2024). 'Low-emission' steel is defined as having emissions of less than 2.2 tCO_2/t crude steel, including Scope 1, Scope 2, and limited Scope 3 emissions up to finished steel production. Scope 3 emissions shall include agglomeration (including sintering, pellet making, coke making), beneficiation, and embodied emissions in purchased raw materials and intermediary products, but shall not include upstream mining, downstream emissions and transportation emissions, both within and outside the gates of a steel plant. The taxonomy is 'carbon footprint' based and does not address the scrap issue.

Table 3: 'Low-emission' steel measurements and metrics in a selection of Indian policy initiatives

2.3 India and Europe compared

Indian policymakers face the same challenges as their European counterparts, in seeking to ensure that disparate policies, affecting areas that may fall under the responsibility of different Ministries (or Directorates) fit together within a coherent framework. And as in Europe, policy development in India is highly dynamic.

For similar reasons, both European and Indian policymakers have come to see the need for standardised definitions for 'low-emission' steel. But the opportunities to link otherwise disparate domestic policy measures into a coherent system lie far from fulfilled.

European policymakers have aimed to achieve some coherence between EU ETS and CBAM systems, but there appears little coherence between the calculation of CBAM emissions and the unfolding product-based approach of the ESPR and CPR. In India on the other hand, the proposed MRV rules of the CCTS appear to provide the basis for the Green Steel Taxonomy, which should form the basis of further policies. However, Indian steelmakers competing in European markets would need to use the distinct rules, scope and boundaries of the ESPR and CPR as well as those of CBAM.

Coherence is required not only across different policies within each country but between India and Europe. From the European perspective, the EU CBAM is a policy designed to prevent 'carbon leakage', ensuring that European industries that are carrying the costs of decarbonisation are not put out of business by lower cost, higher emission imports. From an Indian perspective the EU CBAM presents both risks and opportunities: opportunities because it strengthens market incentives for 'low-emission' steel in a major export market, and risks because it may exclude Indian steel that does not yet meet (or cannot prove that it meets) its criteria.[16]

16 Somwanshi, R., & Prakash, S. (2025, September 17). CBAM to have larger impact on Indian exports, not US tariffs: India steel secretary. S&P Global. Retrieved from https://www.spglobal.com/energy/en/news-research/latest-news/metals/091725-cbam-to-have-larger-impact-on-indian-exports-not-us-tariffs-india-steel-secretary; Mukherjee, A., & Chatterjee, S. (2022, November). Carbon Capture, Utilisation, and Storage (CCUS) Policy Framework and its Deployment Mechanism in India. NITI Aayog. Retrieved from https://www.niti.gov.in/sites/default/files/2022-11/CCUS-Report.pdf

Europe is the second-largest destination for Indian steel exports, worth USD $6-6.5 billion annually, making India highly exposed to the impacts of CBAM. It has been estimated that the application of EU import duties based on CBAM default values could reach USD $1.2-1.5 billion per year, with the potential to rise to USD $8 – 9 billion by 2030.[17] The dual challenge is both to reduce plant-level emissions in India, and to ensure that those emissions have been verified in a form recognised by the EU.

The impacts of CBAM are given additional significance in the context of the India-EU Free Trade Agreement (FTA), a comprehensive free trade agreement concluded between India and the EU on 27 January 2026. CBAM operates as a border measure independent of preferential trade arrangements, and FTA partners are not exempt from its application. For Indian producers, this means that market access gains negotiated through the FTA on tariff lines relevant to steel will be partially offset by CBAM certificate costs. The FTA therefore creates a conditional opportunity for Indian producers: preferential tariff access to the EU market is now available in principle, but its commercial value is contingent on the verification of the 'low-emissions' that CBAM, CPR, and ESPR require. What constitutes verification for each trading partner is likely to become a key part of bilateral negotiations.

The bottom line is that policies in Europe and India do not operate in isolation. Alignment across policies within each jurisdiction is needed for those policies to be efficient and effective domestically. But alignment of policies between jurisdictions is also needed if they are to operate efficiently and effectively in a world in which countries and regions trade steel and steel products across borders, at the same time as they seek to decarbonise.

	Policy Instrument	Boundary	Scrap Treatment	GHG Scope	Status
	EU ETS	Site	None	Scope 1	Active
	CBAM	Product	Footprint	Scope 1; Partial upstream	Active
	Steel Trade Defence Instrument	Product	None	N/A	Active
	Industrial Accelerator Act (IAA)*	Product	Scrap-variable	Scope 1, 2 and partial upstream	Planned
	ESPR*	Product	Footprint	Scope 1, 2, upstream Scope 3	In development
	CPR*	Product	Disclosure	Scope 1, 2, upstream Scope 3	In development
	Green Steel Taxonomy	Site	Footprint	Scope 1, 2, limited scope 3	Active
	CCTS*	Site	None	Scope 1, 2	In development
	ResponsibleSteel International Production Standard	Site	Disclosure	Scope 1, 2, upstream Scope 3	Active
		Product	Scrap-variable Footprint		

* Not yet adopted

17 FICCI Steel Committee (2025 White Paper) Global Trade Research Initiative (GTRI), "Impact of CBAM on India" (January 2026). Carbon Tracker Initiative, "Measuring Transition: The Indian Steel Majors" (October 2025).

2.4 Beyond Carbon

Indian policies for 'low-emission' steel are notable for their use of the term 'green steel', rather than terms such as 'low-carbon', or 'low-emission' steel, which focus specifically on the emission of GHGs. This raises further questions around policy coherence, in relation to sustainability aspects of steel production beyond its emissions of GHGs.

Although the details vary between jurisdictions, many countries have developed explicit policies, regulations and guidance in relation to 'green claims' and labelling. A common theme is that it is often considered misleading to focus claims on just one environmental aspect of a product, when other aspects are also material.

a. Europe

The EU's proposed Green Claims Directive was withdrawn from further development in 2025, although national regulations still apply. The EU's Empowering Consumers for the Green Transition (EmpCo) Directive, which becomes binding from September 2026, prohibits generic environmental claims. Whilst the Directive is limited to B2C practices, it is expected that social and environmental claims on products must be specific, or covered in a Type 1 Ecolabel. In steel-containing products, such considerations could be expected to extend to the impacts of iron ore and coal mining on water use, biodiversity and safety, for example.

The EU's revised Green Public Procurement (GPP) criteria for buildings — currently in development by the Joint Research Centre but not yet formally adopted — are structured around themes including whole-life carbon, material circularity, and water efficiency, and link to Do No Significant Harm obligations under the EU Taxonomy that extend to biodiversity. Biodiversity and water impacts associated specifically with iron ore and coal mining in steel supply chains are not yet explicitly addressed in the draft criteria, and whether they will be remains to be determined in the implementing rules.[18] The EU Taxonomy for Sustainable Finance (TSF) includes technical screening criteria covering pollution prevention, circularity and resource efficiency.

As is the case for policies relating to steel decarbonisation and industrial strategy, the application of trade regulations and rules relating to wider environmental and social concerns present both an opportunity and a threat. Issues such as worker health and safety, labour and other human rights, water use and biodiversity are as relevant to Indian workers and communities as they are to Europeans.

European regulations applicable to steel, and covering due diligence, labour rights and sustainable development, already exist. The EU Corporate Sustainability Due Diligence Directive (CSDDD) and the EU Forced Labour Regulation are cases in point: alongside CBAM's focus on carbon, producers are increasingly required to demonstrate compliance with social and environmental obligations reaching deep into their supply chains, creating a cumulative compliance burden that underscores the case for a more integrated and holistic policy approach. This is not a question of creating new requirements, but of recognising the opportunity to implement existing requirements in a more coherent and effective way, by integrating them with the region's industrial and climate strategies.

18 Background Report for the Revision of EU Green Public Procurement Criteria for Buildings, JRC138891, Luxembourg, 2024. DOI: 10.2760/3484975.

b. India

In India, also, there is potential for 'green steel' standards to go beyond carbon and align with broader sustainability criteria. The Confederation of Indian Industry's GreenPro Ecolabel, a Type I multi-attribute ecolabel accredited by the Global Ecolabelling Network under ISO 14024, already certifies a range of steel construction products on a lifecycle basis covering energy, materials and other environmental criteria alongside carbon. This mirrors the direction of European and other global 'green procurement' and 'green product' labelling regimes: as noted above, a recurring regulatory theme is that claims focused on a single environmental attribute are increasingly considered incomplete or potentially misleading.

This is further reflected in the EU's Empowering Consumers for the Green Transition (EmpCo) Directive, which becomes binding from September 2026 and prohibits vague or single-attribute environmental claims and self-created labels lacking independent substantiation. Aligning Indian green steel standards with this multi-attribute approach — building on the existing GreenPro infrastructure, rather than creating new mechanisms from scratch — would position Indian producers advantageously as these European frameworks come into force, where applied in consumer-facing markets.

Looking ahead, there is every reason to expect that future trade, and procurement regimes will increasingly integrate ESG dimensions beyond carbon, encompassing human rights due diligence, biodiversity, water use and other environmental impacts. Mandatory supply chain due diligence legislation, already in force or advancing in several jurisdictions, points clearly in this direction.

2.5 Multilateral Aspects

We have focused on the examples of Europe and India as case studies, but the world is multi-lateral, not bi-lateral.

Every country that imports or produces steel, and seeks to establish policies that promote steel decarbonisation both within its borders and in relation to the steel it imports, faces the same challenges, and has the potential to benefit in similar ways from aligning its own decarbonisation and trade policies with internationally recognised norms for the identification of 'low-emission' and 'green' steel. Countries that do not agree on these underlying requirements create unnecessary costs and barriers for domestic steel producers wanting to export steel or steel products, as well as for their own manufacturers importing steel or steel products from other countries.

It is not surprising that international efforts to promote green industrialisation through the G7, the World Trade Organisation (WTO) and under the auspices of the UNFCCC Conference of the Parties (COP), have included a focus on harmonised standards and interoperability.[19] Any trade alliance or market shaping policy will eventually require credible, comparable data to assess the emissions performance of traded products, if not the categorisations themselves[20], and a number of global initiatives have emerged to drive progress on this objective.

19 OECD/Climate Club (2025), Carbon intensity metrics in the steel and cement sectors of Climate Club members: 2023-24 work programme Pillar 1, Module 1 "Overcoming the Challenges in Emissions Intensity Metrics", OECD Publishing, Paris, https://doi.org/10.1787/56681870-en.

20 Cf Decarbonisation deals: A proposed COP Negotiations Presidency initiative | Climate Change Authority

Trade initiatives such as the WTO Trade and Environmental Sustainability Structure Discussions (TESSD) dialogues have placed carbon-measurement standards, transparency and methodology comparability in their discussions. Participants recognise these as essential to minimise discrimination and unintended protectionist outcomes. Further momentum is emerging from the Belem Declaration and towards COP31.[21]

The United Nations Industrial Development Organisation (UNIDO) has coordinated the Industrial Deep Decarbonisation Initiative (IDDI) since COP26 – an international coalition including many G20 signatories that advances low-emissions procurement criteria through its Green Public Procurement Pledge.

The Steel Breakthrough Agenda, launched at COP26 to galvanise initiatives to coalesce on progressing steel decarbonisation, includes a key focus on the alignment and interoperability of embodied-carbon measurement standards. Collaboration between ResponsibleSteel and World Steel Association (worldsteel) together with the secretariats of the International Energy Agency (IEA), UNIDO, WTO and ISO to drive private sector commitment on this front led to the launch of the Steel Standards Principles (SSPs) at COP28, aimed at driving alignment and interoperability in the measurement of steel emissions. Today more than 60 standards initiatives, companies and other interested organisations have endorsed the SSPs, and in 2025 the SSP Transparency Criteria were launched to encourage further progress on this front, promoting common points of disclosure as well as transparency on methodological differences.

The Climate Club, hosted by the Organisation for Economic Co-operation and Development (OECD) and IEA, was launched at COP28 as an intergovernmental initiative to accelerate increasing ambition on industry decarbonisation and has grown to include some 50 country members. As steel decarbonisation gains traction and carbon prices rise, global supply chains are poised to shift. Countries with abundant sources of renewable energy (e.g. the Middle East, North Africa, Australia) have the potential to make low-emission iron (e.g. hydrogen-DRI) for export to steelmaking hubs elsewhere.[22] Players in the EU are considering the import of low-emission iron as a cost-effective way to decarbonise their own steel value chains.[23] This makes robust traceability of upstream materials essential. If the EU imports 'low-emission' DRI, it must trust the emissions data from the producer, not only for the purposes of CBAM but also, potentially, for the 'low-emission' steel label and public procurement, and that data must be measured and disclosed on the same basis wherever in the world it is produced.

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21 The WTO's Trade and Environmental Sustainability Structured Discussions (TESSD), launched in 2020, serve as the main forum for WTO Members to explore how trade rules can support climate and environmental objectives. World Trade Organization. Trade and Environmental Sustainability Structured Discussions (TESSD). https://www.wto.org/english/tratop_e/tessd_e/tessd_e.htm; Relevant discussions in the context of steel also here: https://www.wto.org/english/res_e/booksp_e/climate_action_e.pdf,

22 Agora Industry, Europe's Steel Sector Can Cut Costs, Preserve Jobs, and Accelerate Decarbonisation Through Green Iron Trade (Berlin: Agora Industry, 2025), https://www.agora-industry.org/news-events/europes-steel-sector-can-cut-costs-preserve-jobs-and-accelerate-decarbonisation-through-green-iron-trade; ECDPM, The Geography of Green Iron and Steel: New Opportunities for Europe and North Africa, Discussion Paper 382 (Brussels: ECDPM, 2024), https://ecdpm.org/application/files/3917/3391/3266/The-geography-green-iron-steel-new-opportunities-Europe-North-Africa-ECDPM-Discussion-Paper-382-2024_.pdf OECD, Green Iron Opportunities in Australia: Emerging Prospects for Hydrogen-Based Ironmaking and Export Pathways (Paris: OECD, 2025), https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/10/green-iron-opportunities-in-australia_0db4032b/bbd1e2b8-en.pdf ;; Hydrogen Insight, "Green Steel: Move Iron Production to Places Where Green Hydrogen Will Be Cheap and Abundant, Says Shell" (2022), https://www.hydrogeninsight.com/industrial/green-steel-move-iron-production-to-places-where-green-hydrogen-will-be-cheap-and-abundant-says-shell/2-1-1359361; https://media.odi.org/documents/Steel_Briefing_Paper.pdf ;

23 Ibid.

2.6 Conclusion: the need for policy coherence

In conclusion, there is no shortage of steel decarbonisation policy initiatives in India, Europe, or indeed worldwide. Different policies are designed to drive down emissions through carbon pricing at the point of production, support investment in 'low-emission' steelmaking, support trade in 'low-emission' steel products, increase demand for 'low-emission' steel through public procurement and public-facing 'low-emission' steel labelling. Similar policies are being developed or implemented in a growing number of countries and regions.

Taken together, such policies ought to provide a strong, global, commercially meaningful signal in support of steel decarbonisation.

But these initiatives are often unaligned, discordant and sometimes even operating in conflict with each other as well as with overlapping policies focused on industrial, social, or other environmental objectives applicable to steelmaking.

Without greater alignment, policies intended to decarbonise steelmaking may function as effective trade barriers or simply create unnecessary red-tape and add costs for steelmakers, manufactures and importers, whilst proving to be inefficient or ineffective in achieving the intended objective of mitigating the impacts of climate change.

In the next chapter we propose explicit, readily actionable measures that policymakers can take to address these concerns.

3. The fundamentals of effective steel decarbonisation policy: coherence, interoperability and urgency

3. The fundamentals of effective steel decarbonisation policy: coherence, interoperability and urgency

We propose three fundamental requirements for more efficient and effective steel decarbonisation policies, both nationally and internationally: policy coherence; technical alignment and interoperability; and an appropriate sense of urgency.

When these three requirements are met, policies become mutually reinforcing, rather than mutually interfering.

Policy coherence refers to the alignment of objectives across different policy initiatives: trade, climate, biodiversity, industrial support, 'green procurement' and others. Policies need to be assessed to identify and remove conflicts between objectives, and to identify and maximise the opportunities to reinforce complementary effects. Coherence is required across policies within a given jurisdiction, as well as between policies of other jurisdictions to take account of the effects of trade.

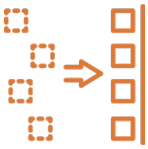
Technical alignment and interoperability refers to the standardisation of relevant GHG measurement rules and metrics necessary for policy implementation, to the extent that the same modules of GHG datasets can be used for calculations under different measurement systems. Interoperability is also required across policies within a given jurisdiction, and between jurisdictions. Where different policies share data requirements, those requirements must be specified in the same way, reinforcing and capitalising on the benefits of policy coherence.

The natural mechanism to achieve such interoperability is through the use of international standards, as long as such standards are fit for purpose. The adoption of ineffective international standards only ensures that policies referencing them are themselves ineffective.

This leads on to the final requirement for effective policymaking, which is an appropriate sense of **urgency** and ambition. Climate change is a global crisis. Steelmaking currently emits around 4 billion tonnes of CO_2 equivalent GHGs annually. Every tonne of carbon dioxide emitted to the atmosphere makes the crisis worse, with impacts that will last for centuries. Policymaking takes time, and we cannot afford that time to be wasted reinventing existing and effective tools or reaching agreement on mechanisms that lack meaningful impact. Decarbonisation policies must be designed for timely implementation, and to drive meaningful change rather than reinforce the status quo.

Effective policymaking may seem to be an easy thing to call for, but hard to achieve in practice. We do not believe this needs to be the case for steel decarbonisation policy, and we believe the benefits would be substantial.

The following sections consider each of these fundamental aspects of effective policymaking together with examples and practical recommendations.



3.1. Policy coherence

Under policy coherence we focus on alignment in relation to the higher-level objectives of policy, rather than on the technicalities of policy implementation, which we address under the following section on interoperability.

Policy coherence (a): Steel trade and decarbonisation

Trade and climate policy for steel often operate on separate tracks, and are framed as being in conflict, when in fact they should be complementary.

The EU's proposed revision of its steel import regime illustrates the problem: it remains centred on traditional protection tools (quotas and tariffs) disconnected from carbon performance. Under the proposal, once the reduced quota is filled, all steel, regardless of carbon intensity, faces a 50% out-of-quota tariff. The design risks penalising cleaner producers, since carbon performance does not influence access conditions.

A coherent policy approach would treat 'low-intensity' steel differently in relation to tariffs and quotas, and encourage trading partners to do the same, creating a low- or zero-tariff international market for 'low-emission' steel, with reduced (or no) quota restrictions, while reserving quotas and higher tariffs for 'higher-emission' steel production.[24]

The EU CBAM has established the principle of calculating embedded carbon intensity of steel products at the border, but is uncoordinated with other trade policies affecting trade in steel and steel products, and applies GHG measurement methodologies and metrics that are not aligned with those of other steel policy areas or of trading partners. A coherent European policy approach would reframe CBAM, trade defence measures, European 'low-emission' steel labelling and public procurement measures as trade incentives for the global production of decarbonised steel and turn carbon border pricing and trade defence into a coherent and mutually reinforcing framework.

Trade policies would become drivers for investment in the decarbonisation of steelmaking in exporting countries. In India, for example, this could support implementation of the Green Steel Taxonomy, Carbon Credit Trading Scheme (CCTS) and other measures being called for by Indian steelmakers.

Aligning trade defence with steel decarbonisation policy in this way would create powerful global incentives, internationalising steel decarbonisation efforts, as well as providing a legitimate, WTO-compliant justification for the imposition of tariffs and quotas on cheap, higher-emission steel, that might otherwise be dumped into markets in which decarbonisation imposes higher costs.

It is hard to envisage a more equitable and economically efficient implementation of the Paris Agreement principle of *'common but differentiated responsibilities and respective capabilities'*. Well-designed trade measures that reference 'low-emission' steel are not trade barriers, they are drivers of trade in decarbonised products.

24 See for example, Morrisroe et al (2025). 'Making Clean Steel Competitive in International Trade. A Positive-Sum Agenda for Policy and Diplomacy. A report of the Breakthrough Agenda Policy Network'. https://www.scurveeconomics.org/wp-content/uploads/2025/11/Making-Clean-Steel-Competitive-in-International-Trade.pdf

Policy coherence (b): Public procurement as a global driver of lead markets

Public authorities are among the largest steel purchasers (transport, buildings, defence, energy infrastructure).[25] This makes public procurement one of the fastest ways to create a lead market, aggregating predictable demand, setting product specifications at scale, and using public investment as a driver for the production of 'low-emission' steel.

As is the case for measures to link trade and decarbonisation, there are already precedents. While public procurement is a strategic lever, other policies such as targeted incentives and Carbon Contracts for Difference (CCfD) are also vital to stimulate private sector demand. In the early stages of transition, lower-emission volumes are more readily available in construction grades than in the complex specifications required by higher-grade sectors; public procurement in construction and infrastructure can therefore provide the predictable market pull needed to de-risk investment and build capacity progressively across a wider range of applications.

Canada's Standard on Embodied Carbon in Construction, issued under the Greening Government Strategy, requires a 30% reduction in embodied carbon in major federal construction projects and sets material-specific thresholds for both concrete and structural steel. Notably, the SECC's steel limits include a "primary steel credit"[26] — an adjustment factor that offsets the embodied carbon of primary (ore-based) steel relative to secondary (recycled) steel — showing that steel-specific requirements, including provisions to keep primary steelmaking competitive, are politically and technically feasible at scale.

Other countries could use the same approach. For example, through revisions to the Public Procurement Directive, the EU and its Member States could mandate that a minimum share of steel in tenders for public projects meets a specified, verified 'low-emission' threshold. India's infrastructure buildout (metro systems, ports, etc.) could do the same, requiring procurement to specify 'low-emission' steel.

The alignment of public procurement specifications across multiple countries would collectively increase global demand for 'low-emission' steel, complementing the trade and steel decarbonisation policy drivers already noted in section 1(a), above, giving greater confidence for private capital investment in producer countries and increasing supply and competition. To be most effective and efficient, the GHG measurement methodologies and metrics for 'low-emission' steel need to be aligned with those used to implement trade measures. And, of course, the GHG measurement methodologies and 'low-emission' steel metrics must also be technically effective – an issue we come to below.

Procurement mandates must balance ambition, phased implementation, and predictability in equal measure. Thresholds should genuinely distinguish lower-emission steel from business-as-usual but must be achievable within realistic timeframes. A phased approach, beginning with modest shares and tightening progressively, gives producers the runway to invest and scale. Predictability is equally critical: a stable, transparent trajectory of tightening requirements provides the long-term certainty producers need to commit capital.

25 Bellona Europa. (2024). Green public procurement of cement and steel in the EU: An overview of the state of play. https://eu.bellona.org/publication/gpp-of-cement-and-steel-in-the-eu

26 https://nrc-publications.canada.ca/eng/view/author/version/?id=e33c6800-6f6a-4fc8-b0e4-a0e10113c4ba

Thresholds should align with applicable taxonomy frameworks for overall policy coherence. In countries such as India, where infrastructure demand is enormous and domestic competitiveness is paramount, phasing and predictability are especially important — a gradual approach, supported by targeted incentives and concessional financing, can drive demand without placing undue burden on an industry in transition.

Policy coherence (c): Integration of steel decarbonisation with other applicable ESG policies

In section 2.3, 'Beyond Carbon', we noted the number of government policies aiming to address social and environmental issues associated with the supply chains of imported products, including steel products. These policies are driving buyers in automotive, construction and renewable-energy sectors to seek assurance that the steel they buy is not only low emissions but also free from severe governance or human-rights infractions.

Policies for decarbonisation and policies addressing other ESG issues are often considered in isolation. Considering them together may be perceived as adding unnecessary complexity, thereby reducing the effectiveness of the primary policy objective of steel decarbonisation.

We argue the opposite case. Policies intended to address workers' rights, human rights, biodiversity impacts or other issues will be applicable to steelmakers whether or not policymakers seek alignment. Steelmakers would benefit from alignment across disparate policies, if they have the potential to respond with an acceptable label or certification scheme representing an agreed set of verified data covering the full range of issues, rather than having to address multiple obligations in multiple different formats for different purposes. And such alignment would make all policies more likely to be implemented effectively and efficiently.

Policy coherence (d): Carbon leakage and Scope 2 emissions

The production of iron ore, metallurgical coal, iron, steel and steel products are all associated with significant emissions of GHGs, and are all internationally traded at scale. DRI is an increasingly important input for the production of 'low-emission' steel. For many categories of steel products, indirect energy-related (Scope 2) emissions are the most significant contributor to a steel product's carbon emissions by far.

Any policy that considers only the direct emissions of steelmaking at the point of production, without considering the upstream emissions associated with the production of input materials and indirect energy-related emissions, will inevitably create trade distortions and drive carbon leakage by incentivising steelmakers to relocate the higher-emission aspects of their production processes to jurisdictions that do not impose equivalent costs on those emissions.

Policies for 'low-emission' steel labelling, 'low-emission' public procurement and 'green claims', more generally, are already based on a life cycle approach, taking account of the carbon footprint of a product from 'cradle to gate'. In contrast, policies such as the EU-ETS do not consider upstream emissions, nor the Scope 2 emissions associated with the generation of electricity, undermining the impact of policies applying a broader scope to the determination of GHG emissions.

Although this is in part a technical issue (and we reference it below, in relation to interoperability), it is also a higher-level question of policy coherence. Alignment on the boundaries for GHG accounting needs to be clearly specified by policymakers to ensure that it is applied consistently across different policies and regulations, and to aid interoperability of data between them.

Ultimately alignment and coherence can only go so far. To be truly effective, steel decarbonisation policies need to consider all significant GHG emissions associated with steelmaking up to the point at which the policy takes effect, including upstream indirect (Scope 3) and energy indirect (Scope 2) emissions.

We recommend urgent alignment on the determination of GHG emissions from 'cradle' to the point of policy application, across all steel decarbonisation policies.

Policy coherence (e): 'Low-emission' steel and the scrap issue

The issue of definition of an effective metric for 'low-emission' steel is similarly a key question of policy alignment, with profound impacts on policy effectiveness, and not simply a technical question which can be delegated to lower levels of policy implementation.

The 'scrap issue' is simple. The steel sector globally is highly efficient at recovering and recycling available scrap, not least because this makes sound financial sense even in the absence of additional 'green' incentives. However, because recovery and recycling rates are already so high, this fundamentally limits the potential for additional GHG emission reductions to be achieved by increasing recycling rates further.

The consequence is that steel with a high scrap content does have a low carbon footprint, but policies that are designed to incentivise its use are unlikely to have any impact in reducing global, rather than local, GHG emissions, as the scrap it contains would have been recycled anyway, and the underlying supply of scrap cannot be significantly increased.

Moreover, scrap availability itself varies by geography, according to the age-structure of a country's in-use steel stock and the rate of increasing steel demand, driven by population growth, urbanisation, industrialisation, infrastructure and consumer demand. Different countries do not have the same levels of access to scrap, or potential to increase the scrap content of the steel they produce.

To use the CBAM as an illustrative example, every additional tonne of scrap content in steel exported from India to Europe would reduce the CBAM certificate cost. This creates a financial incentive to increase the scrap content of steel for export to the EU. However, this demand-side signal is unlikely to significantly expand scrap recovery in India. The constraint is not demand for scrap but its supply: India's steel stock is relatively young and has not yet reached end-of-life at scale, while much of the scrap that does arise is already highly utilised — often re-purposed and re-used informally without entering the smelted steelmaking stream that CBAM measures. CBAM therefore rewards steelmakers who can access scrap, without materially increasing how much scrap is generated or collected.

There is a growing recognition that this has far-reaching implications for multiple decarbonisation policies as they apply to the steel sector, including in relation to carbon pricing, border adjustment mechanisms, preferential import tariffs, 'green' public procurement and 'low-emission' product labelling. In short, policies which use the metric of the product carbon footprint to define 'low-emission' steel are unlikely to be efficient or effective in driving steel decarbonisation.

So-called 'scrap-variable' metrics for defining 'low-emission' steel, as outlined in Section 2(b), below, are designed to address this. It is important to emphasise that the scrap-variable approach encourages the use of gas-based DRI and, prospectively, green hydrogen DRI, to complement the use of scrap in EAF steelmaking. This is especially important in economies where scrap availability is structurally constrained, as in India.

In March 2026 the EU's IAA proposed a scrap-variable approach for the identification of 'low-emission' steel[27]. At the time of writing the details for implementation are unclear[28], although they will be highly consequential. Other policy measures, including the EU's CBAM, and India's Green Steel Taxonomy are still primarily based on the 'carbon footprint' approach, and will need to be revised to align with an agreed scrap-variable metric for 'low-emission' steel, to achieve policy coherence and interoperability. Such a revision would be straightforward and have little or no implementation cost for steelmakers. However, for lower-emission steel in economies where scrap availability is structurally constrained as in India, technology archetypes like gas-based DRI — and, prospectively, green hydrogen DRI — represents a technically credible complement to scrap in electric arc furnace steelmaking. Where iron ore is abundant but end-of-life scrap is not, a scrap variable is tech agnostic and is fit for purpose in such scenarios as well.

We recommend the urgent review of steel decarbonisation policies that are currently based on the 'carbon footprint' approach, and a high-level instruction to policymakers to revise such policies to adopt a 'scrap-variable' approach at the earliest opportunity.

3.2. Interoperability

The recommendations of the previous section focus on the benefits of coherence across national policies, as well as between policies in different jurisdictions. This section focuses at a more technical level, on mechanisms for the efficient and effective implementation of policies with overlapping scopes of application by ensuring that they are technically interoperable.

We consider four key aspects of interoperability:

1. Rules for the measurement of GHG emissions associated with steelmaking;
2. The adoption of an effective steel decarbonisation metric – the basis for comparing the emissions performance of steelmaking sites and steel products, and for identifying 'low-emission' steel;
3. The need for a global standard for downstream chain of custody for steel products;
4. The use of international, rather than national or regional, mechanisms for the recognition of verified GHG emission and steel decarbonisation performance data.

27 Commission Staff Working Document: SWD(2026)71Impact assessment report accompanying the COM(2026)100 Proposal for Regulation (https://single-market-economy.ec.europa.eu/publications/industrial-accelerator-act_en)

28 Classes of environmental performance: ESPR five representative iron and steel intermediate products - DRAFT (https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/642/documents)

Interoperability is of value in its own right, creating policy efficiencies even where policies themselves may be poorly aligned at a higher level. But where policies are aligned, as recommended in the previous section, the benefits are multiplied. And the benefits are exponentially increased when high levels of policy coherence and interoperability are achieved on a multi-national, and not only national or bilateral basis.

Interoperability (a): Consistent rules for measuring and reporting the GHG emissions of steelmaking

At its most basic, the interoperability of policies intended to support steel decarbonisation requires the adoption of common rules for measuring the GHG emissions associated with steelmaking.

Without such common rules, data on GHG emissions cannot be reliably compared, and it becomes impossible for data generated within one policy framework to be used to show compliance or demonstrate the achievement of 'low-emission' performance levels for steel within a different framework. Interoperability at this level does not pre-determine the way such data may be used, it simply creates a common data currency that can be exchanged across policies and jurisdictions.

For the demand side companies operating across multiple regulatory regimes, this common data currency may be more directly useful than labelled categories of 'low-emission' steel built upon it — enabling compliance navigation, supply chain management, and corporate decarbonisation strategies that no single labelling framework can substitute for.

Policymakers may be surprised to discover that there is currently no effective ISO or European (EN) standard for the consistent measurement of GHG emissions for steelmaking already in place, despite the critical importance of the issue and decades of steel industry involvement in ISO and European technical committees and processes.

Potentially applicable ISO and EN standards for the measurement of steel facility-level GHG emissions fail to specify consistent requirements for: the collection and disclosure of the GHG emissions associated with the extraction, processing and transportation of input materials for steelmaking; the inclusion of methane and nitrous oxide emissions in addition to CO_2 emissions; the allocation of emissions associated with the production of co-products such as slag; the measurement and disclosure of process gas emissions; the disclosure of GHG emissions based on directly comparable scope boundaries, amongst other significant aspects. Standards applicable to the measurement of GHG emissions for steelmaking facilities are then not aligned with standards for measuring GHG emissions for Life Cycle Analysis (LCA) or EPDs, and applicable EN and ISO standards for EPDs apply different GHG measurement rules.

When different EPD standards are used to measure the GWP for the steel product, there may be as much as 30% variation. But even when the same EPD standard is applied, highly material variations are permissible. ResponsibleSteel research shows that the GWP value calculated for a steel product under the widely-used EN 15804 standard may differ by as much as 30% due to variations in application of the methodology – far higher than previously thought[29]. In other words, choice of EPD standard and its application may have a greater impact on reported emissions than any real variations of the emissions themselves, rendering policy measures ineffective.

29 Based on a quantitative study on the use of the GWP value in EPDs to obtain DPLs by ResponsibleSteel (publication anticipated H2 2026). Previous studies have indicated 20% e.g. Waldman, B., Huang, M. and Simonen, K. (2020) 'Embodied carbon in construction materials: a framework for quantifying data quality in EPDs', Buildings and Cities, 1(1), p. 625–636. https://doi.org/10.5334/bc.31.

Recent progress has been made to standardise data measurement methodologies and improve their transparency under the auspices of the SSP, supported by the worldsteel, ResponsibleSteel, IDDI, ISO, WTO, amongst others. In December 2025, the initiative reached agreement on common points of disclosure for GHG measurement rules relating to system boundaries, data quality, allocation methodologies, low emissions technologies and the use of credits, under the 'SSP Transparency Principles'[30] – the building blocks for consistent GHG measurement.

This is a useful start, and we recommend that policymakers specify compliance with the criteria of the SSP Transparency Criteria as a minimum requirement for the recognition of any data submitted in fulfilment of relevant policy measures, including in relation to EPDs, CBAM disclosures, or ETS measurements, as a matter of urgency. In practical terms, achieving this requires policymakers to specify a common set of data points for consistent disclosure, following the SSP criteria, and including disclosure of scrap content. Consistent, comparable disclosure of these data points, even ahead of full alignment on the underlying measurement methodologies for each, would significantly improve the usability of GHG data for compliance, product classification, and decarbonisation tracking.

Agreeing to disclose variations in GHG measurement rules would be a first step towards interoperability. It would make it possible to understand the differences between different GHG measurements, even if the measurements themselves are still not directly comparable. But this kind of approach is highly inefficient compared to the adoption of common GHG measurement rules applied to each aspect, and the requirement to measure and disclose GHG emissions for all such aspects. At that point, GHG measurements become directly comparable, and the same measurements could be recognised across multiple steel decarbonisation policies, and in multiple jurisdictions. The development of a set of common measurement rules should therefore be an urgent priority.

Once such a common currency for GHG measurement for steel production has been established, further improvements in interoperability become possible. We focus on three of these: in relation to the metrics for defining 'low-emission' steel; the allocation of GHG emission measurements to steel products based on physical traceability; and the recognition of data that has been reliably verified under different jurisdictions.

30 Steel Standards Principles (SSP) agreement on transparency in greenhouse gas emissions metrics for steel, 17 December 2025. https://steelstandardsprinciples.org/transparency-criteria-in-ghg-emissions-reporting/

Interoperability (b): Scrap content declaration and a 'scrap-variable' metric for 'low-emission' steel

We have recommended in Section 1(e) that steel decarbonisation policies have to address the 'scrap issue' if they are to be effective, and that alignment around a 'scrap-variable' scale is an efficient mechanism to achieve this.

The main challenge to implementing this is standards inertia. The policy world has become accustomed to the use of direct emissions measurements (e.g. in relation to the EU-ETS), or 'product carbon footprints' as measured by EPD standards, as the basis for defining steel's GHG emissions, and, subsequently, 'low-' or 'lower' emissions, and such references are embedded in multiple policies.

It is, however, straightforward to change this. There is no need to abandon decades of experience with GHG measurement and life cycle based EPD standards. All that is required is to add requirements to measure and disclose the recycled (i.e. 'scrap') content of steel, in addition to the consistent measurement and disclosure of GHG emissions associated with steelmaking (as detailed in Section 2(b), above).

As for GHG measurement, it is essential to standardise rules for the measurement of steel scrap, so that measurement by one steelmaker in one location means the same as its measurement by another steelmaker in another location. Currently, both terminology and measurement definitions are inadequately specified and often inconsistently applied.

The SSP Transparency Principles includes scrap content within its identification of key requirements for both site- and product-level disclosure, and references the ISO standard 14021:2106/A1:2021 this purpose. Harmonised definitions are essential here, including a clear distinction between pre-consumer scrap (arising from steelmaking and manufacturing processes) and post-consumer scrap (arising from products that have reached genuine end-of-life). Another ISO standard, ISO 20195:2019, provides a basis for this, previously agreed with representatives of the steel sector.

We recommend that the same, consistent, rules for scrap measurement should be applied not only in relation to steel decarbonisation policies, but also in relation to policies applicable to improved circularity – another example of the potential to improve alignment and interoperability across overlapping policies.

With consistent rules for GHG measurement and disclosure in place, including the disclosure of emissions with 'crude steel' product boundary as specified in the SSP Transparency Principles, and with the consistent measurement of scrap content, it becomes straightforward to specify a scrap-variable scale for the specification of 'low-emission' steel based on those data points.

In designing a scrap-variable approach, its framing must remain balanced. Addressing the scrap issue does not diminish the importance of decarbonising primary steelmaking. At the same time, a scrap-variable approach must continue to recognise genuinely low carbon footprints, such as those of electric arc furnace (EAF) producers with a long-established, historically scrap-based route; such producers should not be disadvantaged by a metric change for having made early decarbonisation choices. A credible transition requires the continued engagement of both primary and scrap-based routes.

We recommend that the calculation and disclosure of a 'scrap-variable' GHG emissions metric for steel or steel products, determined on a common basis, should be specified as a minimum requirement across all steel decarbonisation policies, and that decarbonisation incentives should be specified on this basis.

Interoperability (c): A downstream chain of custody standard for steel products

A third aspect of interoperability is in relation to the application of GHG measurements and metrics to steel products and its ferrous inputs. Steel is traded internationally and at scale, not only as relatively unprocessed steel products, but also as major components of complex manufactured products such as cars, ships, turbines and machinery.

In order to extend the application of steel decarbonisation measures to steel products, rules have to be specified not only in relation to the measurement of the GHG emissions associated with the production of steel, but also in relation to the origin of the steel in products.

In the simplest cases this is straightforward: when rebar or hot-rolled coil is produced it is usually trivially easy to identify the steel mill where they were produced. Further down the manufacturing chain the level of complexity can quickly spiral. A car maker is likely to be sourcing hundreds of steel-containing components, manufactured through multiple intermediaries, sourced from different steelmaking companies, producing steel at multiple facilities. There are many points in the chain of supply from steelmaking facility to end product where sustainability information can be lost, diluted or inconsistently recorded, and so where 'low-emission' steel risks losing its identity, and the actual emissions of a steel product may be misrepresented.

EPD standards often use generic, secondary values for the embodied GHG emissions of input materials and are highly flexible when it comes to specifying the boundaries within which primary data can be averaged or estimated, together with such secondary data. How should the emissions level of the steel in a car be calculated when it is traded internationally, and the assessment of a CBAM certificate or tariff has a material impact on the cost of import?

An agreed and consistent approach is becoming an increasingly urgent requirement. Today, for example, intermediate steel products are subject to CBAM, but a finished machine containing the same steel may enter the EU without consideration of its embodied emissions. The EU "Omnibus" Reform Package aims to expand CBAM to 180 downstream products categories from January 2028[31], and will need an effective downstream 'chain of custody' standard, to be implemented and verified in trading partner countries worldwide, if it is to be implemented effectively.

This challenge is not unique to the steel sector. Chain of custody standards have been developed to address it elsewhere. However, the very broad definition of chain of custody includes misleadingly called 'mass balance' approaches which do not require any direct association between the steel in a product, and the GHG emissions that are assigned to it, creating huge risks for carbon leakage if products are traded internationally, and 'low-emission' claims are applied to the steel that is traded, whilst the 'higher-emission' steel is traded locally without any disincentive.

A credible downstream chain of custody standard, operationalised via a digital traceability system (such as the proposed EU Digital Product Passport), and linked to the use of agreed (SSP-aligned) GHG and scrap content data could mitigate this risk, and support the development of a more coherent global market for 'low-emission' steel. Sector-specific data exchange platforms such as Catena-X in the automotive supply chain illustrate how harmonised accounting rules can be translated into operational data flows across real value chains; ensuring that common measurement requirements are compatible with such platforms, and that the GHG and scrap data entered into such platforms is verified, and harmonised with measurement rules and GHG metrics that policies specify, is essential if interoperability is to function effectively in practice rather than only in principle.

31 https://ec.europa.eu/commission/presscorner/detail/en/ip_25_3088

We recommend that policymakers prioritise the development of such a standard, designed to address the context and challenges of the steel supply chain, and aligned explicitly with the management of interoperable GHG and scrap data, as recommended above.

Interoperability (d): International recognition of credible verification programmes

The final requirement for effective interoperability is the international recognition of verified data that conforms with the previous aspects.

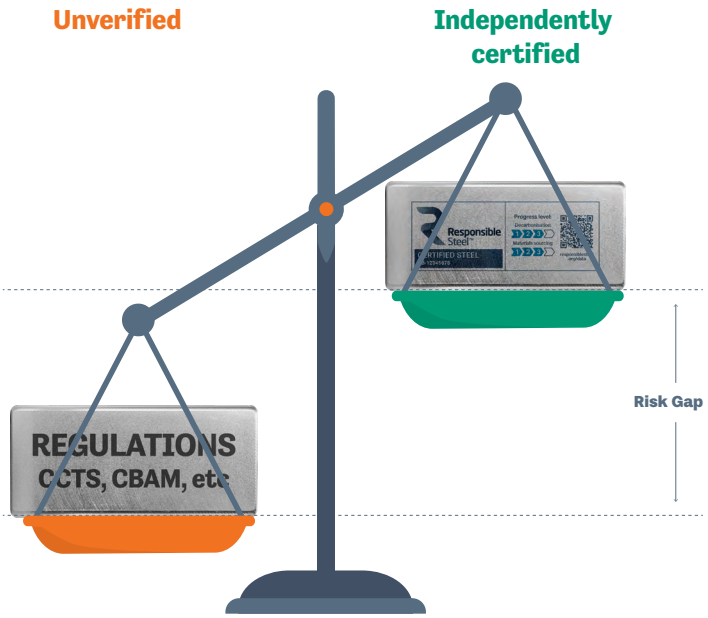
A steel exporter in India (or any country) should not have to undergo multiple GHG emission audits to satisfy domestic regulators, EU import rules, and customer requests. If the verification is good enough, it should be recognised everywhere. A credible, independent verification framework that all parties, including governments, recognise is a straightforward pathway to achieve this. CBAM, for example, does not currently recognise third-party certification schemes or national monitoring, reporting and verification (MRV) systems as legally equivalent evidence for embodied-emissions reporting, creating unnecessary bottlenecks – unfairly penalising 'low-emission' steelmakers and small producers, and delaying CBAM's effectiveness as a decarbonisation measure.

Policymakers need to define criteria for recognising high-quality, third-party verified data as admissible evidence: reducing duplication, streamlining compliance processes and lowering administrative burdens.

ISO standards provide a robust basis for the qualifications of auditors, the level of verification required, and for the processes of verification and certification, overseen by credible accreditation or international assurance mechanisms. Policymakers should specify requirements for credible verification with reference to these widely recognised and highly regarded standards and recognise assurance service providers with international scope. If assurance mechanisms are abused, assurance and verification service providers can be penalised or blacklisted.

Third-party certification systems that integrate GHG measurement with broader sustainability criteria — such as the ResponsibleSteel International Production Standard — can serve as particularly effective bridging mechanisms in this context. The ResponsibleSteel Standard consolidates GHG emissions verification, in alignment with international assurance standards such as ISO 14064 for GHG verification and ISO 14067 for carbon footprint measurement, robust MRV protocol subject to independent third-party audit, appropriate governance safeguards to ensure integrity and other ESG criteria within an integrated framework.

Where certification systems meet internationally recognised criteria, policymakers should explicitly recognise conformity with them as admissible evidence of verified emissions performance, thereby enabling a material reduction in the duplicative compliance audits.



Independently verified data does more than substantiate a claim. By providing investors, regulators, and buyers with a shared basis for trust, it reduces the due diligence each would otherwise need to undertake independently. As a result, certified steel, while materially identical to its uncertified counterpart, carries measurably lower risk throughout the value chain and in every transaction in which it is used.

Embedding formal mechanisms for the recognition of third-party verification into instruments such as the EU CBAM would create strong incentives for convergence toward comparable, third-party verified emissions data systems applicable in exporting countries.

3.3. Urgency

Our final fundamental requirement for coherent policymaking is that it must be imbued with the necessary level of urgency.

We recognise that policymakers operate under real constraints — fiscal pressures, concerns about industrial competitiveness, and trade sensitivities that cannot be dismissed. The sequencing and pace of steel decarbonisation will differ across jurisdictions, consistent with the differentiated pathways discussed throughout this paper. The overriding requirement is that policies recognise, and are designed to address, the pace and scale of change that is required to achieve the goals of the Paris Agreement. In this respect, formal recognition of existing certification systems represents one of the most immediately available tools: it can be activated now, at low administrative cost, and begins to reduce duplicative compliance burdens on producers without waiting for new verification infrastructure to be designed and deployed

In relation to urgency, we make just two recommendations: that policies intended to drive lower-emission steelmaking must specify incentives and disincentives that are genuinely impactful – they need to drive change, not simply facilitate business as usual; and that policymakers make use of effective tools where they already exist, rather than spending scarce time and resources re-inventing existing tools. No tool is perfect. All tools need to be subject to repeated review, and where necessary improvement. But we cannot afford to ignore effective tools simply because we did not develop them ourselves.

Urgency (a): Thresholds for 'low-emission' steel must be set at levels that drive real change

In the previous section we have argued strongly for the application of the same (or least interoperable) rules for GHG measurement, scrap content, 'low-emission' steel metrics and allocation of GHG emissions data to steel products downstream of the point at which crude steel is produced.

We have referred to a wide range of policy measures that include the specification of performance measures for defining 'low-emission' steel and steel products, including in relation to a 'low-emission' steel label, for public procurement, for exemption from CBAM penalties, for import quota exemptions, or for qualification for ETS credits; and eligibility for public funding, financing, and state aid — including the EU Innovation Fund, InvestEU, EIB concessional lending, national decarbonisation grants, and the Clean Industrial Deal State Aid Framework (CISAF). In Indian context the policy measures can be applicable in Production Linked Incentive Scheme for Steel, National Steel Policy and Green Steel Road Map, emerging Government e-Marketplace, Priority Sector Lending and Green Finance and State Level Decarbonisation Schemes. We have argued that equivalent policy tools in other countries should adopt interoperable GHG measurement rules and metrics. The underlying GHG emissions data for specifying 'low-emission' steel should be the same, worldwide.

We want to emphasise, however, that alignment and interoperability, as we recommend it, does not require that different countries specify the same threshold levels when it comes to the application of these or similar policies within their jurisdictions.

Countries or regions may reference different performance levels, appropriate to their own needs and decarbonisation targets, in line with international agreements, as long as the data and metrics on which those thresholds are based meet the requirements for interoperability that we have laid out.

In all countries, however, reference levels must be set to drive decarbonisation, rather than to reward 'business as usual' incumbents. A classification framework whose upper performance classes can be met for steel produced with global average levels of emissions would not achieve this basic requirement of effective policy. There are many ways to achieve this, whether by setting a single pass/fail threshold (for example in relation to public procurement, or favourable tariff treatment), or by banding (for example specifying multiple performance levels in relation to 'low-emission' steel product labelling). And thresholds can be made stricter over time.

The fundamental requirement, in all cases, must be that thresholds are set at levels that genuinely distinguish 'low-emission' steel production from 'business as usual'.

Urgency (b): If existing international standards are effective, use them

Our final recommendation is in some ways the most obvious and easiest to implement – and yet seems to be hard for policymakers to adopt. Simply put, it is to not reinvent the wheel.

The natural mechanism to achieve interoperability is by referencing international standards, where such standards already exist, and are fit for purpose. The corollary is that where international standards are not fit for purpose, they should not be adopted simply because they exist: the adoption of an ineffective international standard only ensures that a policy referencing it is rendered ineffective.

There are many reasons why policymakers are encouraged to make use of international standards. Reference to international standards is explicitly favoured in WTO agreements for the avoidance of technical barriers to trade. It is a common misunderstanding that only ISO standards can be recognised as such, or that international standards need to be developed by intergovernmental entities. Neither of these assumptions is correct. ISO is not itself an intergovernmental organisation, and many organisations other than ISO have developed widely recognised international standards, that are regularly referenced in trade and other government policies. The EU timber regulations (now the EU Deforestation Regulation), for example, relies on FSC and PEFC standards and certification systems to demonstrate the legality and sustainability of forest management.

The requirements to develop an international standard are onerous. They are codified in guidance developed by ISO, as well as by the International Social and Environmental Accreditation and Labelling Alliance (ISEAL), with specific reference to sustainability standards. They include the need to set clear objectives; to avoid unnecessary trade distortion; to be transparent in terms of process; to consult with affected parties; and to establish a clear, transparent, consensus–based decision–making process. Where international standards development bodies have met these requirements and developed standards that would be effective in the implementation of policy, policymakers should use them to their advantage.

We have already made reference to ISO standards for assurance and verification. We make three further recommendations: firstly, in relation to the use of standards for the measurement and reporting of GHG emissions associated with steelmaking; secondly, in relation to the use of standards covering other ESG aspects of steelmaking; and thirdly, in relation to standards for steel traceability or 'chain of custody' in manufactured and final products.

i. International Standards for GHG measurement and reporting

We recommend that policymakers: list the key aspects that need to be defined for credible site and product level GHG reporting for steel production, based on the specifications of the SSP Transparency Principles; specify their requirements for consistency in the measurement of each of these aspects; and then identify and list any international standards that meet both these sets of requirements.

We believe that the ResponsibleSteel International Production Standard would meet these requirements and that if so, it should be referenced in relevant policies. If the Standard falls short in any areas we would seek agreement on modifications to allow for its subsequent recognition.

ii. International Standards for other ESG aspects of steelmaking

Similarly, we recommend that policymakers should list the key aspects of other environmental and social criteria that they believe should be considered, along with steel's GHG emissions, in relation to claims of 'green' or 'sustainable' steelmaking, including in relation to 'green' procurement. Having done so, we recommend that they then identify and list any international standards where they consider conformity would provide adequate evidence that those criteria have been met.

iii. International Standards for steel traceability or 'chain of custody' control

Finally, we note the need for an international traceability/chain of custody standard to provide a consistent basis for tracing steel from the point of production through to the steel content of intermediate and finished products, and associated rules to ensure the

consistency and credibility of claims about the 'low-emission' steel content of such intermediate and finished products.

We do not believe that such a standard currently exists, although ResponsibleSteel has developed a draft Chain of Custody Standard, intended to provide the basis for steel traceability and the application of associated GHG emission (and other ESG) claims for steel products downstream of steel production.

We recommend that policymakers provide institutional support for the development of a credible and effective downstream chain of custody standard for application to steel products, as a matter of urgency. As and when an appropriate standard has been developed, steel decarbonisation policies should recognise 'low-emission' claims of intermediate and final steel products that are certified in conformity with its requirements.

4. Conclusion

4. Conclusion

Policymakers worldwide have created a wide range of policies to address the challenges of steel decarbonisation, including both 'push' and 'pull' mechanisms: they include policies focusing on support for capital investment; carbon pricing; trade mechanisms; public procurement specifications; and support for 'green' product labelling.

Each of these policies has the potential to have an impact. However, to date, policies are being designed and implemented with insufficient integration between related policies within the same jurisdiction, and with little coordination with equivalent or related policies under development in other jurisdictions.

The consequence is that policies are unnecessarily burdensome on steelmakers, costly in terms of administration, and inefficient or ineffective in achieving decarbonisation. We call for an urgent review, with the explicit remit to revise policies to improve their national, regional and global coherence.

We identify three fundamental aspects of policy where improvements are needed: in relation to higher-level **policy coherence**; in relation to **technical interoperability**; and in relation to the need to specify requirements that will effect change with the necessary **urgency**.

Within each area we have made specific recommendations to help turn today's patchwork of regulations into an integrated framework. The measures can be implemented quickly, and at minimal cost. Their impact would be substantial.

The stakes are high, and time is not on our side. Efficient, effective, and cost-effective policy measures to support the global decarbonisation of the steel sector exist. History will not judge us kindly if we fail to make use of them.

List of Acronyms

BF	Blast Furnace
BOF	Basic Oxygen Furnace
CBAM	Carbon Border Adjustment Mechanism
CCfD	Carbon Contract for Difference
CCTS	Carbon Credit Trading Scheme
CCUS	Carbon Capture Utilisation and Storage
CEN	European Committee for Standardisation
CID	Clean Industrial Deal
CISAF	Clean Industrial Deal State Aid Framework
CPR	Construction Products Regulation
CSDDD	Corporate Sustainability Due Diligence Directive
DRI	Direct Reduced Iron
EAF	Electric Arc Furnace
EmpCo	Empowering Consumers for the Green Transition
ESG	Environmental Social Governance
EPD	Environmental Product Declaration
ESPR	Ecodesign for Sustainable Products Regulation
EU	European Union
EU ETS	European Union Emissions Trading System
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GHG	Greenhouse gas
IAA	Industrial Accelerator Act
ICM	Indian Carbon Market
IDDI	Industrial Deep Decarbonisation Initiative
IEA	International Energy Agency
ISEAL	International Social and Environmental Accreditation and Labelling Alliance
JRC	Joint Research Centre
LCA	Life Cycle Analysis
MRV	Monitoring, Reporting and Verification
MT	Million Tonnes
NGSM	National Green Steel Mission
OECD	Organisation for Economic Co-operation and Development
PAT	Perform Achieve and Trade
SSP	Steel Standards Principles
STDI	Steel Trade Defence Instrument
TESSD	Trade and Environmental Sustainability Structured Discussions
UNIDO	United Nations Industrial Development Organisation
WTO	World Trade Organisation

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