Book and Claim Framework for the Iron and Steel Sector

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The individuals and organizations participating in working group discussions and peer review are not responsible for the opinions or conclusions expressed in this document. 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 Google 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

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Executive Summary

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 buyers and producers flexibility as the market evolves. Eligibility is anchored in performance thresholds that 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 sets 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, 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

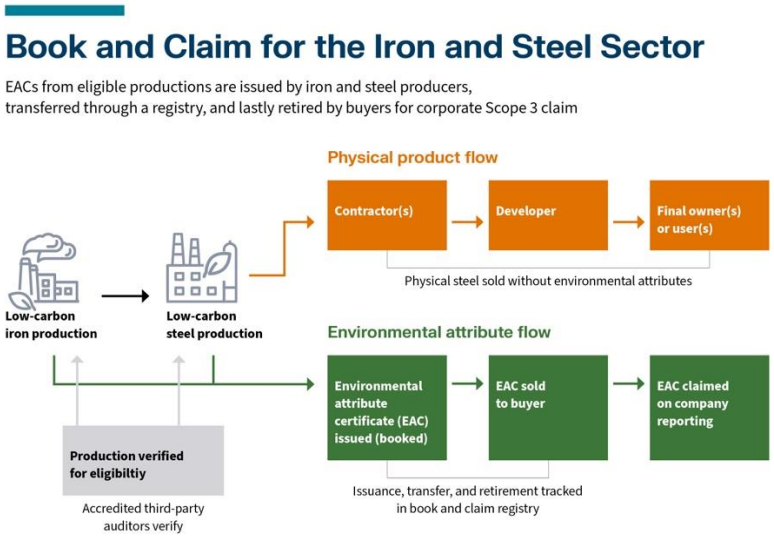
The iron and steel industry accounts for roughly 11% of global greenhouse gas (GHG) emissions, making it the single largest industrial emitter. While technologies such as hydrogen-based direct reduced iron (H2-DRI) and near-zero emissions ironmaking are technologically viable, their deployment remains 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. In this way, 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 that separates a product's verified environmental attributes (e.g., emissions performance) from the physical flow of material. A producer of a low-carbon product may issue an *environmental attribute certificate* (EAC), which a buyer may purchase and apply to an eligible inventory even when the physical product is outside the buyer's physical value chain. More information on different chain-of-custody models can be found in ISEAL Chain of Custody Models and Definitions v2 (2025).[1]

Exhibit 1

Illustrative book-and-claim model of the iron and steel sector



For iron and steel producers, B&C enables the monetization of low-emissions steel production without requiring physical delivery to certificate buyers. By connecting producers with a broader pool of customers beyond local or immediate options, including downstream buyers with ambitious climate goals and higher willingness to pay, B&C can strengthen demand signals and provide the offtake certainty needed to support investment and scale.

For buyers, B&C enables demand to be aggregated across projects, regions, and product types without disrupting existing procurement or logistics. It also allows buyers to address upstream Scope 3 emissions where direct procurement of deeply decarbonized iron and steel is stymied by limited supply, long and complex steel value chains, or limited control over supplier intermediaries.

Credible implementations require clear eligibility criteria, robust verification, transparent tracking, and unambiguous rules for issuance, transfer, and retirement. These safeguards are necessary to prevent double counting, ensure climate integrity, and build 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

RMI launched the Sustainable Steel Buyers Platform (SSBP) in 2023 to help corporations in steel-intensive sectors translate ambitious climate commitments into real purchasing potential for low-emissions iron and steel.[2] During the platform's inaugural procurement process, a decoupled market mechanism emerged as a promising complement to direct procurement. The Steel B&C initiative was subsequently developed to establish the credible market rules and governance that are critical to operationalizing this approach.

The framework was informed by an Advisory Group of prospective buyers and a Working Group of approximately 20 organizations representing producers, buyers, technical experts, academics, industry associations, and other stakeholders across the steel value chain.

These groups met monthly to provide technical input on key design elements, 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.

A draft framework was then released for public consultation in April 2026. More than 20 organizations submitted written feedback on the full body of the framework. Comments further tested the same core

design elements discussed with the Advisory and Working Groups. This feedback was reviewed and used to inform the revisions reflected in this document.

1.4 Interaction with the broader ecosystem

This framework was developed with consideration of ongoing work by major standard-setting bodies, including the Science Based Target Initiative (SBTi), the Greenhouse Gas Protocol (GHGP), and the ISO Chain of Custody standards. While detailed guidance, particularly for Scope 3 accounting, remains under development, this framework provides interim guidance for near-term market activity.

The design also draws on established B&C applications in sectors, such as sustainable aviation fuel,[3] and on emerging approaches in other hard-to-abate sectors, such as cement and concrete. Key references include the Roundtable on Sustainable Biomaterials (RSB) Book & Claim Manual and the AIM Platform Standard and Guidance,[4] henceforth referred to as the "AIM Standard."

The framework is intended to complement and remain interoperable with existing steel-sector standards and initiatives. It draws on established product-performance definitions, existing sectoral datasets, and currently available emissions baselines. Although existing steels standards use different accounting methodologies and transition pathways, ongoing harmonization efforts (Steel Standards Principles) are improving interoperability.[5] The framework supports these efforts and should evolve with them.

1.5 Guiding design principles

The framework is guided by several core principles, aiming to be:

- **Credible** from an environmental standpoint, delivering high-integrity emissions outcomes;
- **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; and
- **Aligned** with core principles for standards development and B&C systems, including those of ISEAL, the AIM Platform, and the Book and Claim Community for Transport

Two safeguards apply throughout the framework:

- **No double counting**: Clear rules ensure environmental attributes are booked and claimed only once, supported by robust tracking and retirement.
- **Additionality**: Climate impact is demonstrated beyond business as usual, including both financial and regulatory additionality.

1.6 How to use this document

This document provides guidance to certificate suppliers, buyers, value chain partners, and other market participants on the credible issuance, transfer, and retirement of book and claim unit certificates in the iron and steel sectors.

It **is currently not a normative standard.** Rather, it is intended 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 organized around the core elements of a steel B&C system. Each section presents proposed rules, supporting rationale, and illustrative use cases to explain key design choices and implementation considerations.

Throughout this document, normative language is used to convey the level of expectation associated with each provision:

- **Shall** or **must** indicates a requirement;
- **Should** indicates a recommended practice;
- **May** indicates a permitted or allowed option; and
- **Can** and **cannot** describes whether an action is feasible under specified conditions.

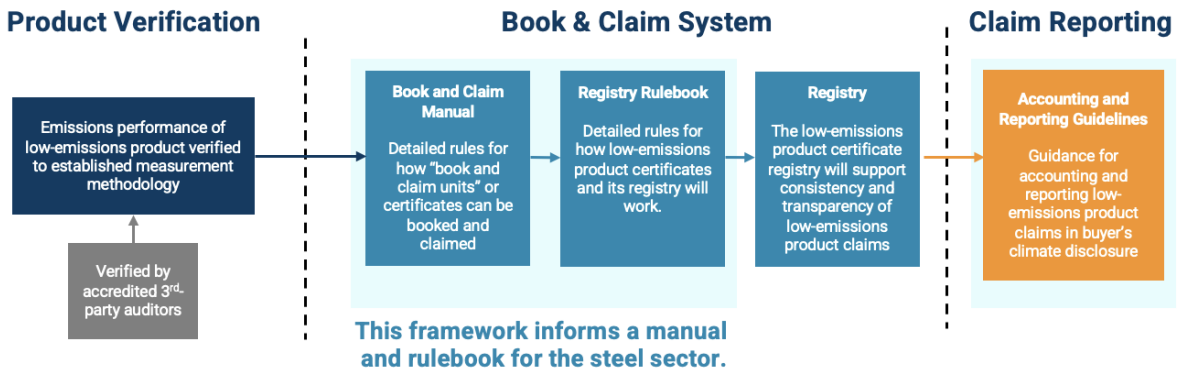
2. Scope of This Framework

2.1 Scope

A functioning B&C system requires three interdependent components (Exhibit 2):

Exhibit 2

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



- **Product verification requirement**: A clear climate performance measurement methodology, supported by third-party verification, that confirms that emissions performance of eligible iron and steel products is calculated using a consistent measurement methodology.
- **B&C system infrastructure**: A system manual and registry rulebook, implemented through a governed digital registry, that securely manage 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 to account for and communicate claims in corporate climate reporting.

2.2 Functional unit

The functional unit defines the physical product from which an EAC is separated and determines the emissions boundary and entity eligible to generate the EAC. **Once registered, each EAC becomes a book-and-claim unit (BCU), representing one ton of verified iron or steel.**[i]

This framework uses **a dual functional unit system** so 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 produced for the purposes of steelmaking, including but not limited to 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.

This dual-functional unit approach supports direct investment in the low-emissions ironmaking stage, where transformative technology shifts are most critical, while maintaining alignment with existing steel standards. 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, stand-alone 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 steel, the current functional unit is at the crude level. This boundary captures 88% of total production emissions,[6] including ironmaking, sintering, coke-making, etc., while excluding downstream processes such as hot rolling, cold rolling, coating, annealing, or galvanizing. Using crude steel provides a common production stage across steel products, simplifies inventory matching by avoiding the need to align claims with specific finished products, and supports comparability across steel BCUs. It also aligns with ongoing sectoral efforts to harmonize production emissions accounting methodologies at the crude steel level.[ii]

The system may expand the steel functional unit to hot-rolled products. This would better reflect common procurement practices and include emissions from the additional fossil-fuel-intensive processes in the supply chain (e.g., reheating furnaces). Expansion will depend on sufficient interoperability in

[i] EAC-generating suppliers may also reference general specifications for iron and crude steel products, such as General Specifications for Ore Based Metallics by International Iron Metallics Association, https://www.metallics.org/wp-content/uploads/2024/08/IIMA_OBM_Factsheet_1_What_Are_OBMs.pdf.

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

downstream emissions accounting and performance thresholds for downstream processing steps of steel products (see Appendix B).

2.3 Eligible system users

The system is intended for organizations that seek to credibly issue, transact, and claim BCUs. Each user role has defined permissions and claiming rights to promote transparency and prevent misrepresentation.

- **Iron producer:** Produces iron products such as pig iron, direct reduced iron (DRI), hot-briquetted iron (HBI), or electrolytic iron. May register, hold, and transfer iron BCUs.
- **Steel producer:** Produces crude or finished steel products via blast furnace-basic oxygen furnace (BF-BOF), EAF, or DRI-EAF routes. May register, hold, and transfer steel BCUs and, where permitted under Section 8.3, co-claim iron BCUs with a value chain participant or corporate end-user.
- **Value chain participant:** Facilitates the manufacturing, fabrication, aggregation, specification, or deployment of steel products without producing the primary material or materially altering its emissions intensity. This may include fabricators, contractors, OEMs, constructors, and building developers that operate *between* primary production and final use and may influence purchasing or deployment decisions. They may hold, transfer, and retire iron and/or steel BCUs and make Scope 3 claims associated with retired units in accordance with system claims rules.
- **Corporate end-user:** Uses iron or steel in end-products, equipment, buildings, or infrastructure and accounts for the associated Scope 3 emissions. May hold, transfer, and retire iron and/or steel BCUs and make Scope 3 claims associated with retired units consistent with system claims rules.
- **Auditor**: Provides independent assurance of compliance. May access registry information for verification, but may not register, hold, transfer, or retire BCUs.
- **Verified input supplier:** Supplies decarbonization inputs (e.g., biochar, hydrogen, alternative reductants, etc.) without operating the facility that generates the BCUs. May access relevant registry data and facilitate transactions, but not register, hold, transfer, or retire BCUs.
- **Market infrastructure provider**: Supports operation of the system without producing, using, or claiming iron and steel BCUs. This may include registry operators and standards developers. May access registry data and facilitate transactions within its designated role, but not register, hold, transfer, or retire BCUs.

3. Eligibility Criteria for BCU Issuance

Eligibility criteria establish the environmental integrity of BCUs and market confidence in their use. Unless otherwise specified, the criteria apply at the production-site level to ensure that BCUs represent the deployment of meaningful decarbonization measures within a product's underlying technology route.

3.1 Emissions intensity threshold

The system defines the maximum emissions intensity thresholds, expressed as tons of carbon dioxide equivalent (tCO_2e) per ton of BCU, for eligible iron and crude steel production. The thresholds are based on a scrap-variable sliding scale system (Exhibit 3).

Ironmaking and steelmaking site-generating EACs shall meet the following emissions-intensity thresholds:

- Crude steel: ≤ **0.2–1.2 tCO_2e/t crude steel**, depending on a 0%–100% scrap share of metallic input. Sites or products achieving **≤0.05-0.4 tCO_2e/t crude steel** may be designated "Near-Zero Aligned." Reported emissions intensity in BCU documentation must be accompanied by disclosure of scrap share to support verification.
- Iron: ≤ **0.87 tCO_2e/t iron**, with at least 90% iron (Fe) content. Sites or products achieving **≤ 0.30 tCO_2e/t iron** and at least 90% iron content may be designated "Near-Zero Aligned." Reported emissions intensity in BCU documentation must be accompanied by disclosure of %Fe metallic and %Fe content to support verification. Where an iron BCU's iron content exceeds the minimum iron-content requirement, producers may choose to verify eligibility against a product-specific threshold derived from the methodology in Appendix C.

The system's thresholds establish a globally consistent eligibility floor that balances environmental integrity with early market development, while supporting investment in low-emissions technologies. Production meeting near-zero thresholds may be designated "Near-Zero Aligned" to distinguish first-of-its-kind, ultra-low-emissions production for ambitious buyers seeking priority offtake.

Regional policies, technologies, and decarbonization pathways may differ, and domestic green steel taxonomies are in place to structure country-specific thresholds and incentives based on local policy or technological conditions. However, a consistent global threshold is needed to anchor sector-wide progress toward near-zero production and provide buyers with a consistent basis for recognizing low-emissions production globally.

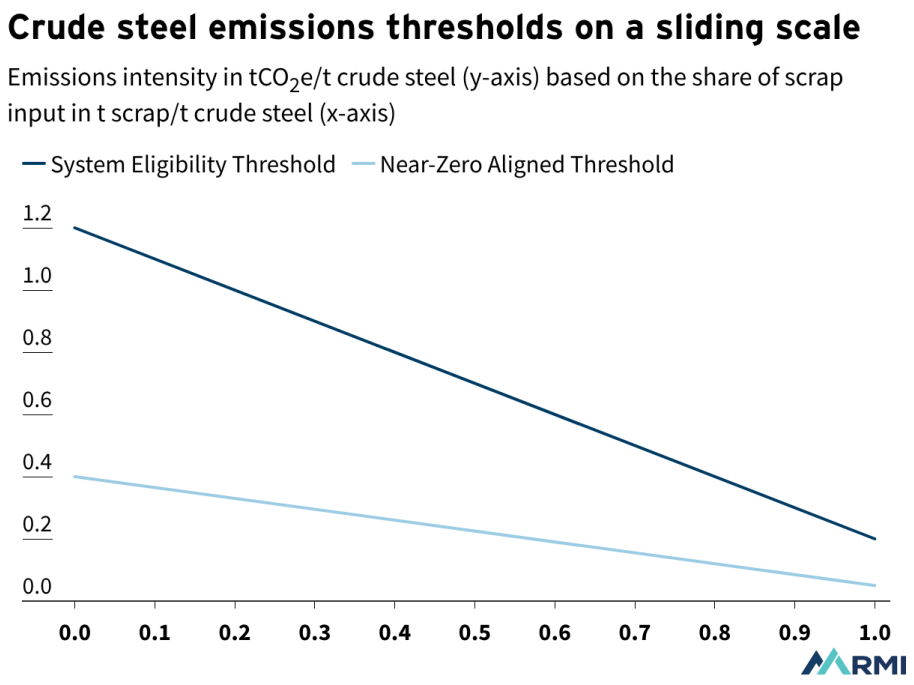
The system threshold aligns with ResponsibleSteel Decarbonization Progress Level (DPL) 3 and is intended to support interoperability with other major schemes (e.g., Low-carbon Emissions Steel Standard [LESS], China's C2F Steel Standard [C2F Steel]) as sectoral production standards harmonize. Verification of B&C units under the system's eligibility rules does not constitute certification or endorsement by ResponsibleSteel or any other scheme.

Box 1: Scrap-variable approach for threshold setting

The system applies a scrap-variable approach for threshold setting to reflect the decarbonization pathways of the steel sector, consistent with high-integrity classification standards and International Energy Agency's (IEA) low-emissions definition and underlying measurement methodology (available at https://www.iea.org/reports/definitions-for-near-zero-and-low-emissions-steel-and-cement-and-underlying-emissions-measurement-methodologies). Although scrap-based production currently accounts for one-third of global steel output, scrap availability is limited by the long service life of steel-containing products. The International Renewable Energy Agency (IRENA) indicates that scrap may only meet about half of annual steel demand by 2050, even under a net-zero pathway (information can be found at https://www.irena.org/Decarbonising-hard-to-abate-sectors-with-renewables-Enablers-and-recommendations/Industry-sector/Iron-and-steel).

Sector-wide decarbonization will therefore require both decarbonized scrap-based secondary production and the deployment of near-zero-emissions primary ironmaking. Because primary ironmaking is inherently energy-intensive but remains necessary to meet future demand, the sliding scale provides consistent incentives for decarbonization across both production pathways.

Exhibit 3



If the system expands the steel functional unit to hot-rolled steel products, the sliding-scale thresholds will be extended accordingly. Sectoral developments required for this translation are described in Appendix B.

The emissions intensity threshold is a minimum requirement for BCU issuance. Additional technology route-specific requirements and buyer-defined criteria may further constrain eligibility for BCU generation and suitability for corresponding transactions.

3.2 Transition alignment requirements

Route-specific criteria

To provide greater assurance of system-level impact, all EACs shall also meet applicable site-level, route-specific criteria demonstrating alignment with a near-zero emissions transition.

Blast furnace (BF)-based production[iii]: eligibility shall be subject to the following requirements:https://www.imf.org/en/publications/weo/weo-database/2023/april/groups-and-aggregates?utm_source=chatgpt.com

- **No new capacity:** BF facilities commencing operation on or after 2030 shall be ineligible, including facilities equipped with CCS/CCUS, to avoid locking in emissions-intensive assets.
- **Use of bio-based feedstocks:** Where bio-based feedstocks are used in BF-based ironmaking, they shall:
    - Satisfy the system's biomass eligibility requirements.
    - Account for at least 50% of the energy used in a BF-based ironmaking process. Biomass, biomethane, or RNG used only as a partial injection to substitute fuel within a BF process shall not qualify.

Fossil-based DRI production: eligibility shall be conditional on partial consumption of non-fossil feedstock for reduction.

- For the reduction process, 10% (on an energy basis) shall be comprised of renewable hydrogen reductants.[iv]
- Reductants derived from renewable hydrogen produced via electrolysis[v] (either directly supplied by a renewable electricity generating asset or directly supplied from the grid) shall:
    - Incentivize the deployment of new renewable electricity generation capacity, such that renewable electricity supply shall come into operation not earlier than 36 months before the installation of the electrolyzer.
    - Where electrolyzers are connected to the grid, demonstrate renewable properties of electricity with renewables power purchase agreements that are geographically

[iii] This reflects evidence from the IEA and sector transition pathways (e.g., Mission Possible Partnership, https://missionpossiblepartnership.org/steel-materials/) that continued reinvestment in fossil-based assets significantly increase stranded-asset and lock-in risks.
[iv] Registry specification should utilize a practical disclosure method for verifying the concentration of non-fossil reductant in the DRI system.
[v] Nuclear energy-based electrolysis is also permitted to satisfy eligibility criteria for renewable hydrogen reductants (also referred to as "pink hydrogen").

correlated, such that installations for hydrogen production and contracted renewable electricity are located in the same bidding zone (or equivalent grid boundary).

CCS/CCUS-based production[vi]:

- **Permanence integrity**: Captured CO_2 must be permanently stored in dedicated geological storage with robust measurement, reporting, and verification as well as liability arrangements.
- **Transport and storage:** Operational or contractually secured CO_2 transport and storage infrastructure shall be in place at the time of BCU issuance. Leakage detection measures shall be applied, and the CO_2 leakage shall not exceed 0.5 % of the mass of CO_2 transported.

The use of biomass: Eligibility shall be conditional and transitional, including:

- **Eligible feedstocks**: Biomass is sourced from residual or waste streams, with priority given to landfill-derived biomethane or renewable natural gas (RNG). Purpose-grown biomass and high-risk forestry feedstocks shall be ineligible due to land-use change, permanence, and scalability concerns.

Additional Buyer Considerations

To strengthen assurance of BCU transition impact, buyers should apply one or more additional procurement criteria, such as:

- Requirement for hydrogen additionality, temporal matching, and deliverability (e.g., the Climate Bonds Standard the Steel Industry and the Climate Bonds Steel Criteria).[7]
- Evidence of a credible transition plan, if relevant, such as an SBTi-validated steel target or equivalent.
- Assessment of supplier emissions trajectories against recognized climate-aligned benchmarks, such as the IEA Net Zero Emissions Scenario (See Appendix of *RMI Steel GHG Emissions Reporting Guidance* [p. 26][8]).
- Complementary project- or company-level frameworks, such as Climate Bonds Initiative's Steel Criteria for qualifying decarbonization and retrofit measures, or company-level, time-bound certification pathways to 2050.

[vi] Enhanced safeguards for CCS/CCUS address uncertainties around capture performance and permanence.

3.3 Additionality requirements

EAC-generating products shall demonstrate and disclose regulatory additionality.

Evidence of financial additionality should be provided where required by buyer-specific procurement criteria and feasible for issuer disclosure.

Additionality requirements and related documentation shall be determined at contract signing and apply to all deliveries under the agreement.

Additionality criteria provide greater assurance that emissions outcomes transferred through the B&C system are enabled by BCU revenue and would not have occurred otherwise. This system assesses additionality across financial and regulatory dimensions (Exhibit 4). While regulatory additionality is mandatory for all BCUs issuance, financial additionality is strongly encouraged to be included in individual transaction agreements.

Exhibit 4

Specific additionality requirements

Dimension	Definition	System requirement
Regulatory	The credited activity exceeds legal and policy requirements and does not represent compliance-driven production, consistent with regulatory surplus under the AIM Standard.	Suppliers shall disclose applicable obligations, including emissions trading systems, carbon taxes, performance mandates, and demonstrates that the credited low-emissions production exceeds those requirements or incurs costs beyond compliance, accounting for free allowances or similar provisions. Section 7 of RSB Book and Claim Manual is a useful resource for structuring such disclosure.
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 (e.g., assessing energy cost between natural gas and coal in some regions where NG DRI is already economical with BF-based production).	Buyers should require supplier self-attestation and available evidence demonstrating the materiality of BCU revenues, including its contribution to long-term revenue certainty. Relevant subsidies, tax credits, and incentive programs should also be disclosed

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4. Product Emissions Intensity Baseline Selection

Emissions intensity baselines are required to quantify EAC reduction outcomes and to provide default emissions factors for physical steel products that are decoupled and sold separately from issued BCUs. In line with existing guidance, including the GHG Protocol for Project Accounting and the AIM Standard, 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,[vii] product's functional use (often associated with downstream product families, or broader categories such as flat and long products), and GHG accounting methodology should be considered in selecting and applying an emissions intensity baseline.

The system baseline refers to the starting point to measure emissions-related impact. As such, *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.

Baseline selection hierarchy:

1. 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 (e.g., producing the same end product).
2. Where such baselines are not available, producers shall apply industry averages. Due to the limited consistency in measurement methodologies and system boundaries across available product-level emissions benchmarks, the development of industry-consistent, measurement-aligned, and regionally specific benchmarks will be needed to support credible baselining within the Book and Claim system.

4.1 Iron baseline

BCU issuers shall identify an iron baseline that has been third party verified for alignment with the EAC measurement methodology and region of production. Where site-level operational baselines do not exist, adjustments to industry average reference benchmarks should be applied where necessary to reconcile system boundary differences and other methodological differences.

There is no singular comprehensive iron benchmark established today from public resources, thus setting up a default iron baseline is challenging at this stage. Ironmakers may therefore use credible commercial or life-cycle analysis (LCA) databases, provided the selected emissions factor is aligned with

[vii] EAC scrap share will not always align with that of a relevant product family baseline due to differences in the products' underlying technology mix and corresponding rate of iron consumption for steelmaking. In such cases, scrap adjustments shall be made to account for differences in scrap.

the relevant production region and system measurement methodology (e.g., system boundary and the treatment of process gas and waste heat).

4.2 Steel baseline

BCU issuers shall first identify a crude steel baseline that has been third party verified for alignment with the BCU-aligned scrap content, region of production, and measurement methodology.

If such data does not exist, in absence of public, region-specific, and measurement-aligned steel benchmarks, a conservative and uniform baselining approach shall be applied to ensure consistency across steel units and associated claims. In this case, the baselines shall use the latest product-level LCA averages published in World Steel's LCA database for EU production.

Where BCU scrap share exceeds the benchmark scrap share by >5%, issuers shall make necessary adjustments per the guidelines below to avoid over-stating scrap-related impacts.

To support accurate and comparable BCU claims (see Section 8), the BCU emissions baseline should closely reflect the emissions of the production displaced by the BCU, and to the extent feasible, align with:

- **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).
- **Measurement methodology**: Baselines should be measured under comparable GHG boundaries and accounting rules to the system accounting methodology, to ensure fair, comparable BCU performance claims. Directly using product emissions intensity from environmental product declarations (EPDs) and LCAs may not be suitable given the variability in measurement approaches.[viii]
- **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 minimal additional climate benefits when considering fundamental limitations to the global supply of steel scrap. Where EAC scrap content differs from a selected benchmark, scrap adjustments shall be made to account for differences (see Section 3.1 for additional detail).

Currently, there is no public source of baselines that meet these criteria. Prior to the development of industry-consistent, measurement-aligned baselines, issuers should follow the following guidelines to calculate and report emissions reductions associated with BCUs.

[viii] Due to significant variability in existing EPDs/PCRs, and LCAs today, as well as a high degree of misalignment risk with EAC measurement rules (Appendix G), substantial methodological reconciliation would be required for their use as system baselines.

Interim Baseline Approach

Where a credible, methodologically aligned region-specific baseline is available, issuers may use that baseline with disclosure of the data source, methodology, and rationale.

Where such a baseline is not available, issuers shall use the most recent product-family LCA averages published in the World Steel Association's LCA Eco-profiles for EU production as the default interim baseline.

The following adjustments shall apply where relevant to reconcile key differences between selected benchmarks and BCU production:

- **Scrap content**: Where the BCU scrap share differs from that of the selected emissions benchmark by more than 5%, issuers shall make scrap-based adjustments to align scrap share between the selected emissions benchmark and BCU production, in line with the scrap-adjustment methodology in Appendix E.
- **System boundary adjustment**: Adjust the crude steel BCU emissions measurement to align with the process boundary of the relevant product family average.
    - The worldsteel LCA eco-profiles include downstream processes beyond crude casting. To align system boundaries between crude steel BCUs and product family benchmarks, issuers shall generate a separate GHG measurement inclusive of hot rolling processes (post-crude casting) in line with the EAC's relevant product family benchmark.
- **Disclosure in BCU documentation:** Issuers shall disclose any methodological adjustments applied to BCU and baseline emissions intensity for scrap- and boundary-based reconciliations (see Section 7.2, *GHG Emissions Information*). Adjusted emissions intensities shall be used for calculating any BCU emissions reduction value requested through bilateral transactions.

Exhibit 5

Product family average emissions intensity and associated scrap use for common hot rolled products

Product	Recycled Content (t scrap / t finished product)	Emissions tCO_2 / t steel
Hot rolled coil	0.196	2.10
Rebar	0.646	1.55
Wire rod	0.519	1.70
Plate	0.580	1.94
Sections	0.832	1.04

Source: World Steel Association's 2026 "LCA Eco-profiles" for European steel production

5. Emissions Performance Measurement and Accounting rules

5.1 Methodology scope and interoperability

The BCU accounting rules reference the ResponsibleSteel methodology for measuring crude steel GHG emissions intensity at the site level (Principle 10: GHG Emissions and Climate Change, Criterion 10.4). This site-level methodology is based on the ISO 14404 series (Parts 1 to 4) and the corresponding worldsteel CO2 Data Collection Methodology.

Iron measurements follow the same site-level methodology with an adjusted system boundary to capture only processes relevant to iron production.

This accounting methodology is intended to provide a consistent basis for measuring and comparing BCUs across geographies, production routes, and steel products, while supporting interoperability with other major steel-sector methodologies as harmonization progresses (see Endnote 5).

Existing certification schemes (e.g., LESS, ResponsibleSteel, C2F Steel) may differ significantly in areas such as accounting boundaries, default values, Scope 2 treatment, and allocation of co-products and

scrap. To ensure consistent comparison across BCUs, producers using alternative methodologies for existing measurement and disclosure initiatives may therefore be required to make defined adjustments to align emissions measurements with the system methodology.[ix]

In accordance with the methodology established under Principle 10 of the ResponsibleSteel International Production Standard v2.1.1[9] (See Criteria 10.4, which can also be found in the Fundamentals for GHG emissions accounting & classification),[10] issuers shall measure emissions at the production site level, expressed as tons of carbon dioxide equivalent (tCO_2e)/t crude steel or tCO_2e/t iron (using adjusted system boundary). Reported emissions shall reflect average site performance based on a full year of production data. Where less than one year of production data is available, emissions shall reflect the available average production conditions and be verified under ex-ante and ex-post verification rules (See Section 5.3).

Box 2: Iron Emissions Measurement

Iron emissions shall be measured with all upstream processes included 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.

For ironmaking sites integrated with steelmaking, suppliers generating iron BCUs 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,[i] while treating steelmaking as downstream of iron production where applicable.

Product-level allocation, including reassignment of emissions or emissions-linked attributes across sites, facilities, or products, is currently not allowed to demonstrate compliance with the system's eligibility requirements. Until credible interoperability is established between site-level and product-level accounting approaches, these restrictions are intended to preserve integrity, consistency, and credibility, while preventing the inflation of product-level impact statements.

A limited application of product-level allocation is permitted for BCU emissions disclosure, as per guidance in Section 5.2. This rule is intended to support more efficient pathways for steelmakers to monetize low-emissions iron inputs and to improve consistency and interoperability between iron-level and crude-level BCUs, while remaining broadly compatible with the direction of emerging attribution principles under international standards. Use of allocation shall follow all applicable system

[ix] Where alternative measurement methodologies are used or operationalized at a given site, Issuers should refer to Appendix G to assess alignment for common discrepancy areas.

measurement rules and must not be used to verify eligibility against the system's site-level criteria (see Section 3).

5.2 Allocation rules for low-emissions iron inputs

When eligible iron inputs are blended with other metallic inputs, product-level allocation may be used to report a secondary product-level emissions intensity in BCU documentation and associated abatement calculations, on the condition that the following criteria are satisfied:

1. **Site-level eligibility**: Product-level allocation shall only be applied after the relevant BCU generating production site has demonstrated compliance with the system eligibility criteria without the use of product-level allocation.
2. **Eligible iron inputs**: Iron inputs used for allocation shall meet the same eligibility requirements applicable to iron BCUs.

Use of the system's allocation methodology allows eligible steelmakers to reflect the use of low-emissions iron in product-level BCU disclosures while retaining site-level performance as the basis for system eligibility. Separating allocation from eligibility rules ensures site-level performance can be fairly compared across BCU production.

Allocation method: When allocation is applied, independent verification shall ensure eligible iron inputs are allocated in proportion to the physical iron used in production on a rolling-average basis using an appropriate iron-to-steel conversion factor. The allocation shall thus preserve the metallic-input composition of the crude steel production, based on the BCU iron-to-scrap ratio.

When processing losses occur, the quantity of eligible iron attributes available for allocation shall be reduced proportionally to reflect the quantity of eligible iron retained in the resulting steel output. Attributes associated with material lost during processing shall not be reassigned to remaining output.

No double counting: Emissions attributes associated with eligible iron inputs shall not be used to generate both an iron BCU and a steel BCU, or otherwise be generated, allocated, or claimed more than once within the applicable physical supply chain.

These rules ensure that product-level allocation remains tied to the physical use of eligible iron in the steelmaking process. Preserving the metallic-input ratio maintains consistency with the underlying production process, while accounting for processing losses prevents attributes associated with material that does not remain in the final output from being transferred to other products. See Appendix I for the allocation methodology.

5.3 Emissions verification and certification requirements

Verification: To issue iron and steel BCUs, suppliers shall obtain independent third-party verification from a registry-approved auditor confirming that underlying production units meet the system's eligibility requirements at the performance threshold and all applicable route-specific and additionality criteria.

To ensure accuracy and relevance of the reported BCU 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 appropriate procedures are applied.

Ex-ante verification requires confirmation of the planned boundary, scope, and activities for the assessment period with estimation of emissions attributes based on those elements. If available, prior data shall be assessed to determine if the BCU issuer is able to achieve the estimated outcome.

Ex-post verification confirms the final outcome. If an ex-ante audit was conducted, the ex-post audit validates the ex-ante outcomes and accurately conveys any discrepancies if the ex-ante outcomes do not occur exactly as described.

Certification: Where steel suppliers have sufficient production data to do so, suppliers should pursue certification under an established steel standard that is compatible with the system's measurement rules and performance-based eligibility criteria, such as ResponsibleSteel or another interoperable scheme.

Where sufficient historical data is unavailable, or certification with a compatible scheme is not feasible (e.g., for a stand-alone iron producer), compliance with the system's measurement rules shall instead be demonstrated through the minimum verification and auditing requirements (detailed in Appendix H) by auditors competent to assess self-reported emissions performance against the system's criteria and, where relevant, ensure methodological alignment between system measurement rules and any pre-applied standards.

Pathway to certification and minimum verification requirements

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. For ironmaking sites and steelmaking sites with insufficient production data, auditors must follow the minimum verification and auditing requirements (detailed in Appendix H) to expedite and provide a bridge toward full certification. For sites with sufficient operational history, certification of BCU production with a compatible scheme is encouraged to ensure robust measurement, reporting, and

verification procedures.[x] The requirement of certification may evolve as the industry-wide interoperability efforts progress and may be subject to individual registry's specifications.

Verification and auditing requirements are subsequently informed by the assurance principles and auditing steps described in the ResponsibleSteel Assurance Manual to ensure auditors demonstrate a sufficient level of competency in assessing emissions performance against the system's eligibility threshold.[11] Prior to certification, producers and verifiers are not required to implement the ResponsibleSteel assurance system (or any interoperable compliance system) in full, but should follow practices outlined in Appendix H.

[x] As the emissions measurement and performance-based eligibility criteria are aligned with the Responsible Steel International Production Standard v2.1.1, compatibility with these criteria should be demonstrated via a mutual recognition framework (if established) between an applied certification scheme and the Responsible Steel Production Standard. Prior to the establishment of a mutual recognition standard, producers shall follow the minimum verification and auditing requirements in Appendix H.

6. BCU Issuance and Transaction

6.1 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 (*'delivered'* here refers to when the product has left the production yard). BCUs shall not be issued for future or anticipated production.

Productions associated with BCUs generating products should be audited ex-ante and must 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, because 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 issued before completion of the ex-post audit only if all the following conditions are met:

- Post-production
- Completion of ex-ante audit
- The production volumes and emissions performance are subsequently confirmed through recurring verification. Verification may be conducted at the site level on an annual, quarterly, or other defined basis and must confirm continued alignment with the assumptions and eligibility.
- The BCU record must reflect the ex-post audit results once complete.

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.

6.2 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.

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 counting. 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.[xi]

As an interim measure for the early-stage market, the transfer of co-claimed BCUs is currently prohibited because the archetypes for claims across distinct layers of the steel value chain have not been fully developed. Any future relaxation of this restriction may depend on the registry operator's ability to implement effective controls that mitigate risk of double counting.

[xi] The vintage matching window proposed by this framework should already limit the potential risks of frequent transfers to some extent.

6.3 BCU retirement

Vintage and retirement

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

Claims shall only be made with respect to BCUs that have been retired.

A BCU shall be retired no later than 36 months after the production of the steel represented by that BCU.

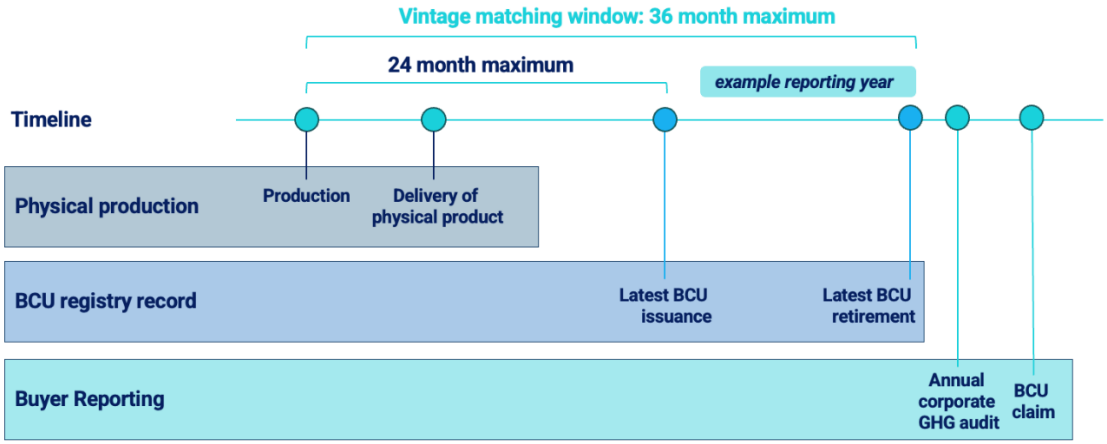
For purpose of this requirement, vintage refers to the period during which the underlying steel production activity that generates the BCU physically occurs. The 36-month vintage matching window therefore defines the allowable temporal range between that production and the BCU's retirement and intended use for a buyer's claim.

For example, a buyer seeking to use BCUs toward its 2025 steel emissions inventory may only claim BCUs that have been retired and that remain within 36 months of the underlying steel production. Accordingly, depending on the specific production and retirement dates, eligible BCUs may include those associated with steel produced in 2023, 2024, or 2025.

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 6

Timeline of BCU creation, vintage, and retirement



7. Registry Traceability Minimum Requirement in Registry Record

7.1 BCU record creation and tracking process

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.

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.

The registry record for each BCU should include the information needed to assess eligibility, including emissions performance, GHG accounting methodology, additionality, contractual criteria, and production data relevant to temporal requirements.

The registry shall demonstrate compliance with system requirements and enable buyers to assess any additional contractual criteria. It should therefore capture both minimum data fields required by this framework in Section 7.2 and commonly requested buyer-specific information.

Transfer

Registries should automatically update BCU records to reflect all transfers and current claim holders to preserve traceability.

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

Retirement

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.

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.

7.2 Minimum requirement in registry records

The following data fields must be created and tracked in a registry upon BCU creation **as a minimal requirement**, but may include other components:

Upon BCU retirement, data fields with an asterisk (*) should be made public in a registry via a public retirement table.

- **BCU record information***
    - Date of issuance
    - Functional unit (iron, crude steel)
    - Date of production (year and month)
    - Vintage date or period
    - Date of sale/delivery
    - Proof of sale/delivery
    - Owner of unique claim rights
- **Beneficiaries and holding history**
    - Unique companies that have held the unit
    - Accounts holding history (e.g., Supplier holding account -> Buyer general holding account)
    - Current owner(s) of unique claim rights
    - Ultimate retiree*
        - Retirement date
        - Copy identifier of retired BCU (if co-claiming is involved)
    - Co-claimed (Yes/No)
    - Transferred (Yes/No)
        - 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
- **GHG emissions information***
    - Product emissions intensity (in tCO_2e/t functional unit)
    - Product scrap share (%)
    - Product Emissions calculation methodology (e.g., ISO 14067, etc.)
    - Third-party verification and/or certification provide
    - Baseline emissions intensity (in tCO_2e/t functional unit)
    - Baseline scrap content (%, scrap share in baseline emissions intensity)
    - Source of baseline intensity, and rationale for selection of baseline outside of Framework guidance (if applicable)
    - Year of production represented by baseline emissions intensity
    - Description of scrap-related and boundary-related adjustments (if applicable)[xii]

[xii] Relevant methodological adjustments to baselining calculation may be automated in registry system.

- **Production Information**
    - Producer/organization
    - Production location
    - Decarbonization technology type and relevant technical details[xiii] (more details in Appendix J)
    - Regulatory additionality declaration following Exhibit 4 in Section 3.3 or through assurance statement
    - Product certification (e.g., ResponsibleSteel, LESS, C2F Steel) or standards or methodologies that demonstrate achieving emissions performance within the System Eligibility Threshold with aligned GHG accounting methods, scope, and boundary
- **Iron-specific Product Information**
    - Iron-specific: Metallic content[xiv]
    - Iron-specific: Iron (Fe) content[xv]
    - Iron-specific: Iron threshold conversion rate
- **Assurance**
    - Name of auditor/verifier for product emissions intensity
    - Audit date
    - Audit validity period
    - Standard audited against
    - Statement of eligibility from a third-party verifier*
    - Controls to avoid double counting
    - Dual reporting disclosures (if relevant, this may include dual-reporting of location-based and market-based emissions intensity values when Scope 2 market instruments are involved in calculating product emissions intensity)

[xiii] 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.

[xiv] Used to verify that product meets the minimum metallic iron content to ensure HBI passes the receiving steelmaker's product requirements and is able to be received for melt into a steel product (e.g., 83%).

[xv] Used to verify that product is comparable with system iron threshold, which is based on a conversion rate specific to an iron product's Fe content per methodology in Appendix C.

8. BCU Claiming and Inventory Reporting

8.1 Allowable claims and requirements

Allowable claims

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

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

BCUs shall not be claimed or reported in ways that would inadvertently create risk of double counting. Use of BCUs to adjust emissions information beyond corporate Scope 3 reporting and climate progress tracking shall be subject to additional scrutiny to ensure double counting risks are mitigated.

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.

To maximize product-level and value chain association, buyers should prioritize BCUs that are closely aligned with their physical steel use on product-type, whether the BCU corresponds to the same product family (e.g., flat or long product) or intended application as the physical steel reflected in the inventory. The use of spend-based estimates, including those derived from environmentally extended input-output (EEIO) models, may be necessary as an interim approach where data challenges are present. In such cases, buyers should actively transition toward more granular physical-volume data and supplier-specific emissions factors, which are most likely to accurately reflect the resulted abatement outcomes.

Claims beyond those used for Scope 3 inventory reporting should be exercised with great caution and care, as such claims may carry higher risk of greenwashing perception and double counting (see Appendix K). In such cases where EACs are used to make on-product claims,[xvi] emissions attributes may be transferred, communicated, or claimed by parties outside of an established claiming structure for a unique BCU documented in a verified system of record. Claimants may wish to make these claims to communicate lower-emissions or environmental benefits to consumers. However, they shall take reasonable measures to minimize this risk, including conducting a documented internal claims-risk review where appropriate, and seeking review or assurance from a qualified third party. Claimants should also report physical emissions information separately from any EAC-supported impact claim until

[xvi] These claims include any statement, label, or disclosure applied directly to a product, project, building, or entity that communicates positive environmental attributes (e.g., “low carbon” or “green”) or asserts specific emissions performance. This includes claims that modify or imply changes to emissions intensity values reported through instruments such as EPDs or LCAs, or that use BCUs to alter the emissions intensity for the project, buildings, or similar applications.

applicable guidance, such as ISO 14067 and EPD and product category rule (PCR) programs, explicitly recognizes such treatment and establishes proper safeguards for transparency and credibility.

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.

8.2 Claim accounting method

In accordance with the AIM Standard, companies shall apply one of the two accounting pathways to incorporate iron or steel BCU outcomes into Scope 3 GHG reporting:

1. **Product matching with substitution**, where the BCU and the targeted iron or steel inventory (sub)component can be matched in compatible units of activity; or
2. **Emissions matching**, where such product-level matching cannot be credibly performed or where the data required for substitution are unavailable.

The accounting pathway is selected based on the data availability and quality of the company's steel-related GHG emissions inventory as well as alignment between the BCU baseline and the physical steel inventory. Before applying the accounting method, companies may first estimate the relevant iron and crude steel involved in their steel inventory (i.e., [sub]component), Box 3).

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).

Box 3: Determining the applicable inventory for iron and steel BCUs

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. Iron content should be based on the most representative data, in the following order of preference:

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

With provided iron content, companies should also apply an appropriate process yield factor to convert contained iron content in finished steel product to the corresponding iron inputs to steelmaking.

Steel BCUs. Where purchased steel is reported as a downstream steel product (e.g., hot rolled coil, bar, pipe, etc.) and steel BCUs don't indicate downstream processing emissions, companies may need to convert the purchased volume to a crude-steel equivalent volume by accounting for downstream processing losses. Companies should use, in order of preference:

- Supplier-specific processing yield
- Product-specific yield factors from credible LCA studies or database

Where no better data is available, a default factor downstream Fe yield of 94% may be used to convert iron content to iron inputs and a cumulative processing yield of 95% may be used to convert finished steel product to crude steel equivalent.

If a credible inventory emissions baseline expressed in the relevant BCU unit (e.g., crude steel or iron) cannot be identified, companies may need to convert the finished-steel inventory emissions baseline to the corresponding crude-steel- or iron-level basis. Where no better data is available, companies may assume downstream processing takes 20% of total finished steel product emissions. A calculation example is provided in Appendix L.

1. Product matching with substitution

Companies shall use the product matching method where the iron or steel BCUs and the targeted steel inventory (sub)component can be expressed in the same, or credibly convertible unit (i.e., tons of steel, tons of iron). With this approach, the company shall:

1. determine the quantity of the targeted iron or steel (sub)component in the reporting-year inventory;
2. determine the quantity of activity represented by the BCU;

3. convert units where necessary using a credible conversion or activity-data estimation method; and
4. limit the quantity of BCUs applied to no more than the quantity of the matched inventory (sub)component.

Where the BCU quantity exceeds the matched inventory quantity, the excess shall not be applied to that reporting-year inventory.

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.
- 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.

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.

Substitution without adjustments

Substitution without adjustment may be used where:

- the BCU and targeted inventory (sub)component are matched in product/activity units; or
- the BCU baseline emissions intensity is the same as, or sufficiently equivalent to, the emissions intensity of the targeted inventory (sub)component.

Under this approach, the BCU's product-level emissions intensity replaces the emissions intensity of the matched inventory quantity in the contractual inventory.

Example: An automotive company reports 10,000 t of steel used in chassis frames, with a supplier-provided emissions intensity of 1.9 tCO_2e/t crude steel. The company seeks to apply BCUs covering 10,000 t of flat steel. The BCU has the same baseline emissions intensity of 1.9 tCO_2e/t crude steel and a post-intervention emissions intensity of 0.8 tCO_2e/t crude steel. Because the product units are matched and the BCU baseline aligns with the inventory emissions intensity, the company applies substitution without adjustment.

Step	Calculation	Result
Physical inventory emissions	10,000 t × 1.9 tCO_2e/t	19,000 tCO_2e
BCU post-intervention intensity	—	0.8 tCO_2e/t
Adjusted inventory intensity	Substitute 1.9 with 0.8 tCO_2e/t	0.8 tCO_2e/t
Contractual inventory emissions	10,000 t × 0.8 tCO_2e/t	**8,000 tCO_2e**
Emissions reduction reflected in the contractual inventory	19,000−8,000	**11,000 tCO_2e**

*The company therefore reports **8,000 tCO_2e** for the matched volume in its contractual inventory, compared with **19,000 tCO_2e** in the physical inventory before application of the BCUs.*

Substitution with adjustments

Where product matching is achieved but the BCU baseline emissions intensity differs from the emissions intensity of the targeted inventory (sub)component, the company applies **substitution with adjustment** by following these steps:

(1) Calculate the impact of the BCU on a per-unit basis by subtracting the BCU's emissions intensity from the BCU's baseline emissions intensity.
(2) Calculate an adjusted emissions intensity for the targeted (sub)component by subtracting the impact (Step 1) from the (sub)component's own emissions intensity. If the result is below zero, companies shall use zero as the adjusted emissions intensity.
(3) Calculate the resulting emissions for the contractual inventory by multiplying the adjusted (sub)component emissions intensity (Step 2) by the quantity of BCUs that met the requirements of product matching.

This approach ensures that a company's reported emissions can never fall below zero on a per-unit basis, regardless of how the BCU's baseline compares to the company's own inventory baseline.

Example: A construction firm reports 20,000 t of crude steel beams in its inventory with an emissions intensity of 1.9 tCO_2e/t crude steel. The firm seeks to apply BCUs covering 20,000 t of crude steel. The BCU has a baseline emissions intensity of 1.2 tCO_2e/t crude steel and a post-intervention emissions intensity of 0.3 tCO_2e/t crude steel. Because the BCU baseline differs from the inventory emissions intensity, the firm applies substitution with adjustment.

Step	Calculation	Result
Physical inventory emissions	20,000 t × 1.9 tCO_2e/t	38,000 tCO_2e
BCU impact per unit	1.2 − 0.3	0.9 tCO_2e/t
Adjusted inventory intensity	1.9 − 0.9	1.0 tCO_2e/t
Contractual inventory emissions	20,000 t × 1.0 tCO_2e/t	**20,000 tCO_2e**
Emissions reduction reflected in the contractual inventory	38,000−20,000	**18,000 tCO_2e**

*The firm therefore reports **20,000 tCO_2e** for the matched volume in its contractual inventory, compared with **38,000 tCO_2e** in the physical inventory before application of the BCUs.*

2. Emissions matching method

The emissions matching method is used when a BCU's units cannot be matched to the company's targeted (sub)component.

This can happen for several reasons, for example, if the targeted inventory cannot be converted into activity units compatible with the BCU, buyer's steel inventory emissions cannot be disaggregated to the product volume, the BCU reduction value exceeds the inventory component emissions, or the data needed to perform the substitution accounting approach simply isn't available.

Reduction outcomes made using the emissions matching method are reported as a negative value of CO_2e in a company's impact statement rather than in its contractual inventory. This preserves the separation principle established in Section 8.1.

To use the emissions matching method:

(1) Identify the quantity of the targeted (sub)component's emissions for the reporting year. If the quantity is presented as a volume of activity data, use an appropriate emissions factor to convert it to CO_2e.
(2) Use a representative LCA or industry data to determine what percentage of the (sub)component's total emissions are attributable to the specific emissions source targeted by the BCU (e.g., crude steelmaking).
(3) Multiply the percentage from Step 2 by the total tCO_2e from Step 1 to determine the quantity of emissions from the targeted emissions source.

For the BCU:

(4) Determine the emissions reduction percentage of the BCU compared to a credible baseline (i.e., the BCU's baseline emissions intensity). Multiply this percentage by the quantity calculated in Step 3 to determine the maximum addressable quantity of CO_2e.

(5) Determine the quantity of CO_2e reduction associated with the BCUs purchased.
(6) Compare Steps 4 and 5 above: if the BCU's reduction quantity (Step 5) is less than or equal to the maximum addressable quantity (Step 4), the full reduction may be reported. If it exceeds the maximum addressable quantity, only the maximum addressable quantity may be reported.

Example: A consulting firm reports 50,000 t of rebar in its Scope 3 inventory. Supplier-provided EPDs report an emissions intensity of 1.5 tCO_2e/t rebar. The firm seeks to apply a BCU with a baseline emissions intensity of 1.8 tCO_2e/t crude steel and a post-intervention emissions intensity of 0.2 tCO_2e/t crude steel. Because the rebar EPD does not separately identify emissions from crude steelmaking, the firm cannot apply substitution and instead uses the emissions matching method.

Step	Calculation	Result
Total rebar emissions	50,000 t × 1.5 tCO_2e/t	75,000 tCO_2e
Crude-steelmaking emissions*	75,000 × 88%	66,000 tCO_2e
BCU reduction rate	(1.8 − 0.2) ÷ 1.8	88.9%
Maximum addressable emissions	66,000 × 88.9%	58,667 tCO_2e
Reduction represented by retired BCUs	50,000 t × (1.8 − 0.2)	80,000 tCO_2e
Allowable impact claim	Lower of 58,667 and 80,000	**58,667 tCO_2e**

* 88% represents the total production emissions covered by crude steel within the boundary and serves as the average conversion rate between rebar and crude steel for this example (see Section 2.2 or Endnote 7).

The firm may therefore report an impact claim of −58,667 tCO_2e. Its physical Scope 3 rebar inventory remains 75,000 tCO_2e and is reported separately without adjustment.

3. Activity data estimation for spend-based inventories

Companies with spend-based physical inventory data cannot directly apply the substitution accounting approach, since spend-based data does not indicate the physical volume of steel associated with a company's emissions footprint. Consistent with the AIM Standard, companies may instead use activity data estimation as a preparatory step: converting spend-based emissions into an estimated physical steel volume using a credible non-spend activity-based emissions factor, so that the estimated volume can then be used with the substitution accounting approach described above. Where a credible conversion is not possible, companies should instead use the emissions matching method. A calculation example is provided in Appendix M.

8.3 Co-claiming rules and documentation

Number of co-claims: 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. As an interim measure for the early market, the system permits up to **three co-claimants per BCU** (refer to Exhibit 7 for value chain layers), excluding the BCU issuer.

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.

The co-claiming rules apply at the level of an individual BCU. It does not necessarily restrict an entire issued BCU block to one co-claiming structure or create a permanent constraint on a given volume.

Disclosure of co-claimants: 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.

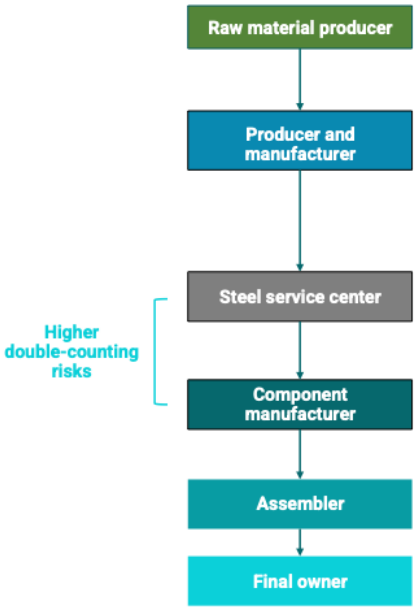
A value chain layer is a distinct stage in a product's life cycle, defined by a set of actors and activities, where ownership or control of goods is transferred before moving to the next stage. A company may be considered to represent a distinct value chain layer when it performs activities that are 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 7 therefore presents a high-level, generic archetype intended to help system users identify and define value chain layers. This framework groups steelmaking and subsequent manufacturing processes into a single layer to prevent potential double counting risks from entities having overlapping activities in these processes.

Requiring disclosure of the end use of the physical good can further mitigate double counting risk by narrowing the relevant supply chain for given end products (e.g., automotive steel frames versus construction beams) and enables further differentiation of layers according to the relevant processing steps required for specified products. This framework acknowledges that end use will not always be determinable, and where this is the case, it is acceptable to rely on the other safeguards described in this section.

Exhibit 7

High-level archetype of steel value chain layers



	Value chain layer actors	Common product types
	Iron ore extractor, scrap supplier, coke producer, etc.	Iron ore, scrap, coke, etc.
	Producer: Ironmaker, steelmaker Manufacturer: Steel processing facilities that may be integrated, standalone, or even integrated upstream with steelmaking.	*Producer: Crude steel (slab, blooms, billets)* *Manufacturer: Flat (HRC, plate) and long products (sections, rod/bar) or furthered processed products like cold rolled coil, galvanized steel, pipe, engineering steel, tinplate.*
	Not present in every supply chain, but it's an intermediary that distributes and sizes steel products without changing their product identity.	*Same steel product as received, in a customer-specified form.*
	Tier 1 (or beyond) component fabricators that may be integrated or standalone, which weld, bend, form, stamp, or forge components that are ready for assembly for final products.	*Project-specific structural components (structural steel frames, beams, etc.), vehicle components (e.g., body-in-white stamped panels, seat frames, etc.), equipment parts, wind turbine towers, pipeline sections, etc.*
	Building developers, OEMs, appliance assembler, energy infrastructure developer, etc.	*Buildings, vehicles, appliances, finished machines, wind turbines, etc.*
	Building owner, fleet owner, steel equipment owner, utility companies (e.g., owner of wind turbines).	

Eligibility for co-claiming with steelmaker: Steelmakers may claim or co-claim iron EACs on the condition that EACs are contracted alongside delivery of the physical iron for which these attributes are associated. Steelmakers shall not make on-product claims associated with claimed, co-claimed, or transferred EAC -linked emissions attributes.

The system requires physical product delivery for steelmaker claimants in order to prioritize the physical offtake of low-emissions iron, while providing flexibility for multi-party EAC transactions to support direct investment in upstream decarbonization.

Physical sourcing of green iron at any given location 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 mitigate these constraints, steelmakers may 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 flexibly capture value from early low-emissions iron procurement, while the system continues to prioritize the growth of physical green iron supply.[xvii]

[xvii] To further support interoperability between iron and steel functional units and producer profiles, as well as support the monetization of lower-emissions iron use, steelmakers may also choose to allocate attributes from eligible, physically sourced iron to specific steel products in order to generate steel EACs following the allocation rules detailed in Section 5.2.

Contractual agreement: 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.

To mitigate double counting risks, 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 the 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.

9. Measures to Prevent Double Counting

Double counting occurs when the same unit of environmental attribute is accounted for more than once, consistent with the AIM Standard definition. In may take the following forms:

- **Double issuance**: the same unit of emissions performance is issued more than once at any given value chain layer within one registry or across multiple registries or schemes.
- **Double selling:** the same unit of emissions performance is sold to more than one buyer, other than permitted co-claiming buyers. This includes selling the attribute unbundled as a BCU through a registry while also embedding the same attribute in a physical transaction. For co-claimed BCUs, all claims must be made on an unbundled basis and must comply with the applicable co-claiming rules.
- **Double claiming:** an attribute sold as a BCU is also used by the physical receipt for emissions accounting and reporting.

Preventing double counting requires coordinated controls by the BCU supplier, BCU buyer, and the registry.

9.1 Supplier responsibilities

The BCU supplier shall ensure that each unit of emissions performance is issued and sold only once, except where an approved co-claiming arrangement applies. The supplier shall:

- Prevent duplicate issuance within or across registries and schemes, consistent with Section 7.1.
- Treat physical products associated with sold BCUs as conventional for product-level emissions accounting, reporting, and documentation.
- Establish and register any permitted co-claiming arrangement before claims are made.
- Maintain auditable records linking each BCU to the underlying production activity, volume, baseline emissions factor, transactions, and physical deliveries.

Double counting risk typically arises when suppliers don't clearly communicate the adjusted emissions factor to physical recipients, resulting in the recipient using a factor that still reflects the original environmental attributes or one that is inconsistent with the baseline used for BCU issuance.

Therefore, 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:

- Provide physical recipients with a default emissions factor consistent with the BCU baseline for their inventory reporting;
- Disclose the default emissions factor, as well as the fact that the attribute has been sold and must not be used for the recipient's own accounting, in purchase agreements, invoices, or equivalent documentation; and
- Prevent inappropriate use of low-emissions claims by physical recipients. Whenever 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.

9.2 Responsibilities of the BCU buyer

The buyer is responsible for using each BCU only once and making claims that are consistent with the rights and emissions outcomes recorded in the registry. The buyer shall:

- Confirm that the BCU has not already been retired, canceled, or claimed.
- Retire the BCU before making any claim.
- Ensure that claims are consistent with the recorded quantity, product category, value-chain layer, geography, vintage, and other applicable characteristics.
- Report BCU-adjusted inventory separately from physical procurement inventory.
- Minimize associated risks listed in Appendix K in the case that a BCU is used to modify any product-level emissions intensity (including product carbon footprint, EPD, or emissions intensity of a specific physical product, project, building, or other application).
- Not transfer, resell, or authorize another party to claim a retired BCU.
- Disclose all parties participating in an approved co-claiming arrangement and ensure that their claims are unbundled and non-overlapping.
- Conduct reasonable due diligence to identify potential overlapping claims across the value chain.

9.3 Responsibilities of the Registry

The registry is responsible for maintaining the controls and records needed to prevent duplicate issuance, transfer, retirement, and claiming. The registry shall:

- Assign a unique identifier to each unit of iron or steel BCU.
- Record issuance, ownership, transfer, retirement, cancellation, and co-claiming status.
- Prevent the same BCU from being issued, transferred, or retired more than once.
- Record sufficient information on the underlying production activity, production period, value-chain layer, product category, quantity, baseline, and calculation methodology (i.e., the minimum data field in Section 7.2).
- Establish controls to identify potential duplicate issuance across registry records, schemes, and environmental attribute systems.
- Record approved co-claiming arrangements, including participating parties, permitted claims, and applicable restrictions.
- Maintain a complete and auditable transaction history.
- Support independent audits of BCU issuance, transactions, underlying production, and associated physical deliveries.
- Establish procedures to suspend, correct, or cancel BCUs where double counting or inaccurate information is identified.

9.4 Interaction with EPDs

EPDs are among the most common environmental disclosure tools used in the iron and steel sectors, typically verified and maintained by an EPD program operator. When the GHG attributes represented in an EPD have been decoupled from the physical iron or steel product, the supplier shall ensure that receipts of the physical product have clear information identifying the correct emissions factor (i.e., BCU baseline emissions factor) and disclose that the attributes have been sold.

Any amendment must follow the program operator's procedures and involve the EPD verifier where required. Where an EPD can be amended, renewed, or reissued, the supplier shall update it to reflect the applicable baseline emissions factor and disclose that the associated GHG attributes have been sold (e.g., via a notes section, disclosure field, supplementary statement, or other approved format). Where immediate revision is not permitted, the supplier shall provide a separate product-linked disclosure identifying the EPD, the transferred attributes, the emissions factor to be used, and the relevant registry records, until the EPD is formally updated or expires.

Fully addressing this risk will ultimately require broader ecosystem-level alignment between B&C and carbon accounting frameworks, particularly in how certificates interact with existing product-, site-, and corporate-level reporting and disclosures.

Neither the GHG Protocol's upcoming Actions and Market Instruments Standard nor the ISO product-level standards or EPD Product Category Rule programs have addressed how commodity EACs should be treated in product-level emissions accounting at the time of this framework's publication. As with Scope 2 market-instrument certificates, this will require coordination among standards bodies, registries, and market participants.

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. *This framework covers regulatory and financial additionality.*
AIM Platform Standard and Guidance	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. *Eligibility within this system is transitional and subject to guardrails.*
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. *In this framework, one BCU equals one ton of neat, certified iron or steel at the defined functional unit.*
Buyer-Defined Procurement Criteria	Optional buyer requirements (e.g., hydrogen additionality and temporal matching, supplier transition plans to Near-Zero Aligned threshold, 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). *Boundary adjustments may be needed to align with this framework's method.*
CCS/CCUS (Carbon Capture and Storage/Utilization)	Technologies that capture CO_2 produced during industrial processes before it enters the atmosphere. *In this framework, CCS and CCUS are eligible only under strict criteria.*
Claim	A buyer's inventory disclosure made after retirement of the BCU. *In this framework, claims are limited to iron or steel emissions and must be reported separately from the physical inventory.*
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. *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.*
Crude Steel	The first solid steel product formed from the solidification of liquid steel, prior to any refining or shaping. *It is the preferred steel functional unit for this system because it captures most process emissions and enables comparable claims across product families.*
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_2e 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 base unit for the system in a B&C system. It correlates to the physical product from which an EAC will be separated. *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.*
Hot Briquetted Iron (HBI)	DRI that has been compressed into dense briquettes while still hot.
Hot Rolled Steel	A steel product made from heating crude steel to high temperatures and rolled into rails, structural shapes, tubes, wires, bars, rebars, coils, or plates. *This system may extend the functional unit to this downstream product level in the future as accounting rules for downstream processing steps become standardized.*

Hydrogen-Based DRI	Primary ironmaking using hydrogen as the reductant, enabling near-zero iron and steel when paired with clean power.
Inventory	A quantified accounting of greenhouse gas emissions from a defined entity, activity, or geographic area over a specific time period. *Claims for BCU-adjusted inventories must be reflected in a separately reported inventory distinct from the complete physical inventory.*
Iron	Metallic units made from reducing iron ore that are used as inputs to steelmaking. *Recognized iron products eligible under the iron functional unit can take the form of pig iron, DRI, HBI, cast, or electrolytic.*
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. *This framework allows the market-based approach for purchased power in emissions measurement, aligning with ResponsibleSteel practice.*
Net-Zero Emissions (NZE) Steel	Top-tier performance aligned with the framework's Near-Zero Aligned threshold and 1.5°C pathways
Offtake Agreement	Contracts that provide forward revenue certainty to suppliers. *This framework allows recurring verification and issuance to align with delivery cycles.*
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. *This framework prohibits using BCUs to make on-product carbon claims or to alter product EPDs/LCAs, to avoid misleading physical customers and to preserve incentives for physical green steel.*
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.
ResponsibleSteel	An independent, multi-stakeholder standard and certification body for the steel industry, covering environmental, social, and governance criteria, including a dedicated GHG emissions measurement and decarbonization performance standard. *This framework's accounting methodology is aligned with the ResponsibleSteel International Production Standard v2.1.1 (Criterion 10.4).*
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. *Where physical procurement is limited or complex, B&C helps buyers address upstream iron/steel hotspots in Scope 3 inventories via verified attributes.*
Scrap Share	The proportion of total metallic inputs in steelmaking that comes from recycled scrap rather than virgin metallic units. *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.*
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. *The B&C framework emerged from SSBP's procurement work.*
Standards Interoperability	Effort to harmonize methods and thresholds across steel programs (e.g., ResponsibleSteel, LESS, GSCC, CISA).
(sub)component	Defined by AIM as the goods and services that companies directly purchase and sell (components) and intermediated goods and services that are inputs to the components (subcomponents).
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. *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.*
Transfer	Reassigning the right to claim a BCU from one user to another. *Co-claimed BCUs cannot be transferred under this framework. All transfers must be logged, and the transferor surrenders claim rights.*
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 ≤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.
Near-Zero Aligned	Label applied to near-zero production to signal leadership and help buyers prioritize first-of-a-kind volumes.

Appendix B: Pathways to BCUs with hot-rolled (HR) functional unit

The B&C system may consider introducing hot-rolled (HR) steel products as an additional functional unit where it improves emissions coverage, supplier flexibility, or interoperability with existing steel-sector accounting and certification systems. Some elements of an HR-based approach can already be accommodated within the current framework, while others would require additional methodological development.

What can be accommodated today. The current framework can already allow the use of product-level emissions information for a hot rolled product, including relevant Worldsteel data, for purposes such as intervention emissions intensity and displaced-product baseline selection, provided that the intervention and baseline are defined on a consistent basis. This is supposed to accommodate intermediate needs for creation and reporting of HR-based products.

Trigger for development of a formal HR functional unit. Development could be initiated where one or more of the following conditions are met:

- Steel supplier or buyer demand emerges for HR-denominated B&C units
- Interoperability efforts between site-specific and product-level emissions standards establish standardized HR product-level measurement and classification rules
- HR-level accounting is shown to materially improve capture of downstream decarbonization interventions
- Harmonized product-level data and methodologies become sufficiently robust to support eligibility, baselining, and claims without reducing comparability

Development should focus on aligning measurement boundaries, accounting rules, and baselining approaches; ensuring comparability across different finished products; and remaining consistent with the system framework where possible. Remaining differences should be addressed through targeted B&C-specific bridging rules.

Priority areas for further development:

- **Clearly defined HR boundary and eligibility**. An HR functional unit would extend the accounting boundary beyond crude steel through hot rolling and include material emissions associated with reheating and rolling processes. A consistent endpoint and eligibility criteria would need to be defined across different steel product pathways, including hot rolled coil, plate, sections, rebar, wire rod, etc.
- **Treatment of the sliding-scale threshold**. A formal HR functional unit would require defining how the sliding-scale threshold applies at the HR level, including whether and how existing thresholds should be adapted. This work should build on ongoing interoperability efforts between ResponsibleSteel and other sliding-scale standards. Over time, harmonized HR-level thresholds could provide a common basis for eligibility and BCU generation.
- **Measurement methodology**. HR-level accounting would need to remain consistent with the system's existing crude-steel measurement principles while establishing additional rules for product-level allocation, segmentation across multiple product lines, intermediate products, yield losses, and other relevant material and energy flows.

- **Conversion and matching**. HR-denominated BCUs should be matched against a clearly defined mass of HR product in the buyer's inventory.
- **Alignment across functional units**. Where crude-steel and HR functional units coexist, the framework should establish clear rules governing their interaction and preventing the same underlying emissions reduction from being issued or claimed under more than one functional unit.

Governance and development process. Introduction of an HR functional unit should follow the framework's methodology-development process, including technical assessment, stakeholder consultation, testing, and approval through the relevant governance process. An indicative development period of **6–12 months** may be appropriate, depending on the maturity of interoperability work, availability of suitable data, and the extent of methodological testing required.

Appendix C: Iron dynamic threshold

Calculation Methodology for Iron Product Level Threshold

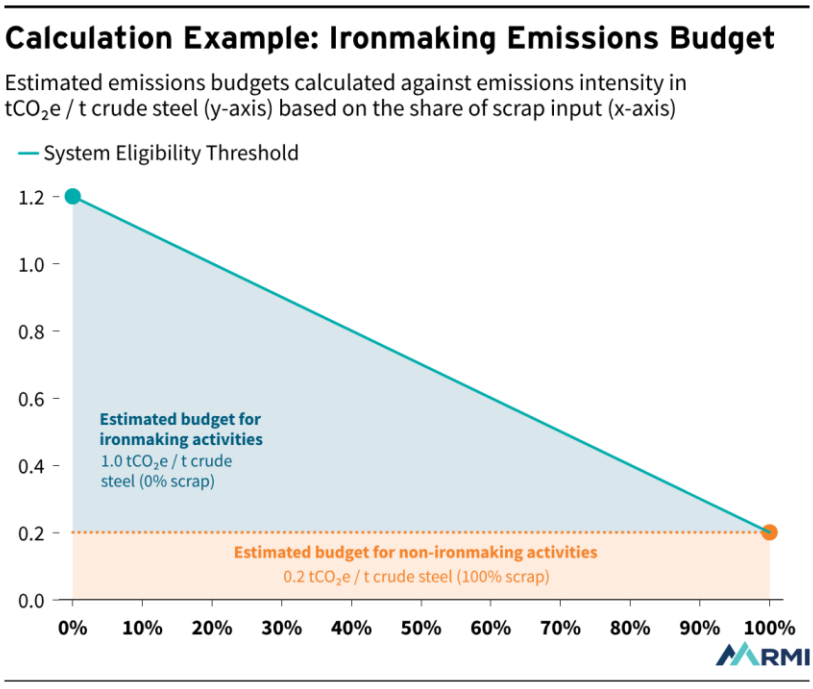
In absence of an iron product-level emissions standard or certification, the system approximates an ironmaking emissions budget from ResponsibleSteel's crude-level Decarbonization Progress Level framework to establish an iron product-level threshold of 0.87 tCO_2e per ton of iron. The iron threshold is derived from ResponsibleSteel's Decarbonization Progress Level to ensure alignment with net-zero frameworks (IEA NZS) and consistency between iron and steel function unit emissions criteria.

The iron product-level threshold is based on two calculations:

1. **An approximated ironmaking emissions budget within the crude steel-level threshold**

Ironmaking emissions are approximated from the scrap-variable crude-level threshold as the difference between the DPL3 crude-steel intensity at 0% and 100% scrap (Exhibit C1),[12] equivalent to 1 ton CO_2e per ton crude steel. This difference represents the estimated emissions budget for ironmaking activities on a crude steel product-level basis.

Exhibit C1



2. A conversion rate of **1.16 tons iron per ton crude steel**

A conversion rate is then applied to the ironmaking budget to convert the emissions budget from the crude product-level to the iron product-level. This conversion is based on two default factors: **Iron Fe%** of 92% and **downstream Fe yield** of 94%, where the effective rate is calculated as the reciprocal of the Iron

Fe content (%) multiplied by Downstream Fe Yield. To ensure qualification and fair comparison under this threshold, iron products eligible for generating EACs must contain at least 90% Fe content.

Iron products with higher %Fe content and/or downstream steelmaking yield may select a different conversion rate to account for greater steel production efficiencies downstream.[xviii] Normalizations and adjustments to iron threshold and/or the applied conversion rate may be applied in registry specifications, depending on various iron product specifications and emissions factors, such as:

- iron Fe metallization,
- iron Fe content,
- downstream yield factors and energy-related effects, and
- other relevant consumption and/or emissions factors defined by system participants leading up to registry implementation.

Example of dynamic conversion:

*If a supplier's iron production exceeds the default factors above (92%Fe content and/or downstream Fe yield of 94%), the supplier **can dynamically convert threshold** to producer-specific Fe content and Fe downstream yield.*

Product-specific Iron Threshold = $\frac{1\ ton\ CO2e\ per\ ton\ crude}{Producer-specific\ conversion\ rate\ (Iron\ Fe\ content\ x\ Downstream\ Fe\ Yield)}$

To verify iron products against the dynamically converted iron emissions threshold, iron producers will be required to disclose the following data in the BCU documentation (see Section 6.2)

1. *Iron product Fe metallic*
    a. Used to verify that product meets the minimum metallic iron content of 83% to ensure HBI passes the receiving steelmaker's product requirements and is able to be received for melt into a steel product.
1. *Iron product Fe content (%)*
    a. Used to ensure qualification and fair comparison under this threshold, iron products eligible for generating EACs must contain at least 90% Fe content.
    b. Used to verify that product is comparable with system iron emissions threshold, which is based on Fe content via the applied conversion rate.
2. *[If relevant] Adjusted conversion rate:*
    a. Used to improve functional alignment and comparability between iron and steel emissions-related eligibility criteria.

[xviii] Any improved yield assumption shall be attributable solely to the intrinsic properties of the iron feedstock (e.g., higher metallic Fe content, resulting in reduced slag generation in the EAF and correspondingly lower iron losses). Yield improvements shall not be assumed on the basis of downstream equipment or process improvements relative to the defaults specified.

Appendix D: Iron benchmark data sources

Potentially available data sources for setting iron baseline are compared in Exhibit D1, noting the difference in measurement methodology and boundary compared with the System's measurement methodology.

Exhibit D1

Comparison of 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	DRI, Pig Iron	Scope 1 and 2, and selection of material Scope 3 processes	Global coverage	Undisclosed, by subscription

Appendix E: Scrap content adjustment methodology and example

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.

Steel emissions baselines available as LCA averages may not exist at EAC scrap shares for relevant product families. For example, EAC flat production may exceed the maximum scrap content of flat product benchmarks from the EU World Steel Eco-Profile database of 19% (0.19 t scrap per t finished product). Differences in EAC scrap share and its relevant product family baseline may be due to differences in the products' underlying technology mix and corresponding rate of iron consumption for steelmaking. In such cases, scrap-adjustments shall be made to account for differences in scrap.

To implement scrap-based adjustments, producers shall adjust the emissions intensity of either the EAC or relevant steel product benchmark to align product-level scrap shares.

This framework recommends producers adjust the benchmark intensity to match the EAC scrap content to better reflect scrap displacement effects in the production system. Within a limited system of global scrap supply, increasing scrap content at any eligible production facility is likely to be accompanied by a corresponding decrease in scrap content elsewhere in the production system. To account for these scrap impacts, the additional emissions from scrap displaced in conventional ("baseline") production should be subtracted from BCU reduction value. A sliding scale gradient assigned to baseline production better reflects this impact, as EAC gradients are based on scrap displaced by decarbonized iron units. This sliding scale is based on the ResponsibleSteel Decarbonisation Progress Level formula of $y \leq b - m(x)$, depicted by the table in Exhibit E1.

Exhibit E1

ResponsibleSteel Decarbonisation Progress Levels

	b: ResponsibleSteel crude steel GHG emissions intensity performance using 0% scrap as input (tCO_2e/t crude steel)	m: gradient	ResponsibleSteel crude steel GHG emissions intensity performance using 100% scrap as input (tCO_2e/t 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

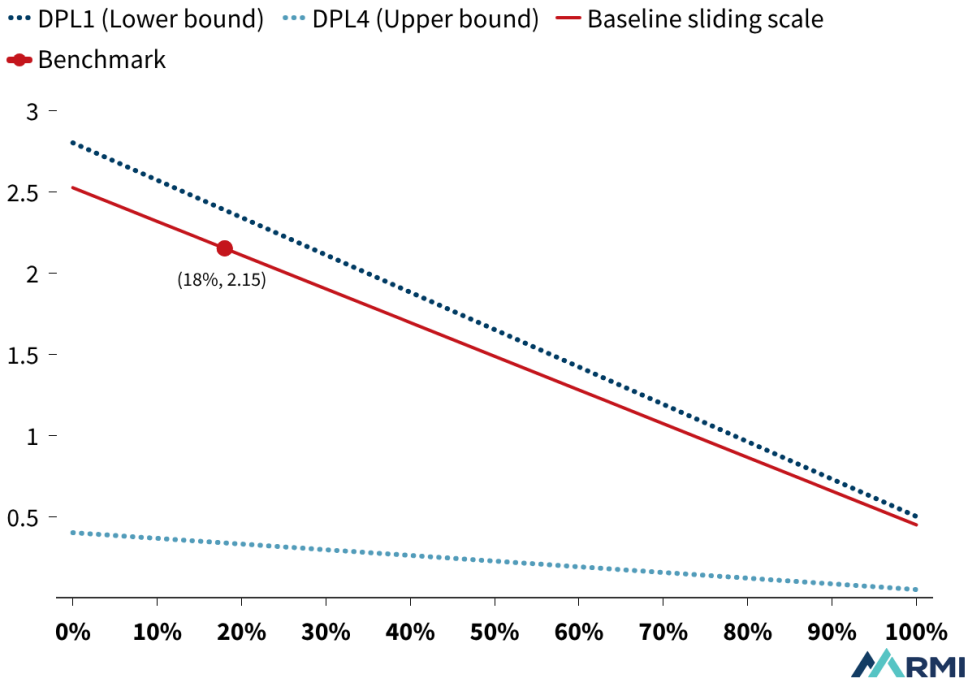
Source: ResponsibleSteel

Using the scrap-variable sliding scale gradients in Exhibit E1, producers shall first identify the point on the gradient corresponding to the selected baseline emissions intensity (e.g., red dot in Exhibit E21). Then, they derive a benchmark-specific sliding scale gradient by applying the same proportional relationship between the upper and lower bounds as in the DPL sliding scale (See Exhibit E2). This provides an equivalent emissions intensity for baseline steel production across all scrap shares to enable issuers to select a scrap-aligned benchmark. This scrap-aligned benchmark should be used in place of the original benchmark value for fair comparison with the EAC to calculate and disclose a reduction value in BCU documentation.

Exhibit E2

Derived sliding scale baseline, based on ResponsibleSteel DPL gradients

Emissions intensity in tCO_2e/t crude steel (y-axis) based on the share of scrap input (x axis)



Appendix F: Standards interoperability, harmonization and equivalency claims

Distinct GHG measurement frameworks and certification standards in the steel sector create inefficiencies in procurement and trade, weaken credibility of claims, and delay 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 ResponsibleSteel 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 ResponsibleSteel GHG criterion, which can be found in ResponsibleSteel's *Fundamentals for GHG Emissions Accounting and Classification*, 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., ResponsibleSteel Decarbonization Progress Level 3). The technical conversion project under development by ResponsibleSteel and others will support producers in identifying differences in accounting methodologies, evaluating the need for additional data inputs, and transforming 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 G: Common discrepancy areas for steel GHG measurement

Exhibit G1

Common discrepancy areas for steel GHG measurement

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. Specific to product or site, versus average of production sites, routes, and product categories.
Default emission factors	Mainly from CRU methodology for ResponsibleSteel, GaBi database, and worldsteel CO2 methodology (details in Annex 5 of the ResponsibleSteel International Production Standard v2.1.1).	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 for BCU verification against system eligibility criteria. Product-level allocation is permitted for eligible iron inputs, upon achievement of system eligibility criteria.*	If product-level allocation is used, alignment with system's product-level allocation methodology.
Upstream methane	Upstream methane leakage shall not exceed 0.2%.*	Methane leakage may not explicitly be included in GHG measurement.
Crediting	System expansion approach for electricity and steam exports, and materials/fuels used beyond system boundary. Credits calculated with the System Expansion approach represent net GHG emissions that would have been generated from the use of alternatives to the site's exported products.	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; and subsequent scrap content calculation. Default scrap share when primary data is not available.

** indicate requirements in addition to ResponsibleSteel Criterion 10.4*

Appendix H: Minimum verification, auditing, and claims requirements

Minimum verification and auditing requirements for producers with less than 3 years of production history

- Independent third-party verifiers:
    - Verification shall be conducted by an independent competent third-party verification body with demonstrated experience in GHG accounting, industrial emissions, and relevant steel production processes.
    - Verifiers should operate under recognized assurance or conformity-assessment frameworks, such as applicable ISO standards, and maintain appropriate procedures for auditor competence, independence, training, quality control, and conflict-of-interest management.
    - Verification bodies already approved under credible steel-sector certification schemes, including ResponsibleSteel (such as registry of Approved Certification Bodies),[13] may be considered to meet these requirements where their scope of approval covers the relevant GHG verification activities.
    - Where a third-party verifier is not already approved under such a sector-specific scheme**,** it shall demonstrate equivalent competence and assurance procedures, including appropriate qualifications for reviewing site-level and product-level GHG data, emissions calculation methodologies, source data, controls, and supporting evidence.[xix]
- Auditing process:
    - Auditors shall apply a risk-based verification process appropriate to the scope of the system, focusing on the supplier GHG data, calculation methodologies, supporting records, and compliance with applicable measurement and eligibility requirements.
    - Verification should include, at minimum, review of the producer's self-assessment, underlying activity data, emissions factors, calculation methods, data controls, and supporting evidence sufficient to establish reasonable confidence in the reported information.
    - The form and intensity of the audit may be adapted to the verification risk. Document review and remote verification may be sufficient where the verifier determines that these approaches provide adequate assurance; higher-risk cases may require additional testing or an on-site assessment.
    - Existing assurance procedures established under recognized standards or steel-sector certification programs, including relevant ResponsibleSteel assurance requirements, may be used where they are consistent with the system's verification objectives.

[xix] See also "auditor approvals" (1.5) and "auditor qualifications" (Annex 3) in the ResponsibleSteel Assurance Manual for additional guidance.

Claims for non-certified suppliers

Verification that production meets emissions-related system requirements, including requirements that reference external standards or classification frameworks such as the ResponsibleSteel International Production Standard v2.1.1 or Decarbonization Progress Levels, **does not constitute certification, endorsement, or recognition under those external schemes** unless the producer has separately completed the applicable certification process.

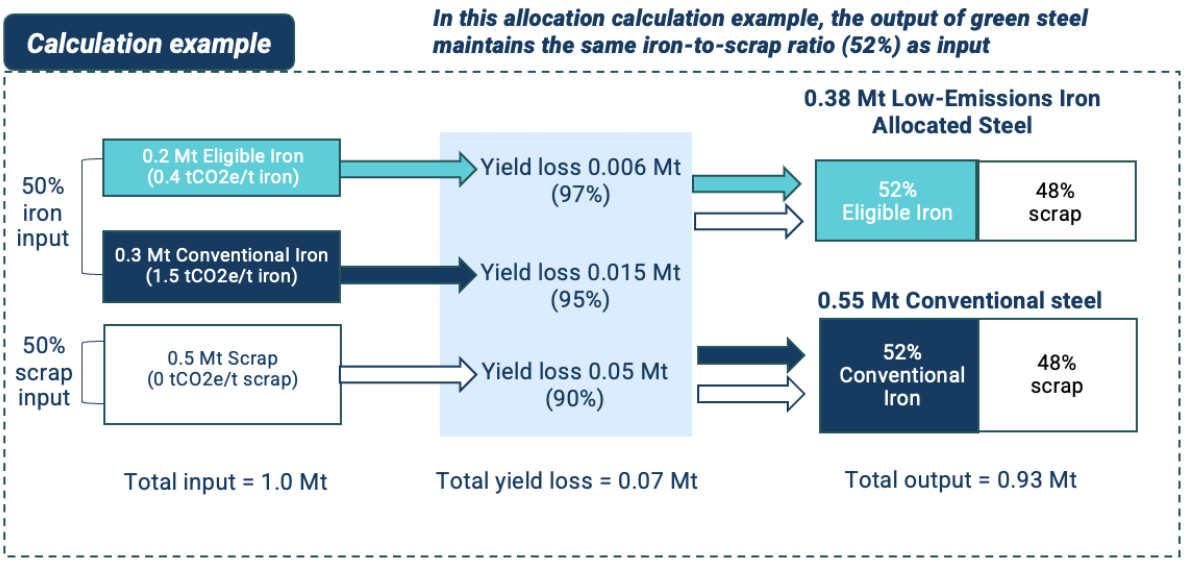
Accordingly, producers shall not use the names, labels, trademarks, certification marks, or other claims associated with ResponsibleSteel or any other referenced standard-setting or certification body unless expressly authorized under that organization's applicable rules.[14] BCU documentation and claims should state only the specific system requirements against which the production has been verified.

Appendix I: Allocation of low-emissions iron inputs for generating steel BCUs

In application, scrap emissions shall not be substituted for iron emissions to avoid emissions stacking,[xx] and yield losses between iron input and steel output shall be explicitly accounted for in calculations. See Exhibit I1 for a calculation example on allocating eligible iron inputs and addressing yield loss.

Exhibit I1

Calculation example for allocating eligible iron inputs



	Low-Emissions Iron Allocated Steel	Conventional Steel
Emissions from metallic inputs	0.194 t eligible iron * 0.4 tCO_2e/t iron + 0 = 0.08 tCO_2e	0.285 t conventional iron * 1.5 tCO_2e/t iron + 0 = 0.43 tCO_2e
Steel processing emissions	0.33 tCO_2e/t steel	0.33 tCO_2e/t steel
Product-level carbon intensity	0.08 + 0.33 = 0.41 tCO_2e/t steel	0.43 + 0.33 = 0.76 tCO_2e/t conventional steel

In addition, a steelmaker using eligible iron may generate steel BCUs only if the EACs have not already been issued for the same volume of iron by the upstream iron producer. Registry auditing requirements would be required to track and prevent double counting or double issuance. While additional safeguards, such as automated registry checks at issuance and mandatory site-level iron tracking, are

[xx] 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.

recommended, this framework does not mandate specific enforcement mechanisms or require registries to employ dedicated quality assurance managers. Implementation will be made at the discretion of registry operators.

Appendix J: 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).

Appendix K: Risks of incorporating BCU-adjusted emissions into product-level LCA and EPDs

These risks arise because product-level emissions information is designed to be shared and reused across value chains. Once a contractual BCU attribute is embedded in a product-level emissions factor, it can become a portable emissions factor, and the resulting value may be used by parties that are not registered claimants and may continue to propagate beyond the system's control. Unlike a registry-based claim, which can be linked to a defined claimant, volume, vintage, and retirement record, an LCA or EPD is routinely shared across customers and reused in downstream calculations. Once the BCU-supported benefit is embedded in that value, the system may lose visibility over who is using the attribute and whether the associated volume, timing, and claiming restrictions continue to be respected.

Exhibit K1

List of example risks

Risk	Example	Why it matters
1. Uncontrolled downstream propagation	A fabricator incorporates BCUs into a product EPD. The EPD is then shared with multiple downstream customers, which use the lower emissions factor in their own product footprints.	A BCU benefit authorized for one claimant can effectively be inherited by multiple downstream parties that were never authorized under registry rules and documentation.
2. Attribute cascading through finished products	An OEM incorporates BCUs into the PCF of a component and sells the component as lower-carbon. The customer then incorporates the lower component PCF into a finished product, whose emissions value is subsequently passed further downstream.	The contractual attribute can cascade through multiple product transformations and become increasingly detached from the original BCU, claimant, and registry record.
3. Replication of a claimant-specific emissions factor	Company A purchases BCUs associated with steel from Mill X and publishes a lower product or supplier emissions intensity. Company B also sources from Mill X and uses Company A's adjusted value as a representative emissions factor without purchasing or retiring BCUs.	A contractual, claimant-specific emissions value may be mistaken for the physical performance of the supplier or production site and reused by unrelated parties.
4. Volume multiplication through product-level disclosure	A fabricator retires BCUs covering 10,000 t of steel but applies the adjusted emissions intensity	The environmental benefit associated with a limited volume of BCUs can be spread across a

	across an EPD representing 100,000 t of annual production.	much larger volume of product, multiplying the apparent impact.
5. Temporal reuse through EPD validity periods	BCUs from a specific production vintage are incorporated into an EPD that remains valid for several years. Downstream users continue applying the adjusted factor after the underlying BCU vintage or claim period has expired.	A time-limited contractual intervention can become embedded in a multi-year product emissions factor and can be reused beyond the period for which the BCU was authorized.
6. Propagation through LCA databases	A BCU-adjusted EPD or PCF is uploaded to an LCA database and subsequently used as background data in many unrelated product assessments.	The contractual attribute may become generic secondary data, making it difficult or impossible to determine which downstream parties are using or claiming the benefit.

Appendix L: Calculation example for converting inventory unit and baseline to the EAC basis

Example: An automotive company reports **10,000 t of finished flat steel** in its inventory with 1.90 tCO_2e/t finished steel. The buyer therefore converts both its inventory quantity and its inventory emissions factor to a crude-steel-equivalent basis before comparing them with the BCU.

Step	Calculation	Result
Finished-steel inventory	—	10,000 t finished steel
Processing yield	Default factor	95%
Convert to crude-steel volume	**10,000 / 95%**	**10,526 t crude steel involved**
Finished-steel inventory emissions factor	—	1.90 tCO_2e/t finished steel
Total inventory emissions	1.90 * 10,000	19,000 tCO_2e
Downstream processing emissions	Default factor	20% of total finished steel emissions
Total addressable emissions related to crude steel	**19,000 * (1%–20%)**	**15,2000 tCO_2e**

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

Activity Data Estimation

Consistent with the AIM Standard, Appendix H, companies with spend-based physical inventory data may use activity data estimation as a preparatory step to enable use of the substitution accounting approach (Section 9.2). This approach uses the following formula:

Estimated activity volume =

[Spend-based emissions (tCO_2e)] / [Non-spend activity-based emissions factor (tCO_2e per unit activity)]

The representative emissions factor is expected to be credible and not spend-based, such as a representative regional or route-specific benchmark intensity. Once this estimate is made, the company can proceed with the substitution accounting approach described in Section 9.2.

Example: A*n appliance manufacturer wants to address emissions associated with crude steel in its purchased goods and services during a reporting period. The company spent* ***US$1 million on crude steel*** *in 2025 and uses an EEIO emissions factor for the iron and steel sector of* ***0.001756 tCO_2e/US$*** *to estimate these emissions.*

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

*0.001756 tCO_2e/US$ * US$1,000,000 =* ***1,756 tCO_2e***

To estimate the crude steel volume associated with these emissions, the company selects a baseline crude steel intensity of ***2.3 tCO_2e/t crude steel****. The company uses this baseline intensity to estimate the total volume of crude steel as:*

1,756 tCO_2e / (2.3 tCO_2e/t crude steel) = ***763.5 t crude steel***

The estimated activity volume can then be used in the substitution accounting approach.

Endnotes

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