

Book and Claim Framework for the Iron and Steel Sector

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Acknowledgements

We would like to thank the following organizations and technical experts for their collaboration and consultation in developing this framework.

The individuals and organizations participating in working group discussions and peer review are not responsible for the opinions or conclusions expressed in this document. All errors and omissions remain the sole responsibility of RMI. Participation in the working group or peer review process does not constitute endorsement of the Steel Book and Claim Framework.

Organizations	Technical Experts
Amazon ArcelorMittal Center for Green Market Activation Columbia University Deloitte Electra Fortescue Gravithy Invenergy Johnson Controls Meta Microsoft Nextracker Rio Tinto ResponsibleSteel Schneider Electric Shell SteelZero, Climate Group Stegra Trammell Crow We Mean Business Coalition World Energy World Steel Association	Alexander Hajek Lachlan Wright

Public Consultation on the Steel Book and Claim System Design

Purpose of the consultation

As book and claim mechanisms gain attention as tools to accelerate industrial decarbonization, robust system design and stakeholder input are essential to build trust and enable uptake. This public consultation seeks feedback on the proposed Steel Book & Claim Framework to ensure it is credible, practical, aligned with existing standards, and fit for market needs.

What we're consulting on

We are seeking feedback on key design elements, including:

- Functional unit
- Eligibility criteria for BCU issuance, such as emission intensity threshold and additionality requirements
- Emissions baseline
- Emissions performance measurement and accounting rules
- BCU issuance, transfer, and retirement
- BCU claiming and inventory reporting
- Double counting safeguards

Who should participate

We welcome input from a broad and diverse range of stakeholders, in particular:

- Iron and steel producers, buyers, and supply-chain actors
- Technical experts, industry associations, and standards bodies
- Relevant NGOs, coalitions, and civil society
- Digital solution providers exploring chain of custody product provisions

We would greatly appreciate your support in sharing the invitation and flagging it to others who may wish to participate.

Timeline and how to submit feedback

Please submit written feedback on the draft materials using the [Steel Book & Claim Framework Response Form](#) and email your completed submission to iwu@rmi.org.

Written comments will be accepted through **April 30, 2026**. We will incorporate feedback and hold follow-up conversations throughout May 2026. The final version of the Framework will be released by the end of June 2026, accompanied by a public webinar.

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Executive Summary

Purpose

This framework lays out the rules and structural elements required to operate a credible book-and-claim (B&C) system for low-emissions iron and steel. It establishes a coherent foundation for how environmental attributes are verified, issued, transferred, and ultimately claimed, enabling producers and buyers to support decarbonized steelmaking even when the physical movement of low-emissions material is not possible.

This framework focuses on core design elements spanning the **system manual** and **claim reporting guidance** for the iron and steel sector; it also includes elements to be included in a registry rulebook, which should be comprehensively developed as a separate document. This framework provides structured considerations for:

- defining the base unit for the system;
- establishing eligibility criteria for certificate issuance;
- specifying procedural requirements for registering, transferring, and retiring eligible certificates;
- and outlining recommended rules and practices for making credible certificate-based claims.

This framework does not establish or replace existing product-level sustainability standards, emissions accounting methodologies, or verification requirements, which are governed by existing steel-sector standards and certification schemes. It also does not endorse or designate any specific registry, nor does it prescribe detailed digital architecture, pricing mechanisms, or contractual arrangements between market participants.

Context

In today's steel sector, buyers often face a limited supply of near-zero material and long, complex value chains that make direct procurement difficult. B&C has emerged as a practical response to these constraints by allowing climate benefits to be decoupled from physical product flows. This framework brings structure and credibility to that model by grounding it in clear governance principles and aligning it with leading standards of chain of custody systems, positioning the sector for wider and more coordinated participation.

Proposed Approach

The framework introduces a dual functional-unit structure that allows certificates to be generated at the iron stage or after crude steel production, reflecting the diversity of emerging low-emissions technologies and giving buyer and producers flexibility as the market evolves. Eligibility is anchored in performance thresholds aligned with ResponsibleSteel (RS), which further incentivize near-zero production to encourage deeper decarbonization. To ensure that B&C reinforces, rather than delays, the sector's transition, the framework includes safeguards that constrain long-term reliance on fossil-intensive routes and set expectations for the credibility of carbon capture, storage, and utilization (CCS/CCUS) performance, methane leakage management, and responsible biomass use. It establishes

harmonized emissions measurement and baseline rules so that certificates represent comparable climate outcomes, using interim defaults, such as Carbon Border Adjustment Mechanism (CBAM) values for iron, until more granular data becomes available.

The framework also defines a controlled method for integrating verified green iron into downstream steel certificates, ensuring that value can move through the supply chain without double counting. A system of independent verification, post-production issuance, and a transparent digital registry provides traceability and mitigates the risk of double counting; while clearly defined claiming rules ensure that certificates can only be applied to iron- and steel-related emissions and cannot be used to make physical product claims.

Implications

For producers, this framework provides the clarity and market structure needed to monetize low-emissions iron and steel environmental attributes, making the business case for capital investments required for new technologies. For buyers, it offers a credible way to support supply-chain decarbonization when physical sourcing is not feasible, while maintaining guardrails that prevent overstated or inconsistent claims. And for the broader market, it establishes a common and interoperable architecture that reduces fragmentation, aligns with existing standards, and supports the scale-up of near-zero production across the global steel value chain.

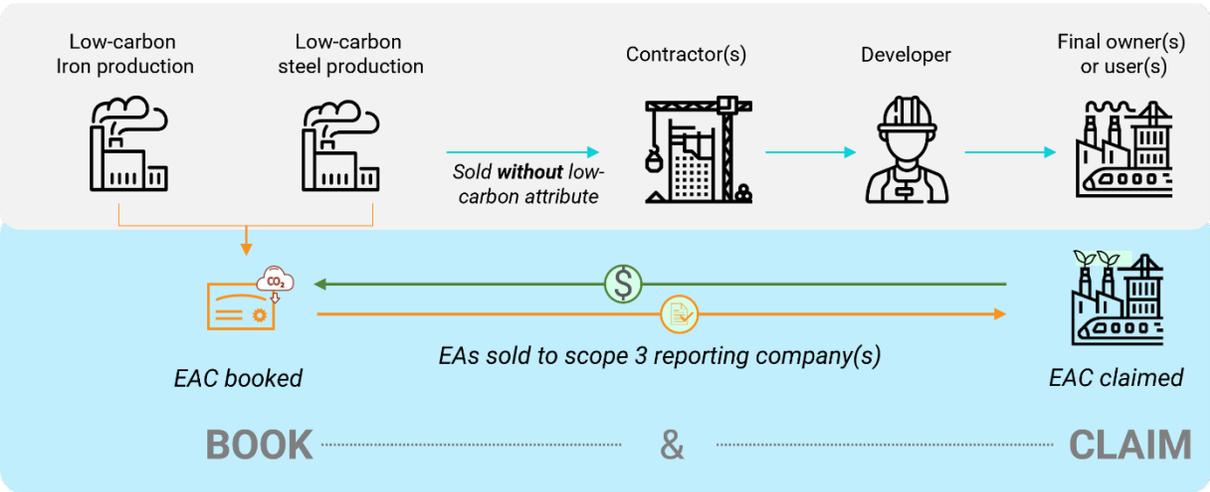
1. Introduction

The iron and steel industry accounts for roughly 11% of global greenhouse gas (GHG) emissions, making it the single largest industrial emitter. While technologies such as scrap-based electric arc furnace (EAF), hydrogen-based direct reduced iron (DRI), and near-zero emissions ironmaking are technologically viable, their deployment remains constrained by high up-front cost, long lifetimes of existing assets, and limited availability of customers willing or able to directly procure physical low-emissions steel today. A book and claim (B&C) system can help address this gap by enabling a wider set of market participants to support low-emissions steel supply by expanding procurement opportunities beyond traditional procurement pathways. By linking financial contributions to verified emissions performance through transparent certificate issuance and tracking, B&C improves and expands revenue certainty for producers, strengthening the investment case and allowing for project development. Through this, B&C can accelerate deployment of low-emissions technologies and support a faster transition to net-zero steelmaking.

1.1 What is book and claim?

Book and claim is a chain-of-custody mechanism in which environmental attributes (e.g., emissions performance) are decoupled from the physical flow of material. Through this model, a producer of a low-carbon product can issue an *environmental attribute certificate* (EAC), which then can be sold and transferred to a buyer without that product having to be in the buyer’s physical value chain. The EAC is claimed by the buyer toward its associated inventory. More information on different chain-of-custody models can be found in [ISEAL Chain of Custody Models and Definitions v2 \(2025\)](#).

Exhibit 1 Illustrative book-and-claim model in the iron and steel sector



EAC: Emissions Attribute Certificates

For iron and steel producers, B&C enables the monetization of low-emissions steel production without requiring physical delivery. This is particularly relevant given the difficulty of connecting with customers further downstream who have higher green purchasing ambition. By decoupling environmental

attributes from the physical product, producers can access these customers and generate additional revenue even where local demand or willingness-to-pay is limited. Currently, existing low-emissions iron and steel demand is fragmented across supply chains, weakening the demand signal needed to justify supplier investment and scale-up. Where suppliers are poised to progress low-emissions strategies, B&C expands the pool of potential buyers beyond local or immediate customers, helping to generate additional revenue streams and boost offtake certainty necessary to de-risk investments.

For buyers, B&C helps aggregate demand across projects, regions, and product types without disrupting existing procurement or logistics, while making credible claims tied to verified emissions performance. Today, physical procurement of deeply decarbonized iron and steel is stymied by limited supply and long and complex steel value chains where end-users have limited physical and financial control over supplier intermediaries. Where physical supply chain coordination is less feasible, B&C enables end-users to tackle emissions hotspots sitting upstream in the value chain and efficiently address their Scope 3 climate targets.

Strong credibility and sustainability guardrails are essential for this model to function effectively at scale. Clear eligibility criteria, robust verification, transparent tracking, and unambiguous rules for issuance, transfer, and retirement are necessary to prevent double counting, ensure climate integrity, and maintain trust among market participants.

1.2 Aim of this framework

This framework aims to provide a scalable and credible mechanism for iron and steel producers and buyers to transact low-carbon steel attributes without disrupting physical supply chains. By establishing common criteria, rules, and processes for the issuance, transfer, and retirement of verified attributes, it enables market participants with clarity and confidence to engage in this emerging space, supporting both the climate integrity of certificates and the bankability of long-term offtake arrangements. Ultimately, it strengthens demand signals and investment incentives needed to accelerate deployment of low-carbon steel technologies.

1.3 Development process

In 2023, RMI launched the [Sustainable Steel Buyers Platform \(SSBP\)](#), which brings together ambitious corporations in steel-intensive sectors like technology, manufacturing, and construction. The platform helps companies translate ambitious climate commitments into real purchasing potential for low-emissions iron and steel. Through the SSBP's inaugural procurement process, designing a decoupled steel market model emerged as a promising purchasing model to supplement direct procurement pathways. The Steel B&C initiative aims to activate this mechanism in the sector by establishing credible market rules and governance that are critical to unlocking confidence, scaling value chain participation, and accelerating impact.

With this context, this framework was developed through a structured consultation process with an Advisory Group and a Working Group convened by RMI. The Advisory Group consists of a small set of ambitious buyers with near-term intent to participate in a B&C system and practical experience with

similar systems in other sectors. The Working Group comprises a broader set of approximately 20 organizations across the steel value chain, including buyers, producers, technical experts, academics, industry associations, and other stakeholders, providing diverse perspectives to inform system design.

Both groups met monthly to provide technical input on the core design elements of the framework, including functional unit, emissions threshold, additionality, attribute claims, and inventory calculation. Their feedback focused on sector-specific challenges, implementation feasibility, and alignment with existing standards and market needs, and directly informed the development of this draft.

The last Working Group session was held in February 2026 to incorporate last refinements to the draft Framework ahead of public consultation. Public consultation is launched on 9 March 2026, with the aim of publishing a final version by the end of Q2 2026 (June).

1.4 Interaction with the broader ecosystem

This framework was developed with close attention to ongoing work by key standard-setting bodies, including the Science Based Target Initiative (SBTi), the Greenhouse Gas Protocol (GHGp), and the ISO Chain of Custody standards, all of which increasingly recognize the role market mechanisms can play in enabling credible pathways to net zero. While detailed guidance — particularly for Scope 3 accounting — remains under development and is not expected until 2027–2028, this framework reflects the latest market signals and provides interim guidance to support near-term market engagement.

The design also draws lessons from more mature B&C applications, notably in [sustainable aviation fuel](#), and from parallel efforts in adjacent hard-to-abate sectors such as cement and concrete. Key references include established system standards such as the [Roundtable on Sustainable Biomaterials \(RSB\) Book & Claim Manual](#) and cross-sectoral guidance like the [AIM Quality, Accounting, and Reporting \(AIM QAR\) standard](#).

Finally, this framework is designed to build on and remain compatible with existing steel-sector standards and initiatives. It recognizes established definitions of product sustainability performance and, where appropriate, leverages existing sectoral datasets and emissions baselines. While current green steel standards may differ in underlying emissions accounting methodologies and net-zero trajectories (e.g., ResponsibleSteel, Low Emissions Steel Standard [LESS], Global Steel Climate Council [GSCC], etc.), ongoing harmonization initiatives ([Steel Standards Principles](#)) and interoperability frameworks (e.g., [ResponsibleSteel Framework for Credible Interoperability](#)) are improving interoperability. This framework supports and aligns with these harmonization efforts and will continue to reflect their evolution.

1.5 Guiding design principles

This framework is guided by a set of core principles agreed upon by the Working Group that compose an effective and scalable B&C system for iron and steel:

- **Credible** from an environmental standpoint, driving high-integrity emissions impacts
- **Straightforward and usable** to facilitate scalable market transactions for low-carbon iron and/or steel attributes

- **Compatible** with existing regulations, voluntary frameworks, and best practices
- **Comprehensive** to cover deep decarbonization solutions and geographic regions to minimize market fragmentation
- **Aligned** with core principles and existing best practices for standards development and B&C systems, as developed by ISEAL, the AIM Platform, and the Book and Claim Community for Transport

In addition to these principles, this framework sets high-integrity criteria for eligible iron and steel production:

- **No double counting** — Clear rules ensure environmental attributes are booked and claimed only once, supported by robust tracking and retirement.
- **Additionality** — Demonstration of climate impact beyond business as usual, including common-practice, financial, and regulatory additionality.

1.6 How to use this document

This document is intended to guide market participants, including prospective and current certificate suppliers, buyers, and value chain partners, in the credible issuance, transfer, and retirement of book and claim unit certificates within a steel B&C system. **In its current form, it is not a normative standard.** Rather, it is designed to inform the development of a future system manual or registry specification, which would require additional validation, testing, and formal governance through a standard-setting body and/or registry operator.

This document is structured around a set of core elements that together constitute the B&C framework for the iron and steel value chain. Each element is presented with proposed rules, an accompanying rationale, and illustrative use cases, providing context for the design choices and highlighting key considerations for implementation.

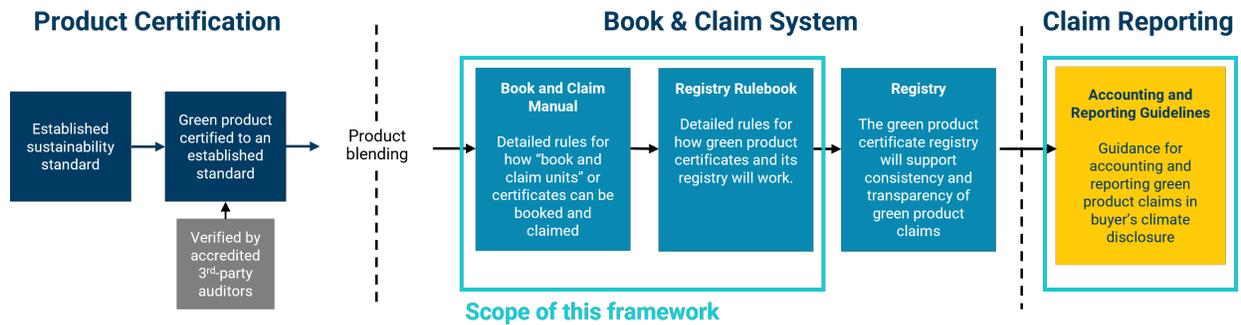
Throughout this document, normative language is used to convey the level of expectation associated with each provision. The terms “**shall**” or “**must**” indicate requirements for certificate issuance, transaction, and/or tracking. The term “**should**” denotes a recommended practice but not a requirement. “**May**” indicates a permitted or allowed option, while “**can**” and “**cannot**” are used to provide additional implementation guidance or to clarify whether an action is feasible under specified conditions.

2. Scope of This Framework

2.1 Scope

A functioning B&C system typically relies on three interdependent components, as shown in Exhibit 2:

Exhibit 2 Key components and normative documents of a book-and-claim system



- **Product certification scheme** — a robust sustainability standard, supported by third-party verification to ensure that low-emissions steel products meet credible, consistent environmental and sustainability requirements.
- **B&C system infrastructure** — a system manual and registry rulebook, implemented through a governed digital registry, with secure data storage to perform the issuance, transfer, and retirement of book and claim units in accordance with defined rules in the system manual.
- **Claim reporting guidance** — a reporting framework that supports certificate buyers in accounting for and communicating green product claims within corporate climate disclosures.

2.2 Functional unit

The functional unit defines the base unit for this B&C system for iron and steel and correlates to the physical product from which an EAC will be separated. Selection of the functional unit determines both the scope of emissions covered by the EAC and the supply chain actor responsible for generating and selling the EAC. **Once registered, an EAC becomes a book-and-claim unit (BCU), corresponding to one ton of neat, certified iron or steel products.¹**

¹ EAC generating suppliers may also reference general specifications for iron and crude steel products, such as [General Specifications for Ore Based Metallica](#)s by International Iron Metallica Association.

Based on these principles, this framework proposes a **dual functional unit system** such that EACs may be generated at two distinct stages of the steelmaking value chain:

- **Iron**, defined as the product from blast furnaces, direct reduction furnaces, or future electrolytic reduction processes, including pig iron, direct reduction iron (DRI), hot briquetted iron (HBI), cast iron, and electrolytic iron.
- **Steel**, defined at the crude steel level (i.e., blooms, billets, and slab), covering the additional processes that mix scrap and iron for melting and metallurgical adjustments.

The use of dual functional units enables direct incentives for decarbonization at the ironmaking stage, where transformative technology shifts are most critical, while maintaining alignment with existing high-integrity steel standards. Although it introduces additional complexity, the dual functional unit approach is intended to support greater flexibility for prospective suppliers. Today, iron- and steelmaking are often co-located due to historical, technological, and economic considerations. As the sector transitions toward direct reduction, electrification, and renewable energy, standalone low-emissions ironmaking facilities that require targeted capital investment are expected to emerge. As such, designing the framework around both iron and steel functional units also ensures adaptability to the structural evolution of the supply chain.

For the functional unit set to steel, the crude steel level is currently preferred over definitions further downstream. A crude steel functional unit follows casting (i.e., blooms, billets, and slab) and captures the majority of the sector's emissions sources (e.g., ironmaking, sintering, coke-making, etc.).ⁱⁱ While emissions from further processing after casting (e.g., hot rolling, cold rolling, coating, annealing, or galvanizing) are excluded, this choice simplifies inventory substitutions and enables more flexible and comparable claims while still including the majority of emissions from the steel production process. Crude steel represents a common production stage across all steel products, avoiding the need to align claims with specific finished products and minimizing variability introduced by product-specific downstream processing. It also aligns with ongoing sectoral efforts to harmonize production emissions accounting methodologies at the crude steel level.ⁱⁱⁱ

As the market matures, the system may expand the steel functional unit to hot-rolled products, as it more comprehensively reflects prevailing physical procurement practices and captures emissions from the final fossil-fuel-intensive process in the supply chain (e.g., reheating furnaces). Several production standards and certification frameworks exist at hot-rolled product levels, including the Global Steel Climate Council (GSCC) and Low Emissions Steel Standard (LESS). Beyond a clear market rationale, expanding the system to accommodate hot-rolled coil (HRC) units is contingent on the interoperability of

ⁱⁱ Roughly covering approximately 88% of total emissions of a finished steel product.

ⁱⁱⁱ As harmonization across steel standards advances, the system's measurement methodology may evolve to maintain alignment and comparability across functional units.

emissions measurement and performance thresholds for downstream processing steps of steel products (see 11.2).

2.3 Eligible system users

This framework is intended for organizations across the iron and steel value chain that seek to credibly transact and claim the environmental attributes of lower-emissions iron and steel separately from physical material flows. It defines a set of eligible System user roles with clear permissions, claiming rights, and guardrails to ensure transparency and prevent misrepresentation.

This framework supports the following System user roles:

- **Iron producer** — Organizations producing iron inputs (e.g., pig iron, DRI, hot-briquetted iron (HBI), electrolytic iron), including standalone iron producers and integrated steel producers registering iron separately. They may register, hold, and transfer iron BCUs.
- **Steel producer** — Organizations producing crude or finished steel products via blast furnace-basic oxygen furnace (BF-BOF), EAF, or DRI-EAF routes. They may register, hold, and transfer steel BCUs.
- **Intermediary** — Organizations that facilitate the manufacturing, fabrication, aggregation, specification, or deployment of iron or steel without producing the material or materially altering its emissions intensity. This includes fabricators, contractors, automotive OEMs, construction firms, and building developers that operate between primary production and final use and may influence purchasing or deployment decisions. They may hold, transfer, and claim (or co-claim) iron and/or steel BCUs in accordance with framework rules.
- **Corporate end user** — Organizations that ultimately use iron or steel in manufactured end products, infrastructure, or buildings and seek to account for associated Scope 3 emissions. This may include equipment owners and infrastructure owners. They may hold and retire iron and/or steel BCUs and make Scope 3 claims consistent with retired units.
- **Auditor** — Independent third parties providing assurance of compliance. They may access registry data for verification purposes, and may not register, hold, transfer, or retire BCUs.

3. Eligibility Criteria for BCU Issuance

Eligibility criteria are central to establishing a credible B&C system, as they underpin the environmental integrity of certificates and market confidence in their use. **This framework defines several criteria and applies them at the site-level to ensure asset-level implementation of deep decarbonization technology.**

3.1 Emissions intensity threshold

- 1) **Ironmaking site generating EACs for iron products** shall meet a Responsible Steel DPL3-equivalent threshold of ≤ 1 ton (t) CO₂e per ton of iron.
- 2) **Steelmaking site generating EACs for crude steel products** shall meet at least DPL3 or an equivalent level from other standards, corresponding to 0.2–1.2 t CO₂e per ton of crude steel, depending on the scrap share of metallic input.

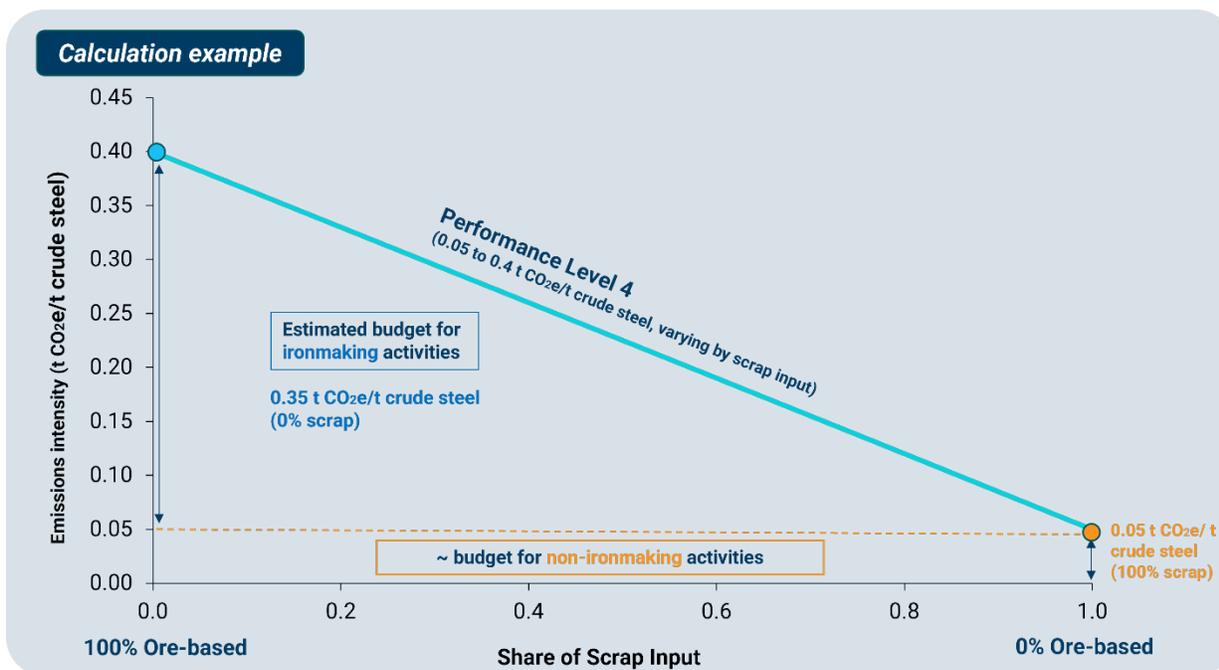
Products achieving DPL4 or near-zero emissions status may be designated "SSBP-preferred" to signal leadership and support supplier progression toward net-zero.

The System's emissions intensity threshold refers to the emissions value (tons of CO₂e per ton BCU) required to qualify for the System. Under this definition, the thresholds for iron and crude steel production units are anchored to Decarbonization Progress Level 3 (DPL3) under the ResponsibleSteel Production Standard,^{iv} and are designed to remain interoperable with other major certification schemes (e.g., LESS, GSCC, China Iron and Steel Association [CISA]) as harmonization across steel production standards advances. Producers already certified or seeking certification under another scheme will be required to generate additional measurements or use conversion tools to assess their emissions performance against the System's emissions threshold (ResponsibleSteel DPL3) (see 11.3).

Because no product standard or certification currently exists at the iron-product level, the System approximates ironmaking emissions from ResponsibleSteel's DPL3 to establish an equivalent threshold of 1 t CO₂e per ton iron, calculated as the difference between the DPL3 crude-steel intensity threshold at [0% and 100% scrap](#) (Exhibit 3). Following the same logic, an iron threshold achieving Decarbonization Progress Level 4 (DPL4) is set at 0.35 t CO₂e per ton of iron. To ensure fair comparison against these thresholds, iron products eligible for generating EACs must contain at least 90% metallic Fe.

^{iv} This doesn't mean the system requires or designates a ResponsibleSteel certification.

Exhibit 3 Calculation example for the iron product threshold



The thresholds are designed to strike a balance between environmental integrity and market viability. DPL3 represents the performance tier that reflects meaningful progress toward near-zero emissions steel (i.e., [achieving DPL4 as defined by the International Energy Agency \[IEA\]](#)). To align with a 1.5°C compatible pathway, and for the steel industry to achieve its Paris Agreement obligations, ResponsibleSteel estimates 15% of global production in 2030 should reach the DPL3 threshold, implying an additional 100–500 million tons of DPL3-certified production relative to 2020 levels.^v

While decarbonization trajectories will differ across regions and technologies, establishing a globally consistent net-zero emissions (NZE) threshold is necessary for EACs to mobilize capital toward projects that needs large capital investment. At the same time, domestic green steel taxonomies are already in place across major producing regions to structure country-specific thresholds and incentives based on local policy or technological conditions.

To reflect the decarbonization pathways of the steel sector, the System adopts a scrap-variable approach for threshold setting, consistent with the ResponsibleSteel Standard. Although scrap-based production accounts for roughly one-third of global steel output, scrap availability is limited by the lifetime of steel-containing products. Modeling from the IEA and the Mission Possible Partnership (MPP) indicates that, even under a net-zero emissions pathway, scrap can supply only about half of annual steel demand by 2050. Thus, in addition to increasing scrap uptake and use (secondary production), the deployment of zero-emissions ironmaking technologies (primary production) will be required to meet sector-wide net-zero goals. Because primary production is inherently energy-intensive in order to remove oxygen from

^v ResponsibleSteel, [Charting Progress to 1.5°C through Certification](#), July 2024. The range in quantities reflects the variance in MPP and IEA models used as a basis for analysis.

iron ore (i.e., the reduction process), yet will be required to meet future steel demand, the sliding scale levels the playing field between the two production pathways, helping structure incentives for investment in both primary and secondary decarbonization.

If the System expands the steel functional unit to hot-rolled products, the sliding-scale thresholds will be extended accordingly. The additional steps required for this translation are described in section 11.2.

Overall, the System is designed to be broad enough to support early market volumes and investment in low-emissions production, but it should serve only as a minimum eligibility floor for credible BCU issuance. Technology route-specific transition alignment criteria and additional buyer-defined requirements (Section 3.2) may further constrain eligibility for individual transactions. Production that meets near-zero performance (DPL4) is further distinguished through the “SSBP-Preferred” designation to clearly signal first-of-its-kind, ultra-low-emissions production to ambitious buyers seeking priority offtake.

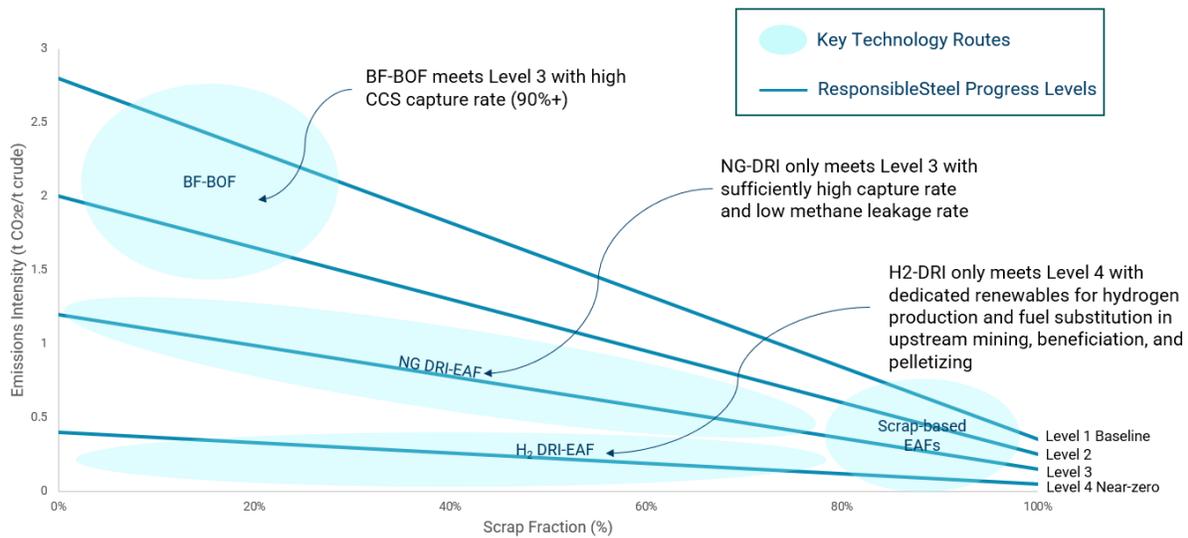
3.2 Transition alignment requirements

Route-specific criteria

To address this gap, all EACs meeting DPL3 or higher (including DPL4) shall also meet route-specific criteria at the site level to ensure alignment with near-zero transition.

Setting an emissions performance threshold at ResponsibleSteel DPL3 is expected to effectively rule out most fossil-intensive BF-BOF capacity that ultimately needs to be phased out to achieve a 1.5°C climate outcome (Exhibit 4). However, some BF-BOF production could still meet the DPL3 threshold if equipped with sufficiently high capture rate from carbon capture and storage (CCS) (>90%). Similarly, other fossil-based routes (e.g., natural gas DRI-EAF) may also achieve DPL3 if methane leakage is minimized and upstream processes are deeply decarbonized. In practice, these assumptions introduce uncertainty and risk reinforcing long-term reliance on fossil-based production routes, therefore this framework adds the additional route-specific criteria as further protections to avoid fossil lock-in.

Exhibit 4 Technology implications for meeting RS Decarbonization Progress Level 3^{vi}



BF-BOF routes^{vii}: eligibility shall apply only on a transitional basis and be subject to:

- **Time-bound qualification:** Issuance from existing BF-BOF facilities shall be eligible only until 2035 in advanced economies and 2040 globally, consistent with 1.5°C scenarios set forth by [Mission Possible Partnership](#). Issuances from BF-BOF facilities that commence operation on or after 2030 shall be ineligible, including facilities equipped with CCS/CCUS, to prevent the lock-in of emissions-intensive assets incompatible with net-zero pathways.

CCS/CCUS-based production^{viii}: Must meet DPL3 via a minimum 90% capture rate at the highest emitting point of capture. Additional eligibility on permanence and storage shall apply, consistent with the [Climate Bonds Initiative Steel Criteria](#):

- **Permanence integrity:** Captured CO₂ must be permanently stored in dedicated geological storage with robust MRV and liability arrangements.
- **Transport and storage:** Operational or contractually secured CO₂ transport and storage infrastructure shall be in place at the time of BCU issuance. Leakage detection measures shall be applied, and the CO₂ leakage shall not exceed 0.5 % of the mass of CO₂ transported.

^{vi} From [ResponsibleSteel](#): “To reach near-zero emissions, plants require: substitution of fossil fuels using non-carbon alternatives, electrification using 100% renewable power, and/or very high efficiency CO₂ capture (>90%). In addition, the decarbonization of energy and material inputs is required, including hydrogen using electrolysis with zero emissions electricity (termed green hydrogen when renewable sources are used).”

^{vii} This reflects evidence from the IEA and sector transition pathways (e.g., MPP) that continued reinvestment in fossil-based assets significantly increase stranded-asset and lock-in risks.

^{viii} Enhanced safeguards for CCS/CCUS address uncertainties around capture performance and permanence.

The use of biomass^{ix}: Eligibility shall be conditional and transitional, and fully aligned with ResponsibleSteel and Climate Bonds Initiative Steel Criteria, including:

- Priority use of residual and waste biomass and biogenic waste streams.
- Ineligibility of purpose-grown biomass and high-risk forestry feedstocks due to land-use change, permanence, and scalability concerns.

For all EACs, upstream methane leakage from gas use should not exceed 0.2%.^x

Buyer-defined procurement criteria

To maximize impact, buyers should take one or more of the following actions to assess supplier, product, or project-level alignment with transition pathways:

- Assessing alignment with additional requirements for hydrogen production used for iron and steelmaking, including additionality, temporal matching, and deliverability (e.g., [Climate Bonds Standard for Steel — Global Efficiency Intelligence](#), [Steel Criteria](#))
- Requiring evidence of transition plans toward DPL4 (e.g., Steel science-based target validated by SBTi or equivalent), provided directly by BCU registrants or through contracts, commitments, and third-party agreements.
- Evaluating supplier emissions performance trajectories against annual reference benchmarks aligned with established/recognized climate-aligned scenarios (e.g., IEA NZE).
 - See Appendix of RMI Steel GHG Emissions Reporting Guidance (p. 26)
- Referencing complementary assessment frameworks to inform supplier evaluation, such as Climate Bonds Initiative’s Steel Criteria for qualifying decarbonization and retrofit measures, or company-level, time-bound certification pathways to 2050 that meet ResponsibleSteel Certification Standard Criterion 10.1.

^{ix} Requirement on biomass further ensures that claimed emissions performance reflects real, scalable decarbonization.

^x Methane leakage requirement prevents upstream emissions from undermining climate outcomes. The 0.2% threshold (MiQ certified above grade C) is gradually being included in international voluntary targets (e.g., [OGMP 2.0](#)) and may gain tractions in regional regulations such as EU methane regulation. Roughly [20% of US gas is certified to meet this threshold](#), while supply from the UK, Norway, and Qatar are on the way to meeting this threshold.

3.3 Additionality requirements

EAC-generating products shall demonstrate and disclose meeting regulatory additionality and should provide reasonable evidence of financial and common-practice additionality at the discretion of buyer-specific procurement criteria.

This additionality requirement shall be determined at the time of contract signing and shall apply to all future deliveries under that agreement.

Additionality is a core safeguard to ensure that emissions performance credited through the B&C system is enabled by BCU revenue and would not have occurred otherwise. In this System, additionality is assessed across financial, regulatory, and common practice dimensions (Table 1).

Regulatory additionality (equivalent to regulatory surplus in the AIM QAR) serves as the minimum requirement for additionality test of BCUs. BCU generating suppliers shall demonstrate conformance by clearly disclosing applicable regulatory obligations and providing evidence that their performance exceeds regulatory requirement, as documented in the System record.

Financial additionality is critical to assess whether revenues from BCUs are materially necessary to enable the production and provide long-term forward-looking revenue certainty that is valuable to help project move to Final Investment Decision. However, verifying and disclosing such information can be challenging because financial decisions are likely influenced by confidential cost structures, fluctuating market conditions, and internal capital allocation processes, etc. Suppliers may be reluctant to disclose due to commercial sensitivity, or it can be challenging to isolate the specific impact of BCU revenues on an investment decision. As a result, buyers are encouraged to request evidence from suppliers, including a self-attestation of financial additionality and any available financial details demonstrating the materiality of BCU revenue.

Common practice additionality evaluates whether the production goes beyond prevailing best practice in the region or sector. This can also be challenging to assess because definitions of “common practice” may vary across regions. Rapidly evolving technologies and policy environments can also shift what is considered standard practice over time. To address these challenges, buyers are encouraged to request evidence showing that the supplier’s activities are transition-aligned and deliver meaningful in-region decarbonization impact.

As policies evolve and technologies advance, this System should continue to refine its approach to additionality based on stakeholder input and emerging best practices.

Exhibit 5 Specific additionality requirements

Dimension	Definition	System requirement
Regulatory	The activity is not undertaken solely to meet legal or policy requirements and BCU issuance does not credit compliance-driven production, consistent with the concept of regulatory surplus as defined by AIM QAR.	Suppliers shall disclose all applicable regulatory obligations affecting the underlying production, including emissions trading systems, carbon taxes, and performance mandates; and provide evidence that the low-emissions production exceeds regulatory requirements or faces a cost premium beyond compliance, considering mechanisms such as free allowances or equivalent provisions.
Financial	External funding is material to the activity and BCU revenue enables the project or production pathway. This may require region-specific assessment to reflect differences in techno-economic conditions and production costs that influence whether a pathway is viable without EACs.	Buyers are encouraged to require self-attestation of financial additionality and any financial information demonstrating the materiality of BCU revenues especially if the revenues will provide long-term forward-looking revenue certainty. This may include providing information on financial support linked to the underlying production, including subsidies, tax credits, and incentive programs.
Common practice	The activity goes beyond technologies or practices that are already widely deployed or standard in a given region or market.	Buyers are encouraged to require evidence demonstrating transition alignment, particularly for fossil-based routes and in-region impacts.

4. Product Emissions Intensity Baseline Selection

Emissions baselines are required to quantify EAC reduction outcomes and to provide default emissions factors for physical products that are decoupled and sold separately from BCU issuance. In line with B&C guidance such as AIM QAR, baselines should match as closely as possible the emissions intensity of the activity that was most likely displaced by an “intervention” (i.e., the production of low-emissions iron or steel). Pending data quality and availability, factors like country/region of production, scrap content, product’s downstream use (e.g., product family, or flat or long), and GHG accounting methodology alignment should be considered in selecting the most credible baseline.

In this System, a baseline refers to the starting point to measure change. **Baseline** values are selected by BCU suppliers to best reflect the emissions performance of the replaced products in the local market. A **benchmark** refers to industry-wide established comparison points, usually published by industry standard-setters or associations that can be used to set or validate baselines.

4.1 Iron baseline

Producers shall use asset or operational-level baselines where available. These baselines should reflect the emissions intensity (per ton of product) of the same production site, or a comparable site performing a similar function, such as the EAC-linked production.

Where such baselines are not available, and boundary-consistent iron-level baselines do not yet exist, producers may apply regionally consistent averages. As an interim approach, country-level CBAM default values for iron products (Pig Iron 7201 and DRI 7203) are recommended as a benchmark to set baseline. Adjustments may be applied as needed to reconcile system boundary differences and ensure alignment with the system’s measurement methodology.

There is no singular comprehensive iron benchmark established today, but this framework recommends using CBAM default factors to set the iron baseline as they provide relatively more consistent emissions measurement boundaries and broader geographic coverage. Other options are assessed below and in 11.4 for more details:

- **Country-level benchmark from [CBAM \(interim solution\)](#): [Default values](#) for Pig Iron and DRI across 33 countries, ranging from 1.11 t CO₂/t iron (Canada) to 4.2 t CO₂/t iron (India).^{xi} These values are based on the disaggregation of GHG emissions stemming from energy consumption reported per country (in the IEA World Energy Balances) to the relevant subprocesses (pellet, sinter, blast furnace) under the final energy consumption flow of the iron and steel industry production.^{xii} Direct CO₂ emissions from the consumption of carbonates (limestone or dolomite) are included in scope.**

^{xi} Country-level variance depends on coal consumption, iron ore source, average grid emissions factor, and relative consumption and emissions intensities of coking, pelletizing, and sintering processes.

^{xii} According to the [GHG measurement methodology for default factors in CBAM](#).

- **Regional benchmark from CRU Group** (subscription-based): Asset-level iron production data covering most global ironmaking sites are available through subscription. Data points for public access are available for Ukraine, Russia, Brazil, and the United States, indicating a range from 1.47 t CO₂/t iron (US) to 1.77 t CO₂/t iron (Ukraine). However, these data points are measured with inconsistent boundaries depending on site-level configurations and not including Scope 3 upstream emissions.^{xiii}
- **Deriving country/regional iron benchmark from Worldsteel**: Calculating cradle-to-gate iron emissions using the WorldSteel CO₂ dataset if feasible, with adjustments for process gas and waste heat crediting in integrated BF-BOF productions.
- **Deriving global iron-level benchmark from RS Decarbonization Progress level model**: Deriving a global iron benchmark using PL1 as the reference value using the same approach applied in this framework, resulting in 2.45 t CO₂/t iron.

Setting a default iron baseline is challenging at this stage due to limited data availability. Most iron production data is aggregated across multiple sites or combined with steelmaking processes,^{xiv} and are often not publicly accessible. Accounting methodologies and standards specific to iron products are also not established, further constraining ironmakers' ability to consistently and fairly measure and baseline at the iron product level. This framework therefore recommends using CBAM default factors as an interim solution. When applying these default values, however, ironmakers shall check the boundary difference between CBAM and any environmental product declaration (EPD) and consider these adjustments to fully align with the System's EAC measurement methodology:

- Include upstream emissions (e.g., mining, beneficiation, and methane leakage)
- Note the difference that process gas and waste heat used at integrated BF-BOF sites are likely not adjusted or credited back to allow a direct comparison with other iron products (DRI, electrochemical iron, etc.).
- Consider using regional production-weighted averages for DRI and pig iron default values for better reflecting supply pool.

^{xiii} Emissions associated with coke plants, charcoal kilns, and sinter plants, are included in Scope 1 and 2 emissions benchmarks where these processes occur on site (e.g., on-site sintering is included in Russia and Ukraine benchmarks, where off-site pelletizing is excluded in the US benchmark).

^{xiv} Sixty-five percent of companies present a single aggregated figure for emissions for all assets. Only 15% disclose emissions at the asset-level (CIU survey).

4.2 Steel Baseline

System users are encouraged to use sliding scale baselines drawn from regional default values for primary and secondary steelmaking routes in order to account for the proportion of scrap used in an EAC's underlying physical steel product and region of production.

A credible baseline approach for steel units is important to ensure accuracy and consistency in calculating and claiming emissions outcomes from EAC production. Baselines should closely reflect atmospheric benefit from EAC production, and should align to the extent feasible with:

- **BCU-aligned scrap content:** Baselines should, where feasible, match the scrap content of the displaced steel product, which varies by final product type and production region. This is because scrap share significantly influences emissions intensity, and mismatched scrap shares can artificially inflate claims by increasing the credit given to interventions that offer limited additional climate benefits when considering fundamental limitations to the global supply of steel scrap (see 3.1 for additional detail). Where life-cycle assessment (LCA) averages are used as emissions baselines, the BCU emissions intensity shall be adjusted when the BCU scrap share exceeds the baseline by more than 10% (e.g., refer to RS Decarbonization Progress Level gradients in 11.5).
- **BCU-aligned country/region of production:** Baselines should reflect the emissions profile of steel produced geographically as close as possible to the displaced product, to account for emissions differences across location-specific production factors (e.g., iron use, scrap availability, grid emissions, methane leakage, ore grade, and steelmaking technology mix).
- **BCU-aligned measurement methodology:** Baselines should be measured under comparable GHG accounting rules to the BCU GHG accounting methodology, to ensure fair, comparable BCU performance claims.

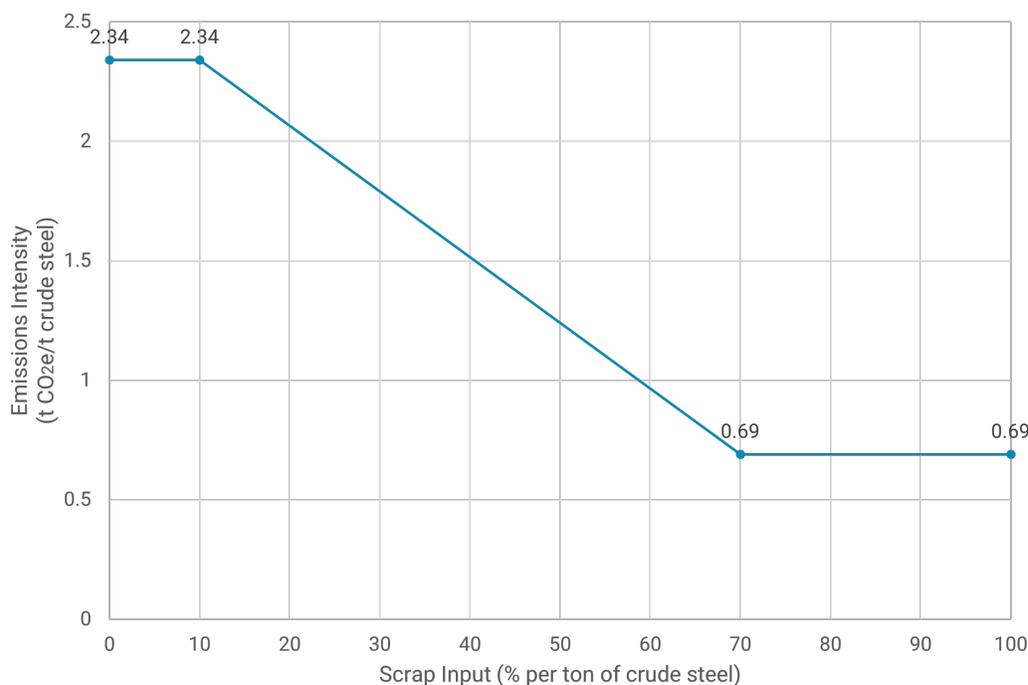
Because the majority of emissions come from ironmaking, product and country-level iron use is the largest driver of emissions differences between steel products and production regions. Scrap-variable baselines intend to reflect emissions performance across product-level scrap shares, where existing product benchmarks (e.g., average LCAs by product type or product family) may not adequately reflect products from an EAC production region and/or EAC product-level scrap content. Product intensity averages from product carbon footprints (LCAs, EPDs) may also be generated from more limited accounting methodologies relative to EACs, which, if used as baselines, may threaten the accuracy and comparability of calculated EAC reduction outcomes.

Sliding scale crude product baselines

To satisfy System benchmarking requirements, a scrap-variable baselining approach is proposed to align with existing sliding scale performance frameworks and better reflect emissions outcomes based on the EAC production geography and product-level scrap use. Scrap-variable crude steel emissions baselines can be charted across scrap input share (0%–100%) using calculated reference values that reflect current performance of primary integrated (BF-BOF) steelmaking and secondary (EAF) steelmaking routes (see example in Exhibit 6). Using the sliding scale, baseline values can be derived for all scrap shares such that claims may be made for all EACs depending on product-level scrap input. Adopting sliding scale

progression into baselining further supports comparability with existing low-emissions steel initiatives that utilize the scrap-variable sliding scale framework in their standards and definitions, such as IEA, ResponsibleSteel, and the Low Emissions Steel Standard (LESS).¹

Exhibit 6 Global steel sliding scale with technology-specific reference values



Example of modeled scrap-variable sliding scale using global average emissions factors and associated scrap shares published by World Steel Association: 2.34 t CO₂e per ton crude for BF-BOF production representing >70% scrap, and 0.69 t CO₂e per ton crude for Scrap-EAF production representing <10% scrap. Alternative reference values might include global modeled numbers using consumption and emissions factors from relevant databases (e.g., IEA, IPCC, Ember); LESS Virtual Reference Plants,² or Responsible Steel Decarbonization Progress Level 4 to represent best-available technology or median production emissions performance.

The primary and secondary steelmaking default values will vary widely across countries based on the type of feedstock used in EAFs and BOFs (scrap, pig iron, DRI), fuel mix (natural gas versus coal, particularly in BF-BOFs), grid emissions intensity (particularly for EAFs), as well as other structural factors such as technology efficiency and plant age.³ To account for these differences, country-level sliding scale baselines should be developed, where steelmaking reference values are based on country-specific energy consumption and emissions factors. Sliding scale default values for primary and secondary pathways should use comparable cradle-to-gate GHG accounting methods and measurement boundaries.

Country- or regional reference values for primary and secondary steelmaking pathways may be collected from available country- or regional emissions and production data. Where industry averages do not exist,

top-down or bottom-up approaches may be used to calculate reference values for primary and secondary steelmaking routes, depending on available data for the following production emissions factors:

- Energy consumption rate
- Fuel mix (e.g., coal, natural gas) in BF-BOF
- Fuel-specific emissions factors
- Feedstock used in EAF (scrap, DRI, pig iron)

Carbon intensity of electricity used in EAF Product-level benchmarks may also be considered for use as baselines but may be limited by available data and low level of alignment with EAC scrap content and region of production.

Additional baseline approach may include:

- 1) **Adjusted regional LCAs/EPDs:** Deriving supplier-specific crude benchmarks by adjusting selected regional average steel LCAs/EPDs, subject to consistent boundary and methodological alignment.
- 2) **Product-family averages:** Develop or adjust existing downstream product family averages to set product-specific crude-level emissions intensities. If available, default emissions factors for downstream processing may be used to back-calculate crude-level intensities.

Option 1 requires substantial methodological reconciliation in the absence of standardized adjustment tools. Option 2 may be more viable in the near future as regional benchmarks for downstream processes are developed from industry-wide efforts. Currently, suppliers may use default emissions factors for downstream processes from the LCA database to adjust accordingly (i.e., align product boundaries), although this may produce inconsistent outcomes.

Scrap misalignments between EACs and product-level benchmarks may also risk over-reporting emissions claims, as global, system-wide emissions impact of scrap use is limited. Where product benchmarks are used as baselines, producers are encouraged to adjust EACs to align with the average scrap content of product-level emissions benchmarks.

Due to the low consistency in measurement methodologies and system boundaries in available product-level emissions benchmarks, as well as the need for scrap-adjustments, the sliding scale baselining method should be prioritized for system use.

5. Emissions Performance Measurement and Accounting rules

5.1 Methodology scope and interoperability

The system accounting methodology is anchored in the ResponsibleSteel Production Standard (Criterion 10.4) and is designed to support and leverage interoperability with other major standards and methodologies (LESS, CISA, World Steel LCI) as harmonization progresses. Producers certified under alternative schemes may be required to make defined methodological adjustments (e.g., adding or removing credits from process gas used in downstream processing) to align with ResponsibleSteel ensuring fair and consistent comparability across BCUs registered in the system.

To create consistency with direct physical product reporting, the system's measurement methodology is grounded in internationally recognized and comprehensive GHG accounting frameworks and standards. Existing certification schemes (e.g., LESS, ResponsibleSteel, GSCC, CISA) differ in their underlying accounting boundaries, treatment of market-based instruments for Scope 2 emissions, and allocation methods for co-products and scrap recycling ([details here](#)). While accommodating multiple schemes can provide flexibility and ease of reporting for producers, these methodological differences limit comparability across BCUs.

Accordingly, the EAC measurement methodology is aligned with the underlying methodology used to determine the eligibility intensity threshold (DPL3), which ensures EACs:

- Use an internationally consistent methodology applicable to all geographies and steel products,
- Achieve significant levels of alignment with globally recognized life-cycle inventory accounting principles (i.e., World Steel Association LCI methodology),
- Are consistently verified against the system's eligibility threshold (DPL 3) and criteria, and
- Are fairly compared to support efficiency in EAC transactions.

Producers shall measure and report emissions at the site level where production occurs, expressed as t CO₂e/t crude steel, in accordance with ResponsibleSteel's site-level GHG emissions accounting requirements ([International Production Standard Version 2.1.](#), Criterion 10.4 and 10.6). Reported emissions shall represent the site's average emissions performance based on activity data covering a full year of production. For producers with less than one year of production data, emissions shall still reflect the site-wide average for the available production period and shall be verified on a conditional basis until a minimum of one year of verifiable production data is available.

As allocation is not permitted to meet the system's eligibility threshold, each EAC will be verified according to the average emissions intensity of the producing site. Where product-level allocation is relevant (i.e., green iron used as inputs) for reported EAC measurements, producers shall follow the guidance set out in Section 5.2. Where alternative methodologies are used, suppliers should refer to Exhibit 7 to check alignment on common discrepancy areas.

Exhibit 7 Common discrepancy areas for steel GHG measurement methodologies

(Note: * indicate requirements in addition to ResponsibleSteel Criterion 10.4 and 10.6)

Alignment area	System's methodology	Common discrepancies
System boundary	Cradle-to-gate (through casting of crude steel) including upstream emissions from material and fuel extraction, production, and transportation.	Upstream boundary — whether mining of ore, material, and fuel included. Downstream boundary — whether it is closed at crude-level.
Default emission factors	Mainly from CRU methodology for ResponsibleSteel, GaBi database, and worldsteel CO ₂ methodology (details in Annex 5 of RS standard).	Other emissions factors might be used especially on fuel. Underlying GWP factors used (e.g., IPCC AR5 vs AR6).
Purchased power	Use of market-based mechanisms are permitted.	Some EPDs/LCAs or methodology may only allow location-based approach.
Use of allocation	No allocation of emissions to co-products and by-products. Proportional allocation is permitted for green iron inputs.*	Alignment with proposed rule for allocating green iron inputs.
Upstream methane	Upstream methane leakage shall not exceed 0.2%.*	Methane leakage may not explicitly be included in GHG measurement.
Crediting	System expansion approach to calculate credit as GHG emissions that would have been generated.	Alignment of implementing system expansion approach for site-specific case.
Scrap emissions	Upstream embodied emissions for scrap are assigned zero upstream emissions.	Alignment with boundary and embodied emissions of scrap.
Scrap share	Internal scrap is excluded from metallics input.	Definition alignment of internal, home, manufacturing scrap. Default scrap share when primary data is not available.

Many organizations within the steel sector are moving toward alignment on discrepancy areas, with endorsers of the [Steel Standards Principles \(SSP\)](#) acknowledging the need for harmonization.

Iron intensity measurement

Iron measurements follow the crude-level accounting methodology, with a system boundary adjusted to reflect iron production and expressed as t CO₂e/t iron product. Aligning iron measurements with the crude steel accounting methodology ensures consistent system boundaries, thus enabling comparability across functional units and associated claims (e.g., iron EACs and steel EACs are measured on a consistent basis).

The system's accounting boundary for iron includes all upstream processes up to the point at which the iron product (e.g., pig iron, DRI, HBI, electrochemical iron) is first produced. It applies across all iron production pathways and includes emissions from raw material and fuel extraction, production and transportation (e.g., iron ore and coal mining, etc), intermediate processing (e.g., sintering, pelletizing),

ironmaking processes (e.g., direct reduction), and electricity use, consistent with the boundaries defined in the ResponsibleSteel [International Production Standard Version 2.1](#).

For ironmaking sites integrated with steelmaking, suppliers generating iron EACs shall segregate emissions in accordance with the iron production system boundary. Where process gas or waste energy generated within the system boundary of iron production are used on site or off site, suppliers shall apply the system expansion method in accordance with Criterion 10.4.7, while treating steelmaking as downstream of iron production where applicable.

5.2 Allocation of environmental attributes

General Allocation Rules

Reallocation of emissions or attributes across sites is not permitted, including “over-allocation” and “internal carbon banking” where emissions outcomes or low-emissions output from multiple facilities are aggregated and concentrated into a single product line. Each EAC must be bound by the emissions intensity of the site of production.

For verification against the system eligibility threshold, emissions intensities of crude-level EAC shall be measured and verified at the site level. Consistent with the system’s measurement rules, reported product-level emissions intensities shall not selectively attribute emissions performance beyond what is physically and operationally achieved. These restrictions are intended to preserve integrity, consistency, and credibility, while preventing the inflation of product-level decarbonization.

An exception may apply for steel made from green iron inputs, where product-level allocation may be used to reflect the use of verified low-emissions iron inputs. In such cases, allocation shall be permitted only in accordance with system proposed rules, shall maintain consistency with site-level accounting, and shall ensure that emissions benefits are not claimed more than once across iron and downstream steel EACs.

Proposed allocation Rules for Green Iron in Steel EACs

When green iron is blended with other metallic inputs, steel EACs may be generated by allocating green iron attributes in proportion to the physical iron content used in production, maintaining the iron-to-scrap ratio in the final steel product.

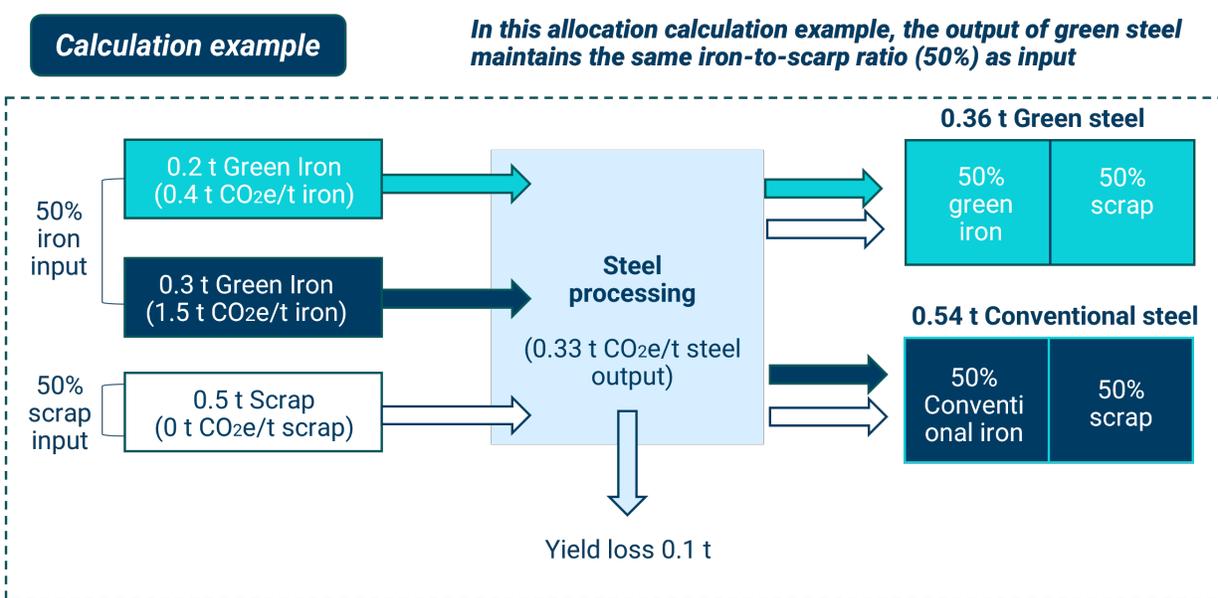
Green iron inputs eligible for allocation shall meet the Responsible Steel Decarbonization Progress Level 3 (DPL3)-equivalent threshold of ≤ 1 t CO₂e per ton of iron.

EACs shall not be generated more than once along a single physical supply chain to avoid double counting.

Steelmakers often struggle to monetize green iron because they would absorb higher up-front input costs in highly competitive commodity markets, while facing market volatility and uncertain customer demand that is rarely sufficient to offtake green iron at the scale of an entire site. Allowing limited allocation of green iron into steel EACs helps the transfer of green iron premiums and monetizes green iron investment and purchasing.

In application, scrap emissions shall not be substituted for iron emissions to avoid emissions stacking,^{xv} and yield losses between iron input and steel output shall be explicitly accounted for in calculations. See Exhibit 8 for a calculation example on allocating green iron inputs and addressing yield loss. In addition, a steelmaker using green iron may generate steel EACs only if the upstream iron producer has not already issued EACs for the same volume of iron. Registry auditing requirements would be required to track and prevent double counting or double issuance.

Exhibit 8 Calculation example for allocating green iron inputs



	Green Steel	Conventional Steel
Emissions from metallic inputs	0.2 t green iron * 0.4 t CO ₂ e/t iron + 0 = 0.08 t CO ₂ e	0.3 t conventional iron * 1.5 t CO ₂ e/t iron + 0 = 0.45 t CO ₂ e
Steel processing emissions	0.36 t green steel * 0.33 t CO ₂ e/t steel = 0.12 t CO ₂ e	0.54 t conventional steel * 0.33 t CO ₂ e/t steel = 0.18 t CO ₂ e
Product-level carbon intensity	(0.08 + 0.12)/0.36 = 0.56 t CO ₂ e/t green steel	(0.45 + 0.18)/0.54 = 0.63 t CO ₂ e/t conventional steel

^{xv} Note the system applies a physical mass-balance allocation, whereby emissions are attributed in proportion to the actual iron ore and scrap inputs used in production. This differs from a “carbon bank” approach, under which verified decarbonization outcomes may be pooled and allocated to products at the steelmaker’s discretion, independent of the specific physical input mix of those products.

If steelmaker intends to generate EACs under this approach, it shall both meet the site-level emissions performance eligibility (e.g., achieving DPL3) and provide a product-level emissions intensity, reflecting the allocated green iron attributes, that is verified by a third-party auditor to demonstrate alignment with the system's methodology and ensure attributes are not applied more than once within the system boundary.

5.3 Emissions verification and certification requirements

To issue iron and steel BCUs, suppliers shall obtain independent third-party verification from approved auditors confirming that EAC production meets the system's eligibility requirements at the site-level performance threshold and any applicable route-specific and additionality criteria.

Where steel suppliers have sufficient production data (>3 years), suppliers shall pursue full ResponsibleSteel core-site certification or certification under another scheme demonstrated to be interoperable with the ResponsibleSteel framework. Where a supplier has limited historical production data (<3 years), or where steel certification is otherwise not feasible (e.g., standalone iron producer), compliance with the system's measurement rules shall be conducted according to the following minimum verification and auditing requirements to ensure auditors demonstrate competence in assessing self-assessed emissions performance against RS requirements or in evaluating GHG methodological alignment between RS and another relevant standard.

Timing of audits

To ensure accuracy and relevance of the EAC emissions measurement, audits shall be completed prior to BCU issuance and within 24 months of the production and may commence as soon as sufficient production volumes are available. Ex-ante verification may be conducted prior to production to facilitate ex-post auditing, provided the same RS procedures are applied.

Pathway to certification

The suppliers' certification pathway will vary depending on the operational age of the production site, the availability of historical production data, and the feasibility of verification during early production stages (Exhibit 9). For ironmaking sites and steelmaking sites with less than 3 years of production data, auditors must follow the minimum verification and auditing requirements to expedite and provide a bridge toward full certification. For sites with more than three years of operational history, certification is required to ensure robust measurement, reporting, and verification procedures.

Exhibit 9 Certification pathway for production sites at different stages

Production history	Certification pathway
< 1 year	<ul style="list-style-type: none"> • Self-assessments before 12 month data collection period, to expedite certification process, using minimum verification requirements specified above. • Should demonstrate progress toward ResponsibleSteel Core Site Certification after one full year of production, with adjustment of BCU emissions intensities for any material deviation in calculation.
1–3 years	<ul style="list-style-type: none"> • Shall follow relevant excerpts of Principle 10 (GHG Emissions and Climate Change) of the ResponsibleSteel International Production Standard V2.1.1, in line with ResponsibleSteel Fundamentals for Emissions Accounting and Classification⁴ • Where suppliers already hold other certifications, valid EPDs, or LCAs representing site-level performance, auditors may use verified results to support assessment of conformity with the system’s eligibility requirement. However, modifications (or additional measurements) may be required to ensure full alignment with the system’s accounting rules (see Exhibit 2). • Should pursue ResponsibleSteel Core Site Certification or an interoperable certification scheme that demonstrates equivalency to RS Decarbonization Progress Levels via third-party audited interoperability assessments (e.g., third-party audited interoperability measures and joint assurance statement).^{xvi} • Additional checkpoints for first and second year of production to ensure progress is made toward Core Site Certification.
> 3 years	Shall be certified under ResponsibleSteel Core Site Certification or an interoperable certification scheme demonstrating equivalency to RS DPL3 via third-party audited interoperability assessments (e.g., third-party audited interoperability measures and joint assurance statement). ^{xvii}

Minimum verification and auditing requirements

As the system is aligned with the [ResponsibleSteel \(RS\) Production Standard](#) for emissions measurement and performance-based eligibility, the following verification and auditing requirements are informed by the assurance principles and auditing steps described in the [ResponsibleSteel Assurance Manual](#) (v2.2) to ensure auditors demonstrate a sufficient level of competency in assessing emissions performance

^{xvi} Where more than 3 years of historical production data are available, all EAC measurements shall be performed and verified under recognized certification systems. As interoperability frameworks between certification systems evolve, across both measurement and assurance, suppliers will be required to comply with applicable external requirements (e.g., a RS/LESS joint assurance statement) to meet the B&C system’s accounting and verification rules. This will enhance system credibility, enable acceptance of multiple certification frameworks, and avoid duplicative reporting requirements within the steel sector.

^{xvii} See footnote xxii.

against RS requirements. As such, producers and verifiers are not required to implement the ResponsibleSteel assurance system in full but should follow practices outlined in select sections below:

- Independent third-party verifiers:
 - Verification bodies and auditors should be approved by ResponsibleSteel (See registry of [Approved Certification Bodies](#)) who have been verified to meet ISO 17021 requirements as well as additional RS requirements on management systems, training, calibration, and demonstrated competence.
 - Where third-party verifiers are not already RS-approved, verifiers shall meet the minimum auditor requirements (ResponsibleSteel Assurance Manual, Annex 3, 1.1), as well as the specific GHG requirements (ResponsibleSteel Assurance Manual, Annex 3, 3.3./3.5).^{xviii}
- Auditing process:
 - Auditors should follow the auditing procedures under Chapter 2 “Pre-Audit Activities” and Chapter 3 “Independent 3rd Party Audit” to the extent it is relevant for GHG-only verification for the purposes of verifying supplier GHG data against the system measurement and eligibility rules. For example, some portions of the two-stage audit approach may be bypassed at the discretion of suppliers and auditors. For example, suppliers and auditors may decide that a remote review of documents and records may be sufficient (See 3.2.3.4) to meet the on-site requirements of the Stage 2 auditing requirements.
 - Auditors shall follow, at minimum, auditing specifications under the auditor’s “review of the site’s self-assessment and supporting evidence” (3.1.2) and related guidance.

Claims for non-certified suppliers

Production verified to meet GHG-only criterion or DPL3 does not constitute RS certification or recognition, as it has not been assessed against the full RS Production Standard or subject to RS’s assurance and governance procedures. Accordingly, producers shall not use RS labels, marks, or related claims on BCUs or associated physical production beyond what is explicitly permitted under the system’s BCU documentation. Guidance on appropriate use of RS marks and claims is provided in the ResponsibleSteel Claims and Logo Use Guidelines.⁵

^{xviii} See also “auditor approvals” (1.5) and “auditor qualifications” (Annex 3) for additional guidance.

6. BCU Issuance

6.1 Temporal requirement of BCU issuance

In a credible B&C system, BCUs represent environmental attributes derived from productions whose climate outcomes have been verified and audited and explicitly exclude ex-ante or forward-looking expectations that are not auditable or verifiable.

Issuance cadence

BCUs shall be issued only on a post-production basis, after the corresponding physical iron or steel product has been produced and delivered with proof of delivery. BCUs shall not be issued for future or anticipated production.

Productions associated with BCUs generating products should be audited ex-ante and shall be audited ex-post.

BCUs do not generate net climate benefits unless the associated low-emissions iron or steel product is actually used by downstream sectors (e.g., automotive, construction, etc.). Requiring production and delivery prior to BCU issuance prioritizes real-world use and ensures that climate outcomes have occurred. However, tracking iron or steel to its final use is often costly and impractical, records of sale or delivery are used as best proxies to demonstrate that low-emissions materials are utilized within the steel supply chain and displace conventional iron or steel. Acceptable evidence may include, but is not limited to, shipping records, delivery tickets, invoices, warehouse receipts, etc. Such documentation is not required to be publicly disclosed but it shall be auditable and verifiable.

Under a long-term offtake agreement for EACs, BCUs may be created after ex-ante audit and production, prior to the ex-post audit, provided that the production and its emissions performances are subsequently confirmed through recurring verification. Such verification may be conducted at the site level on a recurring basis (e.g., annual or quarterly) and shall confirm continued alignment with the assumptions and eligibility criteria established in the ex-ante audit.

Issuance timing

BCUs should be created within 24 months of the production. If not possible, the circumstances that prevents adherence to it shall be transparently disclosed in a public emissions report.

Requiring BCUs to be created within a defined period after production ensures temporal integrity that they reflect recent decarbonization and minimize the risk of issuing BCUs for production that occurred years earlier, possibly before the system or incentive existed. Within the defined period (i.e., 24 months after production occurrence), iron- and steelmakers may make their own decisions on when and at what frequency to issue BCUs.

Example of issuing BCUs for a long-term offtake agreement: A steelmaker enters into a forward offtake agreement for EACs that covers 50% of plant production, retaining 50% sold directly to local markets. In this case, within 24 months of production, the steelmaker may use quarterly verification and issuance periods. For each quarter, BCU issuance shall not exceed 50% of verified delivered production (verification at site level). The steelmaker may choose to aggregate all invoices from the period and all other required data to issue and pass BCUs from that period.

6.2 Traceability requirement for issuance

Verified and accurate information about the details of the BCUs shall be conveyed and tracked transparently in a digital registry upon issuance and must not be issued simultaneously on multiple registries.

BCUs from the same site or batch may be issued on different registries, as long as the same BCU for a single unit of product is not issued on multiple registries.

The registry record for each BCU should include all the information that is necessary to assess its eligibility status spanning across emissions performance, GHG accounting methodologies, additionality, and other criteria agreed contractually, as well as production information to assess its conformance with temporal requirements.

The following data shall be tracked in a registry upon BCU creation, but may include other components:

- Date of issuance
- Producer
- Production location
- Vintage date or period
- Date of sale/delivery
- Proof of sale/delivery
- Functional unit (iron, crude)
- Product certification (e.g., ResponsibleSteel, LESS, GSCC, CISA) or standards or methodologies that demonstrate achieving emissions performance at Responsible Steel DPL3 with aligned GHG accounting methods, scope, and boundary.
- Decarbonization technology type and relevant technical details^{xix} (More details in Appendix 11.6):
- Regulatory additionality declaration following Exhibit 1 in Section 3.3 or through assurance statement
- EPD/LCA (if available)

^{xix} Includes abatement technologies like CCS, CCU, hydrogen, renewable electricity, and bioenergy. This enables purchasers to tailor purchasing strategies to achieve specific levels of supply chain exposure to different abatement technologies.

- EPD/LCA verifier (if relevant)
- Product emissions intensity (in t CO₂e per t functional unit)
- Product scrap share
- Scrap adjusted emissions intensity (if relevant)
- Baseline emissions intensity
- Source of baseline intensity
- Baseline scrap content

The registry is used to validate and provide transparency that an EAC meets the framework eligibility but may also be used by buyers to ensure compliance with any additional preferences that are included in their individual contracts. The registry, therefore, needs to include all fields required to prove framework adherence as well as those that are most likely to be considered or tracked by buyers.

7. BCU Transfer

A transfer refers to the reassignment of a BCU or the associated right to claim, from one system User to another, often from one BCU purchaser to another. Upon transfer, the transferring entity fully surrenders its own right to claim the emissions benefits associated with that BCU. Transfers do not create new claims and do not alter the emissions profile of the BCU.

A resale is a monetary transaction where a BCU is sold after purchase, often involving a new sale price.

7.1 Transfer rules

BCUs owned solely by one claimant (without co-claims) can be transferred to any other eligible system user, provided that the transfer does not create a risk of double-claiming. Transfer rights and constraints shall be explicitly defined in the contractual agreement with the BCU Issuer and documented in the registry and shall not be amended after contract execution.

When a BCU is co-claimed, it shall not be transferred to any system users to avoid double-claiming risks.

Transfers may occur upstream or downstream and may take place multiple times prior to final retirement, as long as a single right to claim remains. Allowing transfer provides flexibility for BCU purchasers to manage demand fluctuations and facilitate large-volume BCU purchasing. However, frequent transfers or transfers for resale might inflate BCU prices, diluting effectiveness of purchasing in driving upstream production. System users should therefore limit the frequency of transfers and avoid transfers undertaken solely for resale.^{xx}

7.2 Transfer process and documentation

All transfers shall be executed through the registry and logged as discrete transactions and linked to the original BCU issuance record.

Transfer documentation shall include the following information, at minimum:

- Date of transfer
- Identity of all parties involved in the transfer
- Volume of BCUs transferred
- Confirmation that the user making the transfer has surrendered the right to claim

Registries should automatically update BCU records to reflect all transfers and current claim holders to preserve traceability. In the absence of a developed digital registry for the iron and steel sector, all parties shall clearly document all BCU transactions with the above information recorded.

^{xx} The vintage matching window proposed by this framework should already limit the potential risks of frequent transfers to some extent.

8. BCU Retirement

8.1 BCU vintage and retirement

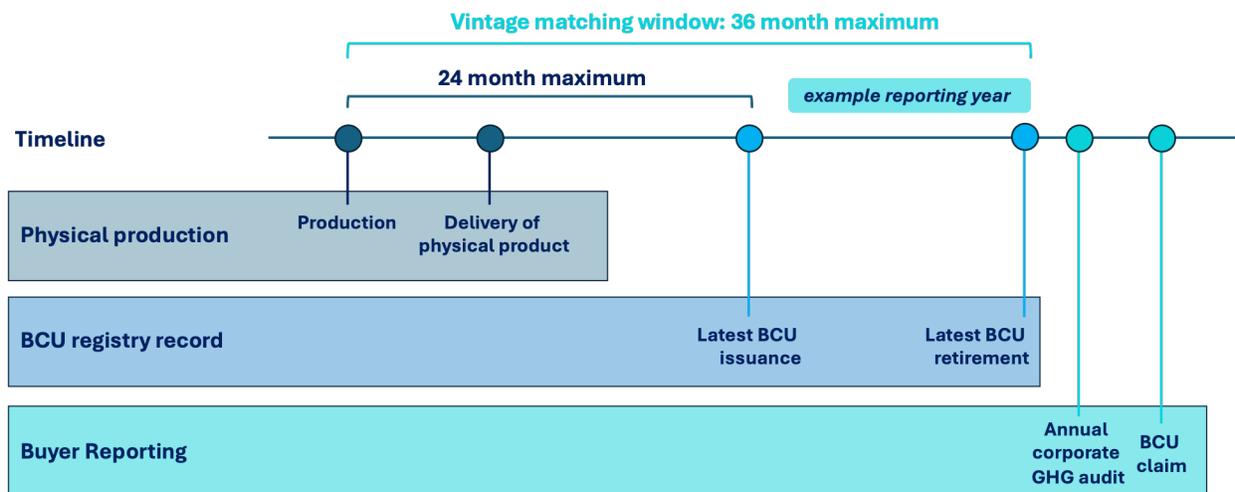
BCUs should be claimed as soon as possible after the issuance to ensure temporal alignment between production, issuance, retirement, and buyer’s reporting periods.

Claims shall be made only after retirement, within a defined vintage matching window of 36 months relative to the buyer’s reporting period and shall not rely on future production.

Vintage refers to the period during which the underlying production activity that generates the BCU physically occurs. The vintage matching window defines the allowable temporal range within which BCUs may be applied to a buyer’s reporting period for claiming purpose. For a buyer intending to claim BCUs in its 2025 steel emissions inventory, a 36-month vintage matching window limits eligibility to BCUs representing productions occurring in 2025, 2024, or 2023.

Requiring temporal alignment of BCUs for its creation and use reduces the risk that BCUs are banked and applied to reporting periods that are materially disconnected from the underlying productions, ensuring the claimed impacts reflect the actual displacement occurring in the system. It also helps preserve the value of newly deployed low-emissions technology by prioritizing demand for BCUs associated with recent production and investments over legacy attributes.

Exhibit 10 Timeline of BCU creation, vintage, and retirement



8.2 Traceability requirement of BCU retirement

BCUs shall be retired through the registry by the BCU holder, with the system record updated to document the retirement date, the entity responsible for the retirement, and where co-claiming applies, the specific copy of the BCU that is retired.

Retirement permanently removes the BCU from circulation as it designates the final use of the BCU that can no longer be retired by any other entity at that layer nor at any other time. The following information shall be transparently recorded in the registry at a minimum:

- Retirement date
- Entities who retired BCU
- Copy identifier of retired BCU (if co-claiming is involved)

9. BCU Claiming and Inventory Reporting

9.1 Allowable claims and requirements

Iron and steel BCUs should be claimed against a physical, activity-based inventory volume, using an accounting approach based on the level of inventory alignment between the BCU and the buyer's physical steel use.

To maximize product-level emissions claims and value chain association, buyers should prioritize purchasing BCUs that closely align with their physical steel use on product-type — whether the BCU corresponds to the same product family or intended application as the physical steel reflected in the inventory.

Applying BCU claims against estimated steel inventory volumes derived from spend-based data (e.g., EEIO models) should generally be avoided, given the difficulty of validating EEIO-based emission factors, the limited ability to demonstrate credible product alignment, and high risk of calculation errors due to methodological mismatches.

Allowable claims: Iron and steel BCUs shall be applied only to emissions associated with iron or steel use.

The claims may be made at entity or corporate inventory level for purposes such as emissions reporting or tracking climate progress, subject to applicable regional or program-specific rules.

BCUs shall not be used to make on-product claims or directly alter product carbon footprint in ways that would inadvertently pass on emissions attributes to parties outside the approved co-claim structure.

Corporations may apply iron and steel BCUs to emissions associated with steel use across their inventories (e.g., steel used in buildings, machinery, or purchased products) but must not apply iron and steel BCUs to emissions associated with non-steel materials or activities.

On-product claims are not allowed for making BCU claims. These include any statement, label, or disclosure applied directly to a product that communicates positive environmental attributes (e.g., “low-carbon” or “green”) or asserts product-specific emissions performance, including claims that modify or imply changes to product-level emissions intensity such as adjustments to EPDs or LCAs, or the use of BCUs to alter the emissions intensity for the project, buildings, or similar applications.

Although prohibiting such claims may limit the flexibility to directly pass on a “right to claim” to downstream customers through products or projects for cost-sharing purposes, this restriction reduces greenwashing risks by avoiding claims that suggest physical low-carbon content where none exists, and critically, preserves incentives for the offtake of physical green iron and steel coupled with their environmental attributes.

Buyers may instead share the attributes with interested supply chain partners through approved co-claiming structures. In some cases, when such risks are managed, BCU issuers may also consider contractually specifying what emissions claims their customers and suppliers can make about the products they purchase.

Steelmakers shall not claim, co-claim, or transfer iron EACs.

The system limits co-claiming and transfer of iron BCUs to prioritize the physical offtake of green iron and to encourage steelmaking with low-emissions inputs, recognizing that steelmaking is the immediate step following iron production. This approach is intended to mitigate the risk of inflating premiums for green iron through transfer (or resale) of iron BCUs and drive real demand for physical green iron and support direct investment in upstream decarbonization.

Sourcing green iron can be challenging, particularly where supply chains are not structured to accommodate new green iron production, transport is not yet economically viable, and downstream demand is still emerging. To address these constraints, steelmakers may allocate physically sourced green iron to specific steel products to generate steel EACs following the allocation rules proposed in Section 5.2 or work bilaterally with ironmakers to facilitate the sale of iron BCUs to their customers with defined terms. This ensures steelmakers can participate in the market and capture value from early action, while the system continues to prioritize the growth of physical green iron supply.

For example, a steelmaker may be unable to physically supply low-emissions steel to a customer in Location A because its green production — using green iron — occurs in Location B. In this case, the steelmaker can transfer iron-related emissions attributes to customers by generating steel EACs from Location B by allocating green iron inputs to steel products, following the proposed allocation rules, and maintaining the required iron-to-scrap ratio. In this case, the steelmaker shall not claim, co-claim, nor purchase iron BCUs.

Separate reporting: Emissions inventory with BCUs applied shall be reported separately from a complete physical inventory, with explicit reference to specific emissions scopes and categories (e.g., Scope 3 Category 1).

Communication: BCU claimants may disclose corporate-level emissions performance information that reflects the application of BCUs, provided such disclosure shall clearly state that the reported emissions outcomes are achieved through market-based mechanisms and do not apply to any specific customers.

Separate reporting of BCU-adjusted inventories preserves a clear distinction between physical emissions and market-based adjustments, consistent with the structure established by the Greenhouse Gas Protocol on Scope 2 accounting. In practice, a corporation applying BCUs to steel used in both owned buildings and purchased hardware shall report:

- (1) a Scope 3 emissions inventory disaggregated by category that reflects physical emissions with no BCUs applied; and

- (2) a corresponding Scope 3 inventory with the same category structure, in which Category 1 and Category 2 emissions are adjusted through the application of BCUs.

In public communications, the company must clearly state that the reported emissions differences are achieved by claiming steel BCUs and cannot apply to its customers.

9.2 Claim accounting method

Estimating iron-related inventory (Iron BCUs)

To claim iron BCUs, companies may first estimate the iron-related portion of their steel inventory emissions by determining the iron content of purchased steel, which requires additional data and methodological steps.

Iron content may be determined using the following data sources, listed in order from most to least representative of actual inventory emissions:

- Supplier-provided iron content, where available
- Regional default scrap shares by product family (e.g., regional LCA/EPD database, Worldsteel Eco-profile database)
- Global default scrap shares by product family (e.g., Worldsteel LCI database)

Once iron inventory volumes are estimated, companies can apply the same alignment assessment, accounting approach, and volume capping criteria set out in the following sections.

Accounting methods

Companies shall implement **direct substitution** or **enhanced substitution** approaches to applying BCUs to their physical, activity-based iron or steel inventory emissions.

For claiming iron and steel BCUs, there are two major approaches to incorporate climate performances into a company's steel-associated GHG emissions inventory. The suitability of a given approach depends on the following factors:

- Alignment with the physical steel inventory on product type
- Data availability and quality for the company's steel-related GHG emissions inventory
- Consistency of underlying assumptions of emissions measurement methodology between the BCU and the company's steel inventory

Selecting an appropriate accounting approach helps to maintain accounting integrity by preventing over-claiming, providing a transparent basis for managing risks from inventory mismatches, and ensuring consistency with accounting principles used in other sectors while addressing steel-specific nuances (e.g., scrap ratios, product families). There is also no implied hierarchy of desirability among the approaches, although direct substitution may enable more precise matching and therefore more accurate accounting outcomes.

1. Direct substitution

The direct substitution approach is appropriate where the iron or steel product represented by BCUs very closely matches the company's physical iron or steel use with respect to product type (flat or long) and emissions accounting boundary. Under this approach, the emissions intensity associated with BCUs is substituted for the emissions intensity of the matched physical inventory volume.

Downstream emissions included in an EPD shall remain included in the company's emissions inventory unless boundary adjustments or "add-on" factors are explicitly defined and justified in BCUs to allow a consistent like-for-like substitution of emissions.

To apply this method appropriately, the company should confirm that the following criteria are met:

- **Reliable product-level emissions factor:** The inventory emissions factor (e.g., EPD or high-quality generic emissions factor) is known, reliable, and based on robust product category rules with credible third-party assurance. Adjustments may be needed if significant methodological differences exist.
- **Aligned system boundaries:** The inventory emissions factor system boundary aligns with the BCU system boundary, so that claimed emissions performance reflects only the emissions within the BCU's measurement scope. The company may need to extract or adjust the upstream system boundary of an EPD to match the BCU boundary (e.g., an EPD doesn't include upstream mining emissions).
- **Product alignment:** The inventory emissions factor corresponds to the same product type represented by the BCU to ensure that reduction outcomes reflect true atmospheric benefit. Recognizing that upstream EACs may align with broader product families, this alignment can be based on broad long-flat or hot-rolled categories rather than detailed finished products.

For example, an automotive company seeks to decarbonize 10,000 tons of steel used in chassis frames during a specific reporting period. The company calculates emissions related to this volume using supplier-provided EPDs, which indicates an emissions intensity of 1.9 t CO₂e per ton of crude steel, produced in Europe with a scrap content of 20%. The company's physical steel emissions are:

$$1.9 \text{ t CO}_2\text{e/t} * 10,000 \text{ t steel} = 19,000 \text{ t CO}_2\text{e}.$$

The company purchases BCUs representing 10,000 tons of steel applicable to flat products, produced in Europe with a comparable scrap share (10%–30%), and carrying an emissions intensity of 0.8 t CO₂e per ton of crude steel. Applying the direct substitution approach, the company substitutes the BCU emissions intensity for physical steel emissions intensity, resulting in adjusted steel emissions:

$$0.8 \text{ t CO}_2\text{e/t} * 10,000 \text{ t steel} = 8,000 \text{ t CO}_2\text{e}.$$

2. Enhanced substitution

The enhanced substitution is appropriate where close product matching is not feasible (e.g., the criteria for direct substitution are not met) or when primary data for the company's physical steel inventory are

unavailable. Under this approach, net reduction emissions intensity is calculated based on the difference between emissions intensity associated with the BCUs and an appropriate baseline emissions intensity.

Because this approach works with less precise product matching, it introduces a higher risk of over-claiming. In particular, if BCUs are associated with a higher baseline emissions intensity than the baseline used for the company's physical steel inventory, the calculated total reduction outcomes could reduce reported steel-related emissions to zero or negative values. Such outcomes would not reflect the physical and methodological reality of steel production (i.e., steel production cannot achieve zero or negative emissions under current conditions).

To manage this risk and maintain inventory integrity, when the BCU baseline exceeds the company's baseline emissions intensity, an adjustment shall be applied to constrain the magnitude of claimed reduction outcomes. The adjustment to which BCUs may be applied shall be determined using one of the following methods:

- (1) BCU baseline cap: The adjusted volume is calculated by dividing the company's total steel-related emissions by the BCU baseline emissions intensity.
- (2) Total emissions cap: Buyers cap the reduction outcomes (per ton of BCU) to the total steel emissions in their inventory on a product level.

The BCU baseline cap is the preferred method, as it constrains claims to emissions within the BCU's system boundary and retains integrity of the BCUs as a product-level measurement. By contrast, the *total emissions cap* may pose credibility risks, as it allows reduction outcomes to be applied against emissions outside the BCU boundary and may result in inventory emissions intensities that fall below physically achievable levels (e.g., zero emissions). Accordingly, use of the total emissions cap shall be at the discretion of the claiming company and subject to auditor judgment. An auditor's guide will be needed to help auditors credibly assess emissions reporting and claiming for buyers applying BCUs to their emissions inventories.

For example, a consulting firm plans to decarbonize 50,000 tons of steel rebar used in its owned office buildings during a reporting period. Supplier-provided EPDs indicate an emissions intensity of 1.5 t CO₂e per ton of rebar, however, the emissions intensity specific to crude steel cannot be disaggregated. The firm therefore calculates its physical steel-related emissions as:

$$1.5 \text{ t CO}_2\text{e/t} * 50,000 \text{ t steel} = 75,000 \text{ t CO}_2\text{e}.$$

The firm plans to purchase BCUs that best reflect the rebar used in its buildings. It considers a BCU with a baseline emissions intensity of 1.8 t CO₂e/t crude steel and a low-emissions climate performance of 0.2 t CO₂e/t crude steel. Because the BCU baseline is greater than the baseline implied by the firm's inventory data, a BCU Baseline Cap must be applied to determine the claimable volume.

Using the BCU baseline cap, the maximum volume to which BCUs may be applied is:

$$75,000 \text{ t CO}_2\text{e}/1.8 \text{ t CO}_2\text{e/t} = 41,667 \text{ t crude steel}.$$

After purchasing and retiring BCUs for this volume, the firm calculates total reduction outcomes as:

$$41,667 \text{ t} * (1.8 \text{ t CO}_2\text{e/t} - 0.2 \text{ t CO}_2\text{e/t}) = 66,667 \text{ t CO}_2\text{e}$$

Thus, the firm's net steel-related emissions for the reporting period are:

$$75,000 \text{ t CO}_2\text{e} - 66,667 \text{ t CO}_2\text{e} = 8,333 \text{ t CO}_2\text{e}$$

3. Other approach for spend-based inventories

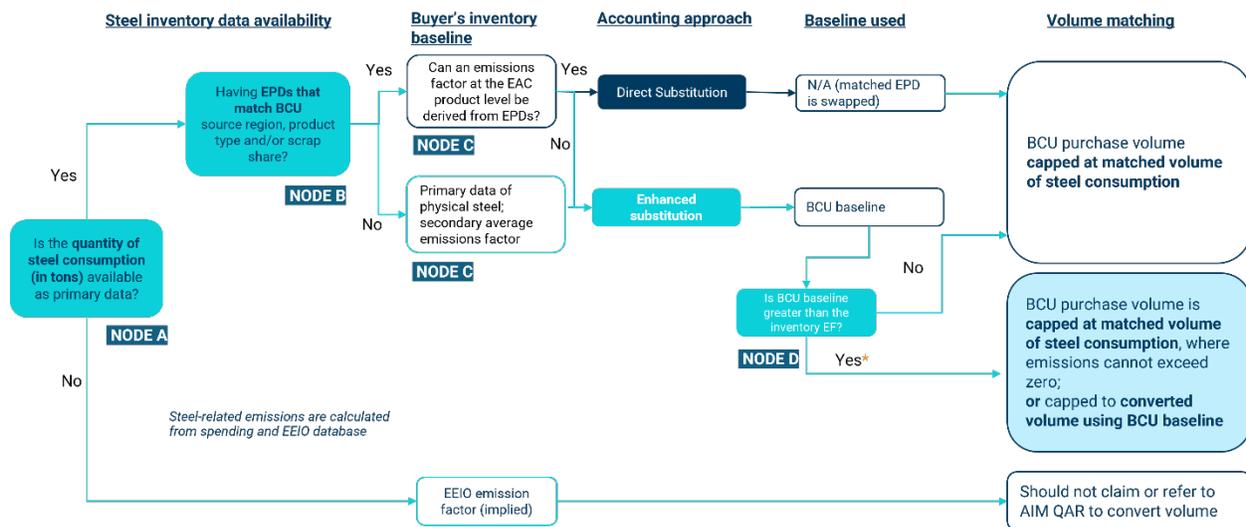
Where companies nonetheless elect to apply BCUs to spend-based inventories, they shall follow the *Activity Estimation Accounting Approach (intervention baseline approach or unit cost approach)* set out in the AIM QAR guidance to convert spending data into estimated steel volumes. A calculation example for steel value chain is provided in Appendix 11.7.

Decision tree for selecting accounting approach

To help facilitate a streamlined process for selecting an accounting approach, a decision tree is provided in Exhibit 11 for reporting companies to use. Generally it carries three-steps:

1. Assess level of inventory alignment and product matching (Node A-B)
2. Define the accounting approach based on level of alignment and data availability (Node C)
3. Assess the need to adjust the magnitude of claiming BCUs (Node D)

Exhibit 11 Decision tree for reporting accounting approaches



9.3 Co-claiming rules and documentation

Companies may co-claim BCUs with a maximum of two other value chain players, where co-claiming parties shall 1) operate in the same end-use value chain, and 2) represent distinct value-chain layers.

Allowing co-claim helps enable companies to share costs and emissions benefits of a production with other interested value chain players, thereby reducing demand barriers and encouraging broader participation and collaboration in the system. However, it should be permitted with clear safeguards to prevent double-counting risks.

Limiting BCU co-claiming to entities in different layers of the same end-use value chain aligns with Scope 3 accounting principles, under which the emissions associated with a product is typically reported by multiple organizations based on their distinct roles in a shared value chain. Consistent with this approach, co-claiming is permitted only among entities performing different functions within a value chain where physical iron or steel is, or can be, transferred. By prohibiting multiple claims by entities operating within the same value chain layer, this rule also prevents double claiming and preserves the integrity of the emissions benefits attributed to BCUs.

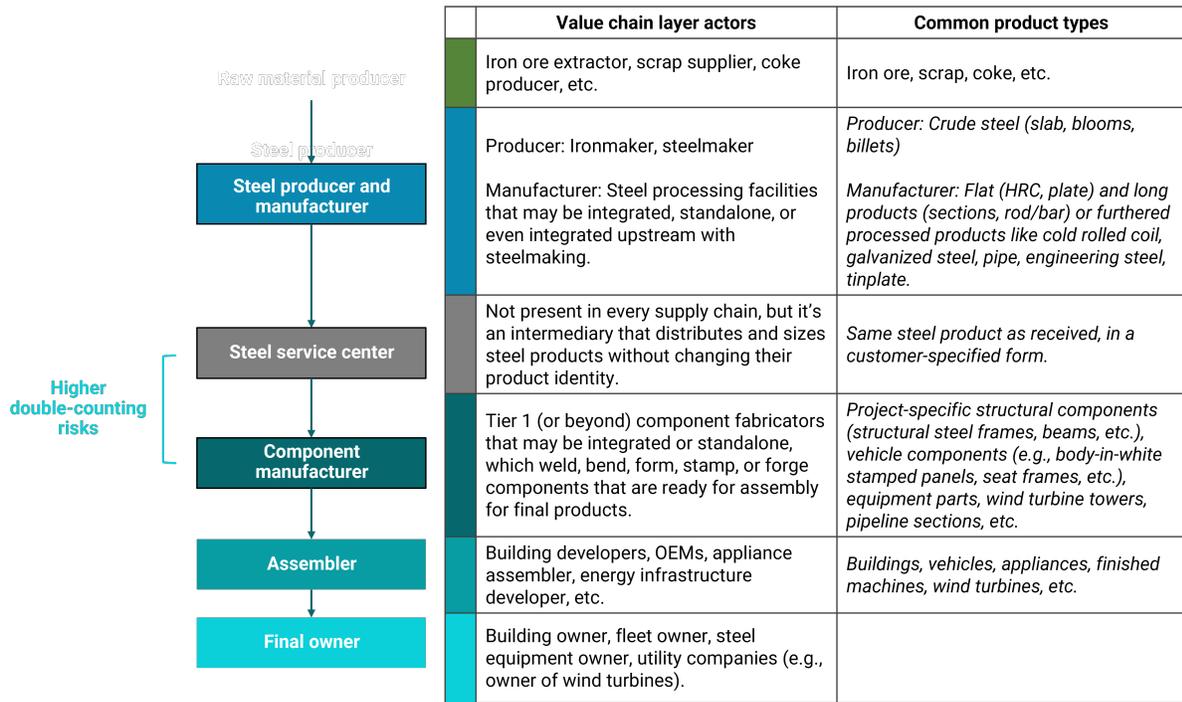
To inform which value chain layers may co-claim, BCU issuer shall disclose the end use of the physical iron or steel to the buyers in the registry record and/or contractual agreement.

A value chain layer is a distinct stage in a product's life cycle, defined by a set of actors and activities, where ownership or control of goods is transferred before moving to the next stage. A company may be considered to represent a distinct value chain layer when it performs activities that are functionally different from those of other co-claiming companies.

Because steel is used across a wide range of end uses, it is difficult to define a single generic value chain archetype that applies to all steel value chains, especially considering variation in production integration and the presence or absence of intermediaries. Exhibit 12 therefore presents a high-level, generic archetype intended to help system users identify and define value chain layers. In practice, stages such as service center and component manufacturing frequently differ across value chains. Certain layers may be absent (e.g., when an OEM sources directly from a mill and bypasses a service center), while steelmaking and steel manufacturing may be either integrated or separated across different entities (e.g., when rolling and galvanizing are performed by standalone entities). These variations make it difficult to define a single archetype that captures all value chain configurations. This framework thus groups steelmaking and subsequent manufacturing processes into a single layer to prevent potential double counting risks from entities having overlapping activities in these processes.

These divergencies increase the risk of double-counting in co-claiming. Requiring disclosure of the end use of the physical good can help mitigate this risk by narrowing the relevant supply chain for given end products (e.g., automotive steel frames vs construction beams) because it helps further specify the processing steps required for that product so that value chain layers can be more feasibly differentiated.

Exhibit 12 High-level archetype of steel value chain layers



The BCU issuer and buyers should establish a contractual agreement that clearly defines the rights to claim and transfer a given BCU and specifies the measures in place to prevent double counting. No additional right-to-claim beyond the contractual agreement shall be created or asserted.

All co-claiming arrangements shall be transparently reflected in registry records to avoid double counting and traceable pass-through to downstream customers.

The structure of the steel value chain varies by distinct supply chains, sectors and end uses, presenting credibility risks to co-claiming across non-direct suppliers and customers. To limit credibility risks and preserve market flexibility, the system permits up to three co-claims associated with a BCU. To do this, the BCU issuer and the co-claiming buyers (including primary claimant) should establish a contractual agreement, that specifies:

- Allowable extent (e.g., number of claims), but no more than three
- Types of co-claiming (e.g., distinct roles, distinct attributes, different temporal elements of BCUs)
- Identities of contractual parties and roles including responsible party for managing double-counting risks
- Requirements on subsequent transfer of co-claims
- The extent to which each party can co-claim
- Measures to avoid double claiming within the same value chain layer (e.g., contractual agreements, restricted to users in the same end-use sector)

Once the contractual agreement executes, the BCU issuer shall update the registry record that includes the following information and pass the record of BCU individually to each co-claiming party:

- Total number of claims
- Copy identifier of each claim
- Entities who currently hold the co-claim
- Value chain layers of co-claimants
- Responsible party for managing double-counting risks

The primary EAC buyer may create co-claims at the time of contract execution, including co-claims with undefined claim holders. However, once co-claimants are identified, the buyer must work with the issuer to create an updated system record that documents the final number of co-claims associated with the BCU and the identities of the co-claimants.

For example, an automotive OEM plans to purchase BCUs to mitigate the steel-related emissions in one of its vehicle models for a reporting year. Multiple companies account for and report emissions associated with steel production upstream of OEM. In this case, the OEM can partner with its tier-1 that produces body-in-white using cold rolled coil steel (component manufacturer) and a rental car company that purchases a fleet of this vehicle model (final owner) to co-claim the defined unit of steel BCU, because they share the upstream Scope 3 emissions attributable to crude steel production. These three companies occupy different positions in the steel value chain and therefore have distinct emissions accounting responsibilities for the same underlying crude steel activity.

10. Measures to Prevent Double Counting

Double counting, in this context, refers to any situation in which the same unit of environmental attribute is erroneously accounted for more than once, consistent with the AIM QAR definition. In the iron and steel value chain, double accounting can arise in the following forms:

- Double issuance, in which the same unit of climate performance results in more than one iron or steel BCU, often across different registries or schemes.
- Double selling, in which the BCU issuer sells the same unit of climate performance to more than one buyer, in addition to the BCU buyer (or co-claiming buyers), for example by selling the attribute unbundled as steel BCU through a registry while also embedding it in a physical transaction of steel.
- Double claiming, in which the same unit of climate performance is claimed by more than one company addressing the same types of emissions within comparable value chains, such as
 - both a physical and a virtual customer claiming the same unit of climate performance;
 - a customer of the virtual customer that is not a co-claimant claiming the same unit of climate performance; or
 - multiple customers at the same value chain layer claiming the same unit of climate performance.

To prevent double counting, the system establishes safeguards against double issuance, double selling, and double claiming, and these safeguards are embedded in previous sections meant to address double counting.

To avoid double issuance, where multiple BCUs are created for the same emissions outcome, the same unit of BCU shall not be issued simultaneously across multiple registries (Section 6.2).

To prevent double selling, where the same BCU is transferred to more than one buyer, all transactions must occur through a digital registry that records issuance, transfer, and retirement, with audits covering both BCU transactions and associated physical deliveries (Section 8.2).

To address double claiming — whether between physical and virtual value chains or among value-chain partners — the system requires that BCUs be retired before any claim is made, that BCU-related claims be reported separately, and that all co-claiming arrangements and transfers be transparently documented in the registry (Section 9.3). Suppliers must also ensure that physical receipts are provided with the correct default emission factor that is consistent with the baseline emissions factor used in BCU calculations (Section 10.1).

In external communications, on-product claims are not permitted, and BCUs shall not be used to alter related the steel emissions intensity of projects, buildings, or other applications in ways that could inadvertently transfer emissions attributes to parties outside the approved co-claim structure (Section 9.1).

10.1 Supplier accountability of emissions intensity for physical recipient

Suppliers that generate BCUs for all or part of a site’s production shall be responsible for ensuring that physical recipients of the associated iron or steel products apply the correct emissions intensity in their inventory reporting. At a minimum, suppliers shall implement the following measures:

- Provide a default emission factor for physical product receipts that is consistent with the baseline emissions factor used for BCU issuance. Physical recipients shall use this default factor for inventory reporting.
- Prevent inappropriate use of low-emissions claims by physical recipients. Suppliers may choose to not publicly disclose site-, product-, or corporate-level emissions intensities that could be used by physical customers to claim reduced emissions when the associated attributes have been sold as BCUs. Where emissions information is disclosed, suppliers shall include clear disclaimers indicating that the environmental attributes have been decoupled for selling or remove such intensity data from public materials.

Double counting risk may arise between physical and virtual value chains when emission factors for physical steel products are not properly adjusted or clearly communicated to physical recipients. This can occur if a physical customer uses an emission factor that still reflects the original environmental attributes (i.e., attributes not successfully stripped) or one that is inconsistent with the baseline used for BCU issuance. In many cases, these situations are not the result of intentional misrepresentation, but rather of unclear or incomplete communication. Providing clear, consistent information helps suppliers manage greenwashing risks and ensures that physical customers apply the correct emissions factors. This includes specifying the adjusted emissions factor in purchase agreements and clearly indicating in public disclosures (e.g., EPD, sustainability report, or websites) that the environmental attributes have been decoupled from the physical product.

EPDs are one of the most common disclosure tools in the iron and steel sectors. These documents are often publicly available and reflect site-level sustainability performance beyond GHG emissions. When the emissions attributes represented in an EPD have been decoupled from the physical iron or steel product, suppliers shall update the EPD to reflect the baseline default emissions factor and to clearly acknowledge that the GHG attributes have been sold, for example through the existing “notes” section or an equivalent disclosure. An additional “cover page” indicating the use of a B&C mechanism is encouraged to further improve transparency. Recognizing that this is a shared challenge across sectors, this approach is aligned with RMI’s B&C framework for the cement and concrete industry.

Fully addressing this type of risk will ultimately require broader ecosystem-level alignment between B&C with carbon accounting frameworks, particularly in how certificates interact with existing product-, site-, and corporate-level reporting and disclosures. In the meantime, this framework provides practical measures to help suppliers manage these risks and ensure that physical recipients have clear, transparent, and auditable information on the correct emissions factors to use. These measures are not

exhaustive, and continued collaboration across the value chain will be important to strengthen credibility and transparency over time.

11. Appendices

Appendix A: Glossary

Term	Definition
Additionality	Evidence that the credited emissions performance goes beyond business as usual and beyond legal requirements. <i>This framework covers regulatory, financial, and common-practice additionality.</i>
AIM QAR (Advanced and Indirect Mitigation Platform Intervention Quality, Accounting, and Reporting Standard)	Cross-sector book-and-claim guidance referenced for baseline selection, accounting approaches, and transparent reporting.
Allocation	How a steelmaker shall reflect verified low-emissions iron inputs in steel certificates when green iron is blended with other metallics.
Audits (Ex-ante/Ex-post)	Ex-ante audits review planned production and methods before issuance; ex-post audits confirm actual outcomes and eligibility against rules.
Baseline	A reference product emissions intensity used to quantify outcomes and compare claims to what would have happened otherwise.
Benchmark	An industry comparison point (often from standard-setters or associations) used to set or validate a baseline when site data is lacking.
BF-BOF (Blast Furnace-Basic Oxygen Furnace)	Conventional iron and steelmaking route with higher emissions. <i>Eligibility within this system is transitional and subject to guardrails.</i>
Book and Claim (B&C)	A chain-of-custody model in which a producer issues environmental attribute certificates (EACs) for verified low-emissions performance that can be sold separately from the physical product.
Book-and-Claim Unit (BCU)	An EAC once registered in the B&C system. <i>In this framework, one BCU equals one ton of neat, certified iron or steel at the defined functional unit.</i>
Buyer-Defined Procurement Criteria	Optional buyer requirements (e.g., hydrogen additionality and temporal matching, supplier transition plans to DPL4, performance trajectory vs. IEA NZE) that can further constrain eligibility for a specific offtake.
CBAM (EU Carbon Border Adjustment Mechanism)	A practical baseline source for iron, providing country-level default intensities for pig iron (7201) and DRI (7203). <i>Boundary adjustments may be needed to align with this framework’s method.</i>
CCS/CCUS (Carbon Capture and Storage/Utilization)	Technologies that capture CO ₂ produced during industrial processes before it enters the atmosphere. <i>In this framework, CCS and CCUS are eligible only under strict criteria.</i>
Claim	A buyer’s inventory disclosure made after retirement of the BCU. <i>In this framework, claims are limited to iron or steel emissions and must be reported separately from the physical inventory.</i>
Corporate End User	An organization that ultimately uses the final product and retires BCUs to manage Scope 3 emissions.
Co-Claiming	Sharing a certificate’s outcomes by up to three entities in different value-chain layers within the same end use sector. Requires transparent registry documentation and contractual limits to avoid double counting.
Cradle-to-Gate	System boundary for emissions measurement that evaluates the environmental impact of a product from raw material extraction to the factory gate. <i>For crude steel, this includes upstream extraction and processing through casting of crude steel; downstream processes like rolling and coating are out of scope for the crude-steel unit.</i>
Crude Steel	The first solid steel product formed from the solidification of liquid steel, prior to any refining or shaping. <i>It is the preferred steel functional unit for</i>

	<i>this system because it captures most process emissions and enables comparable claims across product families.</i>
Decarbonization Progress Levels (DPL1–4)	Performance tiers anchored in ResponsibleSteel. <i>DPL3 is the eligibility floor for this system, while DPL4 denotes near-zero performance.</i>
Direct Reduction Iron (DRI)	Low-carbon ironmaking route where iron is produced through gaseous reduction and without melting the ore.
Double Counting	Any instance where the same unit of environmental performance is used more than once. This includes double issuance (issued twice), double selling (sold to multiple buyers), and double claiming (claimed by multiple parties for the same type of emissions).
EAC (Environmental Attribute Certificate)	The unitized record of verified emissions performance issued by a producer. An EAC becomes a BCU upon issuance and can be transferred or retired independent of physical flows.
EAF (Electric Arc Furnace)	Steelmaking route (scrap-based or DRI-EAF) with significantly lower direct emissions than BF-BOF when powered by low-carbon electricity.
Electrolytic Iron	Emerging ironmaking route that can be near zero when powered by clean electricity. This route is included under the iron functional unit.
Emissions Intensity Threshold	Quantified tCO ₂ e per ton limits a site must meet to issue BCUs.
EPD (Environmental Product Declaration)	A document that communicates the results of an LCA and provides objective, transparent, and third-party verified information about the environmental performance of a product or service throughout its life cycle.
Functional Unit	The functional unit defines the base unit for the system in a B&C system and correlates to the physical product from which an EAC will be separated. <i>This framework uses a dual functional unit system of iron and crude steel, with each registered EAC corresponding to one ton of its functional unit.</i>
Hot Briquetted Iron (HBI)	DRI that has been compressed into dense briquettes while still hot.
HRC (Hot-Rolled Coil)	A steel product made from heating crude steel to high temperatures and winding into large coils. <i>This system may add this downstream product level in the future as accounting standards for downstream steps harmonize.</i>
Hydrogen-Based DRI	Primary ironmaking using hydrogen as the reductant, enabling near-zero iron and steel when paired with clean power.
Intermediary	An entity that facilitates transactions between producers and end users by purchasing, transferring, processing, or aggregating goods or associated attributes without being the original producer or final consumer.
Inventory	A quantified accounting of greenhouse gas emissions from a defined entity, activity, or geographic area over a specific time period. <i>Claims for BCU-adjusted inventories must be reflected in a separately reported inventory distinct from the complete physical inventory.</i>
Iron	Metallic units made from reducing iron ore that are used as inputs to steelmaking. <i>Recognized iron products eligible under the iron functional unit can take the form of pig iron, DRI, HBI, cast, or electrolytic.</i>
Issuance	Post-production creation of BCUs with proof of delivery.
Issuance Timing	BCUs should be created within 24 months of the associated production, with recurring verification where relevant under long-term offtake.
LCA (Life-Cycle Assessment)	Evaluates the environmental impact of a product, service, or process throughout its entire life cycle, from raw material extraction to disposal.
Market-Based Mechanism (Scope 2)	A method of accounting for a company’s electricity emissions based on the specific contractual instruments it purchases, rather than the average emissions of the local grid. <i>This framework allows the market-based approach for purchased power in emissions measurement, aligning with ResponsibleSteel practice.</i>

Net-Zero Emissions (NZE) Steel	Top-tier performance aligned with DPL4 and 1.5°C pathways, identified as “SSBP-preferred.”
Offtake Agreement	Contracts that provide forward revenue certainty to suppliers. <i>This framework allows recurring verification and issuance to align with delivery cycles.</i>
On-Product Claims	Any statement made on a physical product, product label, technical specification, EPD, LCA, invoice, or customer communication that suggests the physical product itself has lower embodied emissions or improved environmental attributes as a result of book & claim units. <i>This framework prohibits using BCUs to make on-product carbon claims or to alter product EPDs/LCAs, to avoid misleading physical customers and preserve incentives for physical green steel.</i>
Permanence (for CCS/CCUS)	The requirement that any CO ₂ captured through CCS/CCUS must be securely and durably stored for the long term, with a very low risk of future release.
Process Gas/Waste Heat Crediting	A set of accounting rules that determine how to treat the emissions effects of using by-product process gases (e.g., coke oven gas, blast furnace gas, basic oxygen furnace gas) and recovered waste heat from integrated steel sites so that Book-and-Claim measurements remain fair and comparable across different production routes and site configurations.
Proof of Delivery	Evidence that the physical product was produced and delivered prior to BCU issuance.
Registry/Registry Rulebook	The digital platform and rules used to issue, transfer, and retire BCUs. Records must include key fields (producer, location, vintage, intensity, scrap share, baseline, etc.), and the same BCU must not be issued on multiple registries.
Retirement	Permanent removal of a BCU from circulation recorded in the registry. Only retired units can be claimed.
Route-Specific Criteria	Additional safeguards by technology route (e.g., BF-BOF time limits, CCS permanence, biomass restrictions, methane leakage guardrail) to ensure transition alignment and avoid fossil lock-in.
Separate Reporting	BCU-adjusted inventories are reported separately from the physical inventory and clearly labeled by scope and category.
Scope 3	Indirect greenhouse gas emissions that occur in a company's value chain. <i>Where physical procurement is limited or complex, B&C helps buyers address upstream iron/steel hotspots in Scope 3 inventories via verified attributes.</i>
Scrap Share	The proportion of total metallic inputs in steelmaking that comes from recycled scrap rather than virgin metallic units. <i>This is a key driver of emissions intensity as thresholds, baselines, and adjustments are scrap-variable and should match displaced products as closely as possible.</i>
Sliding Scale	The scrap-adjusted gradient used to set route-neutral thresholds and baselines across iron vs. steel and flat vs. long families.
SSBP (Sustainable Steel Buyers Platform)	A buyers’ group accelerating steel decarbonization through collaborative procurement and market action in the iron and steel sectors. <i>The B&C framework emerged from SSBP’s procurement work.</i>
Standards Interoperability	Effort to harmonize methods and thresholds across steel programs (e.g., RS, LESS, GSCC, CISA).
Steel Value-Chain Layers (for Co-Claiming)	High-level stages from steelmaking to manufacturing and end use that are used to ensure that co-claimants occupy different layers to avoid double counting.

Steel Standards Principles (SSP)	A set of internationally endorsed principles launched at COP28 that aim to harmonize how greenhouse gas emissions are measured, reported, and verified across the global iron and steel sector.
System Boundary	Defines which emissions sources are included when calculating the emissions intensity of a product.
System Expansion	An emissions-accounting method where the system boundary is enlarged to include the alternative processes that would have occurred if a by-product, co-product, or energy flow were not used. <i>This framework uses the system expansion approach for treating process gas/waste energy uses and other boundary interactions to keep EAC measurements comparable across sites and routes.</i>
Transfer	Reassigning the right to claim a BCU from one user to another. <i>Co-claimed BCUs cannot be transferred under this framework. All transfers must be logged, and the transferor surrenders claim rights.</i>
Transition Alignment	Technology-specific checks ensuring eligible units are compatible with 1.5°C pathways and do not entrench high-emitting assets.
Upstream Methane Leakage (Threshold)	Guardrail that upstream gas leakage should aim to be $\leq 0.2\%$ where applicable.
Verification	Independent, third-party evaluation of actual production data to confirm that the emissions performance, process conditions, and eligibility requirements reflected in a book-and-claim unit (BCU) are accurate, correct, and compliant with the framework's rules.
Vintage	The production period of the underlying iron/steel activity that a BCU represents that governs when it can be matched to a buyer's reporting year.
Worldsteel LCI	Referenced route averages and life-cycle inventory alignment provided by the World Steel Association used in baselining and methodological interoperability.
SSBP-Preferred Designation	Label applied to DPL4/near-zero production to signal leadership and help buyers prioritize first-of-a-kind volumes.

Appendix B: Pathways to HRC-unit BCUs

The sliding-scale threshold can be extended to HRC level in line with *mutual recognition efforts between sliding scale classification standards*. To maximize supplier flexibility and choice across existing certification systems, the B&C system will need to expand to allow suppliers to generate steel EACs at either the crude or HRC functional units and make accounting adjustments where necessary to align with the Responsible Steel emissions accounting methodology.

In the near term, suppliers seeking to verify an HRC product against the established threshold should measure and verify the HRC product up to the crude product level, using RS product-level accounting rules to enable verification for eligibility and BCU generation. As mutual recognition and accounting harmonization efforts evolve between sliding scale standards, producers will be permitted to use interoperable, DPL3-aligned thresholds at the HRC-product level across harmonized classification systems.

If product is already or intends to be certified under an HRC-level standard, supplier must make necessary modifications to evaluate against the RS standard in line with the system's eligibility rules (measurement, threshold). To do this, suppliers must generate a crude BCU using RS accounting rules, or generate an HRC BCU using harmonized HRC-level accounting rules once they are finalized by sliding scale performance standards.^{xxi} While mutual recognition work is ongoing, an equivalent HRC emissions intensity may be derived using default emissions intensity for product-specific downstream processing steps.

^{xxi} *Measurement rules have not yet been made consistent between HRC benchmarks and steel production emissions frameworks, which limits comparability for properly verifying performance (EAC eligibility) and baselining (EAC claims).*

Appendix C: Standards interoperability, harmonization and equivalency claims

Distinct GHG measurement frameworks and certification standards in the steel sector creates inefficiencies in procurement and trade, weakens credibility of claims, and delays progress to decarbonization. This has led to emerging efforts to increase alignment and interoperability between frameworks and standards, where alignment and conversion tools are under development to enable thorough comparisons between accounting rules that can support, on a case-by-case basis and with mutual assurance and governance guardrails, equivalency claims between classification systems.

This will provide greater flexibility for suppliers who already (or are planning to) measure and report emissions criteria under GHG accounting methodologies and standards that differ from those of ResponsibleSteel, including LCAs, PCRs, or other certification systems (LESS, GSCC, CISA, etc.). Note that the RS GHG accounting rules do not vary significantly from the World Steel GHG accounting rules, and limited data adjustments may be required.

Depending on the level of alignment with RS GHG criterion, producers may be required to **source/provide additional data** to convert existing emission metrics to allow consistent assessment against the system's emissions performance threshold (i.e., RS Decarbonization Progress Level 3). The technical conversion project under development by RS and others will support producers in identifying differences in accounting methodologies, evaluate the need for additional data inputs, and transform existing GHG data to suitable measurements for verification against the systems emissions threshold. Additional data inputs or calculation adjustments to conform with the ResponsibleSteel GHG accounting rules might include:

1. Source of upstream default emissions factors
2. Use of market-based mechanisms for sourcing renewable energy
3. Emissions accounting boundary
4. Treatment of process gas and waste heat (e.g., application of system expansion)
5. Any allocation of input metallics, fuels, or energy

As standards interoperability and harmonization efforts evolve, the system may align with and leverage the harmonized GHG accounting rules, tools, and assurance procedures.

Appendix D: Iron Benchmark data sources

The four options available (or potentially available) for setting iron baseline are compared in Exhibit D1. with additional information:

- 1) CBAM Country-level pig iron and DRI [Default Values](#) (2023, 2025)
 - Accessible from: 2023 [JRC134682_01.pdf](#) or 2025 [Implementing regulation - EU - 2025/2621 - EN - EUR-Lex](#).
 - Relevant product code:
 - 7201 includes pig iron and spiegeleisen in pigs, blocks, or other primary forms.
 - 7203 includes ferrous products obtained by direct reduction of iron ore and other spongy ferrous products, in lumps, pellets, or similar forms; iron having a minimum purity by weight of 99,94%, in lumps, pellets, or similar forms).
 - Measurement Methodology:
 - Annex IV of Article 7 of EU Regulation 2023/95.
 - System boundary,⁶ data source,s and averaging rules (See [1.1 Geographical Scope](#), where “Only input materials listed as relevant to the system boundaries of the production process as specified in the implementing regulation adopted pursuant to Article 7(6) are to be considered”).
- 2) [CRU](#) Group iron data at regional level (under subscription)
 - Industry-leading data tool across commodity value chains in metals and mining sectors, in order to compare emissions across assets, projects, and regions.
 - Data is available by subscription to CRU’s Emission Analysis Tool and web-based DataLab platform.
 - Methodology underpinned by standards (GHGp) and calibrated to industry accredited schemes (EU ETS, worldsteel, and International Aluminum Institute).
- 3) RS reference values to derive **global iron-level benchmark** (PL1 proxy of **2.45 t CO₂/t iron**; based on difference from 2.8 at 0% scrap to 0.35 at 100% scrap).
- 4) Worldsteel production data to develop **country/regional iron benchmark** (including deriving pig iron emissions from BF-BOF and may require adjustment to account for system expansion).

Exhibit D1 Comparison of available data sources for iron benchmarking

DATA SOURCES	IRON PRODUCT	EMISSIONS COVERAGE	GEOGRAPHIC COVERAGE	VALUE RANGE
CBAM	DRI, Pig Iron	Direct and indirect, not including iron ore mining, coal extraction and processing, or natural gas extraction	33 countries	1.11(Canada)–4.2 tCO ₂ /t iron (India)
CRU GROUP	Pig Iron	Scope 1 and 2, where boundaries differ by site (e.g., charcoal kilns, coke plants, charcoal kilns, and sinter plants)	4 countries: Ukraine (Sinter-based), Russia (Pellet-based), US, (Pellet-based), Brazil (Charcoal-based)	1.47 (US)–1.77 (Ukraine)

WORLD STEEL	DRI, Pig Iron	Cradle-to-gate, up to ironmaking	Iron-level benchmarks would be derived from production emissions data or existing published product family benchmarks (pending validation).
RESPONSIBLE STEEL	Proxied (ore-based metallic)	Cradle-to-gate, up to ironmaking (Proxy)	Global iron-level benchmark proxied from ResponsibleSteel Decarbonization Progress Level 1 using the following calculation, pending validation: $(a - b) * c$ <i>Where a = PL1 ResponsibleSteel crude steel GHG emissions intensity performance using 0% scrap as input (ton CO₂e/ ton crude steel)</i> <i>Where b = PL2 ResponsibleSteel crude steel GHG emissions intensity performance using 100% scrap as input (ton CO₂e/ ton crude steel)</i> <i>Where c = Assumed iron-to-steel conversion rate</i>

Appendix E: Responsible Steel Decarbonization Progress Level Gradients

Exhibit E1 Responsible Steel Decarbonization Progress Level Gradients for Scrap Adjustment

	b: ResponsibleSteel crude steel GHG emissions intensity performance using 0% scrap as input (tonne CO ₂ e/ tonne crude steel)	m: gradient	ResponsibleSteel crude steel GHG emissions intensity performance using 100% scrap as input (tonne CO ₂ e/ tonne crude steel)
ResponsibleSteel Decarbonisation Progress Level 1	2.80	2.30	0.50
ResponsibleSteel Decarbonisation Progress Level 2	2.00	1.65	0.35
ResponsibleSteel Decarbonisation Progress Level 3	1.20	1.00	0.20
ResponsibleSteel Decarbonisation Progress Level 4	0.40	0.35	0.05

Appendix F: Abatement Technology and Criteria

In registry upon BCU creation, suppliers shall label products according to the abatement technologies used based on the thresholds and definitions:

- Carbon capture and storage — Where steelmaking processes continue to be based on carbon-containing fossil fuels, but the resulting emissions are captured and stored permanently in geological formations.
- Carbon capture and use — Same as above but where the captured emissions are used to produce an alternative carbon-containing product (e.g., methanol) or replace current applications of carbon dioxide (e.g., enhanced oil recovery).
- Renewable hydrogen — Where steelmaking processes shift to use hydrogen produced through electrolysis powered renewable electricity.
- Renewable electricity — Where steelmakers use renewable electricity (e.g., solar and wind) directly within the steelmaking process (e.g., electric arc furnace, rolling mills, etc.).
- Bioenergy — Where fossil fuels are replaced by drop-in alternatives produced from biomass (e.g., charcoal).

Exhibit F1 Abatement technology list and definitions

Abatement Technology	Definition
Carbon capture and storage	Applies where a carbon capture system designed for capturing >50% of the emissions (on a point source basis) is deployed either at the site where ironmaking or steelmaking occurs or at the site where fuel is produced and subsequently used in ironmaking (e.g., production of hydrogen via steam methane reforming). The resulting carbon dioxide stream must be permanently stored in a geological reservoir not associated with active oil production.
Carbon capture and use	Applies where a carbon capture system designed for capturing >50% of the emissions (on a point source basis) is deployed either at the site where ironmaking or steelmaking occurs or at the site where fuel is produced and subsequently used in ironmaking (e.g., production of hydrogen via steam methane reforming). The resulting carbon dioxide stream is used to either manufacture a carbon containing product (e.g., methanol, concrete cured with CO ₂) or replace an existing use of carbon dioxide (e.g., enhanced oil recovery).
Renewable hydrogen	Applies where renewable hydrogen supplies >20% of the energy needed for iron ore reduction or where >50% of energy needed for heat in a duty separate to iron reduction (e.g., pelletization, hot-rolling, etc.). Renewable hydrogen is defined as hydrogen produced through the electrolysis of water with electricity either supplied directly from renewable energy or via the grid coupled with a project-specific market-mechanism to procure renewable energy (e.g., power purchase agreement, utility green tariff, etc.).
Renewable electricity	Applies where renewable electricity supplies >50% of the electricity demand at the site of ironmaking or steelmaking. Renewable electricity is either supplied directly from renewable energy or supplied via the grid coupled with a project-specific market-mechanism to procure renewable energy (e.g., power purchase agreement, utility green tariff, etc.).
Bioenergy	Applies where bioenergy supplies >20% of the energy needed for iron ore reduction or biomass supplies >50% of the energy needed for heat in a duty separate to iron reduction and in the steelmaking process at the site (e.g., hot-rolling, melting scrap, etc.). Biomass is supplied from bioenergy coupled with sustainable biomass verification ¹⁹ (e.g., biomass feedstock's impact on sustainable land use).

Appendix G: Example for claiming BCUs for spend-based inventory

Baseline Selection

Both the *activity estimation method* and the *enhanced substitution method* in accordance with AIM require the selection of a “product intervention baseline” according to Appendix D of the QAR. Two options are available for baseline selection:

Activity Estimation Methods

The AIM QAR allows for two activity estimation methods: the intervention baseline method and the unit cost method. Method selection is to be made at the discretion of the company, with no preference towards either method.

Example: Intervention Baseline Method

An appliance manufacturer wants to address emissions associated with crude steel in its purchased goods and services during a reporting period. The company spent **\$US1 million on crude steel** in 2025 and uses an EEIO emissions factor for the iron and steel sector of **0.001756 t CO₂e/US\$** to estimate these emissions.

The company calculates its steel-related spend-based emissions as:

$$0.001756 \text{ t CO}_2\text{e/US\$} * \text{US\$}1,000,000 = \mathbf{1,756 \text{ t CO}_2\text{e}}$$

To estimate the crude steel volume associated with these emissions, the company selects a baseline crude steel intensity of **2.3 t CO₂e/t crude steel**. The company uses this baseline intensity to estimate the total volume of crude steel as:

$$1,756 \text{ t CO}_2\text{e} / (2.3 \text{ t CO}_2\text{e/t crude steel}) = \mathbf{763.5 \text{ t crude steel}}$$

Based on this estimated volume, the company purchases BCUs with an intensity of **0.4 t CO₂e/t crude steel** for **600 t of crude steel**.

After purchasing and retiring BCUs at this volume, the company calculates emissions after applying the intervention as:

$$(0.4 \text{ t CO}_2\text{e/t} * 600 \text{ t}) + (2.3 \text{ t CO}_2\text{e/t} * (763.5 - 600) \text{ t})$$

$$= 240.0 \text{ t CO}_2\text{e} + 376.05 \text{ t CO}_2\text{e}$$

$$= \mathbf{616.05 \text{ t CO}_2\text{e}}$$

The company reports its net steel-related emissions as 616.05 t CO₂e for this reporting period (compared to 1,756 t CO₂e without intervention).

Example: Unit Cost Method

An appliance manufacturer wants to address emissions associated with crude steel in its purchased goods and services during a reporting period. The company spent **US\$1 million on crude steel** in 2025

and uses a **2022 EEIO model**. Because the EEIO model is based on the value of a dollar in 2022, the company adjusts its spend to the EEIO reference year using the Producer Price Index (PPI).

Given that:

$$\text{PPI (2022)} = 301$$

$$\text{PPI (2025)} = 285.55$$

The price change between 2022 and 2025 is:

$$(285.55 - 301) / 301 = -5.13\%$$

To use the 2022 EEIO model, the company must convert their 2025 spend into 2022 spend, making its 2022 spend equivalent to:

$$\text{US\$1,000,000} / (1 - 0.0513) = \text{US\$1,054,074}$$

The company finds a unit cost proxy of US\$900/t crude steel (2022 US\$) to estimate its crude steel volume as:

$$\text{US\$1,054,074} / (\text{US\$900/t crude steel}) = \mathbf{1,171.2 \text{ t crude steel}}$$

To estimate emissions, the company selects a baseline crude steel intensity of **2.3 t CO₂e/t crude steel**. It also purchases BCUs for **600 t crude steel** with an emissions intensity of **0.4 t CO₂e/t crude steel**.

Emissions associated with the BCUs purchased are:

$$0.4 \text{ t CO}_2\text{e/t} * 600 \text{ t} = \mathbf{240 \text{ t CO}_2\text{e}}$$

Remaining emissions for the portion not covered by BCUs are:

$$2.3 \text{ t CO}_2\text{e/t} * (1,171.2 - 600) \text{ t}$$

$$= 2.3 \text{ t CO}_2\text{e/t} * 571.2$$

$$= \mathbf{1,313.76 \text{ t CO}_2\text{e}}$$

Without any intervention, the emissions associated with the company's inventory would be:

$$2.3 \text{ t CO}_2\text{e/t} * 1,171.2 \text{ t} = \mathbf{2,693.76 \text{ t CO}_2\text{e}}$$

The company reports its net steel-related emissions as 1,313.76 t CO₂e for this reporting period (compared to 2,693.76 t CO₂e without intervention).

Endnotes

¹ Martin Theuringer et al., Rulebook for the Classification System of the Low Emission Steel Standard (LESS), version 1.1, LESS, 2025, <https://lowemissionsteelstandard.org/downloads>

² What are Ore Based Metallics (OBM's)?, International Iron Metallics Association, <https://www.metallics.org/resources/>

³ Ali Hasanbeigi, Steel Climate Impact 2025: An International Benchmarking of Energy and GHG Intensities, Global Efficiency Intelligence, 2025, <https://www.globalefficiencyintel.com/steel-climate-impact-2025-an-international-benchmarking-of-energy-and-ghg-intensities>

⁴ Fundamentals for GHG Emissions Accounting and Classification, ResponsibleSteel, 2025, <https://www.responsiblesteel.org/emissions-accounting-classification>

⁵ Claims and Logo Guidelines for the ResponsibleSteel International Standard, ResponsibleSteel, 2025, <https://www.responsiblesteel.org/resources/claims-and-logo-use-guidelines>

⁶ Commission Implementing Regulation (EU) 2023/1773 of 17 August 2023 laying down the rules for the application of Regulation (EU) 2023/956 of the European Parliament and of the Council as regards reporting obligations for the purposes of the carbon border adjustment mechanism during the transitional period, Official Journal of the European Union, 2023, https://eur-lex.europa.eu/eli/reg_impl/2023/1773/oj/eng