Climate Bonds INITIATIVE

# Steel Criteria

## The Steel Eligibility Criteria of the Climate Bonds Standard & Certification Scheme

Updated: February 2024

***NOTE:*** *These Criteria can be used to certify Use-of-Proceeds Instruments, Sustainability-Linked Debt Instruments, Assets and Entities per the Climate Bonds Standard v4.0*

| Revision | Date | Summary of Changes |
|---|---|---|
| Rev. 1.2 | 27 February 2024 | Minor editorial corrections and clarifications on Biomass use |
| Rev. 1.1 | 17 July 2023 | Minor editorial corrections and revisions to framing to reflect release of CBS v4.0 |
| Rev. 1.0 | December 2022 | Published as Final for Certification |
| Rev. 0.1 | 23 June 2022 | Issued as Draft for Public Consultation |

Climate Bond Certified

## Acknowledgements

Climate Bonds gratefully acknowledges the Technical and Industry Working Group members who provided their time and expertise during the development of these Criteria. Members are listed in ***Appendix A*** at the end of this document.

Special thanks are given to ***Ali Hasanbeigi***, the lead specialist and Fabiana Contreras for coordinating the development of the Criteria through the Technical Working Group.

The Industry Working Group provided critical and useability focused consultation and feedback on the Criteria, but this does not automatically reflect endorsement of the criteria by all members.

# Definitions

**Applicant:** The term or name for any potential bond issuer, or non-financial corporate entity that might seek certification under the Steel Criteria.

**Blast Furnace (BF):** shaft furnace that is top fed with iron ore, coke, and limestone to produce hot metal that can then be fed into a BOF to produce steel. When hot metal is allowed to solidify in a pig iron casting machine, the resultant solid iron is called pig iron. The BF is the most energy-intensive step in the BF-BOF steelmaking process, generating large quantities of CO2.

**Basic Oxygen Furnace (BOF):** The BOF converts liquid hot metal from the BF into steel.

**Carbon Capture and Storage (CCS):** describes a suite of technologies that capture waste CO2, usually from large point sources, transport it to a storage site, and deposit it where it will not enter the atmosphere. Stored CO2 is injected into an underground geological formation; this could be a depleted oil and gas reservoir or other suitable geological formation.

**Carbon Capture, Utilisation and storage (CCUS):** describes a suite of technologies that capture waste CO2, usually from large point sources, to then use it in other processes, or to make products.

**Certified Entity:** The entity or part thereof which is being certified under the Climate Bonds Standard. Currently, Entity Certification is limited to non-financial Entities or segregated segments thereof, for which the Climate Bonds Initiative has Climate Bonds Standard Sector Criteria for Entity Certification.

**Climate Bonds Initiative (Climate Bonds)**: An investor focused not-for-profit organisation, promoting large-scale investments that will deliver a global low carbon and climate resilient economy. Climate Bonds seeks to develop mechanisms to better align the interests of investors, industry and government to catalyse investments at a speed and scale sufficient to avoid dangerous climate change.

**Climate Bonds Standard (CBS):** A screening tool for investors and governments that allows them to identify green bonds the proceeds of which are being used to deliver climate change solutions. This may be through climate mitigation impact and/or climate adaptation or resilience. The CBS is made up of two parts: the parent standard (CBS v4.0) and a suite of sector specific eligibility Criteria. The parent standard covers the certification process and pre- and post-issuance requirements for all certified bonds, regardless of the nature of the capital projects. The Sector Criteria detail specific requirements for assets identified as falling under that specific sector. The latest version of the CBS is published on the Climate Bonds website.

**Climate Bonds Standard Board (CBSB)**: A board of independent members that collectively represents $34 trillion of assets under management. The CBSB is responsible for approving (i) Revisions to the CBS, including the adoption of additional sector Criteria, (ii) Approved verifiers, and (iii) Applications for Certification of a bond under the CBS. The CBSB is constituted, appointed, and supported in line with the governance arrangements and processes as published on the Climate Bonds website.

**Climate Bond Certification:** allows the applicant to use the Climate Bond Certification Mark in relation to that bond. Climate Bond Certification is provided once the independent CBSB is satisfied the bond conforms with the CBS.

**Critical interdependencies**: The asset or activity's boundaries and interdependencies with surrounding infrastructure systems. Interdependencies are specific to local context but are often connected to wider systems through complex relationships that depend on factors 'outside the asset fence' that could cause cascading failures or contribute to collateral system benefits.

**Direct Reduction Iron (DRI):** also known as 'sponge iron', is iron metal that can be produced by a broad group of processes, based on different feedstocks (e.g. fossil gas, hydrogen) furnaces, reducing agents, etc. Through the reduction process, oxygen is removed from iron ore in its solid state.

**Electric Arc Furnace (EAF):** steelmaking process that mainly uses recycling ferrous scrap to produce steel. Also, DRI and Pig iron can be fed to the EAF as a scrap substitute

**Green Bond:** A green bond is a bond of which the proceeds are allocated to environmental projects or expenditures. The term generally refers to bonds that have been marketed as green. In theory, green bonds proceeds could be used for a wide variety of environmental projects or expenditures, but in practice they have mostly been earmarked for climate change projects.

**Industry Working Group (IWG):** A group of key organisations that are potential applicants, verifiers and investors convened by Climate Bonds. The IWG provides feedback on the draft sector Criteria developed by the TWG before they are released for public consultation.

**Investment Period:** The interval between the bond's issuance and its maturity date. Otherwise known as the bond tenor.

**Parent Company/Group:** A company is considered a parent company of another entity (a subsidiary) if it exercises control over the subsidiary. The terms "control" and "subsidiary" have the meaning assigned to them under International Financial Reporting Standard 10 (IFRS 10). A Parent Group consists of the Parent Company and all the companies that the Parent Company exercises control over. Where the Applicant does not belong to a group of companies, the term Parent Company applies to the Applicant.

**Sustainability-Linked Debt (SLD)**: Any debt instrument for which the financial and structural characteristics can vary depending on whether the issuer achieves predefined Sustainability/ ESG objectives. Such objectives are measured through predefined KPIs and assessed against predefined performance targets. Proceeds of SLD are intended to be used for general purposes.

**Technical Working Group (TWG):** A group of key experts from academia, international agencies, industry and NGOs convened by Climate Bonds. The TWG develops the Sector Criteria - detailed technical criteria for the eligibility of projects and assets as well as guidance on the tracking of eligibility status during the term of the bond. Their draft recommendations are refined through engagement with finance industry experts in convened Industry Working Groups (see below) and through public consultation. Final approval of Sector Criteria is given by the CBSB.

# Table of Contents

## List of Figures



## List of Tables



## List of Appendices

# 1 Introduction

## 1.1 The Climate Bonds Standard

Investor demand for climate bonds is strong and is expected to increase in line with the delivery of quality products into the market. However, investor concerns about the credibility of green labelling are also growing. Standards, assurance & Certification will be essential to improve confidence and transparency, which in turn will enable further strong growth in the market.

Today, the Climate Bonds Standard and Certification Scheme is an easy-to-use screening tool that provides a clear signal to investors and intermediaries on the climate integrity of Certified Climate Bonds. Proposals are currently under consultation to also expand certification to entities with climate integrity.

A key part of the Standard is a suite of sector-specific eligibility Criteria. Each sector-specific Criteria sets climate change benchmarks for that sector that are used to screen debt instruments, assets and/ or entities, so that only those that have climate integrity, either through their contribution to climate mitigation, and/or to adaptation and resilience to climate change, will be certified.

These sector-specific Criteria are determined through a multi-stakeholder engagement process, including TWG and IWG, convened and managed by Climate Bonds, and are subject to public consultation. Finally, they are reviewed and approved by the Climate Bonds Standard Board (CBSB).

The second key part of the Climate Bonds Standard (CBS) is the overarching Climate Bonds Standard v4.0. This documents the cross-sectoral criteria all certified instruments/ assets/ entities must meet, in addition to meeting the sector specific Criteria.

## 1.2 Environmental scope of the Steel Criteria

Currently, certification requirements address:

- Climate change mitigation; and
- Climate adaptation and resilience.

## 1.3 What can be certified under the Steel Criteria

Subject to meeting the eligibility criteria in the following sections, the following can be certified under these criteria:

- Use-of-Proceed (UoP)[1] bonds financing decarbonisation measures (e.g., retrofits) - see ***Section 3.***
- Use-of-Proceed (UoP) bonds financing steel production facilities (i.e., assets and activities) - see ***Section 4.***
- Assets not linked to any specific financing instrument (i.e., steel production facilities) - ***see Section 4.***
- Entities (steel production companies) and Sustainability-Linked Debt (SLD) issued by those entities - see ***Section 0.***

See also the Climate Bonds Standard v4.0 for any cross sectoral requirements for Use-of-Proceeds, Sustainability-Linked Debt, Asset or Entity Certification. These cross sectoral requirements must be met in addition to the steel-specific requirements described in this document.

To demonstrate compliance with the following Criteria, in accordance with the CBS, it is the applicant's responsibility to provide the information to prove compliance with each component of these Criteria. Verifiers must include this information in the scope of verification.

[1] Use-of-Proceeds (UoP) is used as shorthand throughout this document for a variety of targeted finance instruments, including green loans, repos, and asset-backed securities. Annex 1 of the Climate Bonds Standard v4.0 details the full list of instruments that can be certified.

Where the portfolio includes several separately identifiable projects, expenditures, or groups of assets, these criteria must be met for each separately identified project or asset grouping. Applicants should determine these project boundaries, which may be based on geographical and/or supply chain linkages.

## 1.4 Documents supporting these Criteria

Steel-specific information to support Applicants and Verifiers is available at Steel | Climate Bonds Initiative as follows:

- Steel Background Paper that details why the criteria were chosen
- Steel Frequently Asked Questions (FAQ's)
- Steel Criteria public consultation feedback and responses summary

In addition, the following cross cutting information to support Applicants and Verifiers is available as follows:

- The Climate Bonds Standard v4.0: contains the requirements of the overarching CBS
- The Climate Bonds Standard v4.0 Entity and Sustainability-Linked Debt Checklist documents: provides further information on the cross-sectoral requirements for Entity and Sustainability-Linked Debt Certification respectively.

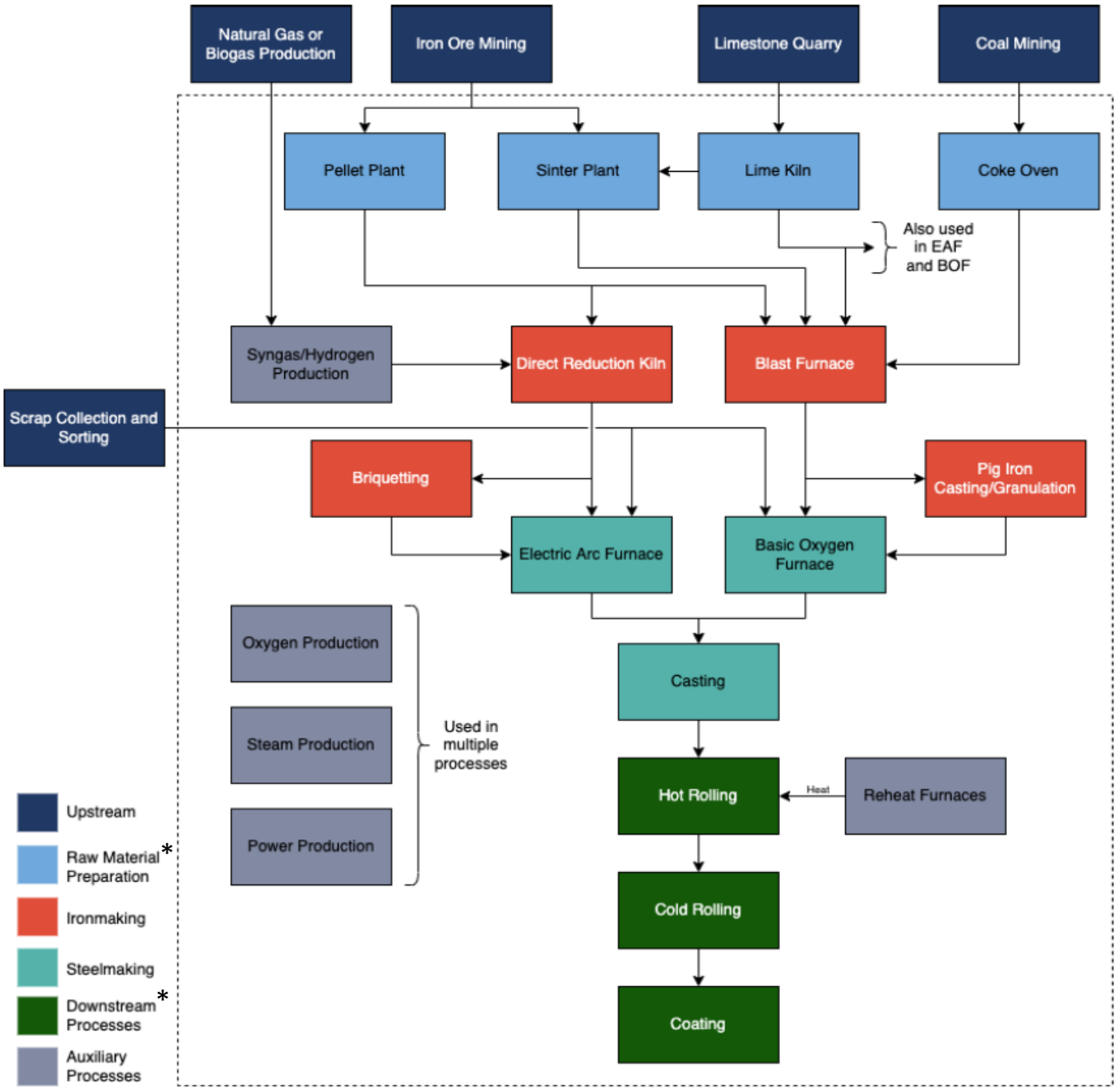
For more information on Climate Bonds and the Climate Bonds Standard and Certification Scheme, see www.climatebonds.net.

## 1.5 Revisions to these Criteria

These Criteria will be reviewed on a regular basis, at which point the TWG will take stock of the deals that are printed in the early stages and any developments in improved methodologies and data that can increase the climate integrity of future deals. As a result, the Criteria are likely to be refined over time, as more information becomes available. Certification will not be withdrawn retroactively from bonds certified under earlier versions of the Criteria.

# 2 Steel activities in scope

## 2.1 The Steel Production supply chain in scope




Boundary for activities within scope of the Steel Criteria

* Within scope provided the process is located on the same site as the steel production

Figure 1: Scope of Activities when meeting the Steel Criteria[2]

[2] Adapted from: Sustainable STEEL Principles Framework.

These Criteria cover assets and activities involved in the production of steel, and companies that operate such assets or activities. The scope boundaries begin at the raw material preparation stage and end with the final steel product coming out of the rolling and coating stages as shown in ***Figure 1***. As such, potential assets and activities that might be certified (subject to meeting the eligibility criteria) include integrated, non-integrated steel production facilities and ironmaking facilities, examples of this are shown in ***Figure 2***. Facilities that are responsible for only one stage of production in the raw material preparation and downstream stages, for example a standalone coke oven, lime kiln, sinter or pellet plant, rolling or coating facility are not eligible, See ***Section 2.4*** for details.

> ***NOTE:*** *The scope of activity is not the same as the scope of emissions. The scope of activity describes what activities can potentially be certified under these criteria. The scope of emissions (**Box 1**) describes what emissions are accounted for when meeting the emissions intensity reduction percentages for existing facilities and the pathway for entities and SLBs.*

Steelmaking facilities can have different configurations, including combinations of the processes shown within the boundary in ***Figure 1***. Examples of how this works are shown in ***Figure 2***: first, an example of an integrated steelmaker and second, an example of a non-integrated steelmaker, the processes within the sample facilities that can be certified are shown in blue.

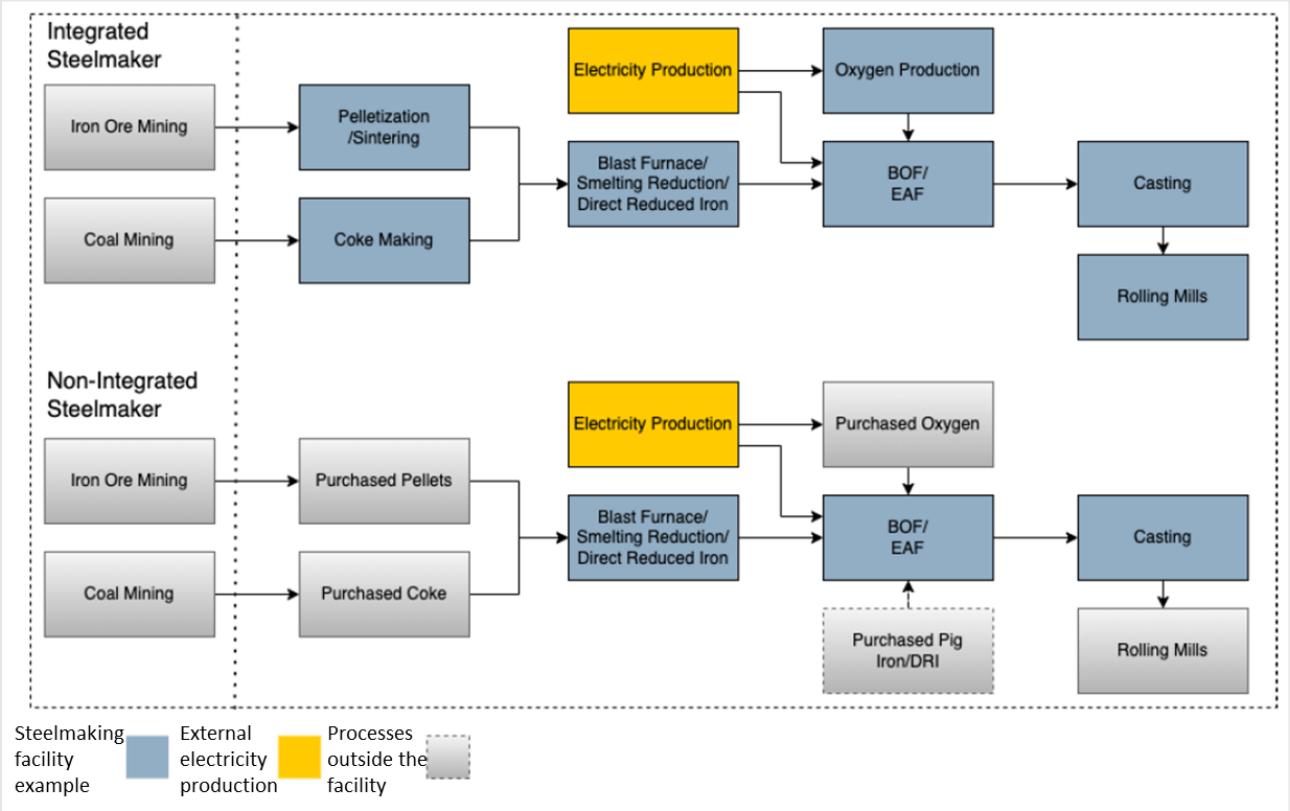



Figure 2: Examples of facilities that can be certified subject to meeting the Steel Criteria[3].

[3] Adapted from the Sustainable STEEL Principles Framework.

## 2.2 Alignment with other Sector Criteria

In respect of UoP bond certifications, where the proceeds will be allocated to multiple sectors, proof of compliance with multiple sector criteria may be required across the portfolio. For example, if the UoP bond is financing both steel activities and cement activities, then the applicant would have to prove compliance with the Steel Criteria in respect of the former and the Cement Criteria in respect of the latter.

**In respect of SLD and Entity Certifications, where the SLD or entity Performance Targets span multiple activities within the entity, all those activities will need to be assessed against the appropriate sector criteria and an overall 'pass threshold' reached. See the Climate Bonds Standard v4.0 Parts D and C respectively for more information on this.**

In some cases, it may not be immediately clear whether activities or projects might fall under these criteria or other sector criteria. The most common examples, and appropriate sector criteria to be used, are clarified in ***Table 1*** below.

**Table 1: Assets or projects partially or wholly covered by other sector criteria**

| Potential use-of-proceeds | Sector Criteria |
|---|---|
| Production of Hydrogen | **Hydrogen** |
| Buildings, commercial and/or residential, that are not solely dedicated to a steel production facility. For example, office buildings for staff | **Buildings** |
| Vehicles that cannot be demonstrated to exclusively support compliant steel activities | **Transport** |
| Production of biomass | **Agriculture/ Forestry (depending on the type of biomass)** |
| Co-processing and sorting of municipal solid waste or waste derived fuels | **Waste Management** |
| Production of bioenergy | **Bioenergy** |
| Energy generation including Solar, Wind, Marine Renewable energy and Hydropower | **Relevant corresponding sector criteria** |

## 2.3 Assets out of Scope

***NOTE:*** *Being outside of the scope of criteria does not automatically indicate that the TWG view these assets and activities as inconsistent with meeting Paris Agreement goals or with a Paris-aligned economy. In some cases, due to time and resource constraints, these Criteria do not take a stance on these issues (see details in list below). Future versions of the Steel Criteria may address these and set robust criteria alongside*

Table 2: Assets and activities out of scope

| Excluded Assets/ Activities | Comment |
|---|---|
| Iron mining | Mining in and of itself (i.e., separate from a steel plant) is not certifiable under these criteria[4] |
| Coal mining | A coal mine cannot be certified, however, producers using coal need to comply with the qualitative criteria set in ***Section 6.3*** |
| Stainless and high alloy steels production | Production of high alloy steel and associated activities are currently out of scope (to be updated in next revision of the criteria) |
| Steel scrap collection and sorting | Currently out of scope (to be updated in next revision of the criteria) |
| Raw material preparation and downstream processes (as separate activities) | Assets and activities dealing solely with the production of coke, iron ore pellets and other raw materials that are not part of an iron or steel production facility are out of the scope, as are assets only dedicated to downstream activities such as rolling, and finishing. In other words, investments in raw material preparation assets and downstream activities can only be certified as a climate bond (subject to meeting the criteria) if these installations are part of a steelmaking or ironmaking plant. |

## 2.4 Entities out of Scope

*NOTE: Being outside of the scope of criteria does not automatically indicate that the TWG view these activities or entities as inconsistent with meeting Paris Agreement goals or with a Paris-aligned economy. In some cases, due to time and resource constraints, these Criteria do not take a stance on these issues. Future versions of the Steel Criteria may address these and set robust criteria alongside*

Table 3: Entities out of scope

| Excluded Entities | Comment |
|---|---|
| Pureplay iron ore mining companies | Companies whose sole activity is mining of iron ore (i.e., separate from a steel production company). |
| Pureplay coal companies | Companies whose sole activity is coal mining (i.e., separate from a steel production company). |
| Pureplay stainless and high alloy steels production companies | Companies whose sole activity is the production of stainless and high alloy steels and associated activities. |
| Pureplay steel scrap collection and sorting companies | Companies whose sole activities are the collection and sorting of steel scrap. |

[4] This means that an iron mine cannot be certified, however integrated steel plants which are directly connected to a mine are still within scope.

# 3 Criteria for decarbonisation measures within steel production facilities

## 3.1 Overview

These criteria cover capital investments (decarbonisation measures) within facilities that have been in operation pre-2022. This differs from an investment that would finance the cost of a whole facility in that it is focused on measures or specific areas of improvement within a production facility (thus certification is granted to the measure itself and not the facility).

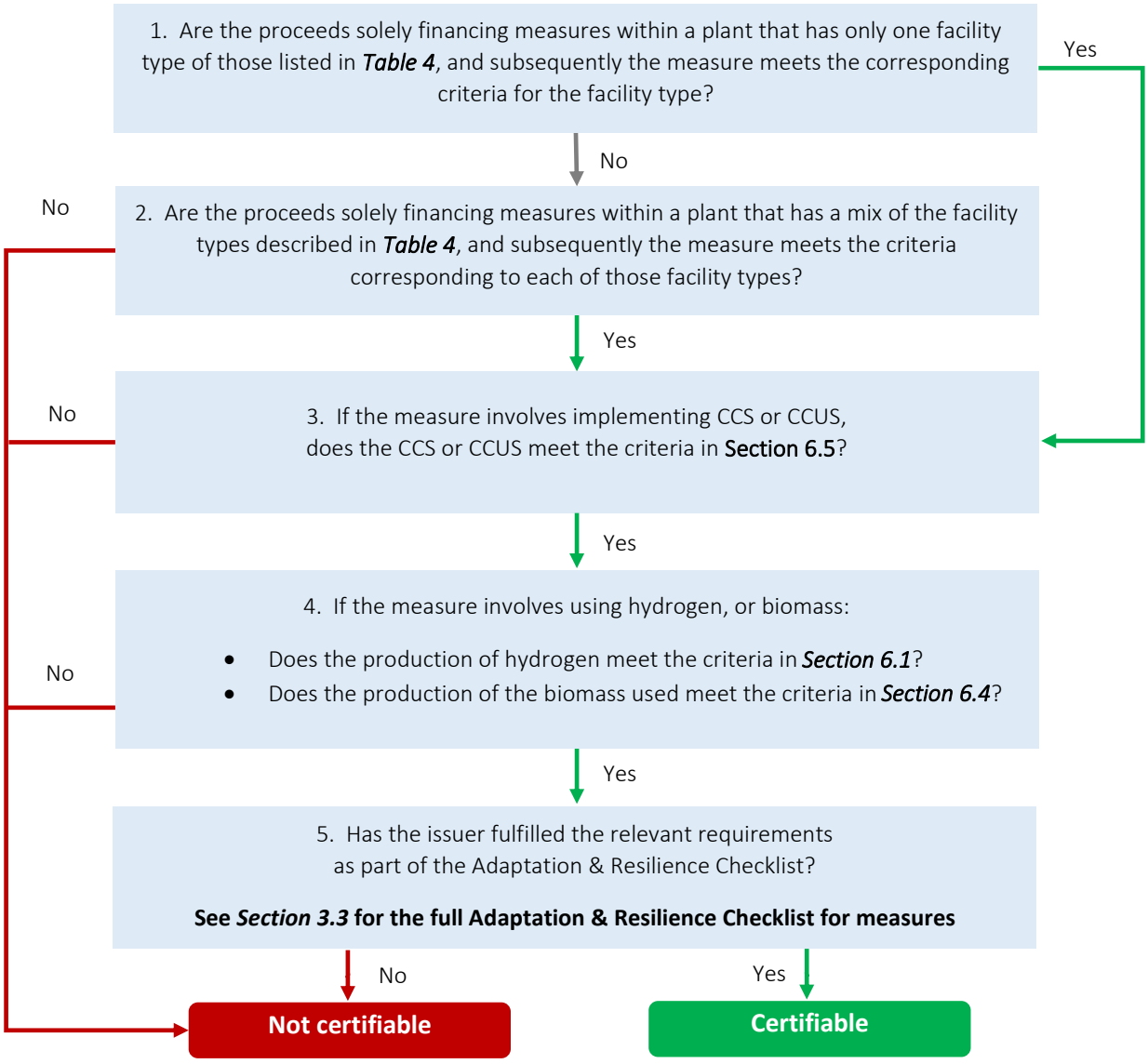



Figure 3: Overview of the Criteria for specific mitigation measures within steel production facilities

## 3.2 Mitigation Criteria

The approach to the eligibility criteria for specific mitigation measures within steel facilities, takes into account the type of facility where the measure will be implemented. This is done to reflect that for steel primary production[5] the implementation of small incremental measures will not suffice to achieve 2030 reduction targets. Consequently, capital investments should be focused on achieving significant emissions savings at the facility level, as per the percentages shown in ***Table 4.***

In addition, if the measure involves using biomass, hydrogen, or implementing CCS or CCUS, these need to meet additional criteria shown in ***Table 5.***

**Table 4: Criteria for decarbonisation measures or retrofitting activities**

| Decarbonization Measures | Mitigation criteria for measures |
|---|---|
| **Optimization of Electric Arc Furnace (EAF), installation and operation of other mitigation measures associated with EAF facilities** | Automatically eligible |
| **Measures associated to a production line with a blast furnace (BF) that became operational in 2007 or later** | The investment shall not be for relining; AND<br>The decarbonisation measure(s) that has been/ will be implemented at the facility and has/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by:<br>• 20% if the pre-decarbonisation baseline emissions intensity is greater than or equal to 2 $tCO_2$/t steel; OR<br>• 15% if the pre-decarbonisation baseline emissions intensity is less than 2 $tCO_2$/t steel;<br><br>Demonstration of compliance shall be done as described in ***section 3.2.1***. |
| **Measures associated to a Production line with a blast furnace (BF) that became operational prior to 2007** | The investment shall not be for relining; AND<br>The decarbonisation measure(s) has been/ will be implemented at the facility and has/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by 50%;<br><br>Demonstration of compliance shall be done as described in ***section 3.2.1***. |
| **Measures associated to a Production line with a DRI** | Either:<br>a) if plant is fossil gas based: The measure(s) have been/ will be implemented at the facility and have/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by 20%<br>Demonstration of compliance shall be done as described in ***section 3.2.1***; OR<br>b) if plant is coal based: The measure(s) have been/ will be implemented at the facility and have/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by 40%<br><br>Demonstration of compliance shall be done as described in ***section 3.2.1***. |

[5] Steel produced from iron ore via the BF-BOF or DRI process

Table 5: Additional criteria for specific decarbonisation measures or retrofitting activities

| Type of Decarbonisation Measure | Mitigation criteria |
|---|---|
| Carbon Capture and Storage or Carbon Capture Utilization and Storage (CCS or CCUS) | Meets the criteria in ***Section 6.5*** |
| Measures involving the use of hydrogen | Hydrogen meets the criteria in ***Section 6.1***. |
| Measures involving the use of biomass | Meets the criteria in ***Section 6.4*** |

Table 6: Examples of steel production Capital Investments eligible for certification

Eligibility due to their CO2 emissions mitigation potential - subject to meeting the emissions reductions thresholds in ***Table 4*** (the list is not exhaustive)

| Asset and activity types | Example use of proceeds (Capital investments) |
|---|---|
| Heat recovery | Installation, upgrade, and operation of heat recovery systems |
| Optimization of Blast Furnace | Pulverize Coke Injection, Top Gas Recycling, Stove waste gas heat recovery |
| Optimization of Basic Oxygen Furnace | Recovery of BOF gas and sensible heat |
| Optimization of Coke Plant | Coke Dry Quenching |
| Optimization of Sinter Plants | Sinter Plant Heat Recovery |
| Optimization of EAF | Oxyfuel burners, EAF scrap preheating, CHP from waste heat |
| Optimization of rolling and finishing and reheat furnace | High Efficiency Burner, Flue-gas monitoring, combustion optimization, exhaust gas heat recovery |
| Optimization of casting | Near net-shape casting |
| Optimization of monitoring and control systems | Installation, upgrade, and operation of advanced sensors and digitized control equipment and systems |
| Carbon Capture Utilization and Storage | Installation, upgrade, and operation of infrastructure and equipment related to CO2 capture of emissions from steel production. |
| Fuel switching | Infrastructure, revamps or modifications of equipment needed for the production of steel using hydrogen or biomass as reducing agent |
| Electrification of heat | Electrification of reheating furnacing |

### 3.2.1 Demonstration of compliance

The Applicant shall provide a plan with evidence of the decarbonisation measures that have been/ will be implemented; and have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond, such that its end performance is equivalent to the performance requirements shown in ***Table 4.*** The Applicant may use one of the following options:

1. **Gradual improvement over the bond's term:** applicant shall set the performance improvement targets such that the required end performance shall be achieved over the bond term. Progress against the decarbonisation targets to be assessed every 36 months showing evidence that the decarbonization targets are being met.
2. **Front-loaded improvement in initial years:** the required end performance is achieved in the initial years of the bond term and on following assessments evidence shows performance is maintained.

These two options are described in detail in the worked example below. Both options still require annual monitoring, verification and reporting under the CBS.

**Worked example for calculating the necessary emissions reduction for an eligible measure/ bundle of measures**

A group of steel plants including:

A. An integrated facility with a BF-BOF that became operational in 2008 that produces steel with an emissions intensity of 2 $tCO_2$/t steel
B. A mixed facility with a BF that became operational in 2009 that produces steel with an emissions intensity of 2.20 $tCO_2$/t steel and an EAF.

Will have retrofits carried out including: modifications to allow for the production of steel using hydrogen and biomass as reducing agents and electrification of reheating furnacing. The bond term is 5 years and starts in 2025.

Per the mitigation criteria per type of facilities in ***Table 4***, to be eligible, the measure or bundle of measures must:

- Achieve a reduction in emissions of 20% at plant level for the steel produced via BF-BOF. This means for "facility A" reaching an emissions intensity of 1.6 $tCO_2$/t steel and for "facility B" reaching an emissions intensity of 1.76 $tCO_2$/t steel
    - Facility A has already implemented retrofits and can reach 20% improvement in the second year of bond term. In subsequent reporting the facility has to show that this improvement is maintained.
    - Facility B will be able to achieve improvement gradually. Target is set to achieve 10% performance improvement for the first assessment and the rest (10% additional improvement from the baseline) by the end of the bond term.
- The EAF facility within "Facility B", does not have additional requirements for the mitigation measures implemented.
- The biomas used shall meet criteria in ***section 6.4***
- The hydrogen used shall meet criteria in ***section 6.1***

The applicant certifying measures shall:

- Have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond (according to the options explained above) such that its end performance is equivalent to the upgrade performance requirements determined by the term of the bond
- Report pre-retrofit emission intensity
- Report post-retrofit emissions intensity
- Report percent improvement achieved

Emissions intensity shall be calculated according to the scope of emissions per ***section 4.3.2.2 - Box 1*** and emissions calculation guidance per ***Box 2***

## 3.3 Adaptation & Resilience Criteria

This section describes the Adaptation & Resilience (A&R) Component of the eligibility Criteria for decarbonisation measures. To demonstrate compliance, all measures must satisfy the requirements of the checklist detailed in ***Table 7***.

The checklist is a tool to verify that the applicant has implemented sufficient processes and plans in the design, planning and decommissioning phases of a measure to ensure that the operation and construction of the asset minimises environmental harm and the asset is appropriately adaptive and resilient to climate change and supports the adaptation and resilience of other stakeholders in the surrounding system, if applicable.

All elements of the checklist must be addressed, and appropriate evidence provided that these requirements are being met or are not applicable in respect of the specific measure(s) linked to the bond. It is expected that the applicant's evidence will encompass a range of assessment and impact reports and associated data, including but not limited to those reports required to meet national and local licensing and approval processes. This might include Development Consent Orders, planning regulations adhered to, Environmental Impact Assessments, Vulnerability Assessments and associated Adaptation Plans.

It is the applicant's responsibility to provide the relevant information to the verifier. Verifiers must include this information in the scope of verification.

For each question in the scorecard:

- A 'yes' indicates sufficient proof given.
- A 'no' indicates insufficient proof.
- In case of a 'n/a,' please justify why the question is not applicable.

**Table 7: Adaptation and Resilience Checklist for steel production mitigation measures**

| No. | Adaptation and Resilience checklist for Steel Production Mitigation Measures | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| **Area 1:** Clear boundaries and critical interdependencies between the measure and the system it operates within are identified. | | | |
| 1.1. | Boundaries of the measures are defined using:<br>1. a listing of all equipment associated with the use of the bond proceeds,<br>2. a map of their location or illustration of their place/role within the overall facility, and<br>3. identification of the expected operational life of the equipment. | | |
| 1.2. | Critical interdependencies between the measure(s) and the system within which it/they operate(s) are identified. Identification of these interdependencies should consider the potential for adverse impacts arising from, but not limited to:<br>1. relationships of the measure(s) to nearby flood zones;<br>2. relationships of the measure(s) to surrounding water bodies and water courses;<br>3. reduction in pollinating insects and birds;<br>4. reduction in biodiversity or High Conservation Value[6] habitat;<br>5. dust and other practices that affect air quality;<br>6. appropriation of land or economic assets from nearby vulnerable groups[7]. | | |

[6] High Conservation Value (HCV) habitat criteria in accordance with www.hcvnetwork.org.

[7] According to IFC Performance Standards

| No. | Adaptation and Resilience checklist for Steel Production Mitigation Measures | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| **Area 2:** An assessment has been undertaken to identify the key physical climate hazards to which the measure will be exposed and vulnerable to over its operating life. | | | |
| 2.1 | Key physical climate risks and indicators of these risks are identified in line with the following guidelines:<br>• Risks are identified based on (a) a range of climate hazards, and (b) information about risks in the current local context, including reference to any previously identified relevant hazard zones, e.g., flood zones.<br>In order to be confident that measures are robust and flexible in the face of climate change uncertainties, it is essential that the climate risks being assessed and addressed cover those that are of greatest relevance to steel production equipment. The physical characteristics of climate change that must be considered in the risk assessment include:<br>• Temperature rise<br>  o High temperatures can impact the operation and efficiency of certain types of equipment.<br>• Increasing intense precipitation events<br>  o Heavy rainfall can result in flash pluvial flooding, which could significantly impact industrial assets[8].<br>  o Drought may alter or reduce availability of water with temperature increase.<br>• Changes in cloud cover, wind speed or increasing temperature extremes<br>  o Poses risks to the availability of reliable energy, both electrical or thermal.<br>• Sea-level rises<br>  o Potential for flooding of coastal infrastructure and assets at risk from storm surge events.<br>• Increased soil erosion<br>  o Risks to the availability of raw materials.<br>  o Risk to transport routes for supply chains.<br>**Guidance for carrying out Risk Assessments:**<br>• Users should apply climate scenarios based on representative concentration pathway (RCP) 4.5 and 8.5 or similar/ equivalent to ensure consideration for worst case scenario.<br>• Risk assessments should use both top-down methods and bottom-up methods that look at inherent system vulnerabilities in local context.<br>• A broad range of models can be used to generate climate scenarios.<br>• For risk assessment, the TCFD The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities is recommended. | | |
| **Area 3:** The measure is suitable to climate change conditions over its operational life | | | |
| 3.1 | The equipment must be tolerant to the range of climate hazards identified in item 2 of this checklist and not lock-in conditions that could result in maladaptation. | | |
| 3.2 | Risk reduction actions/strategies must be tolerant to a range of climate hazards and not lock-in conditions that could result in maladaptation. | | |

[8] Flood risk and resilience will likely have interdependencies with local and national agencies, for example related to local flood defences, coastal flood risk management, shoreline management plans etc.

| No. | Adaptation and Resilience checklist for Steel Production Mitigation Measures | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| **Area 4:** The measure does no harm to the climate resilience of the defined system it operates within, as indicated by the boundaries of and critical interdependencies with that system as identified in item 1 in this checklist. | | | |
| 4.1 | The equipment itself does not pose significant risk of harm to the system it is located within or others' natural, social, or financial assets according to the principle of best available evidence during the investment period, taking into account the boundaries and critical interdependencies as defined in item 1 in this checklist.<br>Harm is defined as an adverse effect on any of the following items:<br>1. Adverse effects on local water bodies and water courses;<br>2. Air pollution from dust and other pollutants;<br>3. Relationships of the measure to nearby flood zones;<br>4. Reduction in pollinating insects and birds;<br>5. Reduction in biodiversity or High Conservation Value[9] habitat;<br>6. Appropriation of land or economic assets from nearby vulnerable groups[10]. | | |

[9] High Conservation Value (HCV) habitat criteria in accordance with HCV Network

[10] According to IFC Performance Standards

# 4 Criteria for steel production facilities

## 4.1 Overview

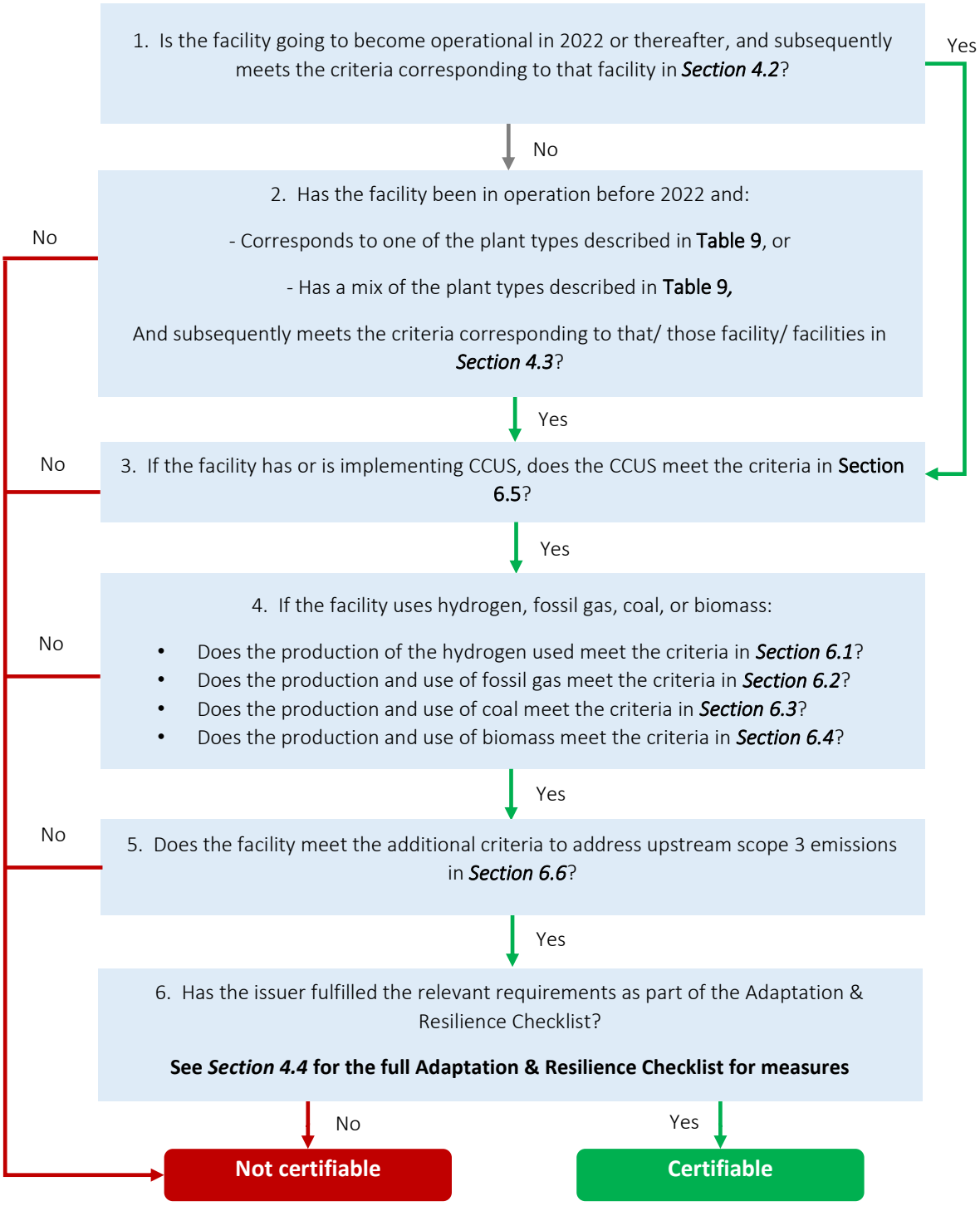



Figure 4: Overview of the Criteria for steel production facilities

## 4.2 Mitigation Criteria for facilities becoming operational in 2022 or thereafter

**Table 8** lists investments in new assets eligible for certification due to their low emissions potential, and any associated eligibility criteria specific to those investments.

The type of facilities listed are in alignment with the deep decarbonization of the sector. Additional cross cutting criteria in ***Section 6*** have been set to account for emissions or other potential issues resulting from the technologies, energy sources or feedstocks used.

**Table 8: Eligible new iron and steel production facilities and applicable certification criteria for each type of facility**

| Eligible Facility | Facility specific mitigation criteria |
|---|---|
| **BF-BOF production line with integrated CCS or CCUS** | CCS or CCUS should capture at least 70% of all emissions[11].<br>CCS or CCUS complies with criteria in ***Section 6.5*** |
| **Smelting reduction production line with integrated CCS or CCU** | |
| **Fossil gas-based DRI-EAF production line with integrated CCS or CCU** | |
| **Fossil gas based DRI with integrated CCS or CCUS** | |
| **Scrap based Electric Arc Furnace (EAF)** | The facility:<br>• Needs to use 70%[12] of scrap as total annual inputs; OR<br>• The combined scrap and (100%) Hydrogen based DRI should add to at least 70% of the EAF total annual inputs |
| **(100%) Hydrogen-based DRI** | Hydrogen meets the criteria in **Section 6.1** |
| **(100%) Hydrogen-based DRI-EAF production line** | |
| **Electrolysis of iron ore steelmaking production line** | A plan that describes how the use of renewable energy will be increased/introduced in the facility within the term of the bond through different strategies such as:<br>a) Increasing renewable-based[13] captive power generation<br>b) Increasing renewable-based power purchase agreement<br><br>The plan shall be provided with evidence of the strategies that will be implemented. Progress of the implementation plan to be assessed every 36 months. |

[11] There are multiple sources of emissions in a steel mill, which poses an economical and technical challenge for the implementation of CCS or CCUS. With 70% capture rate we refer to an average of the emissions captured from all point sources. This aims at promoting investments in 90% capture at the highest emitting point source (e.g. the BF) that should translate in 70% for the overall facility. As technology advances retrofitting the rest of the facility to capture the remaining emissions shall become feasible.

[12] Close to the global average use of scrap and used in the IEA G7 report www.iea.org/reports/achieving-net-zero-heavy-industry-sectors-in-g7-members as the threshold for scrap to distinguish between primary and secondary steelmaking.

[13] Energy produced from renewable sources such as wind, solar, and small hydropower generation.

## 4.3 Mitigation Criteria for facilities operational prior to 2022

For proceeds that are financing a whole ironmaking or steel production facility the criteria in **Table 9** applies.

These mitigation criteria have been set to allow improvements in the emissions mitigation of existing steel production capacity, without locking in technologies that will impede achieving the decarbonization targets of the sector[14] after 2030. On the other hand, small incremental measures will not suffice to achieve the 2030 reduction targets, particularly for BF-BOF facilities, thus investments should be focused on the implementation of a bundle of measures (see examples of applicable measures in **Table 6**) that will mitigate emissions by a significative rate shown in **Table 9**.

**Table 9: Criteria for proceeds that are financing a whole existing production facility**

| Facility type | Mitigation criteria specific to that plant |
|---|---|
| **Electric Arc Furnace** | A plan that describes how the use of renewable energy will be increased/introduced in the facility within the term of the bond through different strategies such as:<br>a) Increasing renewable-based[15] captive power generation<br>b) Increasing renewable-based power purchase agreement<br><br>Demonstration of compliance shall be done by providing evidence of the increase in renewable energy use over the term of the bond. |
| **Production line with a blast furnace (BF) that became operational in 2007 or later** | The investment shall not be for relining; AND<br>A bundle of decarbonisation measures has been/ will be implemented at the facility that has/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by:<br>• 20% if the pre-decarbonisation baseline emissions intensity is greater than or equal to 2 tCO2/t steel; AND by 2030 the emissions intensity of the facility should be below 1.8 tCO2/t steel; OR<br>• 15% if the pre-decarbonisation baseline emissions intensity is less than 2 tCO2/t steel; AND by 2030 the emissions intensity of the facility should be below 1.8 tCO2/t<br><br>Demonstration of compliance shall be done as described in ***section 4.3.1*** |
| **Production line with a blast furnace (BF) that became operational prior to 2007** | The investment shall not be for relining; AND<br>A bundle of decarbonisation measures has been/ will be implemented at the facility that have/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by 50%; AND<br>The emissions intensity of the facility should be below 1.8 $tCO_2$/t steel by 2030<br>Demonstration of compliance shall be done as described in ***section 4.3.1*** |
| **Production line with a DRI** | Either:<br>a) if plant is fossil gas based: A bundle of decarbonisation measures has been/ will be implemented at the facility that have/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by 20%; OR<br>b) if plant is coal based: A bundle of decarbonisation measures has been/ will be implemented at the facility that have/ will reduce the facility's emissions intensity ($tCO_2$/t steel) between 2022 and 2030 by 40%<br>Demonstration of compliance shall be done as described in ***section 4.3.1*** |
| **Smelting reduction production line** | |

[14] These criteria are based in the pathway described in section 5.3.3, please refer to this section and the background paper for the rationale of the thresholds set for emissions reduction. Other pathways used as reference and further discussed in the background paper include those developed by: MPP, E3G and PNNL, IDDRI.

[15] Energy produced from renewable sources such as wind, solar, and small hydropower generation.

### 4.3.1 Demonstration of compliance

The applicant shall provide a plan with evidence of the decarbonisation measures that have been/ will be implemented; and have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond such that its end performance is equivalent to the performance requirements shown in **Table 9.** Applicant may use one of the following options:

3. **Gradual improvement over the bond's term:** applicant shall set the performance improvement targets such that the required end performance shall be achieved over the bond term. Progress against the decarbonisation targets to be assessed every 36 months showing evidence that the decarbonization targets are being met.
4. **Front-loaded improvement in initial years:** the required end performance is achieved in the initial years of the bond term and on following assessments evidence shows performance is maintained.

These two options are described in detail with the use of examples in the worked example below. Both options still require annual monitoring, verification and reporting under the CBS.

**Worked example for implementing Criteria for proceeds that are financing a whole existing production facility**

A 5-year bond starting in 2025 for a fossil gas based DRI-EAF facility needs to demonstrate that:

- The DRI (gas) plant has/ will implement decarbonisation measures that have/ will reduce the facility's emissions intensity (tCO2/t steel) between 2025 and 2030 by 20%:
- A facility with 0.99 tCO2/t steel baseline emissions shall reach an emissions intensity of 0.79 tCO2/t steel.
- The facility has a plan to address scope 2 emissions within the term of the bond (as per the mitigation criteria for EAF plants in **Table 9**)
- MRV (monitoring, reporting and verification), and mitigation measures for methane leaks on-site and upstream are in place. Any venting or burning shall be reported and accounted in the GHG assessment. Methane emissions must be below 0.2% (See Section 6.2 for more details)

In addition, if CCS or CCUS is implemented or if hydrogen, biomass or coal are used, specific criteria in ***Section 6*** needs to be met.

This bond would have to show compliance in annual reporting in 2025, 2028, and 2030.

The applicant shall:

- Have a contract or agreement with a certified energy auditor demonstrating the assets emissions intensity shall be improved over the term of the bond such that its end performance is equivalent to the upgrade performance requirements determined by the term of the bond this can be done either by:
  2. Showing the facility has already implemented retrofits and can reach 20% improvement in the first 3-yearly verification. In subsequent reporting the facility has to show that this improvement is maintained.
  3. Showing the facility will be able to achieve improvement gradually. Target is set by applicant to achieve 10% performance improvement for the first 3-yearly assessment and the rest (10% additional improvement from the baseline) by the end of the bond term.
- Report pre-retrofit emission intensity
- Report post-retrofit emissions intensity
- Report percent improvement achieved

Emissions intensity shall be calculated according to the scope of emissions per ***section 4.3.2.2 - Box 1*** and emissions calculation guidance per ***Box 2***

## 4.3.2 Methodological notes

### *4.3.2.1 Assessment at asset level, not portfolio level*

If the bond portfolio (e.g. for UoP certification) or the asset portfolio (for Asset certification) includes several production facilities, these criteria must be met by each facility for the portfolio to be eligible. I.e., there is no averaging across the portfolio.

### *4.3.2.2 Technical Guidance for calculating Emissions Intensity*

The requirements Applicants should follow to calculate their emissions intensity are described below. The guidelines in Box 1 and Box 2 are based on the approach for calculating emissions intensity of the Sustainable STEEL Principles[16].

**Box 1: Scope of emissions "The Fixed System Boundary"[17]**

Currently, steelmakers calculate their $CO_2$ emissions intensity according to their scope of production and in accordance with scopes 1, 2, and/or 3, as determined by the GHG Protocol. However, in the steel sector, there is a high degree of variability in the ownership structure and level of vertical integration of production facilities. This causes inconsistent emissions accounting, particularly for scope 3 and makes it difficult to compare steel companies equitably.

To ensure the emissions intensity values are comparable, the approach from the Sustainable STEEL Principles[18], where applicants quantify their emissions intensity within a Fixed System Boundary of activities[19] (shown in ***Figure 5***) applies.

Within the Fixed System Boundary, Applicants are responsible for counting all emissions within the same boundary to calculate emissions intensity, irrespective of ownership of various processes and regardless of whether they are an integrated or non-integrated producer. This does not abandon the accounting standard of scopes 1, 2, and 3 as determined by the GHG Protocol; rather, it establishes a singular boundary of emissions resulting from the production of steel, regardless of whether those emissions are considered scope 1, 2, or 3 for the producer. Within this boundary lies a steelmaker's scope 1 and 2 emissions and a portion (depending on the level of vertical integration) of scope 3 emissions (specifically in the categories of purchased goods and services and processing of sold products).

(cont.)

[16] Developed by the Rocky Mountain Institute (RMI) and the Climate Aligned Finance Working Group and available at: https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[17] All the information in this section is taken from the Sustainable STEEL Principles, more details are available at : https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[18] Developed by the Rocky Mountain Institute (RMI) and the Climate Aligned Finance Working Group and available at: https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[19] Informed by the recommendations of the Net-Zero Steel Pathway Methodology Project (NZSPMP) available at: www.netzerosteelpathwayproject.com/

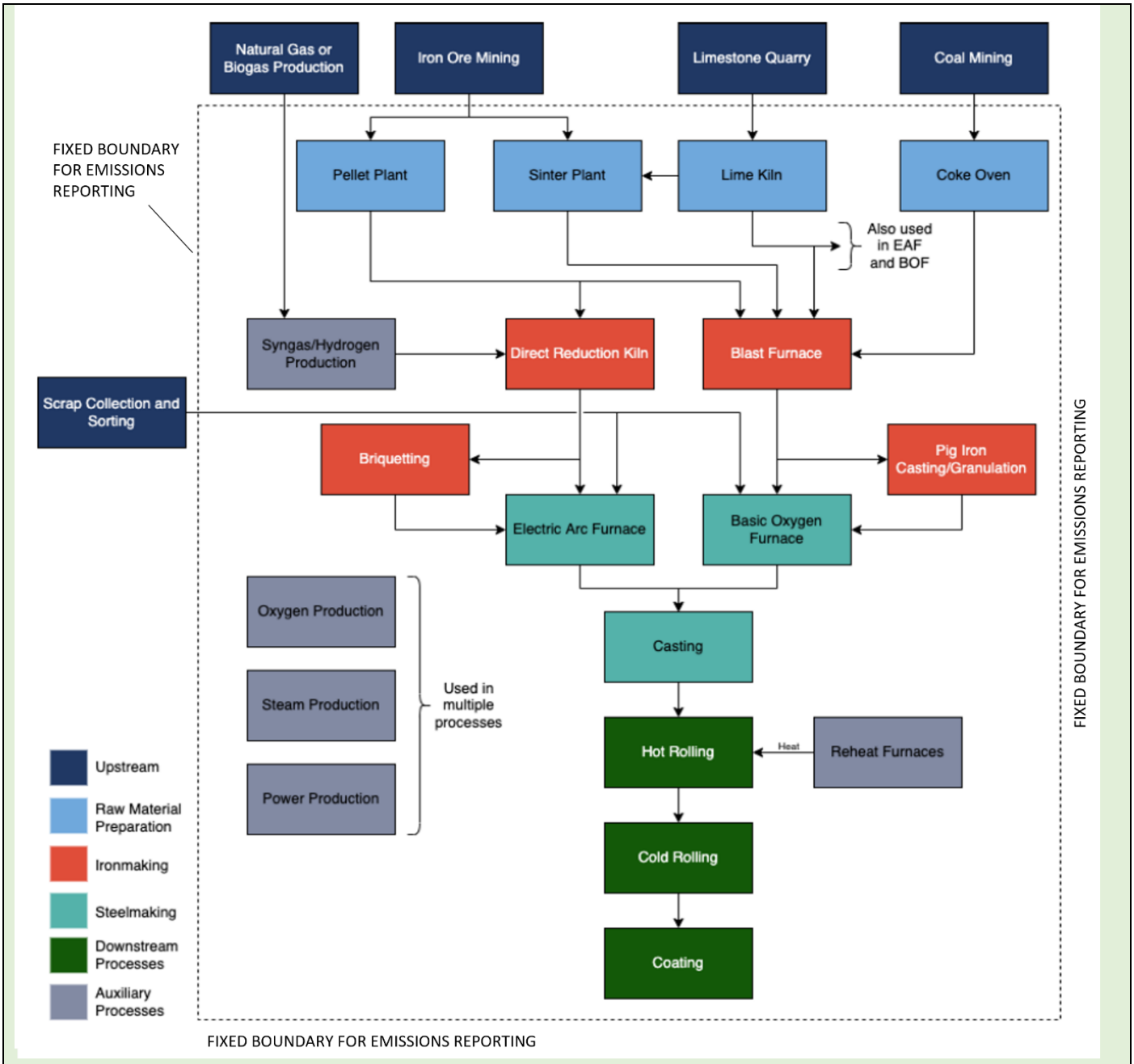



Figure 5: Fixed System Boundary for reporting steelmaking emissions[20].

For instance, in **Figure 6** we have an example of an integrated and of a non-integrated steelmaker. For the integrated steelmaker, when calculating its emissions, all emissions within the boundary represent scope 1 and 2. On the other hand, the non-integrated producer purchases good and services as part of the production process, the emissions of those purchases (e.g. pellets production) or from further processing that is not done in-house, represent scope 3, but since these are within the boundary, need to be accounted for in the emissions intensity calculation.

[20] Source: RMI's elaborations based on ISO 14404, the Net-Zero Steel Pathways Methodology Project, the World Steel Association, and ACT - Assessing Low Carbon Transition.

Non-vertically integrated steel producers can use either Primary Emissions Data sourced directly from their suppliers and off-takers, or standard emissions factors if they are unable to secure data sourced directly (or have a large number of suppliers/ off-takers).

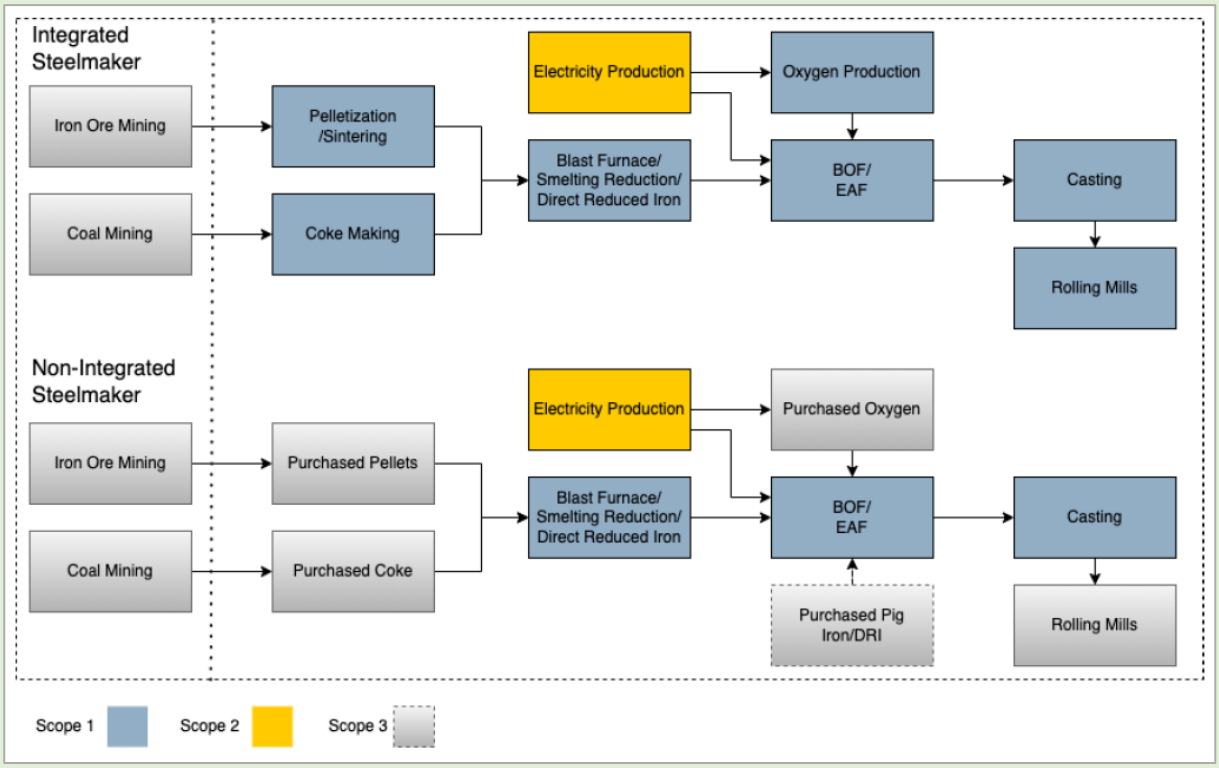



**Figure 6: Example of scope 1, 2, and 3 emissions within the Fixed System Boundary**

Other considerations to take into account regarding the scope of **emissions can be found in Appendix XII.1 of the Sustainable STEEL Principles document**[21]. Here is a list of the applicable topics:

- **Accepted standard emissions factors** are available in part 5. "Data Sources" of Appendix XII.1[22], these shall be used only when Primary emissions data is not available.
- **Pellet plant scope**: iron ore mining and beneficiation are not included in the Fixed System Boundary. To avoid confusion, the definition of Pellet Plant Operations[23] is proposed as "any drying and grinding steps that occur after the upgrading (e.g., via magnetic separation, flotation, etc.) of the iron ore as well as feed preparation (e.g., wetting and mixing with binders), balling, induration, and screening steps to produce pellets". This is illustrated in Exhibit 15 on Appendix XII.1.
- **Credits:** Credits will only be considered for Exports of Intermediate Products outside of the Plant which are also usable in the steel supply chain (e.g., pellet, sinter, lime, and coke). Intermediate Products are all liquids and solids generated during the raw materials preparation processes and ironmaking processes listed in Figure ***5*** on Appendix XII.1.
- **Electricity Emissions Factor:** for methodology and emissions factors see Appendix XII.1 (4 - Electricity Emissions Factor)[24].

While all emissions resulting from ironmaking, steelmaking, and auxiliary processes fall within the Fixed System Boundary, emissions from iron and coal mining are considered out of scope[25]. However, qualitative criteria have been set up in ***section 6*** of this document to account for methane leaks resulting from the use of coal and fossil gas.

[21] https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[22] https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[23] Based on the European Union's Best Available Techniques reference documents (BREFs) and

[24] https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[25] The scenarios utilized under this methodology do not include mining emissions within the steel sector boundary. Therefore, the inclusion of mining emissions in the calculation of the emissions intensity would result in inconsistencies in the scope with the thresholds set for emissions intensity reduction and also with the decarbonization pathway in section 5.3.3; this approach is also consistent with other standards including ISO, Worldsteel and the ACT Methodology. In the future, as scenarios allow, the fixed boundary can be expanded to include emissions from mining, as well as additional GHG emissions, such as methane.

**Box 2: Emissions Calculation Guidelines [26]**

**The calculation procedure is adapted from and expanded, based on the ISO 14404 series, which is the standard used by the steel industry to calculate emissions at the Plant level, specifically:**

$$E_{CO2} = \sum_{t=1}^{N} K_{t,d,CO2} \times Q_{t,d,CO2} + \sum_{t=1}^{N} K_{t,i,CO2} \times Q_{t,i,CO2} - \sum_{t=1}^{N} K_{t,c,CO2} \times Q_{t,c,CO2}$$

Where:

**t** (from 1 through N): refers to each fuel, energy, or other input (emissions source)

**K:** refers to emissions factors[27]

**Q:** refers to Plant quantity

**d:** direct - refers to emissions from fuel sources and electricity use occurring within a steel Plant, where the emissions factor is defined based on the carbon intensity of that fuel source/electricity generation

**i:** indirect - refers to emissions that occur outside of a steel Plant (for example, if pellets are Imported). These emissions should be determined by the relevant producer/consumer and transferred to the steel company. Where this is not possible, average emissions factors can be used[28]. Note that this is an expansion of the categories defined in ISO 14404 and include downstream processes (such as rolling), which may not be performed on the steelmaking Plant but need to be included to comply with the Fixed System Boundary outlined in ***Figure 5***. Transport emissions are not included.

**c:** refer to Credit Emissions (see definition in ***Box 1***).

This calculation provides the overall emissions which is converted to an intensity figure by dividing by the Tons of Steel Produced:

$$I_{co2} = \frac{E_{co2}}{M_{total}}$$

Where $I_{co2}$ refers to carbon Emissions Intensity, $E_{co2}$ refers to total emissions; and $M_{total}$ refers to total Tons of Steel Produced.

## 4.4 Adaptation & Resilience Criteria

This section describes the Adaptation & Resilience (A&R) Component of the eligibility Criteria for steel production facilities. To demonstrate compliance, all facilities must satisfy the requirements of the checklists detailed below in ***Table 10***.

The checklists are tools to verify that the applicant has implemented sufficient processes and plans in the design, planning and decommissioning phases of a facility/facilities to ensure that the operation and construction of the facility minimises environmental harm and the facility is appropriately adaptive and resilient to climate change and supports the adaptation and resilience of other stakeholders in the surrounding system, if applicable.

All elements of the checklist must be addressed, and appropriate evidence provided that these requirements are being met or are not applicable in respect of the specific facility linked to certification. It is expected that the applicant's evidence will encompass a range of assessment and impact reports and associated data, including but not limited to those reports required to meet national

[26] All the information in this section is taken from the Sustainable STEEL Principles, more details are available at : https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[27] See Electricity Emissions Factor and Data Sources in Appendix XII.1 of the Sustainable STEEL Principles at: https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[28] ibid

and local licensing and approval processes. This might include Development Consent Orders, planning regulations adhered to, Environmental Impact Assessments, Vulnerability Assessments and associated Adaptation Plans.

It is the applicant's responsibility to provide the relevant information to the verifier. Verifiers must include this information in the scope of verification.

For each question in the scorecard:

- A 'yes' indicates sufficient proof given.
- A 'no' indicates insufficient proof.
- In case of a 'n/a,' please justify why the question is not applicable.

**Table 10: Adaptation and Resilience Checklist for steel production facilities**

| No. | Adaptation and Resilience checklist for Steel Production Facilities<br>(Note, if the facility shares the same site with an iron mine, the applicant must consider both the production plant and the mine in the scope of the assessment) | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| **Area 1:** Clear boundaries and critical interdependencies between the facility/facilities and the system it operates within are identified. | | | |
| 1.1. | Boundaries of the infrastructure are defined using:<br>1. a listing of all facilities associated with the use of the bond proceeds,<br>2. a map of their location, and<br>3. identification of the expected operational life of the facilities. | | |
| 1.2. | Critical interdependencies between the facility/facilities and the system within which it/they operate(s) are identified. Identification of these interdependencies should consider the potential for adverse impacts arising from, but not limited to:<br>1. Relationships of the facilities to nearby flood zones;<br>2. Relationships of the facilities to surrounding water bodies and water courses;<br>3. Relationships of the asset/project to residential neighbourhoods surrounding the plant;<br>4. Damage or reduction in value of neighbouring property due to boundary structures at risk of falling during storm events;<br>5. Reduction in pollinating insects and birds;<br>6. Reduction in biodiversity or High Conservation Value[29] habitat;<br>7. Dust and other practices that affect air quality;<br>8. Appropriation of land or economic assets from nearby vulnerable groups[30]. | | |
| **Area 2:** An assessment has been undertaken to identify the key physical climate hazards to which the measure will be exposed and vulnerable to over its operating life | | | |
| 2.1 | Key physical climate risks and indicators of these risks are identified in line with the following guidelines:<br>• Risks are identified based on (a) a range of climate hazards, and (b) information about risks in the current local context, including reference to any previously identified relevant hazard zones, e.g., flood zones.<br>In order to be confident that steel production facilities are robust and flexible in the face of climate change uncertainties, it is essential that the climate risks being assessed and addressed cover those that are of greatest relevance to industrial facilities and infrastructure such as steel production plants and other infrastructure. The physical characteristics of climate change that must be considered in the risk assessment include:<br>• Temperature rise | | |

[29] High Conservation Value (HCV) habitat criteria in accordance with www.hcvnetwork.org.

[30] According to IFC Performance Standards

| No. | Adaptation and Resilience checklist for Steel Production Facilities<br>(Note, if the facility shares the same site with an iron mine, the applicant must consider both the production plant and the mine in the scope of the assessment) | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| | ○ High temperatures can impact the operation and efficiency of certain types of equipment.<br>○ Increase in water and energy consumed for cooling purposes.<br>• Increasing intense precipitation events<br>○ Heavy rainfall can result in flash pluvial flooding, which could significantly impact industrial assets[31].<br>○ The site may experience reduced access or egress due to site flooding.<br>• Landslides/ ground movement<br>○ Damage on buildings, equipment and infrastructure<br>○ The site may experience reduced access or egress<br>• Drier seasons<br>○ Drought may alter or reduce availability of water with temperature increase.<br>○ Potential increased use or reliance on mains water for dust suppression and cleaning.<br>○ Potential for increase in dust emissions from the site.<br>• Decreased river flow<br>○ Risks to the availability of raw materials.<br>○ Risk to transport routes for supply chains.<br>• Changes in cloud cover, wind speed or increasing temperature extremes<br>○ Poses risks to the availability of reliable energy, both electrical or thermal.<br>• Sea-level rises<br>○ Potential for flooding of coastal infrastructure and assets at risk from storm surge events.<br>○ Reduction of useful life of assets due to frequent exposure to salty water<br>• Increased coastal/ river erosion<br>○ Risks to the availability of raw materials.<br>○ Risk to transport routes for supply chains.<br>• Wildfires<br>○ Severe damage on buildings, equipment and industrial infrastructure<br>○ Explosions<br>○ Supply chain disruption<br>**Guidance for carrying out Risk Assessments:**<br>• Users should apply climate scenarios based on representative concentration pathway (RCP) 4.5 and 8.5 or similar/ equivalent to ensure consideration for worst case scenario.<br>• Risk assessments should use both top-down methods and bottom-up methods that look at inherent system vulnerabilities in local context.<br>• A broad range of models can be used to generate climate scenarios<br>• For risk assessment, the TCFD The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities is recommended. | | |
| **Area 3:** The measures that have or will be taken to address those risks, mitigate them to a level such that the infrastructure is suitable to climate change conditions over its operational life. | | | |
| 3.1 | The following are examples of risk management activities that applicants might consider, or that might be adopted as part of regulations (e.g. codes and standards). This list is not exhaustive, and applicants should fully assess the mitigation measures that are relevant to the climate risks and impacts identified in the risk assessment. | | |

[31] Flood risk and resilience will likely have interdependencies with local and national agencies, for example related to local flood defences, coastal flood risk management, shoreline management plans etc.

| No. | Adaptation and Resilience checklist for Steel Production Facilities<br>(Note, if the facility shares the same site with an iron mine, the applicant must consider both the production plant and the mine in the scope of the assessment) | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| | **Temperature**<br>• Design standards that maintain equipment rating over its lifetime performance in the face of all potential ranges of temperature rise.<br>• Resilience measures that ensure employees can continue to work at more extreme temperatures (e.g., air conditioning).<br>• Water can be cleaned and recirculated for reuse on site<br>• Alternative cooling systems.<br>• Assess how efficient the current cooling system is, and to propose upgrades or modifications where necessary.<br>**Extreme Rainfall**<br>• Design for resilience to pluvial flooding.<br>• Assessment of site drainage requirements.<br>• Make sure there are suitable alternative transport routes to and from the site.<br>**Drier Seasons**<br>• Measures are in place to review and minimise water use and to maximise collection and use of rainfall<br>• Mains water capacity is adequate, taking into account reduced availability of rainwater for activities such as dust suppression and cleaning<br>**Changes in cloud cover, wind speed or increasing temperature extremes**<br>• Reduced reliance on imported energy and storage infrastructure.<br>**Sea-level rises**<br>• Prevent corrosion. Measures could include making sure that plant or equipment prone to corrosion are protected, such as by being painted with resistant coating, regularly inspected and maintained<br>• Flood risk assessment and planning.<br>**Increased flooding**<br>• Flood risk assessment and planning.<br>• Site installations outside of potentially affected zones.<br>• Ensure flood defence systems and coastal management plans are adequate.<br>**Increased coastal/ river erosion**<br>• Shoreline management plans/ coastal erosion assessment<br>**Landslides/ ground movement**<br>• The potential for ground movement and landslides should be taken into account when assessing sites for steel production infrastructure.<br>**Wildfires**<br>• Implement active fire prevention measures such as fire detector, gas detector, design of sprinkler systems.<br>• Wildland and vegetation management<br>**General risk mitigation measures:**<br>• Business continuity plans<br>• Production restoration plans<br>• System security standards<br>• Employee capacity building | | |
| 3.2 | Risk reduction measures must be tolerant to a range of climate hazards and not lock-in conditions that could result in maladaptation. | | |

| No. | Adaptation and Resilience checklist for Steel Production Facilities<br>(Note, if the facility shares the same site with an iron mine, the applicant must consider both the production plant and the mine in the scope of the assessment) | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| **Area 4:** The facilities do no harm to the climate resilience of the defined system they operate within, as indicated by the boundaries of and critical interdependencies with that system as identified in item 1 in this checklist. | | | |
| 4.1 | The facilities themselves do not pose significant risk of harm to the system they are located within or others' natural, social, or financial assets according to the principle of best available evidence during the investment period, taking into account the boundaries and critical interdependencies as defined in item 1 in this checklist.<br>Harm is defined as an adverse effect on any of the following items:<br>1. Adverse effects on local water bodies and water courses;<br>2. Air pollution from dust and other pollutants;<br>3. Relationships of the asset/project to nearby flood zones;<br>4. Reduction in pollinating insects and birds;<br>5. Reduction in biodiversity or High Conservation Value[32] habitat;<br>6. Appropriation of land or economic assets from nearby vulnerable groups[33]. | | |
| **Area 5:** Additional requirements for facilities sharing a site with an iron mine (facilities without an onsite iron mine need not complete this section) | | | |
| 5.1 | Evidence is provided of a viable Mine Rehabilitation Plan[34] which includes the following details:<br>• Post closure land use<br>• Legal compliance<br>• Progressive rehabilitation<br>• Stakeholder engagement<br>• Baseline conditions have been assessed<br>• Presence of a monitoring plan | | |
| 5.2 | Evidence is provided of a viable Biodiversity Management Plan[14] which includes the following details:<br>• Post closure land use<br>• Legal compliance<br>• Progressive rehabilitation<br>• Stakeholder engagement<br>• Baseline conditions have been assessed<br>• Presence of a monitoring plan | | |
| **Area 6:** The applicant is required to demonstrate that there will be ongoing monitoring and evaluation of the relevance of the risks and resilience measures and related adjustments to those measures will be taken as needed (reporting is required based on the term of certification, which depends on the finance instrument or asset being certified). | | | |
| 6.1 | Indicators for risks identified under item 2 in this checklist are provided. | | |
| 6.2 | Indicators for risk mitigation measures identified under item 3 in this checklist are provided. | | |
| 6.3 | Indicators for "fit for purpose" resilience benefit measures identified under item 4 in this checklist are provided. | | |
| 6.4 | Applicants have a viable plan to annually monitor (a) climate risks linked to the infrastructure, (b) climate resilience performance, (c) appropriateness of climate resilience measure(s) and to adjust as necessary to address evolving climate risks. | | |

[32] High Conservation Value (HCV) habitat criteria in accordance with www.hcvnetwork.org

[33] According to IFC Performance Standards

[34] The GCCA provide thorough guidance on developing such plans: https://gccassociation.org/wp-content/uploads/2020/05/GCCA_Guidelines_Sustainability_Biodiversity_Quarry_Rehabilitation_May_2020-1.pdf

| No. | Adaptation and Resilience checklist for Steel Production Facilities<br>(Note, if the facility shares the same site with an iron mine, the applicant must consider both the production plant and the mine in the scope of the assessment) | Proof Given | Overall Assessment |
|---|---|---|---|
| | | For verifier to complete | |
| 6.5 | Where production or operation has been interrupted, the extent of disruption (for example in reduction in volume output or revenue) should be measured and reported, together with the cause of the interruption. Any actions taken to reduce the risk of further impacts should also be recorded. | | |

# 5 Steel Criteria for Entities and Sustainability-Linked Debt (SLD)

The following sections detail similar, yet distinct, steel-specific criteria depending on what is being certified:

- A "Certified Entity" (in this case, a steel production company or a business segment carrying out steel production) - See ***Section 5.1***
- SLD issued by such a company - See ***Section 5.2.***

***Section 5.3*** contains methodological notes applicable to these requirements.

See also the Climate Bonds Standard v4.0 for the cross sectoral requirements for Entity and SLD Certification relating to Transition Plans and Disclosure for the Certified Entity and requirements in respect of the Parent Group (if any). These cross sectoral requirements must be met in addition to the steel-specific requirements described here.

***NOTE:*** *Current proposals would allow for the certification of only part of a company or group of companies, or SLD that relates to only part of a company or group of companies. See the Climate Bonds Standard v4.0 for full details. This flexibility enables the certification of the part of a company or group of companies relating to steel production, separate from the certification of other activities of the company or group of companies of which it forms a part.*

## 5.1 Steel Criteria for Certified Entities

Two levels of entity certification are available, described in ***Table 11***:

**Table 11: Two levels for Entity Certification**

| Certification Level | Entity Certification Requirements |
|---|---|
| **Level 1: "Aligned"** | **Climate mitigation criteria**<br>1. At the time of certification, the Certified Entity's steel production facilities average emissions intensity meets the entity-level pathway threshold and their future Performance Targets to 2050 continue to meet those declining thresholds (see ***Section 5.3***); *and*<br>2. At the time of certification, all of the Certified Entity's facilities using hydrogen, biomass, coal or fossil gas as fuel or reducing agent meet the cross-cutting criteria in ***Sections 6.1 to 6.4;*** *and*<br>3. If the Certified Entity's production facilities employ CCS or CCUS, it meets the criteria in ***Section 6.5;*** *and*<br>4. The Certified Entity meets the requirements for other scope 3 emissions detailed in ***Section 6.6*** *and details of this to be provided in the Transition Plan; and*<br>5. For any plant of the Certified Entity becoming operational post certification date, that plant will meet the criteria described in ***Section 4.2*** from day 1 of commencing operation. Details of this to be provided in the Transition Plan.<br><br>**Adaptation and Resilience Criteria**<br>6. All of the Certified Entity's steel production facilities meet the adaptation and resilience criteria described in ***Section 4.4***, and that is reassessed and reconfirmed every five years. |
| **Level 2: "Transitioning"** | The criteria are the same as for Level 1, except:<br>The Certified Entity's steel production facilities average emissions do not meet the entity-level pathway threshold at the time of certification, but the future Performance Targets align with those entity-level emissions thresholds by 30 December **2030** and will continue to meet them after that date. |

## 5.2 Steel Criteria for Sustainability-Linked Debt (SLD)

Two levels of SLD certification are available, described in ***Table 12***.

**Table 12: Two levels for SLD Certification**

| SLB Tier | SLD Certification Requirements |
|---|---|
| **Level 1: "Aligned"** | **Climate mitigation criteria**<br>1. At the time of certification, the average emissions intensity of the steel production facilities to which the future Performance Targets of the debt are linked *and* their future Performance Targets for those facilities align with the entity-level pathway threshold from now through to 2050 (see ***Section 5.3***); *and*<br>2. At the time of certification, all of the Certified Entity's facilities using hydrogen, biomass, coal or fossil gas as fuel or as a reducing agent meet the cross-cutting criteria in ***Sections 6.1 to 6.4;*** *and*<br>3. If the Certified Entity's production facilities employ CCS or CCUS, it meets the criteria in ***Section 6.5;*** *and*<br>4. The Certified Entity meets the requirements for other scope 3 emissions detailed in ***Section 6.6*** *and details of this to be provided in the Transition Plan; and*<br>5. For any plant becoming operational post certification date, that plant will meet the criteria described in ***Section 4.2*** from day 1 of commencing operation. Details of this to be provided in the Transition Plan.<br>**Adaptation and Resilience Criteria** |

| SLB Tier | SLD Certification Requirements |
|---|---|
| | 6. All of the Certified Entity's steel production facilities meet the adaptation and resilience criteria described in ***Section 4.4,*** and that is reassessed and reconfirmed every five years. |
| **Level 2: "Transitioning"** | The criteria are the same as for Level 1, except:<br>At the time of certification, the average emissions intensity of the steel production facilities to which the Performance Targets of the debt are linked does not meet the entity-level pathway threshold, but their future Performance Targets for those facilities align by 30 December **2030** and continue to align thereafter through to 2050 (see ***Section 5.3.3***). |

## 5.3 Methodological notes

### 5.3.1 Assessment at portfolio level

Assessment of whether the Certified Entity's steel production activities meet the emissions intensity threshold is determined at a portfolio level. That is, the average emissions intensity across all of the steel production facilities is calculated. It is not necessary to assess each facility separately.

### 5.3.2 The Fixed System Boundary: scope of emissions

The scope of emissions to be included is the same as those for individual production facilities. See ***Section 4.3.2.2 - Box 1*** for details.

### 5.3.3 Entity-level emissions intensity thresholds for the Certified Entity

To assess the net-zero alignment of entities and SLD instruments the approach from the Sustainable STEEL Principles[35] that is consistent with around a 50% chance of limiting long-term average global temperature rise to 1.5°C without a temperature overshoot was adopted[36].

Rather than utilizing a single carbon budget to derive the thresholds, the Sustainable STEEL Principles differentiates between emissions resulting from the production of steel from iron ore (primary steel) and the production of steel from scrap or used steel available for reprocessing (secondary steel) [37] to reflect the significant difference in carbon intensities of the two main ways of producing steel acknowledging that these require separate decarbonization trajectories[38]. Under these principles, steelmakers are evaluated based on their specific usage of scrap, this means that each steelmaker's decarbonization target is company-specific, weighted based on their use of External Scrap.

The applicant's Emissions Intensity, weighted by Scrap Charge, shall be compared against an adaptation[39] of the International Energy Agency Net-Zero by 2050 Scenario[40] (referred from now on as IEA NZE). The adapted scenario results in a split decarbonisation pathway illustrated in ***Figure 7*** and emission intensity thresholds given in ***Table 13***.

[35] the Sustainable STEEL Principles, more details are available at : https://climatealignment.org/wp-content/uploads/2022/06/sustainable_steel_principles_framework.pdf

[36] The principles utilize two decarbonization scenarios, which together form an Alignment Zone. In these criteria, on the other hand, only the 1.5°C scenario from the IEA was adopted. Please refer to the Background paper for rationale behind the adoption of this approach

[37] For the rationale on differentiating between emissions from primary and secondary steel see Background Paper.

[38] The split trajectory approach was first proposed by the "Net-zero Steel Pathway Methodology Project" and then used by the Rocky Mountain Institute (RMI) to develop the "Sustainable STEEL Principles".

[39] This Benchmark is a modified version of the "Net Zero by 2050" scenario published by the International Energy Agency (IEA) in 2021as follows: Yearly emissions and scrap utilization data was interpolated using the decadal emissions and scrap utilization data published by the IEA in the "Net Zero by 2050" report; Scope 1 emissions were taken directly from the IEA's "Net Zero by 2050" report, while scope 2 emissions were estimated using the technology shares of total production included in the report paired with the corresponding emissions factors included in the Mission Possible Partnership model.

[40] International Energy Agency, "Net Zero by 2050: A Roadmap for the Global Energy Sector," May 2021, www.iea.org/reports/net-zero-by-2050

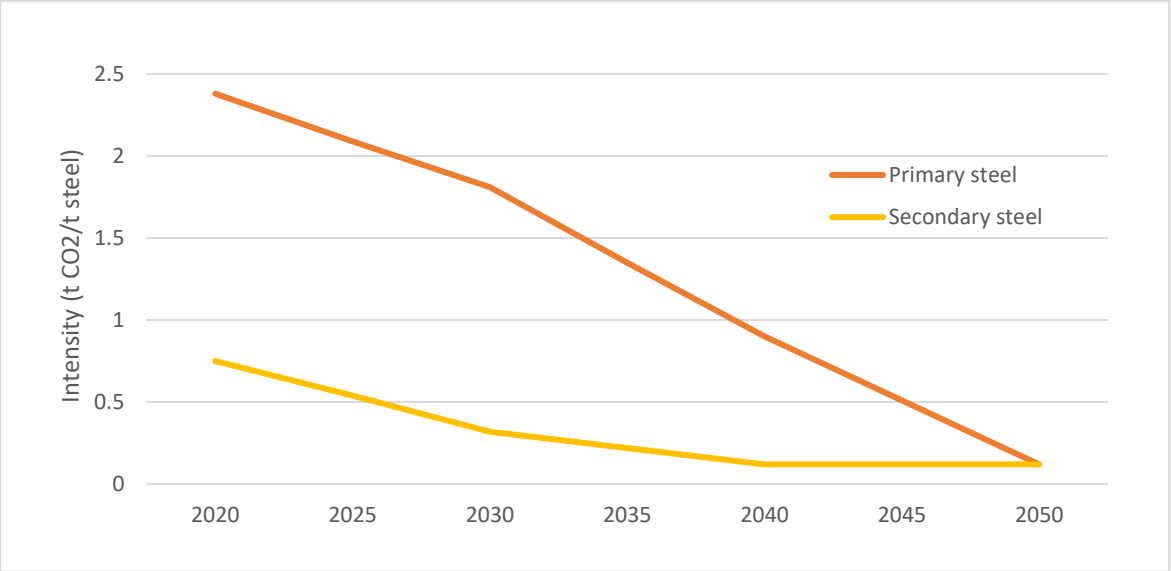



Figure 7: The emissions pathway for all steel production companies (scope 1 & 2 emissions combined)[41]

Table 13: Threshold values forming the emissions pathway for all steel production companies

| IEA NZE Trajectory | | |
|---|---|---|
| Year | Primary Intensity (t CO2/t steel) | Secondary Intensity (t CO2/t steel) |
| 2020 | 2.38 | 0.75 |
| 2025 | 2.09 | 0.54 |
| 2030 | 1.81 | 0.32 |
| 2035 | 1.35 | 0.22 |
| 2040 | 0.90 | 0.12 |
| 2045 | 0.51 | 0.12 |
| 2050 | 0.12 | 0.12 |

**Note:** a linear trajectory is assumed between these date points

**Source:** Rocky Mountain Institute (RMI)[42]

### Calculating the thresholds and assessing alignment:

The pathways are used to determine the alignment of a company based on its emissions and use of external scrap. To show compliance with the pathway the steelmaker must determine the IEA NZE thresholds they need to meet each year as the weighted sum of the primary and secondary trajectories, with the weights being the share of external scrap by weight (for secondary production) and other metallic inputs (for primary production).

To determine their alignment Applicants need to follow the steps below (see example in **Table 14**):

1. Disclose the annual data on Emissions Intensity: calculate (according to the guidelines from the STEEL Principles explained in ***Box 1*** and ***Box 2***) their Emissions Intensity by dividing total CO2 emissions (using the Fixed System Boundary in ***Figure 5***) by the mass of steel produced from steelmaking processes:

[41] Provided by the Rocky Mountain Institute, more information can be found here https://climatealignment.org/wp-content/uploads/2022/06/split_trajectory_briefing.pdf

[42] Provided by the Rocky Mountain Institute, more information can be found here https://climatealignment.org/wp-content/uploads/2022/06/split_trajectory_briefing.pdf

$$\frac{Tons\ of\ CO_2\ emitted}{Mass\ of\ steel\ produced\ in\ tons}$$

2. Disclose the annual data on Scrap Charge: the fraction of Scrap-based Inputs used in steel production. Reporting is only required on purchased Pre-consumer[43] or Post-Consumer[44] External Scrap[45] and the Ore-based Inputs are based on the mass and iron content of purchased product (i.e., iron ore, pellets, sinter, pig iron and DRI/HBI), according to the following equation:

$$F_s = \frac{M_s}{(M_S + \sum_{i=1}^{N} M_i \times x_i)}$$

Where $M_s$ is the mass of scrap (defined as mass of purchased External Scrap minus the mass of sold Home Scrap), and $M_i$ and $x_i$ are the mass and iron grade, respectively, of each Ore-based Input used.

3. Generate a trajectory target for the steelmaker for each year as the weighted sum of the primary and secondary thresholds (determined from the IEA NZE in **Figure 7**), with the weights being the Scrap Charge (for secondary production) and one minus the Scrap Charge (representing other metallic inputs for primary production).
4. Check if the company's total emissions are above or below the target.

If the company's emissions are below the target, this means they are aligned with 1.5°C, consequently they can apply to a Tier 1 certification. On the contrary if the company's emissions are above the target, it is not aligned with 1.5°C yet, thus it can apply to a tier 2 certification, subject to demonstrating they will align by 2030 (see ***Table 11*** (for entity certification) or ***Table 12*** (SLD certification)).

**Table 14: Example calculation to determine the company's emissions intensity alignment to the IEA NZE pathway**

| | | Steelmaker A | | Steelmaker B | |
|---|---|---|---|---|---|
| | **Parameter** | **Primary** | **Secondary** | **Primary** | **Secondary** |
| **Reported by the company** | Production 2022 (t) | 9000000 | 1000000 | 1000000 | 9000000 |
| | Production mix 2022 | 0.9 | 0.1 | 0.1 | 0.9 |
| | Combined emissions intensity 2022 ($tCO_2$/t steel) | 2.4 | | 0.5 | |
| **Calculated** | IEA NZE intensity thresholds by type of input 2022 (tCO2/t steel) | 2.3 | 0.7 | 2.3 | 0.7 |
| | Steel company IEA NZE combined intensity target (tCO2/t Steel) | 2.1 | | 0.8 | |
| | Emissions intensity Δ (Combined emissions intensity 2022 - IEA NZE target) (tCO2/t Steel) | 0.3 | | -0.3 | |
| | | Steelmaker A emissions are above the 2022 target and it is still not aligned with 1.5°C. To get certified the company needs to apply to a Tier 2 performance certifications and meet the requirements. | | Steelmaker B emissions are below the 2022 target and is aligned to the 1.5°C trajectory. The company can apply to a Tier 1 performance certification. | |

**Note:** Adapted from the Sustainable STEEL Principles Framework.

### 5.3.4 Thresholds to be met every three years

The emissions intensity thresholds over time describe a smooth curve down over time. In reality, decarbonisation may likely result in step changes in emissions levels. To reflect this, the Performance targets should align with the emission intensity threshold every three years as a minimum, but annual alignment is not required.

[43] Defined as material diverted as a waste stream during manufacturing (e.g., off-cuts from a stamping process). Pre-consumer Scrap is further categorized as Home Scrap when it is generated at the same Plant that produces steel or Prompt Scrap (or manufacturing scrap) when it is generated from subsequent manufacturing Plants.

[44] Defined as material recovered from steel containing products which have reached end-of-life (e.g., recycling of steel from defunct automobiles).

[45] Only Pre- or Post-Consumer External Scrap is considered. Home Scrap (that is generated at the same Plant that produces steel) is excluded to avoid incentivizing steelmakers to sell Home Scrap and purchase it back from another source to inflate the fraction of Scrap Charge reported, any sales of Home Scrap are subtracted from the mass of purchased External Scrap.

# 6 Cross-cutting Criteria

## 6.1 Additional criteria when using hydrogen as a fuel or reducing agent

Facilities using hydrogen are eligible only if the hydrogen used meets the Climate Bonds Hydrogen Production Criteria[46].

## 6.2 Additional criteria for the use of Fossil gas

Both as reducing agent and for energy generation, it is only eligible for existing facilities prior to 2030. To qualify after 2030 facilities would have to use fossil gas combined with CCS or CCUS measures that meet the criteria in ***section 6.5***.

Projects using fossil gas (even if) combined with CCS or CCUS should demonstrate:

- **On-site activities**: MRV (monitoring, reporting and verification), and mitigation measures for methane leaks as per the best practice recommended[47]. No venting or burning within the limits of the steel plant, except in emergency situations, in such case it shall be reported and accounted in the GHG assessment, as shown on the scope of emissions in ***Figure 5***.
- **Upstream activities**: The gas provider shall give evidence of: having in place MRV (monitoring, reporting and verification), and mitigation measures for methane leaks as per the best practice recommended[48]. Upstream methane intensity[49] must be below 0.2%[50] average of aggregate upstream gas operations. The gas provider shall determine this emissions and report to the steelmaker according to Level 5 of the OGMP 2.0 reporting framework[51]. Evidence of grade A, B or maximum C MiQ certification[52] is accepted as a proxy.

## 6.3 Additional criteria for the use of coal

Direct use of coal for on-site electricity generation is not certifiable.

Both as reducing agent and fuel in the steelmaking process, the use of coal is only eligible for existing facilities prior to 2030 as shown in ***section 4.3***. After 2030, facilities would have to use coal combined with CCS or CCUS (see ***section 4.2*** for applicable facilities) measures that meet the criteria in ***section 6.5.***

Projects using coal should demonstrate:

- **Upstream activities**: The coal provider shall provide evidence of: having in place MRV (monitoring, reporting and verification), and mitigation measures for methane leaks as per the best practice recommended[53]; Upstream methane intensity must be below 5Kg of methane/tonne of coal produced (average at facility level); Any venting or burning shall be avoided, except in emergency situations. The coal provider shall determine these emissions and report to the steelmaker according to Level 5 of the OGMP 2.0 reporting framework[54] adapted for coal or equivalent practice.

[46] www.climatebonds.net/standard/hydrogen-production

[47] Best practice can be found in the report: Best Practice Guidance for Effective Methane Management in the Oil and Gas Sector. Monitoring, Reporting and Verification (MRV) and Mitigation. United Nations Economic Commission for Europe. 2019 https://unece.org/fileadmin/DAM/energy/images/CMM/CMM_CE/Best_Practice_Guidance_for_Effective_Methane_Management_in_the_Oil_and_Gas_Sector__Monitoring__Reporting_and_Verification__MRV__and_Mitigation-_FINAL__with_covers_.pdf

[48] ibid

[49] Defined as the ratio of Methane Emissions relative to natural gas throughput according to the Natural Gas Sustainability Initiative (NGSI) www.eei.org/issues-and-policy/NGSI

[50] Methane emission intensity targets under the Oil and Gas Climate Initiative (OGCI): www.ogci.com/ogci-reports-significant-progress-on-aggregate-upstream-methane-and-carbon-intensity-targets/#:~:text=OGCI%2C%20having%20surpassed%20the%20original,upstream%20methane%20emissions%20since%202017.

[51] www.ogmpartnership.com/ogmp-20-reporting-framework

[52] https://miq.org/the-technical-standard/

[53] Best practice can be found in the report: Best Practice Guidance for Effective Management of Coal Mine Methane at National Level. Monitoring, Reporting, Verification (MRV) and Mitigation. United Nations Economic Commission for Europe. 2021 https://unece.org/sites/default/files/2022-07/2119167_E_ECE_ENERGY_139_WEB.pdf

[54] www.ogmpartnership.com/ogmp-20-reporting-framework

## 6.4 Additional criteria when using biomass as a reducing agent

'Energy crops', wood from forests and 'Controlled wood'[55] are not eligible. Only two potential sources of biomass are covered:

- **Agricultural residues:** needs to comply with the following sections of the criteria applicable for biomass sourcing set out in the CBI Bioenergy criteria: Section 3.3.2 - "Requirement 2: Feedstocks certified under approved best practice standards".
- **Plantation wood and waste:** the wood plantation shall demonstrate to meet the requirements set out for "plantation forestry" of the Climate Bonds Forestry Criteria[56].

OR, Demonstration of compliance to the use of biomass as a reducing agent can also be done by showing Responsible Steel certification[57].

## 6.5 Additional criteria for Carbon Capture & Storage and Carbon Capture & Utilization

Utilisation of direct $CO_2$ emissions from steel production is only eligible when the $CO_2$ is used for the manufacture of durable products (e.g. construction materials stored in buildings, or recyclable products e.g. PET). $CO_2$ should not be used for products that release the CO2 immediately when these are used (such as in urea, carbonated beverages, or fuels), nor for enhanced oil recovery, and the production of other forms of fossil energy sources.

**Carbon capture and storage.** Carbon Capture equipment, both as an individual measure and as part of a whole facility being evaluated, is eligible so long as there is evidence[58] that demonstrates the $CO_2$ will be suitably transported and (if being stored and not utilised) stored in line with the criteria below:

| Component | Requirements |
|---|---|
| **Transport**[59] | 1. The $CO_2$ transported from the installation where it is captured to the injection point does not lead to $CO_2$ leakages above 0.5 % of the mass of $CO_2$ transported.<br>2. Appropriate leakage detection systems are applied and a monitoring plan is in place, with the report verified by an independent third party. |
| **Storage**[60] | 1. Characterisation and assessment of the potential storage complex and surrounding area, or exploration[61] is carried out in order to establish whether the geological formation is suitable for use as a $CO_2$ storage site.<br>2. For operation of underground geological $CO_2$ storage sites, including closure and post-closure obligations:<br>a. appropriate leakage detection systems are implemented to prevent release during operation;<br>b. a monitoring plan of the injection facilities, the storage complex, and, where appropriate, the surrounding environment is in place, with the regular reports checked by the competent national authority. |

[55] Refers to wood and products made from wood that have the label "FSC Mix".

[56] www.climatebonds.net/standard/forestry

[57] The Responsible Steel Standard (www.responsiblesteel.org/) covers 13 principles in the environmental, social and governance domain. These have been evaluated to determine which can be leveraged by the Climate Bonds Criteria, and those areas are referenced in the additional cross-cutting criteria. Projects or assets seeking certification via Responsible Steel will still have to comply with the areas of the Steel Criteria that the best practice does not cover.

[58] Either directly from the applicants or through contracts or agreements with a third party

[59] From the technical screening criteria for qualifying as contributing substantially to climate change mitigation for "Transport of $CO_2$" in Annex 1 of the Commission Delegated Regulation (EU) 2021/2139 (EU taxonomy)

[60] From the technical screening criteria for qualifying as contributing substantially to climate change mitigation for "Underground permanent geological storage of $CO_2$" in Annex 1 of the Commission Delegated Regulation (EU) 2021/2139

[61] "Exploration' means the assessment of potential storage complexes for the purposes of geologically storing $CO_2$ by means of activities intruding into the subsurface such as drilling to obtain geological information about strata in the potential storage complex and, as appropriate, carrying out injection tests in order to characterise the storage site

| | |
|---|---|
| | 3. For the exploration and operation of storage sites, the activity complies with ISO 27914:2017225[62] for geological storage of $CO_2$. |

Furthermore, the use of any certification scheme would be encouraged. Examples of certification schemes include the U.S. EPA Class VI well certification, which includes Reservoir Characterisation[63]. Another example includes the DNV GL certification framework to verify compliance with the ISO 27914:2017 Carbon dioxide capture, transportation and geological storage - Geological storage[64].

## 6.6 Additional criteria to address upstream scope 3 emissions

Applicants must lay out a strategy to address other scope 3 emissions sources that have not been addressed in this section, namely upstream transport, scrap collection and sorting, iron ore mining and limestone mining. Demonstration of compliance can be done by showing:

- Evidence for low-carbon procurement policies; or
- Partnerships with suppliers with GHG emissions reduction targets that can be measured; or
- The asset has Responsible Steel[65] certification

For upstream products results from a life cycle GHG assessment with a cradle-to-site boundary needs to be used to quantify scope 3 upstream emissions.

[62] ISO Standard 27914:2017, Carbon dioxide capture, transportation and geological storage - Geological storage: www.iso.org/standard/64148.html)

[63] www.epa.gov/uic/class-vi-wells-used-geologic-sequestration-co2

[64] www.dnv.com/news/dnv-gl-launches-certification-framework-and-recommended-practice-for-carbon-capture-and-storage-ccs--108096

[65] The Responsible Steel Standard (www.responsiblesteel.org/) covers 13 principles in the environmental, social and governance domain. These have been evaluated to determine which can be leveraged by the Climate Bonds Criteria, and those areas are referenced in the additional cross-cutting criteria. Projects or assets seeking certification via Responsible Steel will still have to comply with the areas of the Steel Criteria that the best practice does not cover.

# Appendix A: TWG and IWG members

| Climate Bonds Coordinator | |
|---|---|
| Fabiana Contreras<br>Senior Research Analyst | Climate Bonds Initiative |
| **Technical Lead Advisor:** | |
| Ali Hasanbeigi<br>Founder and CEO | Global Efficiency Intelligence |
| **TWG Members** | |
| Max Åhman<br>Associate Professor & Head of Division, Environmental and Energy Systems Studies | Lund University |
| Brenda Chan<br>Technical Manager | CDP & The Science-Based Targets initiative |
| Dan Gardiner<br>Transition Plan Analyst | The Institutional Investors Group on Climate Change (IIGCC) |
| Hongyou Lu<br>Senior Scientific Engineering Assoc | Lawrence Berkeley National Laboratory (LBNL) |
| Lucy Kessler<br>Manager | Rocky Mountain Institute |
| Lachlan Wright<br>Manager | Rocky Mountain Institute |
| Robert Adamczyk<br>Associate Director, Senior Environmental Adviser | European Bank for Reconstruction and Development (EBRD) |
| Rutger Gyllenram<br>Founder and CEO | Kobolde & Partners AB |
| Sha Yu<br>Research Scientist | Pacific Northwest National Laboratory (PNNL) |
| Zushu Li<br>Professor | WMG The University of Warwick |
| Antonina Scheer<br>Policy Fellow | Transition Pathway Initiative (TPI) |

| IWG Members<br>Members of the following organizations have participated in IWG meetings and provided critical and useability focused consultation and feedback on the Criteria, but this does not automatically reflect endorsement of the criteria by all members. | |
|---|---|
| Affirmative Investment Management | JSW Steel |
| Alacero | National Australia Bank |
| Arcelor Mittal | NN Investment Partners |
| Baosteel | Nomura |
| BayernLB | Severstal |

| IWG Members<br>Members of the following organizations have participated in IWG meetings and provided critical and useability focused consultation and feedback on the Criteria, but this does not automatically reflect endorsement of the criteria by all members. | |
|---|---|
| Bluescope | Societe Generale Corporate and Investment Banking |
| Citi | Sustain Advisory |
| Danske Bank | Sustainalytics |
| Deloitte | Tata Steel |
| Gerdau | TERNIUM BR |
| ERM Certification and Verification Services | Unicredit |
| ING | Voestalpine |
| Institutional Shareholder Services ESG | World Steel Association |
| Japan Credit Rating Agency | JSW Steel |