Sustainable Aluminium Finance Framework

Questions and Answers

1 Introduction

Aluminum is an essential building block of modern life, used in everything from space travel to beverages, as well as in many of the new technologies powering the energy transition. Yet aluminum production is also highly emissions intensive and responsible for 1.1 billion tons or 2% of global CO_2e emissions per year.[i] On average, producing one ton of aluminum generates 11 tons of CO_2e, compared to 1.9 tons of CO_2 per ton of steel,[ii] for example. As demand for aluminum grows in the future, enabling the sector's net-zero transition will be critical to meeting climate goals.

Recognizing the need for financial institutions to contribute to the decarbonization of the aluminum industry, the Sustainable Aluminum Finance Framework (the Framework) is a voluntary reporting framework which allows banks to assess and disclose the alignment of their aluminum lending portfolios against a 1.5°C pathway and effectively support their clients' decarbonization efforts.

Implementing climate alignment commitments in the financial sector poses significant challenges. It requires a deep understanding of the decarbonization pathways specific to real economy sectors, robust methodologies for assessing alignment, and reliable data for measuring progress. Additionally, successful decarbonization requires action by other players in the global economy, including corporations and policymakers.

The Framework is a bespoke solution that enables banks to make progress against their individual climate objectives by providing insight into their clients' and their portfolios' emissions intensity compared to the sector's 1.5°C pathway. The Framework relies on three key components to do so:

I. A robust methodology to track and report progress.
II. 1.5°C-aligned roadmaps for primary and recycled aluminum production and semi-fabrication (the latter is included for optional reporting).
III. Access to standardized data through comprehensive client reporting guidance and a high-quality data provider(s).

The development of the Framework was facilitated by RMI's Center for Climate-Aligned Finance and supported by Citibank, ING, Société Générale, and Standard Chartered. It is the result of extensive consultations with banks, industry, experts, and civil society, ensuring its robustness and alignment with existing standards.

Ultimately, the Framework enables banks to make progress on climate commitments in line with NZBA guidelines, make standardized comparisons between clients and portfolios, and engage with clients on supporting their transition.

2 Boundary

2.1 What is the objective of the Framework boundary?

The boundary establishes the set of aluminum-sector activities that are considered in scope of the Framework. The boundary has important implications for the decarbonization levers that are available to producers, and for the insight and transparency that banks can bring to their efforts to support the sector's transition. It also impacts the data that clients and banks need to obtain and report on. Furthermore, choices made for the boundary enable the Framework to create a level playing among clients and banks, ensuring that comparisons of clients and portfolios are made on a standardized basis.

2.2 What guiding principles were used to determine which activities should be in scope of the Framework?

Four main principles were used to guide the selection of activities included in the boundary:

1. Emissions sources or greenhouse gases which have a material impact on the overall carbon footprint of the sector should be included.
2. The boundary should align with existing roadmaps, initiatives, industry standards, and reporting tools where possible.
3. To the extent possible, measuring and tracing the emissions source along the value chain should not impose an undue burden on producers.
4. To the extent possible, activities included should enable the comparison of clients on the same basis, with differences in emissions intensity resulting from differences in efficiency and energy inputs rather than differences in processes or accounting methods.

2.3 Which activities are considered in scope of the Framework?

Per the methodology outlined in Section 3, the aluminum sector is broken down into three sub-sectors: primary production, recycled production, and semi-fabrication. The semi-fabrication boundary is optional within the Framework, and lenders may choose to include it in their reporting at their discretion.

For the primary and recycled production boundaries, the Framework follows a "fixed boundary" approach, where reporting parties collect and report emissions data for all activities within the boundary irrespective of the activities within their financial or operational control (see Question #2.4).

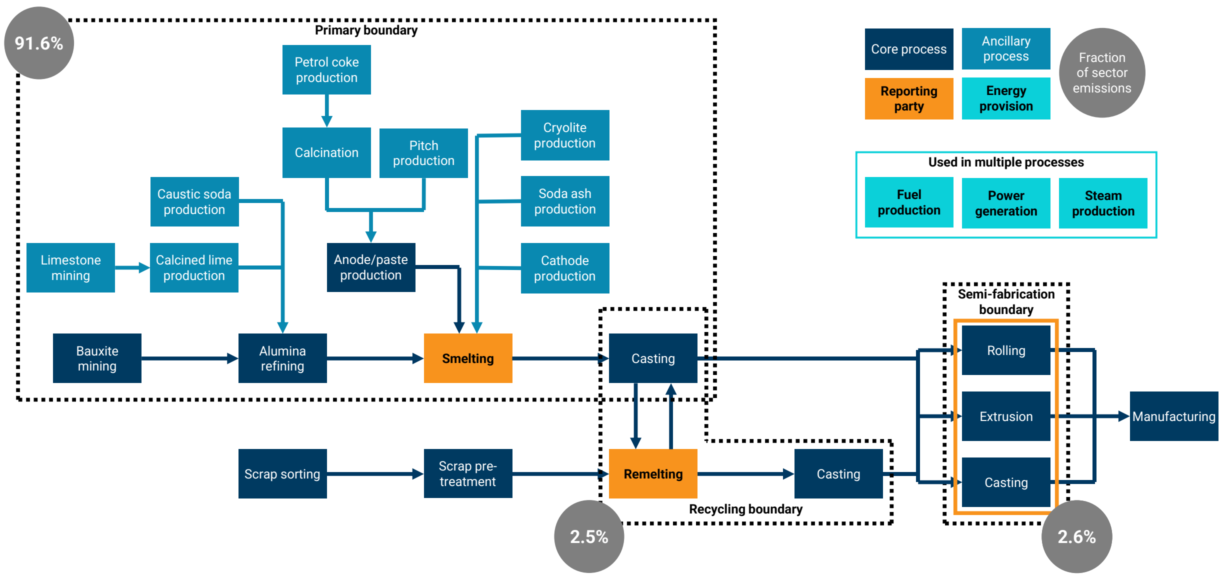

Figure 1: Graphical summary of framework boundaries. Note that the graphical representation of the semi-fabrication boundary, which is included on an optional basis, does not include all possible processes.

a. Primary production boundary

The activities in scope for primary production include all major processing stages: bauxite mining, alumina refining, anode production, smelting, and casting. All scope 1 and 2, and most upstream scope 3 emissions are included in the primary production boundary. This includes:

- Emissions associated with the extraction of fuels used for process heat.
- Emissions associated with the generation of electricity used in all stages of production, including emissions from the extraction of fuels to generate this electricity.
- Emissions associated with the production of ancillary materials including calcined lime, caustic soda, petrol coke, pitch, cryolite, soda ash, and cathode materials.

Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), and perfluorocarbons (PFCs) are all included in the primary production boundary. Transport (~3.1% of total sector emissions[iii]) and alloying (no emissions estimate available) are excluded from the boundary as the transport emissions are difficult to estimate accurately and alloying emissions vary according to the product.

Note that emissions from recycled material added to the primary casthouse will need to be reported and benchmarked following the recycled production boundary and methodology.

b. Recycled production boundary:

The boundary for recycling includes remelting and casting. This narrower boundary excludes emissions from scrap sorting and pre-treatment but enables a more comparable assessment of recycling activities and captures remelting—the major source (92%) of the sub-sector's emissions.

The boundary assumes no additional embodied emissions in scrap. However, note that recyclers report on their purchased primary material using the primary production boundary per Question #2.3a; this material will be benchmarked following the methodology for primary production. Recyclers are also encouraged to report the share of post-consumer scrap in total recycled production and this share is aligned by default until 2030 (see Question #3.8).

All assets with remelting facilities are in scope of the Framework, regardless of their level of integration and relative intake of different scrap types and ingots. The boundary also includes internal remelting activities. Finally, upstream emissions associated with fuel extraction and electricity generation are included, while transport and alloying emissions are excluded.

c. Semi-fabrication boundary (optional)

The "fixed boundary" approach is not applicable to the semi-fabrication boundary as semi-fabricators transform primary and recycled aluminum to produce different products through different processes. For this reason, the Framework follows a company-based variable reporting boundary for semi-fabrication, where reporting parties report only on the activities that are both in-scope and within their financial or operational control.

Following the Aluminum Association's definition[iv], semi-fabrication includes forming processes to transform aluminum ingots into a semi-finished shape. Typical semi-fabrication processes include rolling, extrusion, forging, and casting. Semi-fabricated products may be treated further (surface treatment, thermal treatment, etc.) and/or coated. These treatment and coating processes are considered in scope for reporting if they are performed by the semi-fabricator. Note that embodied emissions in purchased materials for coatings are excluded.

Additionally, semi-fabricators report on their purchased primary material using the primary production emissions boundary, per Question #2.3a; this material will be benchmarked following the methodology for primary production. Note that semi-fabricators do not report on their purchased recycled material. Integrated producers with both remelting and semi-fabrication on site report on these two activities separately, following the recycling and semi-fabrication boundaries respectively.

As with the primary and recycled production boundaries, upstream emissions associated with fuel extraction and electricity generation are included, while transport and alloying emissions are excluded.

2.4 How does a fixed reporting boundary for primary and recycled production differ from the company-based variable reporting boundary adopted for semi-fabrication and why were these approaches selected?

Under a variable reporting boundary, reporting parties collect and report emissions data based on the overlap between activities within their financial or operational control (following the Greenhouse Gas Protocol for reporting) and activities within the Framework's "system" boundary. A variable reporting boundary would thus require companies to report on their scope 1, 2, and limited scope 3 emissions.

Because the activities companies are engaged in can vary, the resulting emissions intensities are difficult to compare between companies—and thus between portfolios—as they could reflect differences in levels of vertical integration rather than differences in efficiency and energy inputs.

A fixed reporting boundary, on the other hand, requires reporting parties to collect and report emissions data for all activities within the Framework's "system" boundary irrespective of the activities within their financial or operational control. This ensures that companies' emissions performance is compared on the same basis and that, in turn, financial portfolios can also be compared in a straightforward and fair manner.

For the primary and recycling boundaries, the Framework follows a fixed boundary approach, and—as much as possible—tailors the boundaries to include comparable processes. This approach is not applicable to the semi-fabrication boundary as semi-fabricators produce different products and rely on different processes. For this reason, the Framework follows a company-based variable reporting boundary for the optional semi-fabrication boundary, where companies report only on the activities that are both in-scope and within their financial or operational control.

Nevertheless, given that the primary production and recycling boundaries represent ~98% of emissions from all in-scope activities (and 94% of total sector emissions), following a fixed boundary approach for these activities creates a strong foundation of comparability across companies and portfolios.

2.5 What share of the sector's total emissions do the activities in scope represent?

According to the International Aluminum Institute's (IAI) sectoral emissions accounting, as of 2018, the primary production boundary accounts for 91.6% of emissions, the recycling boundary accounts for 2.5% of emissions, and the optional semi-fabrication boundary accounts for 2.6% of emissions.[iii] In total, the Framework boundary accounts for 96.7% of the sector's emissions.

2.6 How does the Framework ensure that companies and banks can report on the selected boundary?

The selected boundary has gone through extensive consultations with industry and expert stakeholders, ensuring that companies can report on the data required or use the emissions factors provided by the Framework. The Framework includes detailed technical instructions for clients and banks to calculate required data. Moreover, an Excel-based portfolio-alignment calculator tool is provided to Framework users alongside an Excel-based calculation tool for clients to support standardized reporting.

To implement the Framework, banks are encouraged to obtain data directly from their clients. If needed, however, banks can also rely on the designated third-party data provider(s) identified by the Framework. The emphasis on data quality control ensures the reliability and comparability of reported information.

2.7 Why was this boundary selected for primary production?

The principles outlined in Question #2.2 were used to guide the selection of activities included in the primary production boundary. The selected boundary is inclusive, aligning closely with the emissions boundaries used by the International Aluminium Institute and the Aluminium Stewardship Initiative (ASI). Aligning with IAI is particularly important as the Institute is one of the creators of the chosen roadmaps (see Question #4.5), and the roadmap boundary must align with the reporting boundary.

Moreover, the selected boundary has gone through extensive consultations with industry and expert stakeholders, ensuring that a diverse range of companies can report on this data or use emissions factors provided by the Framework.

The most significant component of primary emissions which is excluded from the boundary is the transport of bauxite and alumina (3.1% of the sector's emissions in 2018[iii]). This decision was made on the basis of principle 3 (see Question #2.2): it is challenging to measure and report transport emissions accurately at the company level; its exclusion also did not conflict with the remaining principles. Moreover, most of the sector's transport emissions are driven by shipping, which is covered by similar initiatives such as the Poseidon Principles.

Finally, the boundary ends at casting as this is the stage where the fundamental inputs and outputs to the primary production process are similar for all operators (i.e., bauxite is the main raw ingredient and primary aluminum metal ingots, slabs, and billets are the output). As primary producers report against this fixed boundary, the uniformity ensures comparability between operators.

2.8 Why was this boundary selected for recycled aluminum production?

The principles outlined in Question #2.2 were used to guide the selection of activities included in the recycling boundary. The recycling boundary is limited to the remelting and casting stage because these processes are comparable and ensure that performance is determined by differences in efficiency, energy inputs, and fuel mix rather than differences in processes, inputs, or products.

The recycled production process is not as uniform as primary production, with differences in the types of scrap used as inputs and in the final outputs from each operator. Inputs to recycling can be post-consumer scrap of different alloys and varying levels of quality, pre-consumer scrap of different grades, internal scrap, and primary metal. Recycling outputs can be recycled ingots of varying grades or semi-fabricated products of different kinds for integrated recyclers.

These differences are reflected in different processes between sites where some may require significant sorting and pre-treatment and others very little. To maintain comparability between operators and portfolios, a narrower boundary of just the remelting and casting stages was selected. By considering just these activities, the intensity differences between processing different scrap inputs are minimized and fair comparisons can be made between companies and portfolios.

This narrower boundary aims to avoid cases where recyclers processing scrap that requires greater energy inputs to process are penalized due to higher resulting emissions. Post-consumer scrap can fall under this category as it often has more impurities. As the share of post-consumer scrap in total aluminum production must increase to stay in line with available decarbonization scenarios, this narrower boundary minimizes the potential impact facing post-consumer recyclers on an intensity basis.

The Framework encourages recyclers to report the share of post-consumer scrap in their remelting inputs. Per the methodology instructions outlined in Question #3.8, this fraction of scrap will be assessed as aligned until 2030 in an effort to support its growth. Finally, recyclers must report on their purchased primary material as it is an important component of their scope 3 emissions.

2.9 Why was this boundary selected for semi-fabrication?

Semi-fabricators transform recycled and primary material into semi-finished products used across the transport, construction, packaging, and other industries. Semi-fabricators often make different products and operate different processes, making like-for-like comparisons challenging. For example, some producers may operate extrusion processes, but have minimal casting processes and vice versa. Likewise, some producers may finish their products with surface treatments or coatings and others may not.

While an important principle guiding the selection of activities considered in scope for the Framework was comparability, another key principle was ensuring that activities which can have a material impact on emissions were included in scope (see Question #2.2). Thus, while including semi-fabrication was in conflict with the comparability principle, it was decided to allow for reporting on an optional basis because of the important role semi-fabricators play in supplying low-carbon products to buyers.

Unlike the primary and recycled production boundaries, companies with semi-fabrication activities only report on the processes under the semi-fabrication boundary which they own and operate. This company-based variable reporting approach to the boundary was deemed necessary for semi-fabrication given the diverse nature of the processes which fall into the semi-fabrication boundary.

Although semi-fabrication occurs downstream of primary and recycled production, it is included as an optional third boundary (instead of an extension of the primary and recycled boundaries) because—while it can often be integrated with recycling operations—it is not frequently integrated with primary production. Requiring primary producers to track the downstream emissions of semi-fabricators who process their products would pose an undue reporting burden. Including semi-fabrication as a separate boundary with its own reporting party removes this potential reporting burden.

Finally, purchased primary material is also included in the reporting requirements for semi-fabricators as it is an important component of their scope 3 emissions. Semi-fabricators do not report on their purchased recycled material, however. This would impose a similar reporting burden to reporting on purchased primary material, but accounts for a much smaller fraction of the sub-sector's scope 3 emissions. It was determined that the relatively small share of embodied emissions in recycled material did not warrant the additional reporting burden on semi-fabricators.

As with the other boundaries, the selected semi-fabrication boundary has gone through extensive consultations with industry and expert stakeholders, ensuring that companies can report on this data or use emissions factors provided by the Framework.

2.10 How should companies that produce primary aluminum account for the trade of intermediate materials within the fixed boundary?

Smelters need to report their emissions intensity based on the inputs consumed in their production of cast aluminum in a given year. The sale of intermediate products (e.g., alumina) not used in a company's own production of aluminum will be "credited" (i.e., not counted for the purposes of the Framework) from their overall emissions calculations. In turn, any in-scope intermediate products that are purchased by the company to produce aluminum will be accounted for in their emissions calculations based on the fixed system boundary approach. Accounting for trade of intermediate materials ensures that emissions are not double counted along the value chain.

Emissions "credits" for exported material are only allowed for intermediates and co-products, not by-products. Intermediate and co-products are bauxite, aluminum hydroxide, alumina, anodes, and anode butts. Dross is not included, for example, as it is a by-product which is generally not considered to have associated embodied emissions. Exports of electricity from operators with captive power will also be credited as this energy is not used to produce aluminum.

This approach results in an intensity which is more akin to a life-cycle emissions intensity than a company intensity. See Figure 2 for an example.

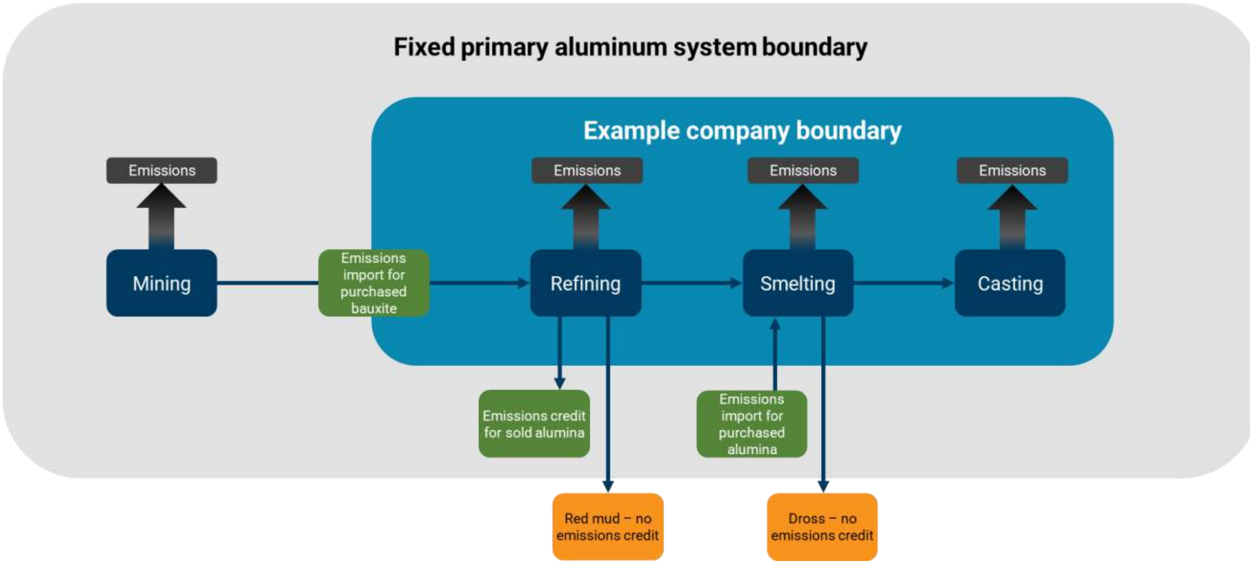

Figure 2: Flow of emissions credits and imports for an example company. In this example, the company operates an alumina refinery and smelter. Emissions must be added for the purchase of bauxite and alumina for use in the refining and smelting processes respectively. There is also an emissions credit for the sale of surplus alumina. No emissions credit is given for dross or red mud.

"Credits" are not considered for the recycling boundary. This is a narrow boundary where the majority of activities are expected to take place on a single site, removing the need to account for intermediate or co-products.

3 Methodology

3.1 What is the objective of the Framework methodology?

The objective of the Framework methodology is to produce a metric for measuring the yearly climate alignment—or alignment score—of a bank's aluminum lending portfolio and its associated emissions intensity.

To the extent possible, the methodology enables banks to make fair, like-for-like comparisons between clients and, in turn, portfolios, and incentivize action across the aluminum value chain on key decarbonization levers. Banks that adopt the Framework are asked to disclose their sectoral portfolio alignment score and—if desired—their portfolio's emissions intensity; client-level data remains confidential (see Section 7).

3.2 How is a portfolio's alignment score calculated?

A bank's alignment score is calculated as the percent deviation between the weighted average of the emissions intensities and 1.5°C-aligned benchmarks of each of the companies in scope in its aluminum lending portfolio (see Question #3.9).

3.3 What were the criteria used to determine a suitable methodology?

Four major criteria were considered in the development and selection of methodology:

Table 1: Key criteria for methodology selection.

Robustness	• A key concern of this criterion is to account for the significant variability in emissions intensity across the sector. Does the methodology allow for a robust way to:
	  ○ Compare the alignment of companies or assets?
	  ○ Incentivize sector-wide action?

NZBA compliance	• Is the methodology compatible with NZBA guidelines? Financial institutions are making these disclosures as part of their commitments to NZBA and ensuring that this framework allows them to meet commitments is paramount.
Ease of implementation	• Is the methodology easy to implement for both clients and banks? • Does the methodology align with existing aluminum sector standards, ensuring harmonization as well as access to data?
Transparency	• Does the methodology result in a transparent measure of alignment? • Can alignment be easily interpreted?

3.4 How will the emissions performance of aluminum producers be assessed under the Framework?

Given the fundamental differences in their production processes, resulting emissions intensities, and decarbonization trajectories, the methodology differentiates between primary production, recycled production, and semi-fabrication (optional) by assessing the climate-alignment of each against separate benchmarks.

The methodology further assesses primary production in two steps. First, a client's performance is gauged against how it performs on electricity and non-electricity emissions intensity separately. Second, a client's performance is re-aggregated to produce its overall alignment for primary production.

The Sectoral Decarbonization Convergence Approach (SDA) is adopted for the three boundaries to assess clients' alignment (defined as the deviation between a client's emissions intensity and its SDA-derived 1.5°C benchmark). The SDA enables the Framework to account for the large variability in starting emissions intensities of aluminum producers (particularly primary producers), while incentivizing sector-wide action (see Question #3.6).

3.5 Why is it important to differentiate between primary production and recycling?

Aluminum can be produced via two distinct processes: from bauxite ore—known as primary aluminum—and from aluminum scrap—known as recycled aluminum. In 2019, 66% of all aluminum came from primary production and 34% was recycled.[iii]

Primary aluminum production requires mining bauxite ore, refining the ore to produce alumina, and smelting alumina to separate aluminum from oxygen using electrolysis. The smelting process is continuous, running for 24 hours, 7 days a week and requiring significant amounts of electricity. On the other hand, to produce recycled aluminum, scrap must be treated and remelted, typically using fossil fuels.

Due to the significant differences in production processes, primary aluminum is—on average—10 times more energy intensive and 27 times more emissions intensive than recycled aluminum. As such, primary and recycled aluminum producers face distinct decarbonization trajectories reflecting the different options available for them to align with 1.5°C-aligned climate targets.

3.6 What is the Sectoral Decarbonization Convergence Approach and why is it being applied in the Framework?

The SDA was originally developed by the Science-Based Targets Initiative (SBTi) to enable companies to set science-based emissions reduction targets in specific sectors based on their relative contribution to the total sector activity and their carbon intensity relative to the sector's intensity in base years. Fundamental aspects of the SDA are adopted by many other climate-oriented initiatives across various sectors and use cases.

In practice, the SDA translates a sectoral decarbonization roadmap into a specific trajectory for a company or asset based on its starting point in a given year. All trajectories converge on the climate-aligned target for the sector (e.g., net-zero emissions intensity by 2050). In this way, the SDA is able to capture a sector's variability in terms of starting points and requires sector-wide action.

In aluminum, differences in access to low-carbon electricity needed for smelting (75% of sectoral emissions overall in 2018) in primary production lead to significant variability in emissions intensities. These can range from as low as 4-5 tCO_2/tAl for producers relying mainly on hydro power for smelting to 25 tCO_2/tAl for producers relying on coal-fired power. The SDA approach allows the Framework to account for this large variability in emissions while incentivizing all producers to take action toward decarbonization.

Ultimately, the SDA alignment score of a company or portfolio indicates the pace of progress on emissions. An SDA score of ≤0 means the company or portfolio is decreasing at the rate required by the 1.5◦C aligned trajectory and is therefore aligned. A score of >0 means it is misaligned. To ensure the comparability of scores and mathematical robustness when aggregating to the company and portfolio level, the SDA must also be applied to recycled production.

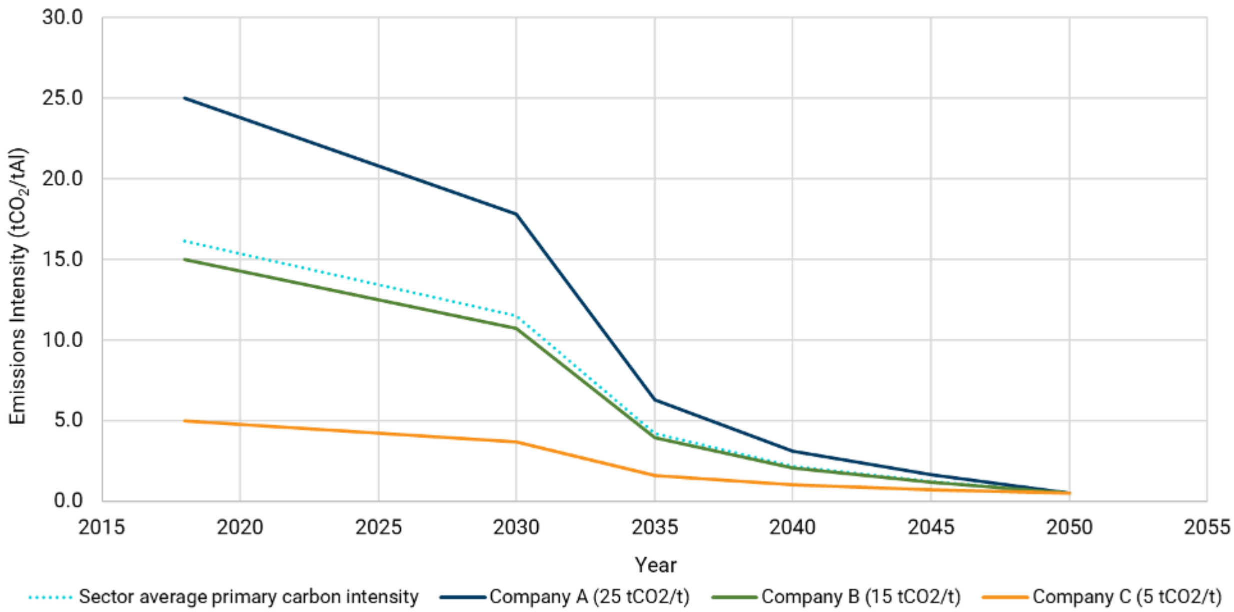

Figure 3: Example SDA trajectories based on the IAI 1.5°C Scenario for primary aluminum intensity only. The dotted light blue trajectory is the sector average trajectory for primary aluminum according to the IAI. All other trajectories replicate the shape of this average curve, but they are normalized to the starting points of three example companies with different baseline emissions intensities. Companies A, B, and C start at 25, 15, and 5 tCO_2/tAl, respectively.

3.7 Why does the Framework differentiate between electricity and non-electricity emissions for primary production?

As described in Question #3.6, the SDA captures the sector's large variability by tailoring each company's benchmark to their starting point. This means that all companies—regardless of whether they are above or below the sector's average 1.5◦C-aligned benchmark—will be required to make emissions intensity reductions to meet their benchmarks, though higher intensity producers will be required to make larger reductions.

While the SDA incentivizes critical sector-wide action, it also displays a shortcoming when benchmarking producers with existing access to low-carbon power. The SDA methodology preserves the shape of the decarbonization curve (or rate of emissions reductions required), which—for primary aluminum production—is largely driven by electricity decarbonization in smelting in the near term. This decarbonization strategy is less relevant to producers who already use low-carbon electricity to power their smelting process.

Assessing electricity and non-electricity emissions separately for primary production ensures that producers are measured against the activities where they need to and can make progress. For example, producers who rely largely on clean hydro power for smelting cannot drastically reduce their electricity emissions for primary production. However, they can (and indeed must in order to be aligned with a 1.5°C trajectory) reduce their non-electricity emissions related to other processes or inputs such as alumina refining or—as technologies mature—the use of carbon anodes for smelting. The rate at which electricity and non-electricity emissions decrease in the roadmap is very different and assessing them separately allows the methodology to account for this nuance based on the source of emissions for a particular producer.

3.8 Why does the Framework consider post-consumer scrap recycling aligned until 2030?

According to the International Aluminum Institute, there are three broad categories of scrap material:

- Post-consumer scrap – Resulting from collection systems after the final product has been used and scrapped.
- Pre-consumer scrap – Derived from waste streams of fabrication and manufacturing processes and traded between sites or companies.
- Internal scrap – Derived from waste streams of fabrication processes and reused internally in the same process or site where it was generated.

There is ongoing debate in the sector about whether pre- and post-consumer scrap should be differentiated and if embodied emissions should be allocated to pre-consumer scrap. The two main views on this topic are summarized in Table 2.

Recognizing that there are valid reasons behind each perspective and that industry and other experts are divided in their viewpoints, the Framework adopted a compromise solution. While recognizing the important role that all recycling plays in the sector's transition, the Framework also acknowledges that different scrap types have different growth curves and may require different incentives. To achieve 1.5°C alignment, post-consumer scrap needs to grow significantly to supply growing demand for aluminum products.[v] Therefore, the Framework considers post-consumer scrap recycling aligned until 2030, when the proposed roadmap begins to require steeper reductions in emissions from recycling. Allocating embodied emissions to pre-consumer scrap is not included in the Framework.

Table 2: Main positions regarding embodied emissions in pre-consumer scrap

View 1 (include embodied emissions)	View 2 (exclude embodied emissions)
• Pre-consumer scrap has a high recovery value, and it should be considered a co-product rather than a waste product. • Emissions should be allocated to pre-consumer scrap according to the co-product allocation method. • This would increase the emissions footprint of pre-consumer scrap and the products it is made from, making primary aluminum more competitive on an emissions basis. • Post-consumer scrap is the only scrap type which does not have an emissions burden.	• All scrap recycling is positive and should be treated as such. • Pre-consumer scrap is a waste product and emissions should be allocated according to the 'cutoff' method (i.e., no embodied emissions in scrap). • There are still significant improvements to be made in pre-consumer scrap which should be incentivized in the same way as post-consumer scrap.

3.9 How will companies' emissions intensities and benchmarks be aggregated to the portfolio level to derive the portfolio alignment score?

Aggregating the emissions intensities and benchmarks of all clients requires two levels of weighting (w): (i) the share of the portfolio's exposure to all in-scope clients and (ii) the share of these clients' total production volume of primary and recycled materials.

These weights are applied to each client's emissions intensities and benchmarks to calculate the portfolio's emissions intensity and benchmark. An individual client's overall emissions intensity and benchmark can also be used directly to determine the client's alignment score, which can serve as an indicator for engagement on financing needs related to the transition.

A worked example is given in Table 3.

Table 3: Example calculations of portfolio alignment score and client alignment scores. Note that this example does not include capping the alignment score of post-consumer scrap as recycling activities are already aligned in this example. It also does not include purchased primary material for the sake of simplicity.

	Parameter		Terms & Equations	Producer A	Producer B
Client-level data	**Primary aluminum production**	Electricity emissions intensity (tCO_2/tAl)	E	**1.02**	**12.60**
		Non-electricity emissions intensity (tCO_2/tAl)	N	**4.90**	**4.30**
		Production (kt Al)	P_p	**4,066**	**3,702**
	Recycled aluminum production	Emissions intensity (tCO_2/tAl)	R	**0.29**	**0.36**
		Production (kt Al)	P_R	**1,379**	**1,004**
Client-level calculations	**Exposure ($MM)**		X	**150**	**100**
	Company benchmarks (tCO_2/tAl)	Primary electricity	B_E	**1.04**	**12.67**
		Primary non-electricity	B_N	**4.68**	**4.69**
		Recycling	B_R	**0.30**	**0.36**
	Aggregated primary company intensity		$A_p = (E + N)$	**5.92**	**16.90**
	Aggregated primary company benchmarks		$B_p = (B_E + B_N)$	**5.72**	**17.36**
	Client alignment score	Primary	$S_p = \frac{(A_p - B_p)}{B_p}$	**3.5%**	**-2.6%**
		Recycling	$S_R = \frac{(R - B_R)}{B_R}$	**-3.3%**	**0.0%**
Portfolio-level calculations	**Exposure and production weight**	Primary	$w_p = \frac{P_p}{(P_p + P_R)} * \frac{X}{X_{total}}$	**38%**	**31%**
		Recycling	$w_R = \frac{P_R}{(P_p + P_R)} * \frac{X}{X_{total}}$	**13%**	**9%**
	Aggregated emissions intensity		$I_P = \sum_{i=1}^{N} w_{pi} A_{pi} + \sum_{i=1}^{N} w_{Ri} R_i$	**7.56**	
	Aggregated benchmark		$B_P = \sum_{i=1}^{N} w_{pi} B_{pi} + \sum_{i=1}^{N} w_{Ri} B_{Ri}$	**7.63**	
	Portfolio alignment score		$S_P = \frac{(I_P - B_P)}{B_P}$	**-0.9%**	

4 Roadmaps

4.1 What were the criteria used to select the Framework roadmaps?

The key criteria were used to evaluate and select the most suitable roadmaps for the implementation of the proposed methodology are listed in Table 4.

Table 4: Key criteria for roadmap selection.

Climate-alignment	• Does the model reach net-zero emissions by 2050 and is it no-to-low overshoot of 1.5°C (per NZBA guidelines)? • Is the model an "integrated assessment model" (IAM) to ensure economy-wide alignment?
Legitimacy	• Has the model been informed or endorsed by industry? • Has the model gone through a process of validation from key stakeholders?
Standardization	• Is the model being used by other voluntary or mandatory initiatives?
Granularity	• Does the model include granular data for the sector, including yearly data on emissions reductions through 2050 and other data necessary to implement the methodology selected by the Working Group?
Robustness	• Is the model based on sensible assumptions about changes in technology? Does the model incorporate various technology options and sensitivities?
Openness	• Are the model's full assumptions and results available to the Working Group and other stakeholders?

To address the complexities of the aluminum sector, and to establish the correct incentives for decarbonization, "granularity" and "robustness" were identified as especially important criteria in a roadmap. Table 5 details additional sub-criteria that were considered critical to the aluminum sector.

Table 5: Zooming in on granularity and robustness criteria for the aluminum sector.

Electricity granularity	• Does the roadmap differentiate electricity emissions from other emissions (even in the case of captive power plants), per the requirements of the selected methodology? • Does the roadmap have robust, sector-specific assumptions about the pace and mix of electricity decarbonization?
Industrial process granularity	• Does the roadmap differentiate between primary and recycled production emissions per the requirements of the selected methodology? • Does the roadmap differentiate emissions of the various steps in the value chain in order to provide insight into what is required for comprehensive sectoral decarbonization? • Does the roadmap have robust, sector-specific assumptions about the pace and mix of non-electricity decarbonization technologies?

Regional granularity	• Does the roadmap model sectoral decarbonization options by region?
Boundary	• Does the roadmap include significant portions of the value chain with clear boundary definitions?
Non-CO_2 emissions	• Does the roadmap account for important greenhouse gases such as perfluorocarbons (PFCs) aside from CO_2?

4.2 Which roadmaps were considered for selection?

Table 6 summarizes the roadmaps considered for selection.

Table 6: Roadmaps considered by the Working Group.

Roadmaps	Description
International Aluminum Institute (IAI) 1.5°C Roadmap[v]	• IAI is a global body representing the aluminum industry with members across the value-chain. • Sector-specific model from an entity that collects data for performance benchmarking and industry trend modelling. • Achieves alignment based on "top-down" constraint on sectoral emissions; does not optimize based on "bottom-up" assumptions such as technology readiness. • Based on IEA 2021 Net-Zero Energy model's aluminum sector carbon budget.
Mission Possible Partnership (MPP) Aluminum Sector Transition Strategy (STS)[i]	• MPP is an alliance of prominent climate NGOs and industry focused on industrial decarbonization. • Sector-specific, "bottom-up" (asset-level) model built on the IAI 1.5°C scenario • Models refining and smelting and optimizes based on technology readiness and cost. • MPP has BAU and 1.5°C core scenarios and multiple additional scenarios.
One Earth Climate Model (OECM)[vi]	• Integrated assessment model first developed by the University of Technology Sydney. • Achieves alignment based on "top-down" constraint on global emissions and energy supply reconciled with a "bottom-up" analysis of energy demand. Does not optimize based on cost and does not model breakthrough technologies such as carbon capture and inert anodes. • Sponsored and adopted by the Net-Zero Asset Owners Alliance.
International Energy Agency (IEA) 2021 Net-Zero Energy model (NZE)[vii]	• Integrated assessment model developed by the IEA and commonly used by many initiatives. • No data published on aluminum except indexed emissions intensity for scope 1 emissions for 2018-2020 and 2030.

4.3 How do the assessed roadmaps compare against the key criteria?

Table 7: Comparisons of available aluminum roadmaps against key criteria

Category		IAI	MPP	OECM	IEA NZE
Boundary		Mining to semis and recycling	Anode production, refining, and smelting	Mining to casting and recycling	Partially available; only models scope 1 emissions
Legitimacy		Has industry validation	Has validation from industry and other stakeholders	Has been endorsed by NZAOA	Has validation from diverse stakeholders
Standardization (used by)		ASI	TBD	NZAOA	Used by many initiatives (not for aluminum)
Robustness		Does not optimize for cost or technology readiness, but has significant industry input	Asset-level modeling that optimizes for cost and technology readiness by process	Uses global assumptions for electricity emissions reductions; does not optimize for cost or model new technologies	Minimal aluminium detail published
Granularity	**Time series**	2018 – 2050 5-year intervals	2020 – 2050 yearly	2019 – 2050 5-year intervals	Indexed emissions intensity data for 2018-2020, 2030
	Regionality	Global	16 regions	Global	Global
	Electricity	Yes	Yes	No	Not available
	Process	Yes, all processes modeled	Smelting and refining only	No, cannot separate primary and recycling	Not available
	Non-CO_2	Yes	Yes	Yes	Not available
Openness		Few assumptions and select data available publicly	Fully open access	Semi-open access	Not available

4.4 How do the roadmaps considered compare on an emissions and carbon budget basis?

Figure 4 shows the absolute sectoral emissions trajectories for the three viable (as determined by data availability) aluminum sector roadmaps: IAI, MPP, and OECM. Note that the MPP roadmap referenced here has been supplemented with data from the IAI roadmap to ensure the boundary is the same (see Question #4.5).

Even with a similar boundary, the IAI, MPP, and OECM trajectories vary due to differences in the underlying assumptions. OECM models steep reductions in sectoral emissions from 2020 to 2030 of 50%, while the IAI and MPP both model 23% reductions. From 2020-2050, the OECM models a 69% reduction in emissions, while the IAI and MPP model 96% and 93%, respectively. Because the OECM does not model new technologies such as low-carbon anodes or CCS, which are needed to decarbonize an important share of the aluminum sector's emissions, it results in higher residual emissions than the IAI or MPP models. Ultimately, however, the roadmaps' cumulative carbon budget from 2020-2050 varies only slightly, ranging between 14.0-14.4 $GtCO_2e$ (Table 8).

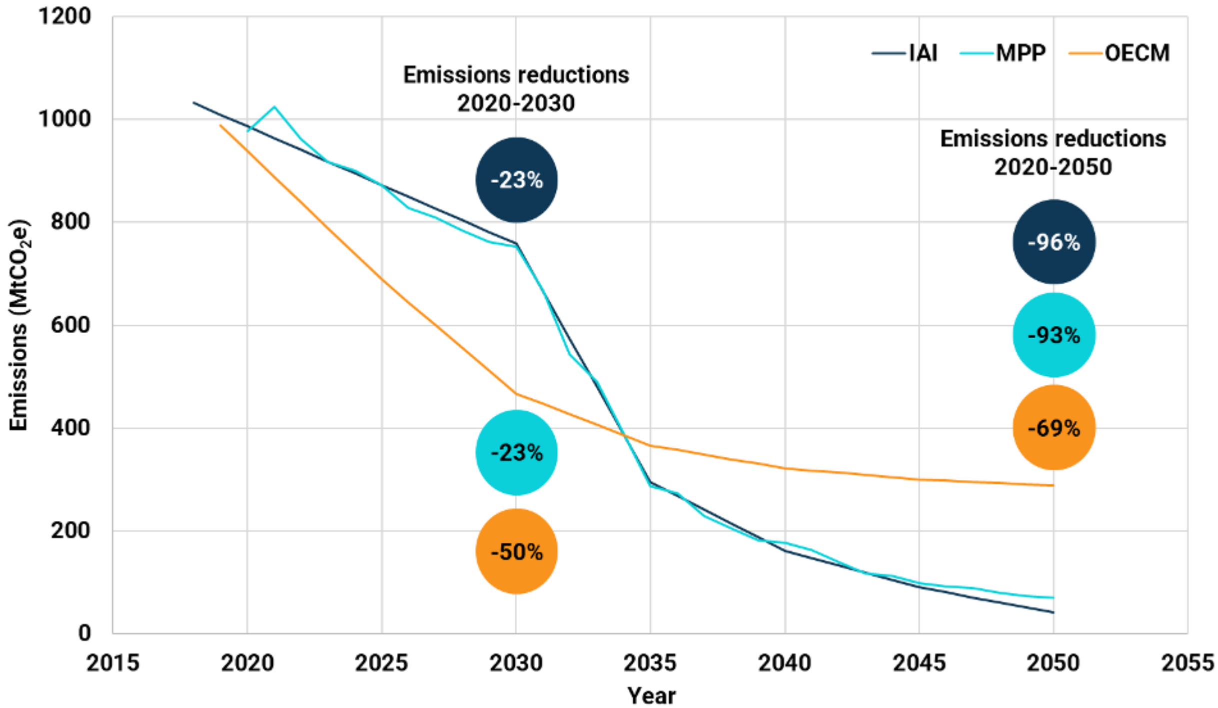

Figure 4: Overall emissions trajectories of the roadmaps considered.

Table 8: Carbon budgets from 2020 to 2050 for the roadmaps of interest.[1]

Roadmap	2020-2050 Carbon Budget ($GtCO_2e$)
IAI	14.0
MPP	14.1
OECM (estimated)	14.4

[1] Note that the MPP roadmap has been supplemented here with parts of the IAI roadmap to ensure a comparable boundary (see Question #4.5).

4.5 Which roadmaps were selected by the Framework?

Based on how the various roadmaps measured against key criteria (see Question #4.3) and the methodology needs, the Framework adopts a dual approach whereby:

1. The primary production emissions trajectory is formed by the MPP roadmap for refining and smelting in combination with the mining, ancillary materials, other scope 3, and primary casting emissions trajectories modeled by the IAI.
2. The recycling and semi-fabrication trajectory is derived from the IAI roadmap.

A complete breakdown of how these two roadmaps complement each other is given in Table 9. Because the MPP roadmap was developed in close collaboration with IAI, the two roadmaps are methodologically consistent.

Table 9: Emissions sources in the aluminum sector in 2018 based on IAI data.[iii] These figures represent the percentage of emissions that each source contributes to the sector's total emissions.

	Mining	Refining	Anode	Smelting	Casting	Recycling	Semis	Internal	Total
Electricity	0.1%	1.5%	-	61.2%	-	0.3%	0.9%	0.2%	**64.2%**
PFCs	-	-	-	3.2%	-	-	-	-	**3.2%**
Process	-	-	0.6%	8.5%	-	-	-	-	**9.1%**
Ancillary	-	1.4%	1.8%	0.6%	-	-	-	-	**3.7%**
Thermal energy	0.2%	11.4%	0.6%	-	0.6%	1.4%	1.7%	0.8%	**16.7%**
Transport	-	1.4%	-	1.7%	-	-	-	-	**3.1%**
Total	**0.3%**	**15.7%**	**2.9%**	**75.2%**	**0.6%**	**1.7%**	**2.6%**	**1.0%**	**100.0%**

In primary boundary and uses MPP roadmap
In primary boundary and uses IAI roadmap
In recycling boundary and uses IAI roadmap
In optional semi-fabrication boundary and uses IAI roadmap

The combined primary production emissions intensity trajectories, the recycling trajectory, and the semi-fabrication trajectory are shown in Figure 5 and Figure 6. The trajectory for primary aluminum is shown as a combined trajectory as well as divided into the electricity and non-electricity emissions intensity trajectories per the selected methodology. The combined primary trajectory calls for a 24% reduction in the emissions intensity of primary aluminum production by 2030 (driven by a 28% reduction in electricity emissions intensity and 15% reduction in non-electricity emissions intensity) and 94% by 2050. Details of the key decarbonization levers and major assumptions underlying these trajectories can be found in Question #4.7.

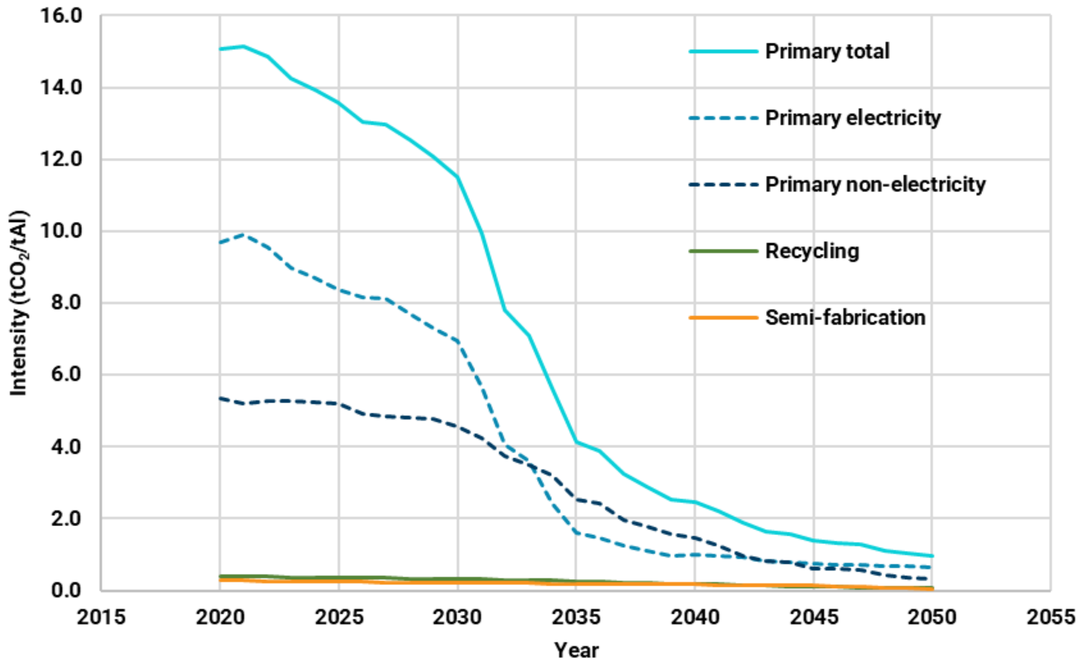

Figure 5: Emissions intensity trajectories for the electricity and non-electricity components of primary aluminum, primary aluminum in total, recycling, and the optional semi-fabrication boundary according to the combined IAI/MPP roadmap.

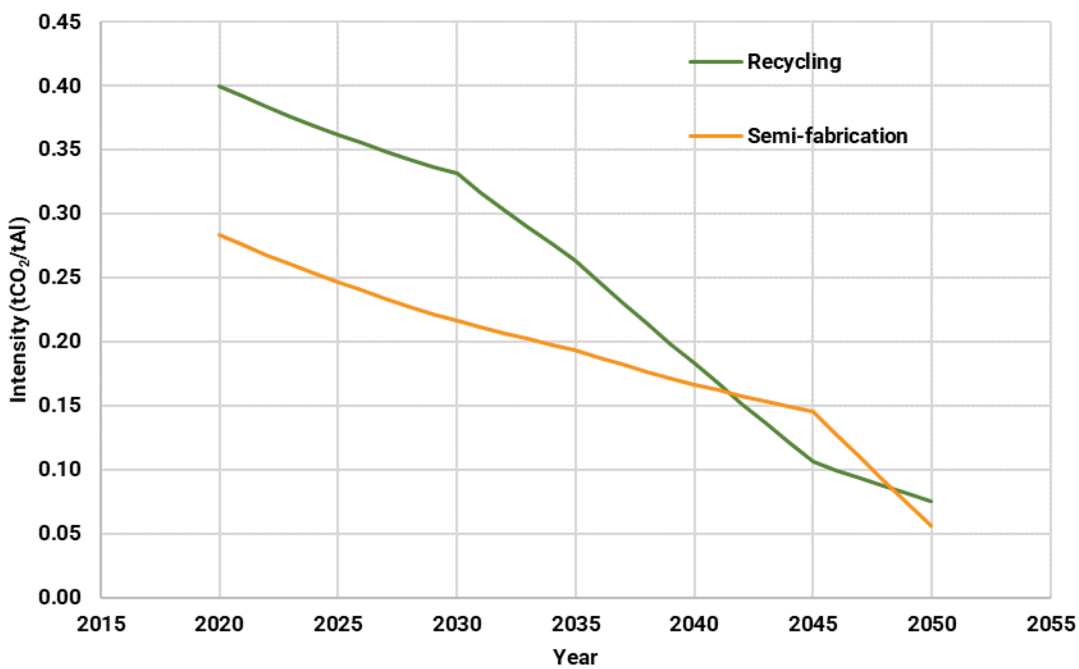

Figure 6: Emissions intensity trajectories for recycling and the optional semi-fabrication boundary according to the combined IAI roadmap.

4.6 Why were the Mission Possible Partnership's Sector Transition Strategy for Aluminum and the International Aluminum Institute's 1.5°C roadmap selected?

Combined, the selected roadmaps meet multiple of the criteria set forth by the Framework. The IAI and MPP models are 1.5°C-aligned, robust, granular, and are based on assumptions that are generally validated by industry and other stakeholders.

Mission Possible Partnership Sector Transition Strategy for Aluminum

The MPP model is a sector-specific model developed by the Mission Possible Partnership, an alliance of prominent climate NGOs and industry focused on industrial decarbonization. It is a "bottom-up" model that optimizes technology switches at the asset-level based on cost and technology readiness. The MPP roadmap was developed in collaboration with the IAI to improve the detail and robustness of the IAI 1.5°C roadmap.

The MPP roadmap models scope 1 and 2 emissions for refining and smelting in 15 regions. It also disaggregates electricity and non-electricity emissions data for primary production, which is a key component of the selected methodology. It is preferred for the refining and smelting segments of the value chain due to its improved technology modeling, which better projects the outlook for non-electricity emissions and therefore enables a more robust assessment of company alignment based on the selected methodology.

Finally, the MPP roadmap is unique in that it is fully open-source and also has an interactive tool available to compare decarbonization options in different regions, with the functionality to generate custom scenarios.

International Aluminum Institute's 1.5°C Scenario

The IAI model is a sector-specific model developed by the International Aluminum Institute, a global body representing the aluminum industry that collects data for performance benchmarking and industry trend modeling. The IAI model achieves alignment based on "top-down" constraints on sectoral emissions which are based on the IEA NZE's aluminum sector carbon budget. Unlike the MPP model, it does not optimize based on "bottom-up" assumptions such as asset-level technology readiness.

The IAI was selected due to its granularity by process and comprehensive scope. The IAI provides trajectories for mining, ancillary materials, and other scope 3 emissions in the primary production boundary. The IAI is also the only model that provides a disaggregated trajectory for recycled production and semi-fabrication.

4.7 What are the key decarbonization levers implied by the selected roadmaps and other major assumptions and implications?

The key decarbonization levers for the aluminum sector identified by the selected roadmaps are electricity decarbonization, material and resource efficiency, new technologies for anode production and refining, and fuel switching for recycling and other processes.

Critically, electricity decarbonization is required by 2035, with efforts focused primarily on transitioning existing coal and gas smelting assets. By 2030, the commercialization and deployment of low carbon anodes for the smelting process (i.e., carbon capture for existing anodes, or inert anodes) and new refining technologies (i.e., energy recovery systems, mechanical vapor recovery systems, hydrogen or electric low carbon boilers and calciners, and concentrated solar thermal) will need to be underway.

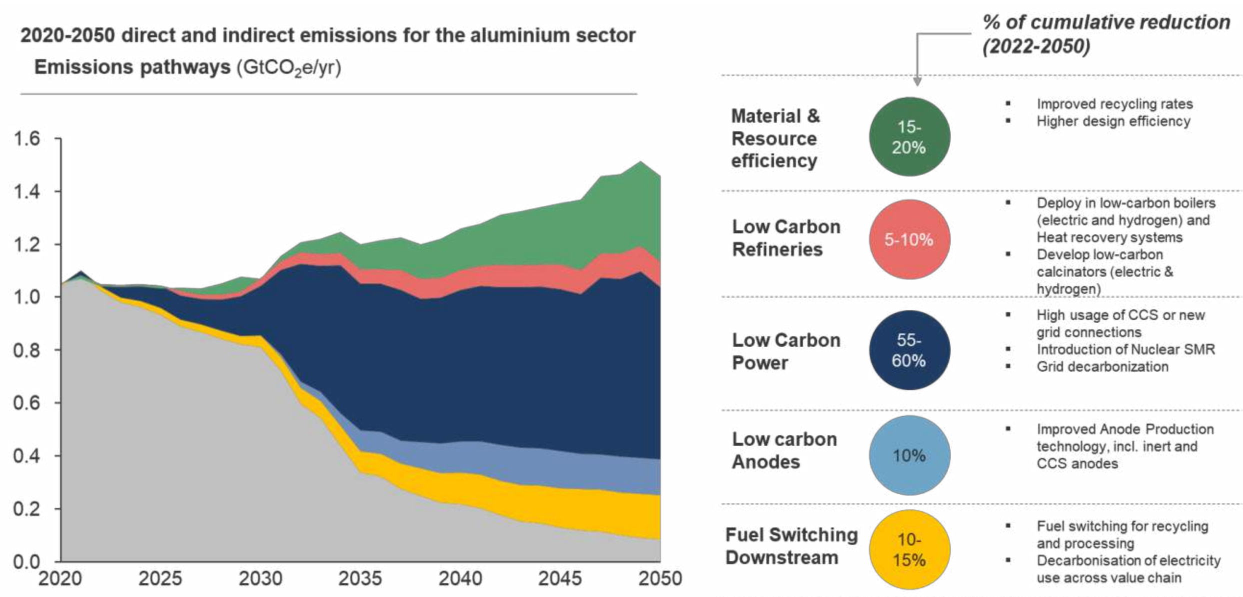

Figure 7: Influence of different decarbonization strategies/technologies on the aluminum sector.[i]

Recycling also has a critical role to play in the sector's transition. The roadmaps estimate significant growth in aluminum demand, much of which is met with increased recycling and material efficiency. Under the selected roadmaps, the supply of recycled aluminum increases from 33% in 2020 to 54% by 2050. Although aluminum products already have high collection rates (about 70%), these need to increase to more than 90% by 2050.[v]

Table 10 summarizes modelled changes in key levers and technologies in 2020, 2030, and 2050.

Table 10: Assumptions of production and scrap volumes, technology mixes, and emissions milestones in the combined IAI/MPP roadmap.[i, iv]

Parameter	Unit	2020	2030	2050
Production and scrap volumes				
Total production	Mt/y	99.9	114.2	148.5
Primary aluminum production	Mt/y	65.3	65.4	67.6
Post-consumer scrap volume	Mt/y	21.4	33.1	68.1
Pre-consumer scrap volume	Mt/y	13.2	15.7	12.8
Internal scrap volume	Mt/y	33.6	35.5	26.7
Power mix for aluminum smelting				
Coal	%	45%	27%	0%
Fossil fuels + CCS	%	0%	6%	48%
Fossil gas	%	9%	17%	0%
Grid	%	34%	38%	19%
Hydro	%	12%	11%	11%
Nuclear SMR	%	0%	0%	22%
Anode technology				
Carbon anode	%	100%	100%	0.2%
Carbon anode + CCS	%	0%	0%	2.1%
Inert anode	%	0%	0%	97.7%
Technology mix for alumina refining (digestion)				
Concentrated Solar Thermal	%	0%	0%	3%
Electric	%	0%	26%	20%
Fossil fuel	%	100%	65%	0%
Hydrogen	%	0%	0%	13%
Mechanical Vapor Recompression	%	0%	9%	64%
Other	%	0%	0%	0%
Technology mix for alumina refining (calcination)				
Electric	%	0%	0%	3%
Fossil fuel	%	100%	100%	46%
Hydrogen	%	0%	0%	51%
Emissions				
Total sector emissions	$MtCO_2e$	980	756	72
Primary production emissions	$MtCO_2e$	951	725	62
Recycling production emissions	$MtCO_2e$	27	28	8
Primary production intensity	tCO_2e/tAl	14.6	11.1	0.9
Recycling intensity	tCO_2e/tAl	0.42	0.33	0.08
Intensity of primary electricity	tCO_2e/tAl	9.7	7.0	0.7
Intensity of non-electricity sources	tCO_2e/tAl	4.8	4.1	0.3
Primary intensity reduction from 2020	%	-	24%	94%
Recycling intensity reduction from 2020	%	-	17%	81%

According to MPP analysis, the transition will result in a higher average levelized cost of aluminum, peaking at US$400/t in 2035 as electricity is decarbonized (equivalent to less than 0.5% of the cost of a new car), and then falling to $300/t by 2050. This increase is attributable to higher levels of investment required to implement new technologies, as well as higher operational and fuel costs in refining and smelting. The increased costs will not be felt evenly across the globe. Assets with current access to low carbon power will not face decarbonization costs for this aspect of their operations. Operators with captive fossil fuel power plants will face the highest decarbonization costs.

Finally, the MPP roadmap did not model a specific carbon price; but a necessary carbon price can be inferred from the cost of technology switching to make low carbon aluminum competitive with higher carbon aluminum. Figure 8 below shows a summary of the carbon costs required to drive technology switches in different parts of the value chain.

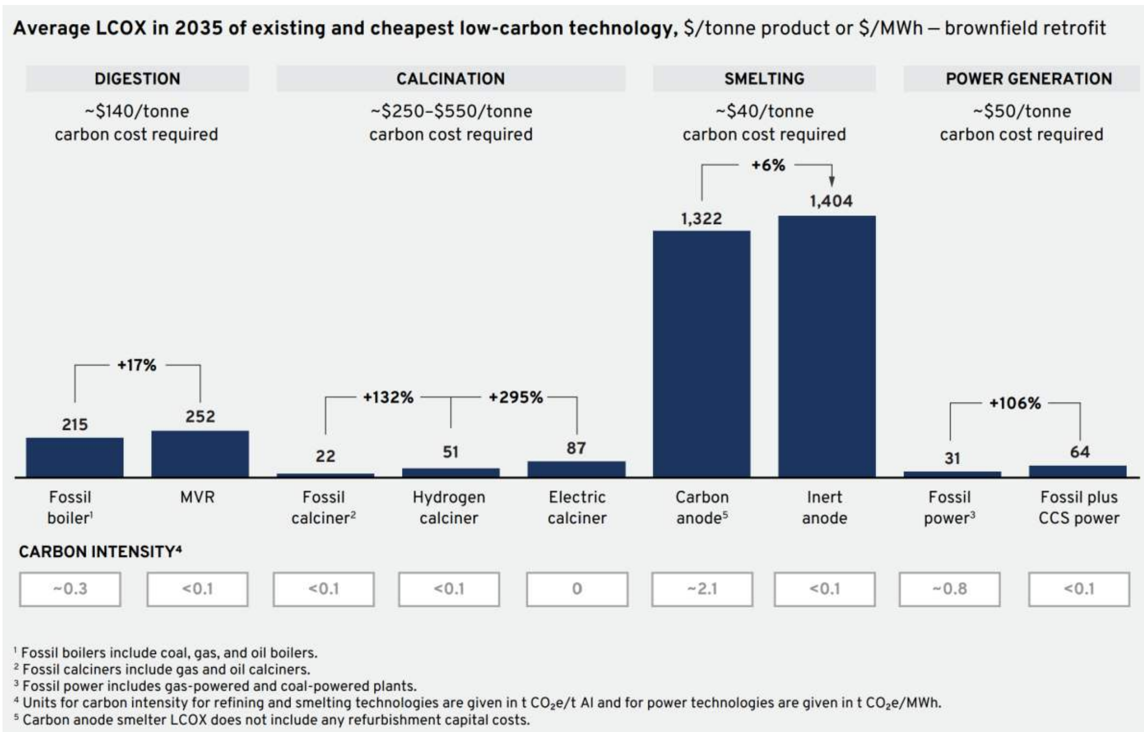

Figure 8: The levelized cost of aluminum production (LCOX) in 2035, and the carbon cost (price) required for cost parity, with and without various technology switches.[i] Most low-carbon technologies result in an increased LCOX of low-carbon aluminum. When a carbon cost is applied to emissions, the cost of high-carbon aluminum production increases compared with the cost of low-carbon alternatives, enabling low-cost producers to compete in the market. As shown in the figure, different carbon cost levels would unlock different actions across the aluminum sector.

4.8 What are the investment requirements of the selected roadmaps?

According to MPP analysis, roughly US$1 trillion of investment across the entire energy system will be required to transition the primary aluminum sector. More than 70% of the investment is required for supporting infrastructure, primarily to deliver clean, grid-connected power. Investment in low carbon power for aluminum production should therefore begin to mobilize by the mid- to late 2020s and peak in the early 2030s when low carbon electricity is needed. The biggest investment in new technologies for primary aluminum production will be inert anodes, which are highly capital intensive and have a large degree of uncertainty. Yet, other anode and new refining technologies will have different investment requirements.

The investment required for recycling was not modeled by IAI or MPP. However, investment in collection, processing, and production of recycled aluminum will be critical in order to meet the significant expansion required of recycled aluminum.

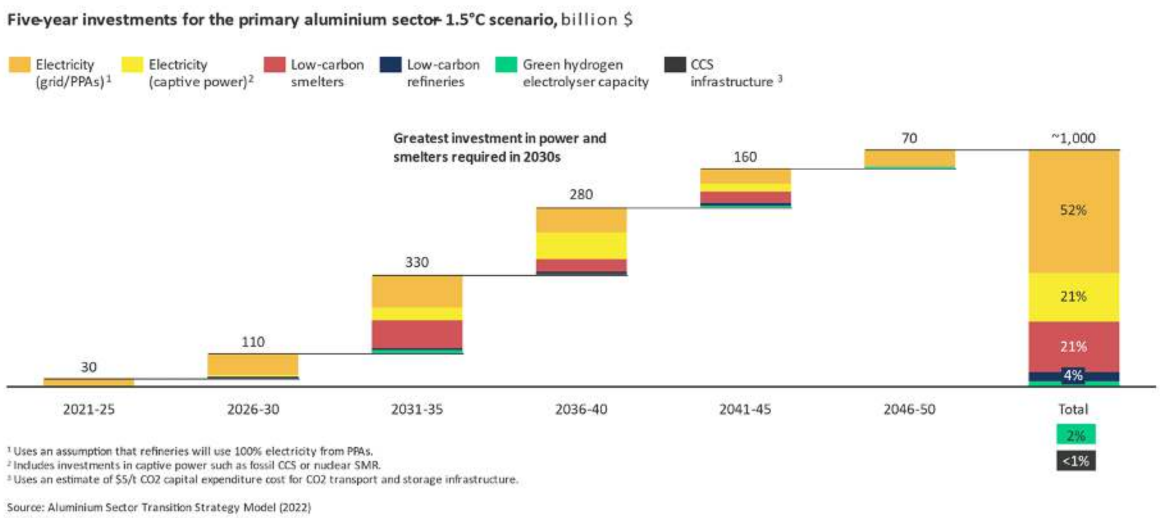

Figure 9: Investment timeline according to the MPP roadmap.[i]

5 Data

5.1 Which data do banks need to assess the alignment of their aluminum clients and portfolios per the Framework and how can they fulfill these requirements?

Following the proposed boundaries and methodology (outlined in Sections 2 and 3), banks will need the following data points to assess the alignment of their clients and portfolios:

- Emissions intensity baseline[2], yearly emissions intensity benchmarks derived from baseline and roadmap data, and yearly emissions intensity for:
  - Electricity-related and emissions from primary production
  - Non-electricity related emissions from primary production
  - Recycled production and associated purchased primary[3]
  - Semi-fabrication production and associated purchased primary material (optional)
- Yearly production/consumption of:
  - Primary aluminum
  - Recycled aluminum, the percentage of recycled production derived from post-consumer scrap, and purchased primary

[2] Based on a multi-year average covering 2021-2023. The same baseline will be applied to clients of all banks thereafter, except in the cases where a specific client's baseline has been revised.

[3] Note that recyclers are allowed to report on the emissions baseline and yearly emissions of their primary material purchases following the primary production boundary without separating electricity and non-electricity emissions to ease reporting.

    - Semi-fabricated products and purchased primary material (optional)
- Financial exposure to in-scope clients

To ease the implementation of the Framework and ensure standardized reporting by clients and banks, technical instructions for calculating required data can be found in the Framework text as well as in the accompanying Technical Guidance. An Excel-based portfolio-alignment calculator tool is provided to Framework users alongside an Excel-based calculation tool for clients to support standardized reporting.[4]

5.2 Which data do companies need to report against the Framework?

Table 11 summarizes the data required for the primary and recycling boundaries. Technical Guidance and an Excel-based calculation sheet will be provided to clients to ease implementation and ensure standardized reporting. These documents were road tested with industry to ensure clarity, accuracy, and alignment with other reporting initiatives.

The selected boundaries and methodology have gone through extensive consultations with industry and expert stakeholders, ensuring that a diverse range of companies can report on this data. While primary emissions data from clients is preferred, standard emissions factors are provided in the Technical Guidance for the different activities within the boundaries.

[4] These documents are meant to be provided to clients to enable reporting; clients only need to report the required intensity figures, not the underlying emissions data.

Table 11: Summary of data requirements.

Category	Primary production	Recycled production	Semi-fabrication (optional)
Direct use of fuels for heat or electricity generation	• Direct fuel use to power equipment or provide heat. • Direct fuel use to generate electricity in 'captive' power plants.	• Direct fuel use to power equipment or provide heat. • Direct fuel use to generate electricity in 'captive' power plants.	• Direct fuel use to power equipment or provide heat. • Direct fuel use to generate electricity in 'captive' power plants.
Process emissions	• Direct process emissions from the smelting process resulting from anode production, anode consumption, and anode effects (PFCs). • Primary data preferred but emissions factors will be provided.	• N/A	• N/A
GHGs included	• Carbon dioxide (CO_2), perfluorocarbons (PFCs), methane (CH_4), and nitrous oxide (N_2O) • Primary data preferred but emissions factors are provided	• CO_2, CH_4, and N_2O • Primary data preferred but emissions factors are provided	• CO_2, CH_4, and N_2O • Primary data preferred but emissions factors are provided
Ancillary materials	• Includes NaOH, calcined lime, petrol coke, pitch, soda ash, cathodes, and aluminum fluoride • Primary data preferred but emissions factors are provided	• N/A	• N/A
Fuel extraction emissions for electricity and direct use of fuels	• Primary data preferred but emissions factors are provided	• Primary data preferred but emissions factors are provided	• Primary data preferred but emissions factors are provided

Category	Primary production	Recycled production	Semi-fabrication (optional)
Purchased electricity	• Location-based approach preferred, but some market-based instruments can also be used.	• Location-based approach preferred, but some market-based instruments can also be used.	• Location-based approach preferred, but some market-based instruments can also be used
Emissions credits for intermediate products	• Exports of bauxite ore, aluminum hydroxide, and alumina can be claimed as emissions credits. Scraps and dross cannot be claimed for an emissions credit.	• N/A	• N/A
Emissions credits for energy exports	• Emissions associated with exported electricity or steam are credited, unless they are derived from a waste stream.	• Emissions associated with exported electricity or steam are credited, unless they are derived from a waste stream.	• Emissions associated with exported energy are credited • The amount exported and associated emissions are needed

5.3 Can data be obtained from third-party data providers?

On a best-efforts basis, banks adopting the Framework should perform client- and portfolio-level climate alignment calculations with data sourced directly from their clients. When data is not available directly from a client, financial institutions can source data from the third-party data provider(s) recommended by the Framework.

6 Financial Scope

6.1 Which clients are in scope of the Framework?

Per the reporting boundaries outlined in Section 2, the aluminum sector is broken down into three sub-sectors: primary production, recycled production, and semi-fabrication. The three categories of in-scope clients for the Framework correspond to the three aluminum sub-sectors, as follows:

- Any client that produces a minimum of 250 kilotons of cast primary aluminum through the processes outlined in the primary production boundary described in Question #2.3a.
- Any client that produces a minimum of 250 kilotons of cast recycled aluminum through the processes outlined in the recycled production boundary described in Question #2.3b.
- Any client that produces a minimum of 250 kilotons of shaped aluminum products through the processes outlined in the semi-fabrication boundary described in Question #2.3c, and generates 50% or more of total revenue through the sale of shaped aluminum products. Note again that reporting on semi-fabrication is optional in this Framework.

Each of the above thresholds should be calculated at the group-level, defined as being inclusive of the entity and all subsidiaries on an aggregate basis, but not any parent entity. An entity is considered to have a subsidiary if it holds a direct or indirect ownership stake of more than 50% of the voting equity of another entity or otherwise controls another entity.

While the minimum thresholds above are considered a floor for reporting purposes, banks are able to report on clients with smaller production values if desired. If a bank decides to do so, they are asked to disclose this decision within the parameters used for reporting.

6.2 What financings are in scope of the Framework?

Financial products that should be reported as in-scope financings are defined as credit products, including bilateral loans, syndicated loans, and club deals. For syndicated financial products, climate alignment calculations should be based on the portion of the financing provided by the bank adopting the Framework. Table 12 below contains a non-exhaustive list of some of the most common financial products that are considered in-scope.

Table 12: Financial products in scope of the Framework.

Financial Products	In Scope
Asset finance	Yes
Bank guarantee	Voluntary
Bridge Loan	Yes
Buyer credit	Yes
Export finance	Yes
Factoring programs (both recourse and non-recourse)	Voluntary
General corporate purpose loan	Yes
Letters of credit	Voluntary
Revolving credit facility	Yes
Revolving loan	Yes
Swingline	Yes
Term loan facility	Yes

Financial Products	In Scope
Working capital facility	Yes

Reporting on bank guarantees, letters of credit, and factoring programs can be performed voluntarily. Whichever voluntary products the bank elects to report on should be done consistently throughout all portfolio calculations, and a list of included products must be disclosed.

More information about the Financial Scope, including additional guidance on how exposure is determined, is included in the Framework document.

7 Reporting

7.1 What disclosures are required by the Framework?

While the Framework does not require any formal sign-on requirements from financial institutions, adhering fully to the Framework requires the following core disclosures:

- Acknowledgement of the use of this framework
- Portfolio Alignment Score (PAS)

Users of the Framework should further disclose the following information which informs how the PAS was calculated:

- Method of determining exposure (i.e., credit limits vs. outstandings).
- If any voluntary products were included in the financial scope.
- If counterparties producing less than the minimum production threshold were included.
- If products with shorter exposures than the 1 year minimum were included.

7.2 What additional disclosures are voluntary?

In addition to the minimum disclosures required to align with the Framework, banks may make further disclosures at their discretion. These include:

- Portfolio emissions intensity. This is separately required by NZBA, and the Framework provides guidance for calculating this figure.
- Sources of data and their relative fractions in the portfolio (i.e., data sourced directly from clients, data sourced from a recommended third-party, or no data available).
- Contextual narrative of alignment score which could include:
    - Key takeaways from the alignment score.
    - Plans and timeline for achieving alignment.
    - Geopolitical considerations relevant to the PAS.

8 Access and Updates

8.1 Who can access the Framework?

The Framework is available to the public and for use by any financial institution.

8.2 How is the Framework maintained?

Financial institutions that use the Framework will have the opportunity to inform methodological updates through participation in the Advisory Group. Advisory Group members commit to meeting annually to discuss the status of the Framework and advise RMI as to whether updates are required to ensure the Framework remains relevant and effective. In addition, input will be requested on an ad-hoc basis.

Participation in the Advisory Group will be open to banks who participated in the original Working Group (2022–2023), as well as to additional financial institutions that use the Framework. All users of the guidance will be invited to join the Advisory Group. However, the number of members is capped at ten and will be filled on a first-come, first-served basis.

Prior to the Advisory Group annual meeting, RMI's Center for Climate-Aligned Finance will determine whether to recommend updates to the Framework. To inform this recommendation, RMI will survey the sector to identify whether material changes have occurred across other methodologies, scenarios, data availability, as well as sectoral and climate finance initiatives.

If an update is necessary, RMI will conduct the work to update the Framework in consultation with external stakeholders. Consultation will entail engaging industry members, civil society, and other financial institutions to source feedback on the use of the Framework and the proposed updates.

Advisory Group members commit to supporting RMI in the consultation process by sharing consultation materials with various stakeholders and following up if needed. The input from the Advisory Group and stakeholders will be considered by RMI, who holds the ultimate decision-making authority.

9 References

[i] Mission Possible Partnership, "Aluminium Transition Strategy", September 2022, https://missionpossiblepartnership.org/action-sectors/aluminium/

[ii] World Steel Association, "Our Performance: Sustainability Indicators," accessed June 2023, https://worldsteel.org/steel-topics/sustainability/sustainability-indicators/

[iii] International Aluminium, "Statistics", June 2023, https://international-aluminium.org/statistics/primary-aluminium-production/#data

[iv] The Aluminum Association, "The Environmental Footprint of Semi-Fabricated Aluminum Products in North America", January 2022, https://www.aluminum.org/sites/default/files/2022-01/2022_Semi-Fab_LCA_Report.pdf

[v] International Aluminium Institute, "1.5 Degrees Scenario: A Model to Drive Emissions Reduction," October 2021, https://international-aluminium.org/resource/1-5-degrees-scenario-a-model-todrive-emissions-reduction/

[vi] Institute for Sustainable Futures at the University of Technology Sydney, "How to limit global warming to 1.5°C: guidance for sectors", May 2022, https://www.uts.edu.au/isf/news/how-limit-global-warming-1.5degc-guidance-sectors

[vii] International Energy Agency, "Aluminium", September 2022, https://www.iea.org/reports/aluminium