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Emerging Practice: Climate Target Setting for Steel Sector Financing

April 2024

Disclaimer

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Purpose of this publication

This paper is one of a series of publications with the purpose of outlining possible choices banks can make when setting climate targets for sectors of the real economy. The paper does this by providing an overview of emerging practices, common challenges and policy, data, and other gaps.

Emerging practices and expertise for climate target setting are evolving quickly. This paper aims to increase banks' awareness and understanding of useful approaches and the latest methodologies in this space at the time of publication.

By joining NZBA, members have already chosen to commit to:

- Aligning their lending and investment portfolios with net-zero emissions by 2050
- Setting intermediate climate targets for their highest emitting sectors for 2030 or sooner by using robust, science-based guidelines consistent with limiting global warming to 1.5°C
- Developing transition plans for the highest emitting sectors for which they have set targets
- Reporting annually on their approach to and progress towards meeting their targets

For many banks, this means setting decarbonisation targets for their Iron & Steel lending and investment portfolios.

This paper does not impose any requirements on NZBA members over and above the commitments made when becoming a signatory and is not prescriptive in terms of specifying when and how they are expected to decarbonise their Iron & Steel lending and investment portfolios.

The details of the commitment to which NZBA members sign up can be found here: NZBA Commitment Statement and Guidelines for Climate Target Setting for Banks. This series of publications on emerging practices does not change this. This paper focuses on decarbonisation and does not consider other important environmental and social issues.

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- The Center for Climate-Aligned Finance at RMI

About the Net-Zero Banking Alliance

The bank-led, UN-convened Net-Zero Banking Alliance (NZBA) brings together a global group of banks that currently represent over 40% of global banking assets and are committed to aligning their lending and investment portfolios with net-zero emissions by 2050.

Combining near-term action with accountability, this ambitious commitment sees signatory banks setting intermediate climate targets for 2030 or sooner by using robust, science-based guidelines.

NZBA is the flagship climate initiative under the Principles for Responsible Banking to accelerate science-based climate target setting and develop common practice. As the banking alliance within the global efforts on net-zero across the finance industry brought together under the Glasgow Financial Alliance for Net-Zero (GFANZ), the NZBA is open to all banks globally, including banks that are not UNEP FI members and Principles for Responsible Banking signatories.

NZBA reinforces, accelerates, and supports the implementation of decarbonisation strategies, providing an internationally coherent framework and guidelines in which to operate, supported by capacity building. It recognises the vital role of banks in supporting the global transition of the real economy to net-zero emissions.

NZBA is convened by the UN Environment Programme Finance Initiative and is a part of the Race to Zero.

Learn more here: unepfi.org/net-zero-banking

Abbreviations & acronyms

ACT	Assessing low-Carbon Transition
ASEAN	Association of Southeast Asian Nations
BF	Blast furnace
BOF	Basic oxygen furnace
CAPEX	Capital Expenditure
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Use and Storage
CDP	Climate Disclosure Project
CO_2	Carbon Dioxide
DRI	Direct reduction iron
EAFs	Electric arc furnaces
FI	Financial Institution
GDP	Gross Domestic Product
GHG	Green House Gas
HBI	Hot briquetted iron
IEA	International Energy Agency
IIGCC	Institutional Investors Group on Climate Change
I&S	Iron & Steel
MPP	Mission Possible Partnership
NZBA	Net-Zero Banking Alliance
NZE	Net-Zero Emissions
NZSPMP	Net-Zero Steel Pathway Methodology Project
OECM	One Earth Climate Model
OPEX	Operating Expenditure
PACTA	Paris Agreement Capital Transition Assessment
PCAF	Partnership for Carbon Accounting Financials
RMI	Rocky Mountain Institute
SBTi	Science Based Targets initiative
SDA	Sectoral Decarbonisation Approach
SSP	Sustainable Steel Principles
WSA	World Steel Association

Contents

Summary

The table below summarises the key design choices financial professionals face when setting net-zero financing targets for the steel sector.

Design choice		Summary for the steel sector
Emissions scope & boundary		The Guidelines for Climate Target Setting for Banks are built around a sectoral approach to target setting that includes clients' Scope 1, Scope 2, as well as Scope 3 emissions that are 'significant' to a given sector in scope for banks' climate targets. As such, steel target-setting frameworks need to clearly define which emissions should be covered by climate targets, both at the client-level (i.e., at the level of a steelmaker) and the sector-level.
Financial scope	**In-scope clients**	Banks can use classification systems such as the North American Industry Classification System (NAICS) or set economic activity thresholds, such as revenue generation from steelmaking, to define in-scope clients for steel climate targets.
	In-scope financings	Banks can set targets across their loan books as well as capital market products, as per the Guidelines for Climate Target Setting for Banks. Methodologies for setting targets for the loan books are more advanced.
	Exposure indicator	Banks need to decide what indicator to use to determine the exposure to each in-scope client for their steel climate targets. Methodologies can use financial data, such as a company's revenues or capital expenditure (CAPEX), to determine an indicator.
Benchmark pathways		The Guidelines for Climate Target Setting for Banks direct member banks to use widely accepted, science-based decarbonisation scenarios to guide members when setting individual long-term and intermediate targets that are aligned with the temperature goals of the Paris Agreement. Climate scenarios that are utilised by banks for their steel climate targets include the International Energy Agency NZE by 2050 Scenario (IEA NZE), and the Mission Possible Partnership's Steel Sector Transition Strategy Model (ST-STSM).

Design choice	Summary for the steel sector
Target metrics	The Guidelines for Climate Target Setting for Banks direct banks to set financed emissions targets using absolute emissions metrics and/or emissions intensity metrics based on an activity.
Target setting	There are three target-setting approaches banks can use for their steel climate targets: ▪ Convergence approach: implies that all counterparties converge to net-zero-aligned, industry-average emissions intensity levels. ▪ Rate-of-reduction approach: implies that all counterparties reduce emissions at the same net-zero-aligned, industry-average rate, irrespective of their current and past performance. ▪ Fair share approach: defines the average rate of reduction in absolute emissions for an industry but recognises that individual counterparties may be better- or worse-performing than average.

1. Introduction

The bank-led, UN-convened Net-Zero Banking Alliance (NZBA) brings together banks worldwide that are committed to aligning their lending and investment portfolios with scientific pathways to achieve net-zero emissions by 2050. The central commitment of NZBA itself is robust, ambitious, and science-based. In addition to targeting net-zero emissions by 2050, the commitment specifies alignment of lending and investment portfolios with a temperature outcome that is consistent with limiting global warming to 1.5°C from pre-industrial levels, in line with the most ambitious objective set in the Paris Agreement.

The first NZBA progress report, published in November 2022, provided a summary of the first set of targets produced by its members. According to the report, 22 members indicated to have measured the carbon footprint of their financed emissions for the Iron and Steel (I&S) sector. With regards to the ambition under the NZBA and sectoral priority areas, 11 members indicated they had set a 2030 target for the I&S sector, 7 of which covered only steel. Most targets related to clients' Scope 1 and Scope 2 emissions, whereas 18% of targets also included clients' Scope 3 emissions.

This paper has been drafted with the intention of:

- **Providing support to banks that are looking to set targets for the I&S sector, to monitor and measure progress towards those targets and take action towards the transition of the I&S sector in line with a 1.5°C pathway.** The content in this paper primarily aims to provide support to practitioners who are managing I&S credit portfolios, and to those in banks responsible for target setting for the I&S sector, however many elements may be also suitable to other types of portfolios or financial institutions. The paper provides a high-level outline of the scope and boundary of emissions, types of counterparties and financings; potential metrics used in I&S target setting by banks and describes attribution and benchmarking approaches in that respect.
- **Outlining the critical components that banks need to consider to inform their key design choices with regard to the decarbonisation of their I&S portfolios.** These are considered the "building blocks" of relevant approaches, including the scope and boundary of emissions (Chapter 2).
- **Providing a high-level overview of the carbon measurement standards banks can apply in relation to their I&S portfolios.** Many of the design choices banks face on target setting equally apply to carbon measurement, therefore an understanding of those is essential (Chapter 3).

- **Reflecting on current and commonly applied approaches relevant for I&S target setting by banks.** The analysis considers the advantages and challenges of each approach, also making available an overview of specific aspects for banks to consider for their respective approach (Chapter 4).
- **Stating a call to action for other stakeholders.** Commercial banks have a role to play in contributing to the transition of the I&S sector, however, the extent to which they can do so is dependent on other actors of the economy, including industrial players and governments.

This paper does not address the following points:

- The I&S industry is part of a broader value chain that includes iron production and coal mining. I&S industry emissions from downstream industrial processes and coal mining are not in the scope of this paper.
- Upstream methane emissions from the extraction and production of inputs into the I&S making processes can be material, but accurate data and reliable benchmark scenarios are currently lacking. Therefore, methane and other GHG emissions beyond carbon (CO_2) are not in scope of this paper. Any future version of this paper will aim to include methane and other GHG emissions, if data and scenarios allow.

2. Understanding the steel sector

2.1 Sector overview

Based on a sector overview by the World Steel Association, around 7% of global direct CO_2 emissions are related to the steel sector, measuring up to 2.6 billion tons of CO_2 emissions per year. In its Net-Zero Emissions by 2050 Scenario (2020 version), the International Energy Agency (IEA) has estimated that CO_2 emissions from the I&S sector will increase to 8% of primary production in 2030, while the CO_2 emissions intensity for steel has remained at a fairly consistent level over the past decade.

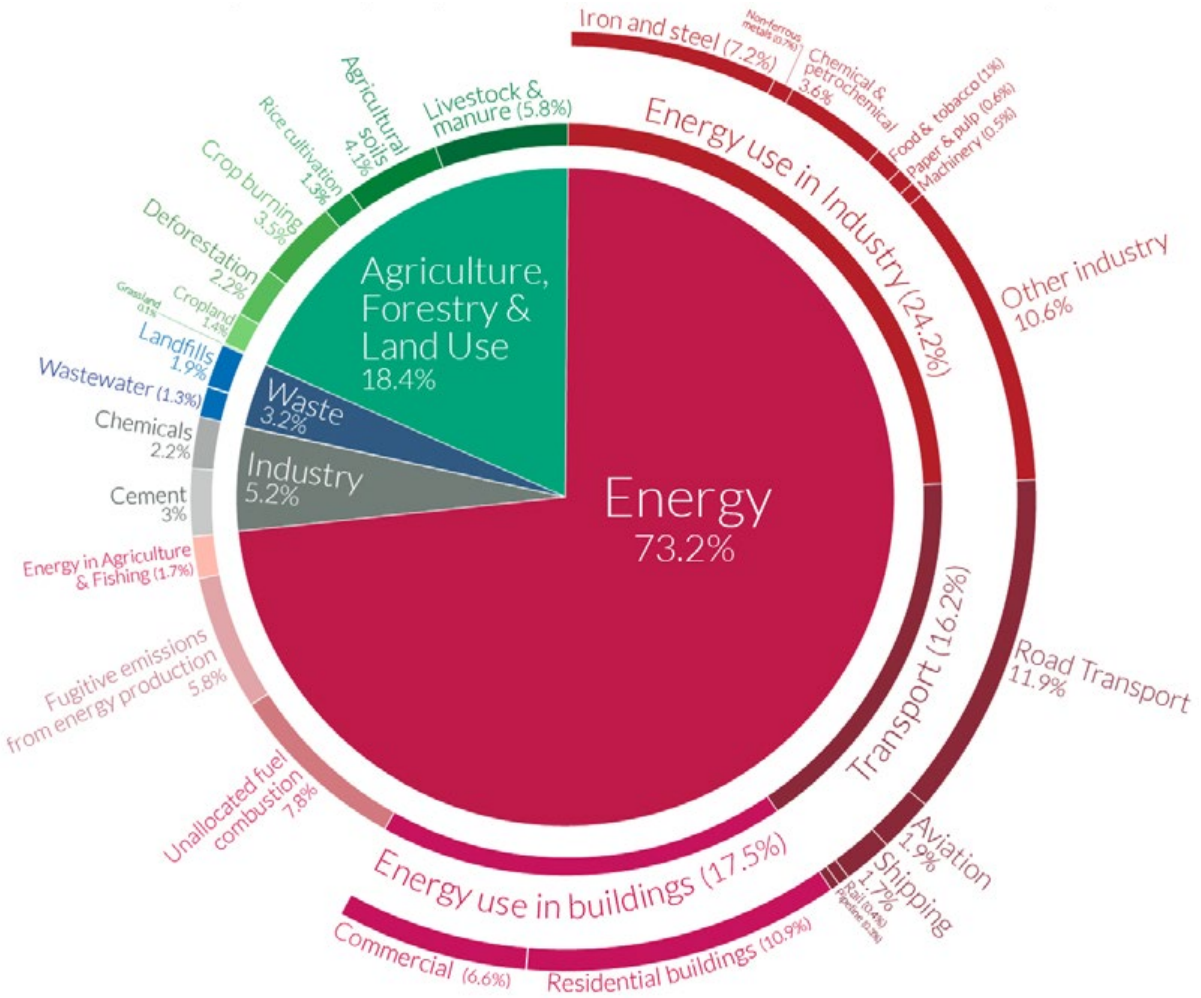


Figure 1: Global GHG Emissions by Sector (World in Data, 2020)

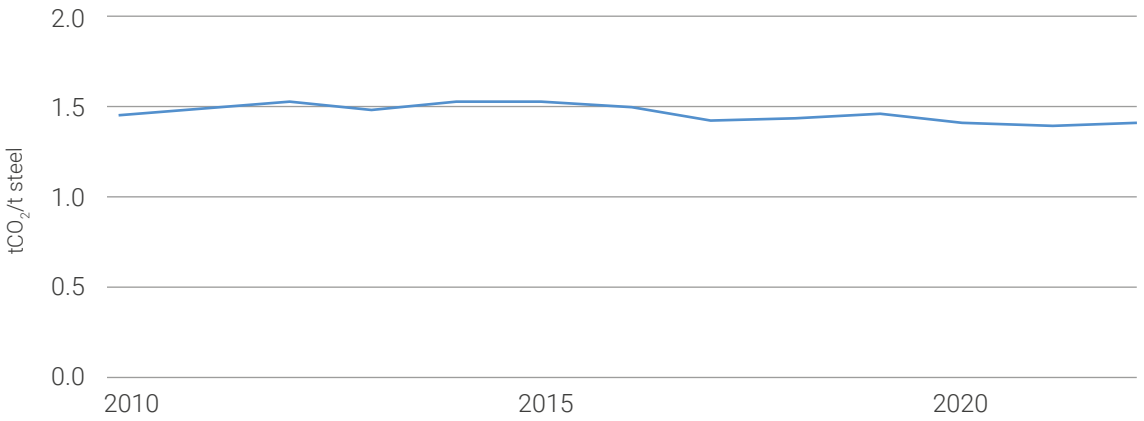


Figure 2: CO_2 Emissions Intensity for Steel (IEA NZE by 2050 Scenario, 2020 version)

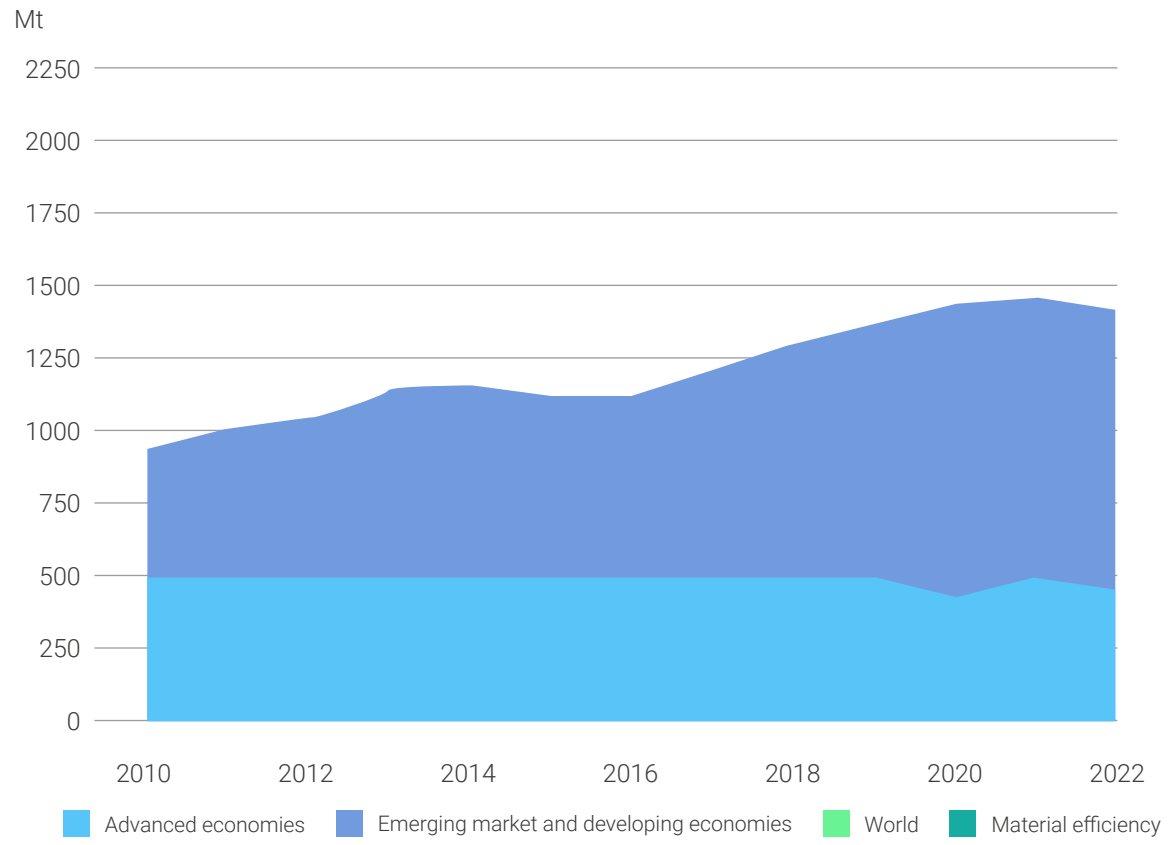


Figure 3: Global Steel Production (IEA NZE by 2050 Scenario, 2020 version)

In 2022, total crude steel production was 1,878.5 Mt globally which represented a 4.2% decrease compared to 2021 levels with China, India and Japan leading as producing countries, followed by the United States, Russia, South Korea, Germany, Turkey, Brazil and Iran (World Steel Association, 2022). Currently, about 75% of global steel is considered to be carbon-intense[1] (McKinsey, 2022).

Reducing CO_2 emissions in the I&S sector in line with the net-zero ambition by 2050 will be a complex process with adjustments that will need to be made across both the

1 mckinsey.com/capabilities/sustainability/our-insights/spotting-green-business-opportunities-in-a-surging-net-zero-world/transition-to-net-zero/steel

supply and demand sides. Banks will have to assume a key role as actors for the acceleration of the transition via their financing capability and decision-making. McKinsey's financial assessment for the net-zero transition foresees a required upfront capital investment of USD 4.4 trillion over the respective period for the steel sector in particular, potentially resulting in an overall increase in production cost of 30% compared to today's one[2] (McKinsey, 2022).

From a supply-side perspective, the IEA considers that the CO_2 emissions reduction potential of conventional processes and the potential for increased recycling of scrap are limited, emphasizing that innovation will be crucial to introduce new near zero-emissions steel production methods. Some of the breakthrough innovations focus on the use of raw materials and feedstock (iron or scrap), the electrification of production facilities, the use of renewable and alternative energy sources, and the use of carbon capture technologies at the site of production. According to the Institutional Investors Group on Climate Change (IIGCC), the following innovation considerations are relevant for investors in the steel sector:

- Increasing the proportion of steel produced by the scrap-EAF process.
- Enhancing the material efficiency of steel products to limit steel demand growth.
- Incrementally improving the energy efficiency of existing steel production capacity.
- Investing in new low-emissions DRI-based capacity (including hydrogen-based) for primary steelmaking.
- Installing Carbon Capture & Storage (CCS) and Carbon Capture, Usage & Storage (CCUS) technologies to fossil-based steel production plants where feasible.

In addition to these innovation considerations, the IIGCC also notes the following:

- **The forecasted increase of production cost:** This might have a direct and considerable impact on operational expenses (e.g. switch to low carbon power sources), increased capital expenses (e.g. retrofitting of assets) as well as potential capital losses (e.g. early retirement of assets), as suggested by the World Steel Association (2021).
- **Transition plans:** These are critical for steel producers to showcase and outline their ambition, commitment, and approach towards net-zero. According to the IIGCC, several steel producers have already committed to becoming Paris-aligned by 2050 and some have already set interim reduction targets for 2030.

From a demand-side perspective, the economic expansion in India as well as some ASEAN countries and Africa is expected to strongly contribute to the increase of global steel demand, even as demand in China is anticipated to gradually decline in the coming years. Additionally, global steel demand is likely to be impacted through the availability and development of other, low-emission materials.

2 The analysis is based on the Net-Zero 2050 scenario from the Network for Greening the Financial System (NGFS). For more, see The net-zero transition: What it would cost, what it could bring, McKinsey, January 2022.

3. Design choices when setting steel sector financing targets for banks

3.1 Emissions scope and boundary

The Guidelines for Climate Target Setting for Banks are built around a sectoral approach to target setting that includes clients' Scope 1, Scope 2, as well as Scope 3 emissions that are 'significant' to a given sector in-scope for banks' climate targets. As such, steel target setting and reporting frameworks need to clearly define which emissions should be covered by climate targets, both at the client-level (i.e., at the level of a steelmaker) and the sector-level. Ultimately, each financial institution is free to decide the emissions scope and boundary that are the most relevant for its activities, ideally by using recognised methodologies and target-setting approaches, to allow for more homogenous practices amongst players, as described under Chapter 4.

Steel manufacturers commonly use the GHG Protocol's Scope 1, 2, & 3 categories to report on their emissions. However, emissions can vary widely depending on the company's ownership structure and level of vertical integration across the sector's value chain. A steel mill is a complex collection of factories, each performing a different part of the steelmaking process and the configuration and scope of each mill can vary significantly. For example, some mills prepare their own raw materials, while others purchase prepared raw materials such as coke and pellets. Generally, there is a high degree of variability in CO_2 emissions within the steel sector, particularly in Scope 3, depending on the ownership structure and level of vertical integration of different steelmakers. In any case, reporting frameworks must be specific and clearly identify which emissions are considered part of the steel sector value chain.

One of the methodological choices that banks make for measuring their portfolios' financed emissions is defining client inclusion by steel sector exposure (see Financial Scope below). For example, one way that relevant steel sector emissions may be captured is through a framework that stipulates that Scope 1 and Scope 2 emissions of the selected clients should be included, as well as a certain percentage of Scope 3 emissions if they exceed a determined threshold of a client's total emissions. However, this methodological approach may result in inconsistencies in the reporting of emissions across production activities between steel producers. For instance, if upstream processes such as sintering or coke production are operated (and/or owned) by a steelmaker, these emissions will be included in their Scope 1 as per the GHG Protocol. For non-integrated operators though, these same emissions would count as Scope 3, and

may not be otherwise reported, presenting challenges when comparing greenhouse gas emissions between steelmakers. Furthermore, this methodological approach reduces transparency and comparability in the bank's NZBA reporting when the client-level intensities—each covering a different scope of activities—are combined at the portfolio-level.

To overcome this issue, several approaches require the use of what is known as 'fixed scope and boundary', which identifies a consistent boundary of activities to be reported on, regardless of whether they are executed by the steel mill themselves, a supplier, or off-taker (i.e. regardless of whether they are Scope 1 and 2 or Scope 3 emissions of an individual company). Such a consistent boundary can improve emissions accounting for the steel sector by enabling a direct comparison of emissions performance between steelmakers across a fixed system of activities, ensuring transparency and comparability. This approach may include materiality thresholds for reporting, may require that a threshold of emissions within the boundary be met, or may simply require reporting on all emissions within the boundary on a best-efforts basis. The 'fixed scope and boundary' has been adopted by the Sustainable STEEL Principles (SSP) based on an industry proposal put forth by the Net-Zero Steel Pathway Methodology Project (NZSPMP), an industry initiative. This approach is also implemented by the IEA and the Science-Based Targets initiative (SBTi).

Whichever approach is employed to define the scope and boundary, methodologies will need to demonstrate robust coverage of all relevant steel sector emissions. In this paper, potential methodologies relevant to financial institutions will be assessed against their ability to capture the various components of the steel value chain, including upstream emissions, raw material preparation, ironmaking, steelmaking, and auxiliary processes as part of their business activities (direct and indirect).

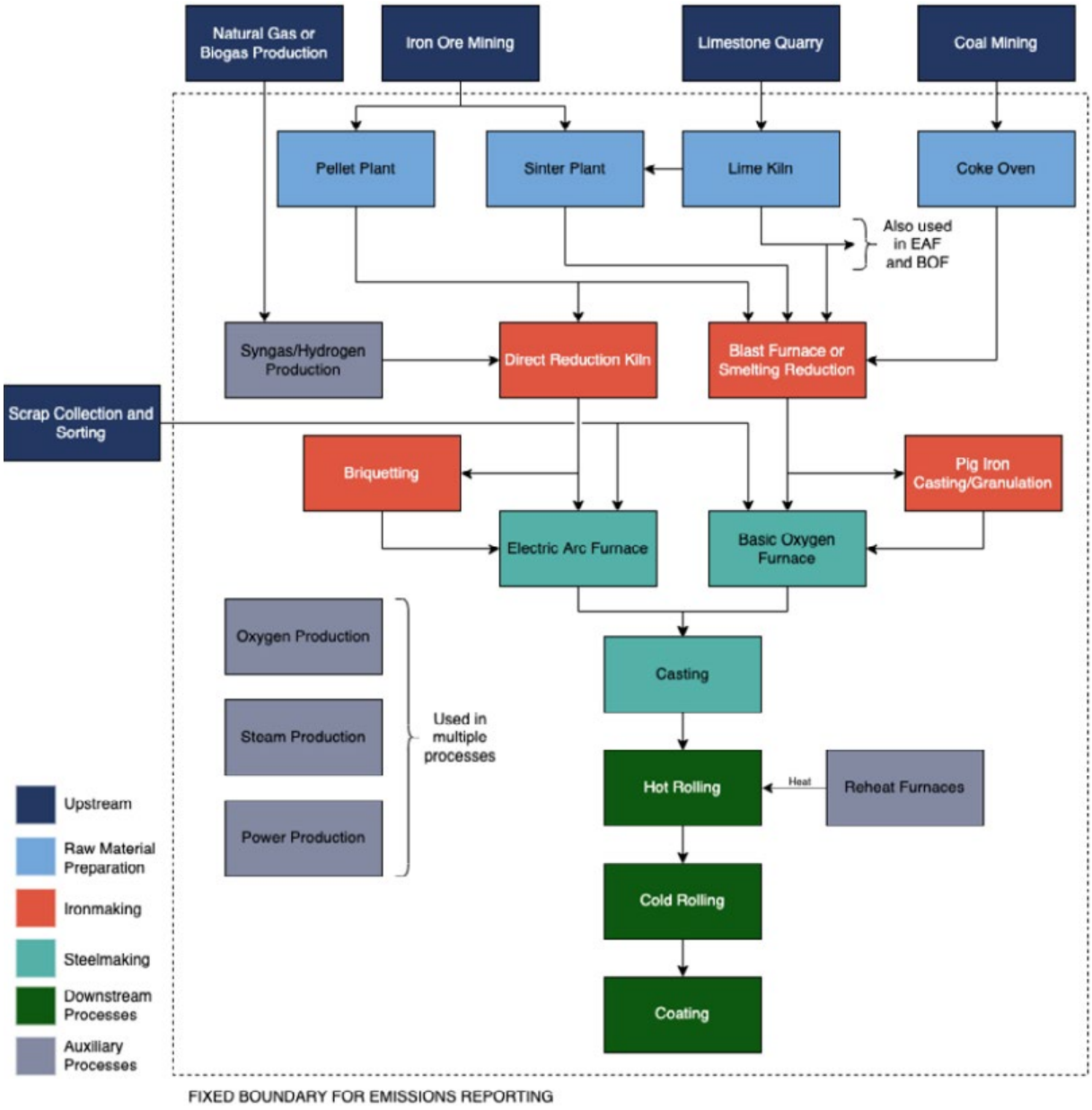


Figure 4: Example of a Fixed System Boundary (Sustainable STEEL Principles, 2023)

3.2 Financial scope

The financial scope is a core component of developing or considering any target setting and reporting methodology and determines which of the bank's financing activities will be included in the target-setting and reporting methodology. A clearly defined financial scope provides greater transparency and accountability and should cover the following three areas:

a. Guidance on which of the bank's clients will be included.
b. Guidance on which of the bank's financial instruments, products, and investments will be covered.
c. The indicator that should be used to determine exposure to each client.

3.2.1 In-scope clients

To achieve comprehensive coverage of the steel sector emissions being financed, the financial scope must define which of the bank's clients are included in the methodology. A methodology may simply refer to the boundary directly and recommend coverage of any company that is active within the boundary. Without further guidance, however, banks may find it difficult or burdensome to identify relevant companies in this way, especially since many clients will be diversified across multiple value chains. The financial scope may therefore rely on the North American Industry Classification System (NAICS) or the Statistical Classification of Economic Activities in the European Community (NACE) codes, or other classification systems used to categorise industries based on their primary economic activity.

A methodology can for example outline the specific NAICS codes that should be included within steel sector target setting and reporting by banks. Although codes like NAICS can aid in categorising companies, they may not provide sufficient details for precise climate reporting since many businesses operate in multiple sectors or engage in several activities that a single NAICS code may not fully capture. Moreover, general-purpose loans provided to integrated steel companies can obscure the identification of the exact economic activities and climate-related assets being financed by the loan, potentially causing some steelmaking to fall outside the financial scope. To overcome this challenge, a methodology can establish certain thresholds to determine client inclusion within the scope. For example, the methodology can set thresholds based on crude steel production, revenue generated from steelmaking, or both. Furthermore, these thresholds may refer to the activities specified in the boundary. This approach can simplify reporting and result in more precise outcomes.

Implementing any of these approaches would lead banks to report on their exposures to companies that produce I&S (or the inputs to that process) directly but may not account for trading or financial companies. Nonetheless, since such companies can serve as sales or financing offices for steel businesses, there is a rationale for considering exposure to such entities if they are controlled by, or affiliated with, a steel company. As a result, methodologies should clarify how non-producing firms in the steel industry should be treated.

3.2.2 In-scope financings

The Guidelines for Climate Target Setting for Banks provide guidance for minimum inclusions of in-scope financings and state that targets and reporting shall cover lending activities and should cover investment activities (members may exclude on-balance sheet securities held for client facilitation and market-making purposes). With regards to the steel sector specifically, frameworks should be more sector-specific and consider which financings contribute to the production of steel.

As a major source of capital for the industry, lending (and specifically long-term lending) should be comprehensively covered by any I&S sector target setting and reporting framework. Shorter-term instruments, as well as unfunded instruments (e.g. guarantees), may be considered in the financial scope but may also be excluded since these instruments are generally considered to have a lower climate impact (and a lower level of climate-related risk) compared to longer-term and funded instruments. Any I&S sector methodology should clearly outline the types of lending exposure that are included for

reporting purposes, and banks should clarify relevant exclusions in their reporting.

The Guidelines for Climate Target Setting for Banks identify investments as relevant for inclusion in the financial scope. Capital markets and capital markets underwriting activities were not mandated in version 1 of the Guidelines and their inclusion in version 2 of the Guidelines (due for launch in April 2024) is currently under review. This is in line with NZBA's guiding principle that, over time, banks should increase the volume of investment activities covered by the targets in line with methodological developments.

3.2.3 Exposure indicator

The portfolio value used to calculate financed emissions may draw on a variety of financial indicators and methodologies that utilise different approaches. While banks may choose what is the best fit depending on the metric they use for steering purposes, whichever methodology is selected by a bank, it should be applied consistently across all clients in target setting and reporting.

Furthermore, a methodology can use financial data, such as a company's revenues, capital expenditure (CAPEX), or debt, to determine how to weigh financial exposure to clients. This data can be used to model how a company's debt is distributed across various business lines, enabling accurate allocation of general-purpose loans that support a company's activities across different sectors. For banks that have exposure to large and diversified groups, this approach can simplify reporting by allowing them to weigh their total exposure based on metrics such as the percentage of steel-related revenues for the entire group, rather than identifying how the provided financing will be used.

3.3 Benchmark pathways

The selection of a pathway or roadmap to net-zero emissions by 2050 for the I&S sector that, as per the NZBA commitment, must be compatible with a 1.5°C scenario, is fundamental for target setting. This pathway should be used to chart out the year-on-year decreases in emissions intensity required for the decarbonisation of the I&S sector by mid-century but may also be used to understand the technological developments, capital expenditure (CAPEX) requirements and policy and demand prerequisites that are needed for the transition.

Available pathways or roadmaps to net-zero emissions by 2050 for the I&S sector should be examined against several key criteria, including the following:

- **Climate-alignment:** Does the pathway or roadmap reach net-zero emissions from the I&S sector by 2050 and is it a no-to-low overshoot of 1.5°C?[3]
- **Granularity:** Does the pathway or roadmap include granular data for the I&S sector such as yearly data on emissions reductions through 2050 or is data only available on a 5-year or decadal basis? Does the pathway or roadmap incorporate various technology options and sensitivities?

3 As defined by the Intergovernmental Panel on Climate Change's "Special Report on Global Warming of 1.5°C" (SR1.5)

- **Transparency:** Are the pathway's or roadmap's full assumptions and results available to banks and other stakeholders?
- **Industry Validation:** Has the pathway or roadmap been informed or endorsed by the industry?
- **Adaptability:** Can the pathway or roadmap be tailored and updated if necessary?
- **Legitimacy:** Has the pathway or roadmap gone through validation with sector stakeholders?
- **Standardisation:** Is the model being used by other voluntary or mandatory initiatives?

Currently, there are multiple pathways or roadmaps that can be referenced for I&S sector target-setting purposes by banks, including the following:

- The International Energy Agency Net-Zero Emissions by 2050 Scenario (IEA NZE)
- The Mission Possible Partnership's Steel Sector Transition Strategy Model (ST-STSM)
- The University of Technology Sydney's One Earth Climate Model (OECM)

Based on their favourable comparisons against the above criteria, the IEA NZE and ST-STSM models are the pathways or roadmaps that are frequently utilised in the steel sector for target setting.

A key consideration in the evaluation of the pathways or roadmaps is the difference in and complementarity of top-down models such as the IEA NZE, and bottom-up models, such as the ST-STSM. Top-down models are defined as those that derive sectoral pathways as part of integrated assessment models for transitioning the global economy to net-zero emissions. These models are very useful for target setting as they ensure targets are consistent with the decarbonisation of the entire economy in line with 1.5°C. By comparison, bottom-up models outline a transition pathway for specific sectors but are built independent of global economy pathways or roadmaps. Bottom-up models, such as the ST-STSM,[4] are recognised for their granularity and ability to provide necessary insights to inform and sharpen client engagement and policy advocacy. However, the temperature alignment of these pathways or roadmaps cannot be established as robustly as with top-down models.

Additionally, it is important to note that the selected pathway or roadmap should be aligned with a bank's chosen measurement methodology and the data used to feed the methodology. For example, it may be that the chosen pathway or roadmap covers the decarbonisation of the I&S sector by only considering Scope 1 emissions, while the bank's measurement methodology (and underlying data) covers both Scope 1 and Scope 2 emissions of its clients. Hence, it is important to ensure that all the elements within the I&S target-setting process by banks are aligned.

Ultimately, banks should use pathways or roadmaps that will help them to achieve two objectives: first, to set robust targets for their I&S portfolios and second to help them guide their clients towards decarbonisation. As such, chosen methodologies should use one or more pathways or roadmaps to facilitate the creation of targets that align with the 1.5°C scenario, as well as establish strategies for engaging clients on their transition.

4 The ST-STSM is a bottom-up model, but the temperature-alignment of the resulting scenarios is validated by a sector-specific carbon budget which is derived from a top-down calculation (see Mission Possible Partnership's Steel Sector Transition Strategy Model, p.30 + climatealignment.org/wp-content/uploads/2022/06/alignment_zone_briefing.pdf)

3.4 Target metrics

To track performance against the chosen pathways or roadmaps, methodologies should establish a target metric to measure and assess the alignment of I&S sector clients and portfolios. The Guidelines for Climate Target Setting for Banks state that targets may be set on the basis of absolute emissions or emissions intensity (in this case, emissions per ton of steel). While the target may be set on either basis, both metrics should be reported based on NZBA. The carbon intensity of production is the most commonly used metric for I&S target setting.

One potential issue with the use of a single metric, such as emissions intensity of production, is that almost every steel mill uses a combination of primary (iron ore) and secondary (scrap) raw materials to produce steel. This balance though can vary widely depending on the production process that is used. For electric arc furnaces (EAFs), the balance can range from 100% scrap to a 50/50 split between primary and secondary, while for blast furnace (BF)-based producers, the scrap ratio will typically be between 10% and 30%. Increasing the use of scrap in BF-basic oxygen furnace (BOF) operations can reduce the simple emissions intensity of production since the most emissions-heavy stage of steel production is iron reduction. The adoption of a simple emissions intensity metric will therefore strongly incentivise increased scrap utilisation. However, there are two challenges with adopting such a metric. First, the supply of scrap is inelastic in the short term, which means that increasing the use of scrap in one mill could potentially mean that another mill uses less scrap, resulting in emissions being moved around rather than reduced. This would also mean introducing an aleatory variable in the bank's ability to meet the target and the stability of that target, as it could be that in a defined year its clients would use less (or more) scrap than necessary, and the other way around in the following years. Second, while the use of scrap should be increased going forward, there will not be enough scrap to meet steel demand, and primary steelmaking will remain necessary for the foreseeable future.

Noting that iron reduction is the most carbon intensive stage of steelmaking, decarbonisation efforts should focus on reducing emissions from primary production rather than simply increasing the use of scrap. A methodology may therefore utilise a metric that integrates separate targets for primary and secondary steel, with the distribution of each set by the scrap use[5] of the steelmaker.

5 For example, scrap charge is used as a proxy.

Definition of scrap use/ratio

The definition of what is included under the term 'scrap' can vary from one organisation to another. The main methodological frameworks propose specific definitions to account for the use of scrap and banks shall refer to each framework's definition. The main points of divergence include:

In SBTi's Steel Science-Based Target-Setting Guidance, home scrap—defined as scrap that is generated during the rolling and finishing of steel—is counted towards the scrap ratio irrespective of whether it comes from the company's own rolling facilities or an external rolling facility. Under the Sustainable STEEL Principles, steelmakers are asked to determine the scrap ratio by reporting on purchased pre- or post-consumer external scrap and subtracting scrap that is sold by the steelmaker. This aims to ensure that scrap that is generated at the same plant that produces steel is excluded from the scrap ratio to avoid establishing an incentive for inefficient steelmaking.

In addition, forward-looking metrics may also be included in methodologies; for instance, they may consider whether clients have themselves set targets or planned for the capital expenditure (CAPEX) necessary to decarbonise. These indicators provide insights into a company's future performance and progress towards climate goals. While useful and highly relevant, forward-looking indicators are additional to the current requirements of the Net-Zero Banking Alliance and may be included on an optional, complementary basis.

3.5 Target setting

Setting emissions reduction targets at the I&S portfolio-level will rely on the metric used to track performance against the chosen pathways or roadmaps. Different approaches can be used to ensure alignment between the targets and the pathways or roadmaps used for the benchmarks. Commonly used approaches include the 'convergence' approach, the 'rate of change' approach and the 'fair share' approach, as outlined in Figure 5.

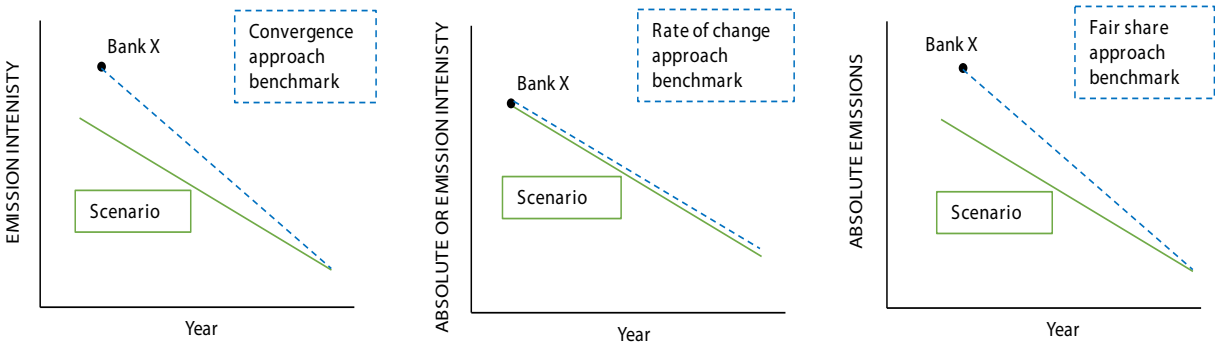


Figure 5: Types of target-setting approaches

i. In the **convergence approach**, companies or financial portfolios set targets to reach the same emissions intensity level as the market benchmark in the selected benchmark scenario(s). In other words, if a loan portfolio's beginning emissions intensity is higher than the benchmark, it must reduce that intensity more quickly than a portfolio whose initial emissions intensity is lower than the benchmark.

ii. The **rate of change approach**, on the other hand, mandates that companies or financial portfolios follow the same pace of change as in the climate scenario, instead of the same emissions level. Under this approach, all portfolios and clients, regardless of their current climate performance relative to the benchmark, are expected to decrease their emissions at the same rate as the market benchmark, depending on the technology. As a result, the efforts of each player in the market will contribute to meeting the scenario's set target.

iii. The **fair share approach** defines the average rate of reduction in emissions for an industry but recognises that individual counterparties will be better- or worse-performing than that average. Based on comparing the counterparty's emissions intensity to its industry average, this approach creates a counterparty-specific rate-of-reduction benchmark for absolute emissions.[6] Thus, with this approach, metrics are only expressed in an absolute emissions unit. Since the fair share approach consists of combining the convergence and the rate-of-reduction approaches, it preserves the benefits and eliminates the challenges of both.

Ultimately, different approaches to target setting may be relied upon as long as the approach is consistent with other elements of a bank's chosen methodology including the pathways or roadmaps and metrics.

6 *Also see Measuring Portfolio Alignment Technical Considerations, pp 30-35 (2021)*

4. Measuring financed emissions for the I&S sector

This section provides a high-level overview of the carbon measurement standards banks can apply in relation to their I&S portfolios. Many of the design choices banks face on target setting equally apply to carbon measurement, therefore an understanding of those is essential. Most banks use the carbon accounting standards provided by the Partnership for Carbon Accounting Financials (PCAF) to measure the financed emissions for their I&S portfolios. PCAF is a partnership between financial institutions established by 14 Dutch financial institutions in 2015 to measure and report on greenhouse gas emissions. Today over 380 financial institutions have joined globally. PCAF developed The Global GHG Accounting and Reporting Standard for the Financial Industry designed to assist with measuring emissions, target setting, and portfolio alignment.

Below is a high-level overview of the PCAF standard in relation to the I&S sector:

- PCAF does not provide a specific definition of steel sector emissions. The scope of activities and emissions sources to be considered for measurement is at the discretion of each financial institution. The sector to which client emissions should be attributed is to be determined by the financial institutions, based on where the revenues of the client generating the emissions are earned (PCAF Financed Emissions Standard—Chapter 5).
- PCAF requires that client Scope 1, Scope 2, and relevant Scope 3 emissions for select sectors be measured and reported. Steel sector Scope 3 emissions are required for inclusion for reports published from 2023 onwards but the exact boundary of Scope 3 emissions to be included is not specified. PCAF also asks financial institutions to disclose Scope 3 emissions separately from Scope 1 and Scope 2 for the sake of transparency and to acknowledge potential double counting issues. According to the standards, credit for avoided emissions, as well as any removals, must also be measured and reported separately from Scope 1, Scope 2, and Scope 3.
- PCAF provides a measurement methodology for attributing clients' emissions to the financial institution but does not have specific guidance for the I&S sector.

- PCAF provides guidance for measuring financed emissions for different asset classes. Financial institutions are required to measure and report financed emissions for each of the asset classes in the outlined guidance. PCAF sorts the asset classes into corporate finance, project finance, and consumer finance categories. The asset classes are further sub-divided into:
    - Listed Equity and Corporate Bonds,
    - Business Loans and Unlisted Equity,
    - Project Finance, Commercial Real Estate,
    - Mortgages,
    - Motor Vehicle Loans, and
    - Sovereign Debt

The business loans and unlisted equity class is the most relevant and meets the NZBA requirements for lenders laid out under NZBA Guideline 1 which states "targets shall cover lending activities and should cover investment activities" (Guidelines for Climate Target Setting for Banks). Additionally, under PCAF, financial institutions are required to report emissions from all loans and investments, and to disclose the total loans and investments under each of the seven asset classes (PCAF Financed Emissions Standard—Chapter 5).

Table 1: List of Asset Classes (PCAF Global GHG Standard, p.47)

Asset class	Definition
Listed equity and corporate bonds	This asset class includes all on-balance sheet listed corporate bonds and all on-balance sheet listed equity51 that are traded on a market and are for general corporate purposes, i.e., unknown use of proceeds as defined by the GHG Protocol.
Business loans and unlisted equity	This asset class comprises business loans and equity investments in private companies, also referred to as unlisted equity. Business loans include all on-balance sheet loans and lines of credit to businesses, nonprofits, and any other structure of the organisation that are not traded on a market and are for general corporate purposes, i.e., with unknown use of proceeds as defined by the GHG Protocol. Unlisted equity includes all on-balance sheet equity investments to businesses, nonprofits, and any other structure of organization that are not traded on a market and are for general corporate purposes, i.e., with unknown use of proceeds as defined by the GHG Protocol.
Project finance	This asset class includes all on-balance sheet loans or equities to projects or activities that are designated for specific purposes, i.e., with known use of proceeds as defined by the GHG Protocol. The financing is designated for a defined activity or set of activities, such as the construction and operation of a gas-fired power plant, a wind or solar project, or energy efficiency projects.

Commercial real estate	This asset class includes on-balance sheet loans for specific corporate purposes, namely the purchase and refinance of commercial real estate (CRE), and onbalance sheet investments in CRE when the financial institution has no operational control over the property. This definition implies that the property is used for commercial purposes, such as retail, hotels, office space, industrial, or large multifamily rentals. In all cases, the owner of the building uses the property to conduct income-generating activities.
Mortgages	This asset class includes on-balance sheet loans for specific consumer purposes—namely the purchase and refinance of residential property, including individual homes and multi-family housing with a small number of units. This definition implies that the property is used only for residential purposes and not for commercial activities.
Motor vehicle loans	This asset class refers to on-balance sheet loans and lines of credit to businesses and consumers for specific (corporate or consumer) purposes—namely the financing of one or several motor vehicles.
Sovereign debt	This asset class includes sovereign bonds and sovereign loans of all maturities issued in domestic or foreign currencies. Both sovereign loans and bonds lead to the transfer of funds to the country, which in turn creates a debt obligation to be repaid by the borrowing country.

- Under the business loans and unlisted equity asset class, PCAF defines an attribution factor as the ratio of the outstanding loan amount (or equity) and the value of the company (PCAF Financed Emissions Standard—Section 5.2). The outstanding amount for business loans is the value of the debt owed to the lender (i.e., disbursed debt minus any repayments). For unlisted equity, the outstanding amount is the outstanding value of equity held by the financial institution. The company value that PCAF uses for private companies is the sum of the company's debt and equity. For loans to listed companies, financial institutions should use the enterprise value including cash (EVIC) of the client.
- PCAF requires measurement and reporting under the absolute financed emissions metric for Scope 1 and Scope 2 and recommends measurement and reporting on emissions intensity if a financial institution intends to set a climate target (PCAF Financed Emissions Standard—Chapter 2). Under the business loans and unlisted equity asset class, PCAF outlines three ways to measure financed emissions based on data availability; reported emissions, physical activity-based emissions, and economic activity-based emissions (PCAF Financed Emissions Standard—Section 5.2). PCAF also provides data quality scores. In this asset class, financed emissions are calculated by multiplying the emissions of the company by the attribution factor.

5. Analysis of methodologies for climate target setting for steel sector financing

To facilitate the transition of the I&S sector, several frameworks have emerged as essential tools for financial institutions to set climate targets and report on emissions. This chapter will compare four prominent frameworks, namely the **Paris Agreement Capital Transition Assessment (PACTA)**,[7] the **Science-Based Targets initiative (SBTi)**[8] and the **Sustainable STEEL Principles (SSP)**,[9] with a specific focus on their practical usability within the context of the I&S sector. The comparison will evaluate the frameworks against the design choices identified in Chapter 2, namely: Emissions Scope and Boundary, Financial Scope, Benchmark Pathways, Target Metrics, and Target Setting. By examining the strengths and limitations of each framework, all of which may be used to satisfy the NZBA target-setting and reporting requirements, financial institutions can make informed decisions regarding their implementation.

Two prominent emissions reporting frameworks, namely the Assessing low-Carbon Transition (ACT) and the Carbon Disclosure Project (CDP), are not reviewed in this paper. While both these frameworks can be used by organisations to assess greenhouse gas emissions, they are best suited for assessing broader environmental performance and readiness for the low-carbon transition and are less suited for setting and reporting against sectoral alignment targets.

In addition, steel sector decarbonisation scenarios such as the IEA's Net-Zero Emissions by 2050 Scenario (IEA NZE) or the Mission Possible Partnership's Steel Sector Transition Strategy Model (ST-STSM) are not described and analysed as these are not target-setting approaches but rather used by different frameworks (such as SBTi and SSP) as reference scenarios or benchmarks.

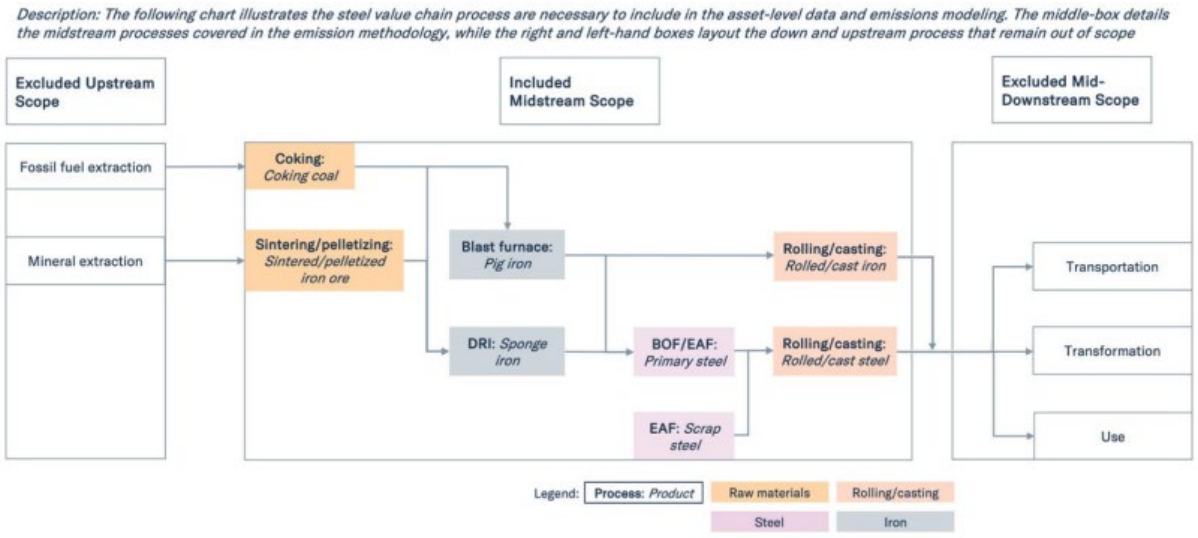
7 PACTA/Climate Scenario Analysis Program—2DII (2degrees-investing.org)
8 Ambitious corporate climate action—Science Based Targets
9 Making Climate Part of Every Steel Loan—Sustainable Steel Principles

5.1 Paris Agreement Capital Transition Assessment (PACTA)

The PACTA framework contains open-source methodologies and tools that help financial institutions and investors to set climate targets and assess the alignment of their portfolios in hard-to-abate sectors, including steel. The PACTA for Banks Methodology, specifically, is a climate scenario analysis toolkit for the corporate lending sector. The toolkit allows banks to link their financial exposure to physical assets (such as steel plants) in the real economy, provides users with insights into the carbon footprints of clients, and facilitates scenario analysis against various climate pathways. Using forward-looking business intelligence data provided by Asset Impact (previously Asset Resolution), results are given at present and up to 5 years in the future.

Emissions scope and boundary

Building off a vast climate-related financial database, the PACTA Tool aggregates global forward-looking steel-sector asset-level data, including emissions intensity, up to the parent company level. To account for the variation in the level of integration between steel plants, the PACTA Tool defines an asset-level fixed system boundary of processes that are in scope, assembled at the level of raw steel production. This boundary captures CO_2 emissions from the entire production process, including Scope 1 and Scope 2 emissions from steel manufacturing and processing as well as from the production of raw material inputs (see Figure 6). More information can be found in PACTA's Steel Asset-level Emission Methodology (2021).



Source: Authors, 2020 based on de Beer et al., 2003

Figure 6: Value Chain Process (PACTA, based on de Beer et al, 2003)

Financial scope

- **In-scope clients**
  The PACTA for Banks Methodology does not provide a set definition of clients considered in-scope by the methodology, instead relying on users to identify which clients to report on. The boundary, above, can serve as a useful reference for this purpose, although it may not be enough to ensure standardised and uniform reporting across bank portfolios. The tool provides users with a data set provided via Asset Impact containing physical asset-level data for the steel sector, which can be used to identify the relevant clients. However, the PACTA for Banks Methodology is data-agnostic, meaning that any data provider/source can be used, as long as the data is provided in the right format (e.g. aggregated at the asset-level as per the boundary, above).

- **In-scope financings**
  Initially designed for listed equity and corporate bonds holdings in 2015, the PACTA Tool was developed to enable reporting on loans and credit facilities to listed and unlisted companies. The specifics of the credit facilities that are reported on are left up to the banks to determine.

- **Exposure indicator**
  Within the PACTA Tool, results are calculated at the loan book level and client level. At the loan book level, a portfolio-weighted approach is used, whereby the production of a client is allocated to the portfolio based on the size of the exposure to that client within the portfolio. Banks can use different financial variables to identify the exposure value used in the analysis. The PACTA for Banks Methodology points to the drawn amount (also referred to as debt outstanding) as arguably the best variable to use, as it reflects the current amount contributing to economic activity in the real economy. However, the committed amount of the loan (also referred to as the credit limit) is also pointed to as a good fit for the analysis. PACTA notes that some banks have expressed their preference for using exposure at default. Ultimately, the methodology is open to different options. Finally, PACTA notes that, when reporting on general-purpose loans to companies that are active in several sectors, revenues/CAPEX/debt data (i.e. a dataset recording how a company's revenues/CAPEX/debt is split across business lines) can be used to model how debt is distributed across business lines to identify steel-relevant exposure. More information can be found in Section 1.6 of the PACTA for Banks Methodology.

Benchmark pathways

As part of the PACTA Tool, a set of scenarios has been prepared for use which provides benchmarks for emissions intensity based on various scenarios, including the IEA's Beyond 2 Degrees Scenario (B2DS) and Net-Zero Emissions by 2050 (NZE) (2021 version) scenarios, as well as net-zero scenarios provided by the Institute for Sustainable Futures (ISF) at the University of Technology Sydney (UTS). More information about those scenarios and details on the methodology used can be found on PACTA for Banks Scenarios and information about these benchmarks can be accessed at transitionmonitor.com.

These benchmarks allow banks to compare the emissions performance of different steel assets and allow for the setting of emissions reduction targets for individual assets or portfolios. In theory, however, any climate scenario can be used provided that the scenario lays out targets in production capacity at the technology level or, for the relevant sectors, emissions intensity units. This last indicator could also be indirectly calculated if the scenarios provide absolute carbon and production values.

The use of multiple scenarios with varying levels of climate ambition is encouraged within the PACTA for Banks Methodology as this provides banks with a better understanding of their current and future alignment to benchmarks. As part of using the methodology, it is essential that at least one scenario is ambitious enough to achieve the goals set out in the Paris Agreement. Within the PACTA for Banks Methodology, a bank is allowed to modify a scenario if all assumptions and the modelling underlying the scenario are disclosed. It should be noted that NZBA members should select a scenario that meets the characteristics set out in the Guidelines for Climate Target Setting for Banks (1.5°C, net-zero by 2050, low/no overshoot etc.).

Target metrics

For the steel sector, the PACTA for Banks Methodology relies on an emissions intensity metric which measures the average CO intensity per economic unit of output (for example, CO_2/per ton of steel produced[10]). To obtain the metric, PACTA assigns 'emissions factors' to the physical assets. Steel plants are assigned an average emissions intensity based on either the known emissions of that plant or on an estimation based on the characteristics of the asset. Hence, tons of economic output (e.g. tons of steel) are converted to tons of CO_2 per ton of steel. The scenarios for these sectors are also reconstructed in such a way as to measure emissions intensity. Once that is achieved, the alignment of a portfolio is then measured based on an adaptation of the Sectoral Decarbonization Approach utilised by SBTi (see 3.2). The PACTA metrics do not differentiate between emissions from primary and secondary steel, potentially making comparisons between the emissions intensity of different steelmakers (which may have very different production profiles) less relevant. More information can be found in Section 2.5 of the PACTA for Banks Methodology.

Target setting

The PACTA for Banks Methodology derives company and portfolio level intensity pathways by applying the rate of change assumed in the sectoral intensity pathway to emissions in a base year. The methodology varies from the Sectoral Decarbonisation Approach utilized by SBTi (see 3.2) by two factors: (a) no change in market share throughout the entire time horizon is assumed, and (b) targets are calculated by applying the required rate of change in emissions from a scenario to the bottom-up asset-level data utilised by the banks within the PACTA Tool. More information can be found in Section 2.5 of the PACTA for Banks Methodology.

10 Tons of steel/mass of steel denotes the mass of final steel product outputs of the rolling/casting stages of PACTA's system boundary.

5.2 Science Based Targets Initiative (SBTi)

The Science Based Targets Initiative (SBTi) is a global body that enables businesses to set ambitious emissions reduction targets in line with the latest climate science. Through the development of guidance at the sectoral level, SBTi supports companies with setting climate targets and then verifies and approves targets.

SBTi's updated Steel Science-Based Target-Setting Guidance, published in July 2023, provides criteria and recommendations to help companies in the steel sector and its value chain set near- and long- term science-based targets at the company-level, aligned with a 1.5°C ambition.

In addition to the guidance provided for corporates, SBTi launched a project for financial institutions that provides target-setting methods, validation criteria, a target-setting tool, and guidance to support financial institutions in aligning their lending and investment portfolios with the climate targets. SBTi's Financial Sector Science-Based Targets Guidance leverages its company-level sector-specific methodologies to help financial institutions set portfolio-level targets.

Emissions scope and boundary

SBTi's Steel Science-Based Target-Setting Guidance was designed for the purpose of setting a company-level emissions intensity reduction target. Their boundary requires that emissions be reported in a core system boundary that spans from inputs to steel production, through the iron and steelmaking process, downstream processing, and downstream value chain.

Specifically, SBTi's core system boundary includes emissions from power production that is imported as well as emissions from the production of hydrogen and syngas and all emissions associated with iron and steelmaking. Within downstream processing, only hot rolling is included, whereas cold rolling and coating are outside of the emissions boundary. Emissions from exported off-gases are also included. SBTi's core boundary for steel is outlined in Figure 7.

Figure 7: SBTi I&S Core Boundary

Financial scope

SBTi points to the PCAF standard for measuring portfolio financed emissions (Financial Sector Science-Based Targets Guidance—Section 4.2). Under the guidance for corporate instruments SBTi lays out three approaches, namely the Sectoral Decarbonisation Approach, the Portfolio Coverage Approach, and the Temperature Rating Methodology. The Sectoral Decarbonisation Approach, a method for setting physical intensity targets that uses convergence of emissions intensity, is the only approach of these three that can be used for NZBA reporting.

- **In-scope clients**
  SBTi does not specifically designate which clients should be included in the steel sector.
- **In-scope financings**
  SBTi's Financial Sector Science-Based Targets Guidance requires targets for investments and lending activities. The guidance on corporate loans, listed equity, and private

equity included in Table 5.2 of that guidance is specifically relevant to banks fulfilling NZBA reporting requirements. Each asset class has a specific minimum coverage.

- **Exposure indicator**
  SBTi points to PCAF for guidance on portfolio exposure weighting.

Benchmark pathways

SBTi's steel benchmarks rely on an adaptation of IEA's Net-Zero Emissions by 2050 Scenario (2021 version). As part of the benchmarks, SBTi includes differentiated pathways that distinguish between primary, iron-ore-based steel production and secondary, scrap-based steel production. SBTi's rationale for 'scrap-input-dependent pathways' is that it supports a) the decarbonisation of ore-based assets, b) a general sectoral shift towards greater circularity in line with 1.5°C pathways, and c) the decarbonisation of secondary-based production. The pathways that targets are set against will depend on scrap share in both base and target years.

Target metrics

The metric used in SBTi's Steel Science-Based Target-Setting Guidance is emissions intensity, measured in tons of CO_2 per ton of hot rolled steel. Company- and portfolio-level targets are set in terms of this metric against the benchmark pathways.

Target setting

Across its company-level steel guidance and portfolio-level guidance, SBTi points to the Sectoral Decarbonization Approach for both target setting and reporting. Financial institutions wishing to use the SBTi framework for steel sector target setting and reporting should reference SBTi's I&S core boundary, as outlined in Figure 7.

SBTi provides a target-setting manual, a target submission form for financial institutions to construct target language, and a target validation protocol (see Financial Sector Science-Based Targets Guidance—Section 5.4.1).

5.3 Sustainable STEEL Principles (SSP)

The Sustainable STEEL Principles (SSP) provide a sector-specific measurement and disclosure framework for banks, enabling lenders to support the decarbonisation of the steel sector and assess climate progress. The Sustainable STEEL Principles include a fit-for-purpose methodology, crafted to harmonise across various standards and optimise for emissions reductions in the steel sector. The data collection and reporting guidance for steelmakers and lenders streamlines disclosure and increases transparency, and the inclusion of a corridor of net-zero scenarios informs target setting and supports client engagement. The framework was developed over 12 months by RMI and five banks—ING, Société Générale, Citigroup, UniCredit, and Standard Chartered—in consultation with 20 additional banks, several steelmakers (incl. ArcelorMittal, JSW, and US Steel) as well as sectoral and climate change associations and initiatives.

Emissions scope and boundary

To account for the high degree of variability in emissions in the steel sector, caused by differences in ownership structures and levels of vertical integration, the SSP assess emissions from steel production using a fixed system boundary of activities, informed by the recommendations of the Net-Zero Steel Pathway Methodology Project (NZSPMP). Within a fixed system boundary, steelmakers are responsible for reporting on all emissions within the same boundary, irrespective of ownership of various processes and regardless of whether they are an integrated or non-integrated producer. A fixed system boundary does not abandon the accounting standard of Scopes 1, 2, & 3; rather, it establishes a singular boundary of emissions[11] resulting from the production of steel, regardless of whether those emissions are considered Scope 1, 2, or 3 for any one entity. In that way, a fixed system boundary can ensure greater consistency in reporting, increase transparency, and enable a more equitable comparison of steelmakers' emissions performance. For example, a steelmaker operating a standalone electric arc furnace will also have to report on upstream emissions (i.e. from suppliers such as DRI/HBI producers) as well as downstream emissions (i.e. from customers such as casters and rollers). More information can be found in Section V.1 of the Sustainable STEEL Principles (also see Figure 4).

Financial scope

- **In-scope clients**

  To support consistency and efficiency in reporting, the SSP provide a clear definition of the universe of in-scope clients that banks are expected to include in their steel sector reporting. To report on portfolio alignment under the SSP, banks are expected to calculate, at a minimum, the climate alignment of any client that:

  a. Produces a minimum of 250 kilotons p.a. of crude steel at the group-level (i.e., inclusive of the entity and all subsidiaries on an aggregate basis, but not any parent entity), and

  b. Generates 20% or more of total revenue through crude steelmaking activities at the group-level (i.e., inclusive of the entity and all subsidiaries on an aggregate basis).

11 While all emissions resulting from ironmaking, steelmaking, and auxiliary processes fall within the boundary, emissions from iron and coal mining are considered out of scope. This is due to the following reasons:

- The scenarios utilized by the SSP do not include mining emissions within the steel sector boundary.
- The CO_2 emissions that result from iron ore and coal mining represent a relatively small portion of total steel sector emissions, although it is important to note that fugitive methane (particularly from coal mining) can be significant.

While emissions resulting from iron ore and coal mining are not currently included, the SSP may consider expanding the boundary to include emissions from mining in the future, as well as include additional GHG emissions, such as methane, if scenarios allow.

The SSP define crude steelmaking activities as the production of crude steel, as well as the sale of processed steel products using crude steel produced in-house by the same counterparty. The SSP furthermore expect banks to include financings that are extended to trading or financial companies and under the parent guarantee of an in-scope client in their reporting. More information can be found in Section IV.1 of the Sustainable STEEL Principles.

- **In-scope financings**
  Financial products that should be reported under the SSP are defined as credit products—including bilateral loans, syndicated loans, and club deals. The framework contains a list of financial products that fall within the scope of the SSP that may be referenced by banks. More information can be found in Section IV.2 of the Sustainable STEEL Principles.

- **Exposure indicator**
  To calculate the climate alignment of their steel lending portfolios, banks determine the reported exposure to each client using the credit limit of the in-scope financing—i.e., committed amounts—or the outstanding under the in-scope financing on chosen financial metric as per year-end i.e., drawn amounts. Whichever method the bank selects must be applied consistently throughout all portfolio calculations and the method must be disclosed in the reporting. Lastly, reported exposure may be weighted by the percentage of steel-related revenues of the total revenues of the client. This approach can simplify reporting for banks with exposures to large, diversified groups since they can weight the total exposure by the percentage of steel-related revenues of the whole group, rather than identify each borrower under the financing or analyse the use of proceeds of the financing. More information can be found in Section IV.4 of the Sustainable STEEL Principles.

Benchmark pathways

Under the SSP, climate alignment is measured as the emissions intensity of steel production compared to a benchmark, determined from an emissions reduction scenario. The SSP utilise two decarbonisation scenarios: an adaptation[12] of IEA's Net-Zero Emissions by 2050 Scenario (IEA NZE)[13] (2021 version), and the Mission Possible Partnership's Technology Moratorium Scenario (MPP TM), one of several scenarios within the Steel Sector Transition Strategy Model (ST-STSM).[14]

12 The IEA NZE Benchmark utilized by the Sustainable STEEL Principles is a modified version of the "Net-zero by 2050" scenario published by the International Energy Agency (IEA) in 2021, with the following modifications:
- 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 MPP model.

13 iea.org/reports/net-zero-by-2050

14 energy-transitions.org/wp-content/uploads/2021/12/MPP-Steel_Transition-Strategy.pdf

These scenarios are furthermore broken to differentiate 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). Differentiating between emissions from primary and secondary steel reflects the market realities of the sector and aims to both increase scrap use in the short-term and incentivise capital investments in low-carbon steelmaking technologies and recycling in the medium- and long-term.

Jointly, the IEA NZE and the MPP TM model scenarios create an alignment zone with three categories. Depending on each company's emissions intensity and scrap utilisation, it can be placed within the Alignment Zone in the following categories:

- **1.5°C-aligned:** Emissions Intensity lower than the IEA NZE,
- **Well below 2°C:** Emissions Intensity above the IEA NZE, but below the MPP TM, and
- **Misaligned:** Emissions Intensity above the MPP TM

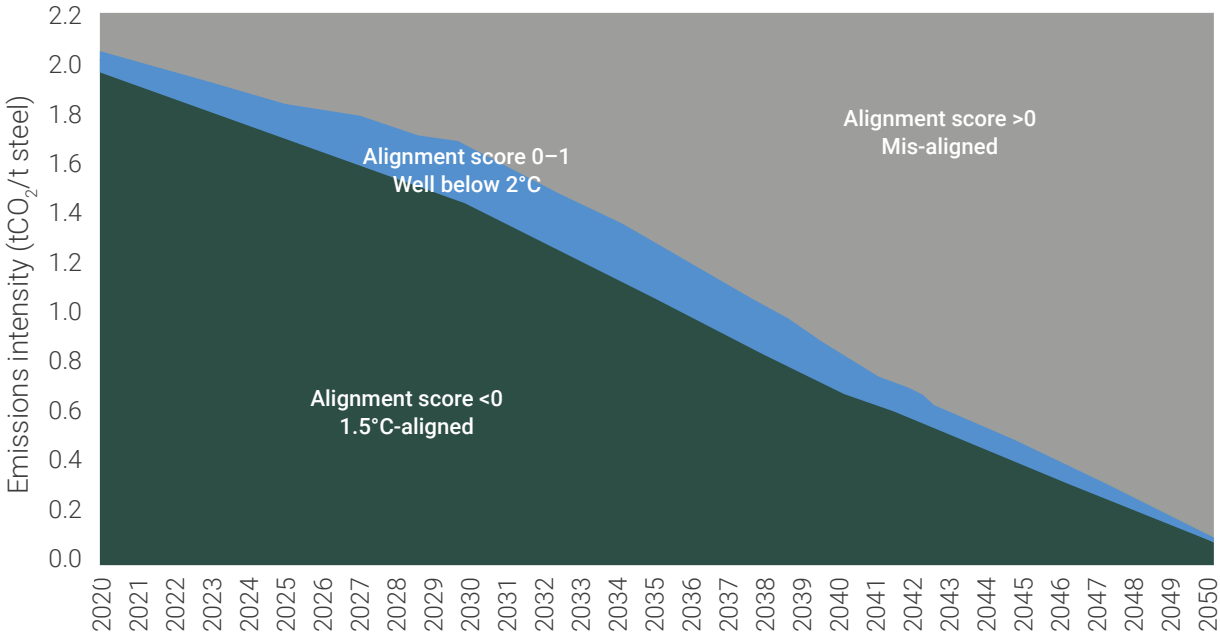


Figure 8: Sustainable STEEL Principles Alignment Zone, p.22

Note: Scenarios in Figure 8 are based on the sample steelmaker's inputs to production consisting of 25% scrap.

Target metrics

Under the SSP, banks ask their steelmaker clients to provide underlying data on their emissions intensity by dividing total CO_2 emissions (including direct emissions, indirect emissions, and credits, according to a fixed system boundary) by the mass of steel produced from steelmaking processes. This emissions intensity is then used to calculate an alignment score.

The alignment score methodology of the SSP also accounts for scrap utilisation rates in a steelmaker's production, assessing the alignment of primary and secondary steel against the disaggregated targets of the Alignment Zone. The SSP combines this information into a single alignment score, allowing for a fairer and more robust comparison of steelmaker emissions, equipping banks with the insights they need to support the climate alignment of their clients and steel lending portfolios. Additionally, it helps avoid

the volatility in emissions intensity coming from the higher (or lower) use of scrap rate in specific years, which could otherwise be misinterpreted as performance improvement (or worsening) and mislead stakeholders, especially in the context of target setting and performance against targets.

All in all, the alignment score methodology fulfils several functions: (i) it defines a client's emissions relative to the three zones of the Alignment Zone (see Figure 8); (ii) it provides a normalised basis that can be used to compare performance across clients and across financial institutions; and (iii) it provides a continuous metric to calculate the weighted average alignment of a bank's loan portfolio. More information can be found in Section V.2 of the Sustainable STEEL Principles.

Table 2: Sustainable STEEL Principles Alignment Scores

	MMP tech moratorium trajectory		IEA NZE trajectory	
Year	**Prim. Intensity (tCO_2/t steel)**	**Sec. Intensity (tCO_2/t steel)**	**Prim. intensity (tCO_2/t steel**	**Sec. intensity (tCO_2/t steel)**
2020	2.46	0.79	2.38	0.75
2030	2.08	0.43	1.81	0.32
2040	1.03	0.28	0.90	0.12
2050	0.10	0.19	0.12	0.12

Target setting

Participation in the Sustainable STEEL Principles does not necessitate the adoption of any single target, and individual target setting remains at the full discretion of each signatory bank. However, signatories of the SSP are encouraged to utilise this methodology for target-setting purposes. The two net-zero scenarios developed as part of the Alignment Zone can be used to set targets.

Targets can be set both in terms of an alignment score and/or directly as emissions intensity. A net-zero aligned intensity target is dependent on the percentage of scrap utilised; given that secondary steel production emits a fraction of the emissions of primary production, it is possible to meet intensity targets by increasing exposure to secondary steelmaking instead of investing in decarbonisation. To create an optimal incentive structure that advances the decarbonisation of the sector as a whole, and to avoid encouraging solely the increased use of scrap (which is limited in availability), the alignment score methodology differentiates between emissions resulting from the production of primary steel and the production of secondary steel. For example, setting a bank's alignment score target of 0 by 2030 implies that the bank's emissions intensity needs to be in line with the IEA NZE by 2050 Scenario in that year, adjusted for the scrap rate used by its clients. This allows for fair benchmarking among steelmakers and financial institutions. Should banks use only emissions intensity to measure their portfolios and set net-zero targets, it would be more difficult to compare performances as the amount of scrap used by steelmakers varies across portfolios and over time.

In the future, the Steering Committee of the SSP may consider expanding the scope of emissions, or amending various methodological components to ensure that the SSP are complementary to other initiatives, such as ResponsibleSteel and SBTi.

The Guidelines for Climate Target Setting for Banks allow for banks to set targets on absolute emissions and/or emissions intensity, while other approaches (e.g. production volume trajectories, technology mix, or measurements such as financing targets) are allowed as supporting targets only. As the SSP alignment score is a direct representation of emissions intensity, and weights two emissions intensity curves together depending on the clients' scrap rate activity, it is considered to be an emissions intensity target and hence a target for an SSP alignment score of zero is deemed to be compatible with the NZBA guidelines. NZBA signatories setting targets using the SSP alignment score should nevertheless yearly disclose the absolute emissions and emissions intensity of their steel lending portfolios to demonstrate progress and promote transparency, in line with NZBA guidelines.

5.4 Summary of target-setting methodologies

The frameworks reviewed in this chapter can all be utilised to satisfy the target-setting and reporting requirements of the NZBA, although not every framework provides users with the full guidance necessary to do so. Additionally, not every framework is optimised for the specific context of the I&S sector.

The PACTA framework offers a climate scenario analysis toolkit for financial institutions. While it includes some useful tools, it does not provide very detailed guidance for setting targets for steel sector clients and portfolios and does not differentiate between primary and secondary steel.

The Science-Based Targets initiative provides guidance for setting robust emissions reduction targets. SBTi's updated steel methodology caters to the realities of the steel sector by utilising a fixed system boundary, differentiating between primary and secondary steel, and referencing robust 1.5°C benchmarks.

The Sustainable STEEL Principles provide a comprehensive framework specifically designed for the steel sector, offering measurement, disclosure, and target-setting tools. The SSP's fixed system boundary ensures consistency in reporting and transparency, and its alignment scoring methodology allows for equitable comparisons of emissions performance.

Table 3 shows an overview of the frameworks available to financial institutions and the tools provided by each of them to meet the NZBA requirements. While each framework has a specific utility, limitations in terms of sector-specific guidance, target-setting support, and completeness of emissions coverage would require banks to do more work in-house. For defining in-scope clients in particular, sometimes this is not up to the methodology itself but to the data providers upon which the methodology draws. Financial institutions will need to engage with data providers to understand the depth of

the data for defining in-scope clients, and have the flexibility to make their own individual decisions about the implementation of frameworks based on their unique needs and objectives. However, all members of the NZBA should transparently disclose the frameworks utilised, along with any additional assumptions and methodologies employed, when reporting climate targets and emissions data.

Table 3: Summary of Target-Setting Methodologies for Steel Sector Financing

		PACTA	SBTi	SSP
Boundary	Fixed system boundary			
Financial scope	Defined in-scope clients			
	Defined in-scope financings			
	Guidance for exposure weighting			
Benchmarks	1.5°C benchmarks included			
Target metrics	Guidance for emissions intensity-based metric included			
	Differentiation between primary and secondary steel			
Target setting	Target-setting guidance included			

6. Call-to-action for data & scenario providers, iron & steel companies, and governments

Commercial banks have a role to play in contributing to the transition of the I&S sector in various ways including the provision of financing, development of new financial products, and engagement with I&S clients to help them manage their transition. However, commercial banks do not operate in isolation and the extent to which they can support the decarbonisation of the I&S sector is dependent on other actors of the economy taking action. NZBA calls on other actors in the economy to help make this task easier by addressing the following requests:

3rd Party Data and Scenario Providers can provide clarity on data and transition pathways for the I&S sector to achieve net zero by 2050, particularly through:

- Coordinating efforts to standardise data and transition pathways so these are compatible and decision-useful for banks. For instance, analysis shows that some data and scenario providers currently employ different assumptions than those used in formulating scenario benchmarks, making a comparison between the two challenging.
- Providing region-specific insights in relation to 1.5°C-aligned scenarios. Even though some work on regional analysis exists today (see chapter on regional implications of the MPP Steel Sector Transition Strategy), more analysis is required on the role of the I&S sector in the energy transition of developing and least developed countries that may still need to rely on revenues from the export of I&S products.
- Providing the data required for banks to be able to construct benchmarks that are suitable for the target-setting approach they have chosen to take for the I&S sector. For instance, recent analysis shows that data is the biggest challenge that banks face in relation to setting climate targets.[15]

Iron & Steel companies can take action to accelerate the transition of the sector and engage with banks in that respect, particularly through:

- Providing improved disclosures on their emissions and the data required for target setting.
- Designing and implementing transformation projects and adopting technology solutions that can contribute to the reduction of their emissions.

15 spglobal.com/marketintelligence/en/news-insights/blog/spotlight-on-sustainability-how-banks-can-overcome-thechallenges-of-achieving-net-zero-by 2050#:~:text=Data%20is%20the%20biggest%20challenge,reaching%20net%2Dzero%20by%202050

- Developing transition plans and engaging with banks regarding the financing and long-term implementation of those transition plans.

Governments can develop a stable policy and regulatory environment that supports banks in financing the transition of the I&S sector, particularly through:

- Setting the national ambition and developing and implementing transition strategies for the I&S sector to achieve net zero by 2050.
- Providing incentives to I&S companies towards the acceleration of the transition for the sector.

UN environment programme

finance initiative

UNEP Finance Initiative brings together a large network of banks, insurers and investors that collectively catalyses action across the financial system to deliver more sustainable global economies. For more than 30 years the initiative has been connecting the UN with financial institutions from around the world to shape the sustainable finance agenda. It has established the world's foremost sustainability frameworks that help the finance industry address global environmental, social and governance (ESG) challenges. Convened by a Geneva, Switzerland-based secretariat, more than 500 banks and insurers with assets exceeding US$100 trillion work together to facilitate the implementation of UNEP FI's Principles for Responsible Banking and Principles for Sustainable Insurance. Financial institutions work with UNEP FI on a voluntary basis and the initiative helps them to apply the industry frameworks and develop practical guidance and tools to position their businesses for the transition to a sustainable and inclusive economy.

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