VCMI:

SCOPE 3 CLAIM ASSESSMENT FINAL REPORT

28 August 2024
Submitted by Accenture

Foreword

The imperative for corporate action on carbon emissions abatement and climate adaptation is clear and urgent. As the impacts of climate change intensify, the pressure on businesses to develop and implement solutions to significantly reduce emissions continues to increase.

The Science Based Targets initiative (SBTi) has provided a robust framework for companies to set science-aligned emissions reduction targets. Central to this framework is the mitigation hierarchy, which prioritizes direct emissions reductions over compensation mechanisms like offsetting. Managing Scope 3 emissions—those out-of-direct-control emissions across value chains which, in most cases, account for the majority of a business's climate impact—remains one of the most complex but critical aspects of corporate decarbonization. Faced with this challenge, an evolving ecosystem of frameworks and methodologies has been considering the role that high quality and integrity carbon credits can play in supporting corporate decarbonization strategies.

The Voluntary Carbon Markets Integrity Initiative (VCMI) has commissioned Accenture to conduct an independent review of the beta Scope 3 Claim methodology. This report presents a comprehensive assessment aimed at refining the methodology, focusing on enhancing requirements, calculations, and guardrails to address key stakeholder concerns. Accenture's approach involved evaluating multiple options, including through a sensitivity analysis, drawing from existing frameworks and sector-level data, and carefully weighing the pros and cons of each alternative. By providing a balanced analysis of the options, the assessment aimed to catalyze credible and consistent progress towards corporate decarbonization while allowing for ongoing stakeholder engagement and adaptation.

As the next step, the VCMI is launching a public consultation on the revised Scope 3 Claim, which will run from 2 September 2024. This consultation aims to gather further input and further refine the methodology before its final publication by the VCMI.

Contents

Acronyms

ACA. Absolute Contraction Approach (SBTi).

AR6. Sixth Assessment Report (IPCC).

GEVA. GHG Emissions per Value Added (SBTi).

GHG. Greenhouse gases.

ICVCM. Integrity Council for the Voluntary Carbon Market.

IEA. International Energy Agency.

IETA. International Emissions Trading Association.

IPCC. United Nations Intergovernmental Panel on Climate Change.

ISO. International Organization for Standardization.

ITMO. Internationally transferred mitigation outcomes.

MRA. Monitoring, Reporting and Assurance Framework.

NDC. Nationally Determined Contribution.

OECD. Organization for Economic Co-operation and Development.

SBTi. Science-Based Targets initiative.

SDA. Sectoral Decarbonization Approach (SBTi).

UTS. University of Technology Sidney.

VCMI. Voluntary Carbon Markets Integrity initiative.

Glossary

Concept	Definition	Source
Claim	A message used to describe or promote a product, process, business, or service with respect to its sustainability attributes or credentials.	ISEAL (2015) (1)
Claim year	Most recent year for which a scope 3 greenhouse gas inventory is available for the company to make a Claim.	Suggested definition
Emissions gap	Difference between reported and trajectory emissions within target boundary.	Suggested definition
First Claim year	First year in which a Claim was made.	Suggested definition
Guardrails	Conditions that need to be observed so that the claim delivers what it has been designed to achieve.	VCMI Beta Scope 3 Claim (2023) (2)
Limit of carbon credits	Maximum amount of carbon credits that can be requested to be used to take responsibility for emissions that should not have occurred.	VCMI Beta Scope 3 Claim (2023) (2)
Linear approach	A procedure to calculate remaining cumulative emissions and the scope 3 trajectory emissions within target boundary that relies on a linear emissions trajectory, as in the SBTi corporate near-term tool (3).	Suggested definition
Maximum % gap	Maximum gap measured as a percentage of the scope 3 trajectory emissions within target boundary for a Claim year.	Suggested definition
Most recent reporting year/Claim year	The year related to an entity's most recent financial reporting year.	VCMI Claims Code of Practice (2023) (4)
Non-linear approach	A procedure to calculate remaining cumulative emissions and the scope 3 trajectory emissions within target boundary that relies on a non-linear emissions trajectory, as set by companies.	Suggested definition
Phase-out year	Last year in which the company will be able to make the Claim.	Suggested definition
Recommendations and supporting guidance	Provide companies with suggestions and additional sources of information to highlight best practice measures that companies should implement or work towards.	VCMI Claims Code of Practice (2023) (4)
Remaining cumulative emissions	The total volume of scope 3 emissions that a company expects to have between the Claim year and its target year to deliver its near-term science-aligned target.	Suggested definition
Reported scope 3 emissions	Scope 3 emissions as reported in a greenhouse gas emissions inventory in a specified timeframe (e.g. year).	Suggested definition
Requirements	Actions that must be implemented by companies as a necessary condition to move forward in the process of making a claim.	VCMI Claims Code of Practice (2023) (4)

Science-aligned target (SAT)	A target that is in line with the latest climate science consensus on safe upper limits for global warming. Alignment with an IPCC model pathway of CO2 emission reductions that limits global warming to 1.5 degrees Celsius with no or limited overshoot is the ultimate objective.	SBTi Corporate Net Zero Standard (2024) (5)
Scope 3 emissions	Indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions, within the SAT boundary.	Adapted from GHG Protocol (2013) (6)
Scope 3 trajectory emissions within target boundary	The scope 3 emissions that are consistent with the company's science-aligned target.	Suggested definition
Target boundary	The activities and their associated emissions that are included in a target in the target base year and subsequent years within the timeframe of the target.	SBTi Glossary (2024) (7)
Target setting	The activity of companies setting greenhouse gas emissions reductions targets in line with what is needed to keep global heating below catastrophic levels and reach net-zero by 2050 at latest.	SBTi Corporate Net Zero Standard (2024) (5)

1 | Executive Summary

This report presents a review and assessment of the VCMI's Scope 3 Claim, which was launched in a beta version in November 2023. The objective of the review is to refine the Claim's methodology, including requirements, recommendations, calculations, and guardrails, in line with the feedback received from stakeholders. The considerations in the report are based on a detailed assessment of thirteen existing corporate emissions reductions frameworks and methodologies, as well as the analysis of seven sector- and company-level emission and decarbonization datasets, carried out within April-July 2024.

The Scope 3 Claim stems from the VCMI's understanding that the lack of progress in scope 3 emissions reduction is a key challenge to the decarbonization of corporations, and that companies need tools to achieve ambitious climate targets.

Motivation: Currently, companies looking to address their scope 3 emissions can submit and approve science-aligned scope 3 mitigation targets, but face challenges to show that continuous effort is being made. This is especially true in the context of emissions that fluctuate in response to countless factors in corporates' supply chains—often difficult to predict or control.

The 'Scope 3 Claim' is a VCMI tool intended for companies to support environmental action through voluntary carbon markets whilst they return to a scope 3 emissions reduction trajectory that is consistent with the implementation and achievement of their net zero transition commitments. It allows companies with approved, science-aligned near-term targets for scope 3 emissions to calculate the emissions gap and, subject to requirements, recommendations, and guardrails, demonstrate their commitment by purchasing and retiring high-quality carbon credits (Figure 1).

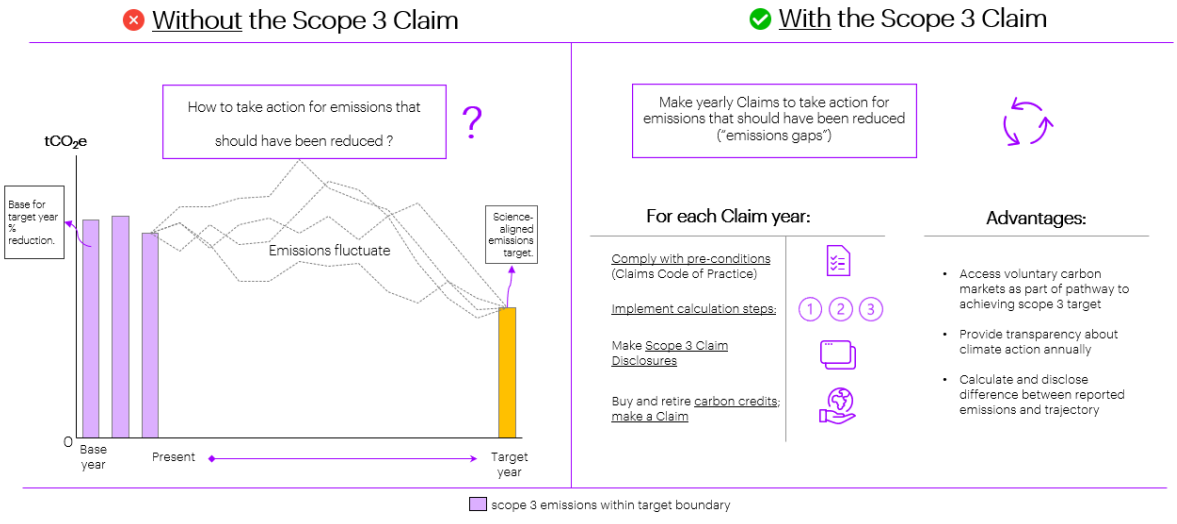


Figure 1. Schematic view of why companies look for a Scope 3 Claim and the key disclosures that they need to obtain a Claim.
Source: Elaborated by the authors.

Feedback received: The work presented here was designed to respond to four key areas of concern, which were raised by stakeholders in VCMI forums and through public statements:

- Concern A. Misunderstanding that the use of carbon credits counts towards achieving emissions reduction targets.
- Concern B. Criticism that the Claim allows companies to increase their total emissions, therefore undermining the mitigation hierarchy.
- Concern C. Companies' reported emissions do not follow linear trajectories. Therefore, alternative credible pathways are required.
- Concern D. The maximum use of credits at 50% of reported emissions can be seen as too high.

Summary of report methodology: To update the Scope 3 Claim, the following aspects were assessed: terminology, requirements, recommendations, calculation methodology and the guardrails that need to be in place.

Firstly, the below set of suggestions were put forward for discussion, assessed in collaboration with the VCMI and its stakeholders and collectively refined into two new requirements and one recommendation that cover concern areas A and B listed above:

- Requirement 1 (new): Publicly disclose that the company has not reduced its scope 3 emissions as expected in the Claim year and disclose the emissions gap.
- Requirement 2 (new): Publicly disclose the barrier(s) faced by the company to reduce scope 3 emissions as well as the actions already taken, their estimated impact in current emissions and action plan designed to overcome such barriers.
- Recommendation 1 (new): Develop and disclose the company's carbon credit procurement guidelines.

Secondly, a three-step calculation methodology was developed for making and maintaining the Claim. The suggested methodology builds upon the existing VCMI Scope 3 beta Claim methodology, with modifications and additions for improved precision and to account for each one of the areas of concern. It covers companies with absolute-based emission reduction near-term targets, representing between 57% (8) and 99% (9) of the scope 3 targets currently used by companies, and can be expanded to intensity-based targets with minor adjustments. Moreover, it includes five guardrails designed to ensure that the concerns raised are addressed, especially concerns B to C listed above.

Detailed Explanation of the Claim process:

Step 1: Determine how much the company would have emitted if following a science aligned trajectory towards its target.

- Guardrail 1: In the first Claim year, define a value that is not higher than that of the linear approach.
- Guardrail 2 (new): In subsequent Claim years, the value may remain stable or fluctuate, but must not increase with respect to the first Claim year.

  Step 2 (new): limit trajectory emissions to the remaining cumulative emissions.

- Guardrail 3 (new): Companies must ensure that the remaining cumulative emissions are not depleted before their near-term target year.

Scope 3 Claim Process

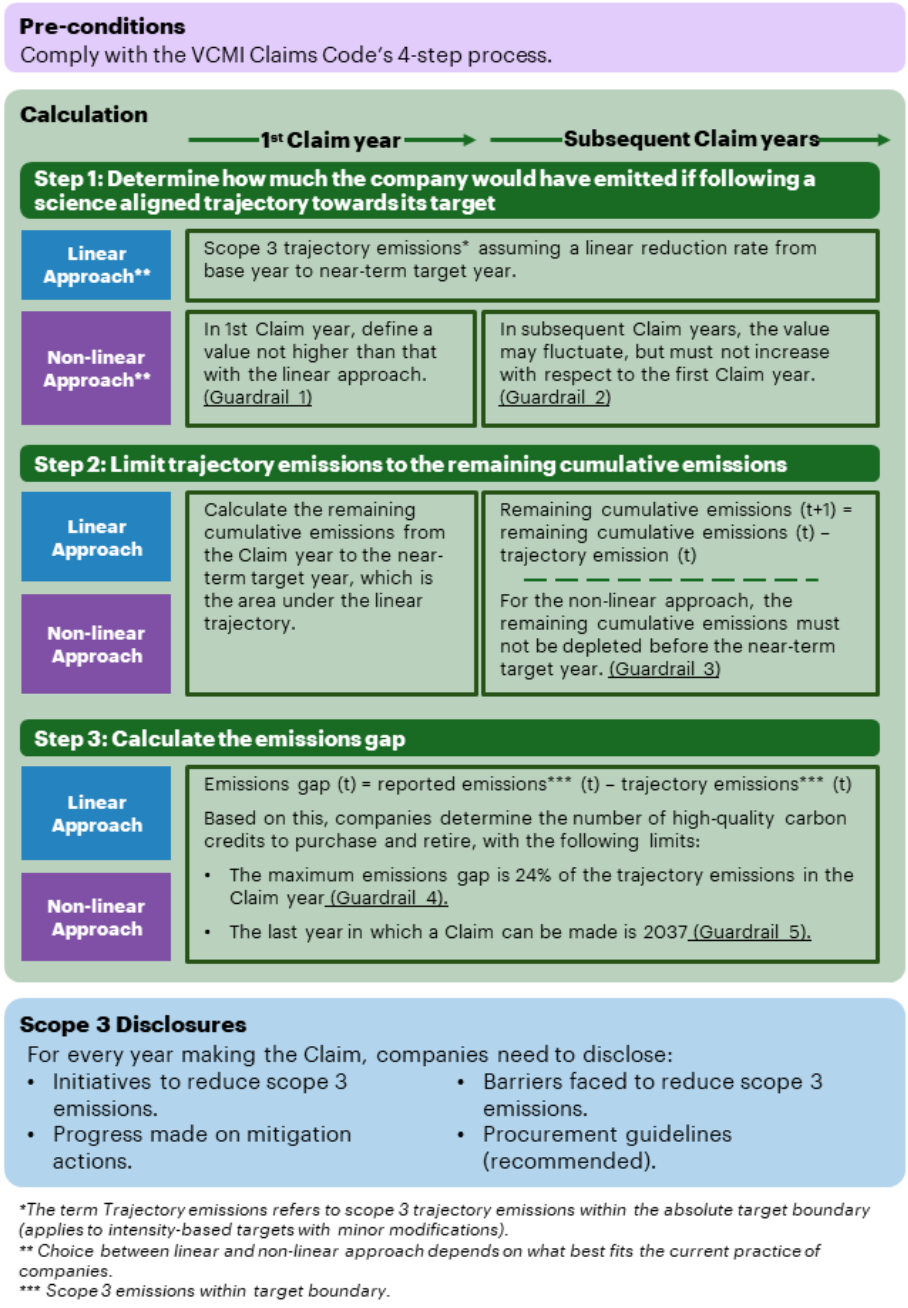


Figure 2 Schematic view of the Scope 3 Claim process.
Source: Elaborated by the authors.

Step 3: Calculate the emissions gap for the Claim year.

- Guardrail 4 (modified). The maximum emissions gap is 24% of the trajectory emissions level.
- Guardrail 5 (modified). The last year in which a Scope 3 Claim can be made is 2037.

Approach to defining guardrails: Guardrails 1-3 were derived in consultation with the VCMI team, while the updates for guardrails 4-5 were driven by insights from data analysis (described in section 4.4).

Guardrails 1 and 2 aim to put a ceiling on the extent to which companies can determine their trajectory emissions level while leaving room for fluctuation. Companies are allowed to depart from a linear trajectory, but the starting point needs to be consistent with implementing their near-term scope 3 targets and the trajectory needs to be bounded.

Guardrail 3 is normative in nature: anchored on the concept of 'remaining cumulative emissions', it ensures that companies use a science-aligned approach all the way through to their near-term target year.

Guardrails 4 and 5 are already present in the Scope 3 beta Claim and were updated following a thorough assessment of the relevant frameworks and data. This update was structured around two questions:

i. What is the maximum level for an emissions gap that should be required to stimulate scope 3 mitigation action while allowing companies to take action towards their net zero transition?

ii. What phase-out year can best stimulate companies to ramp up decarbonization efforts while being realistic as to the timing for removal of barriers to scope 3 decarbonization?

To answer those questions, the following methodologies and datasets were leveraged:

- SBTi's documentation (2019, 2021) (10) (11) of its scope 3 decarbonization pathways;
- Sixth Assessment Report of the IPCC (AR6, 2022) (12);
- Mission Possible Partnership mitigation pathways (MPP, 2022) (13); and
- SBTi Monitoring Report (2023) (13) on emissions gaps.

The IPCC pathways offer a broad set of assumptions and methods for long-term decarbonization scenarios. However, focusing on the short-term (present to ~2040), which is the main focus of this study, most scenarios, including the Shared Socio-economic Pathways (SSP), yield nearly-linear trajectories, making it difficult to reflect nuanced technological barriers. The Mission Possible Partnership mitigation pathways for seven hard-to-abate sectors provided clearer data on the gap between industry-level pathways and the SBTi scope 3 pathway—well below 2oC (WB2).

The data revealed that transportation sectors (aviation, shipping, trucking) do not converge with the WB2 pathway, while other industries, like aluminum, do. The maximum distance between the average MPP sectoral pathway and the SBTi WB2 scope 3 curve was 24%, with convergence expected by 2038. Company-level data from the SBTi Monitoring Report (2023) showed that 45% of companies on track in scopes 1 and 2 had a positive scope 3 emissions gap, with one quarter exceeding the 24% level, suggesting the need for a Scope 3 Claim. If a lower threshold for the maximum emissions gap were to be used, the median gap of 11.6% could be considered. If a higher value were to be chosen, the 52.6% level could be used, which sets apart outliers from the rest of observations.

Using a maximum emissions gap of 24% versus other values has a broad set of implications that need to be considered in deciding on the most appropriate approach. These considerations are explored in the sensitivity analysis.

Sensitivity analysis: The effectiveness and impact of the guardrails were examined in two steps (described in section 4.5 of the report).

(i) A detailed assessment of the maximum emissions gap, which limits the amount of credits required for a Claim to 24% of the trajectory emissions within the target boundary, was carried out.
  a. It was evaluated whether the 24% threshold, derived from sector-level analysis, serves as the appropriate value to achieve decarbonization.
(ii) The potential impact of the guardrails on companies was studied. A simulation of company profiles and a maximum-stress exercise were employed to identify whether the guardrails encourage companies with mitigation challenges to reduce scope 3 emissions.
  a. Further, it was explored how the guardrails might impact companies with good scope 3 mitigation results.

The following methodologies and datasets were leveraged:

- Transition Pathway Initiative (TPI, 2023) (28) data on climate performance;
- Corporate Climate Responsibility Monitor (CCRM, 2024) (29) data on climate performance; and
- CDP climate score (2023) (31) data.

Results: The analysis did not point to a noticeable association between emissions gaps (SBTi Monitoring Report) and climate performance (CDP climate scores), making it hard to define a clear maximum emissions gap threshold other than the one identified in the sector-level analysis.

For example, companies with the highest emissions gaps had high climate scores, suggesting active engagement in mitigation efforts. This was different for companies with the lowest emissions gaps, which showed lower climate scores. Yet, it was found that the differences among groups were not statistically significant, implying that no correlation between emissions gaps and climate performance could be established.

On the other hand, the maximum stress assessment demonstrated that the suggested guardrails collectively lead to a smoother reported emissions path, without the jumps evident in the beta Claim, and provide less room for an increase in emissions with respect to the base year (32% in the suggested Scope 3 Claim vs 90% in the beta Claim). It also showed that more restrictive maximum emissions gaps allow less room for an increase in emissions relative to the base year, with only 9% for the 24% gap and -1% for the 12% gap, making the 12% maximum emissions gap a very restrictive scenario. Overall, the assessment indicates that the 24% maximum emissions gap best balances the space for reducing emissions, allows for some emissions fluctuations, and maintains a smooth reported emissions path.

Potential Implications for Claim adoption: The analysis of company profiles showed that companies are in almost all cases given space to make a Claim in the initial years using this revised methodology. Then, after a few years, depending on their emissions profiles, some companies may no longer be able to continue making a Claim due to the maximum emissions gap (guardrail 4). The more a company is able to make a Claim, the more it will absorb the disclosure procedures necessary for the Claim.

It was found that there is a potential trade-off between giving space for decarbonization to companies that are on an increased emissions pathway (high emitters) versus giving room for companies at the other extreme to increase emissions (low emitters). While companies that are on track to reach their scope 3 targets could be only marginally impacted by a Scope 3 Claim since they are good candidates for a Carbon Integrity Claim (applicable to companies not facing decarbonization challenges), the presence of a Scope 3 Claim still gives room for companies to make a Claim and increase emissions (up to a limit).

Companies in the mid-level emissions profiles—increasing, constant, and reducing emissions—are the ones most likely to benefit from the Claim as the effort required from them to remain able to make a Claim is less substantial. Moreover, since these companies do not have very high emissions gaps, especially in initial years, they tend to have more leeway for some fluctuation in scope 3 emissions, which can help them to deal with hard to control outside forces.

Conclusions:

The Scope 3 Claim is a welcome development in a market where interest for scope 3 emissions is increasing, where companies face major challenges to collect emissions data from their supply chains (14), and where scope 3 mitigation targets are not monitored with the same frequency as GHG inventories are published. Moreover, companies are unsure about how to proceed as emissions fluctuate and their approved near-term emissions targets look difficult to reach.

The refinement of the beta Claim presented in this report has led to the following lessons:

- The concerns raised by VCMI stakeholders may be addressed with a combination of requirements, recommendations, calculation steps and guardrails.
- The calculation steps need to strive for simplicity, but they also need to incorporate enough detail, in the form of equations and procedures, to minimize loopholes and mitigate the risk that the mapped concerns will continue to be an issue.
- Allowing companies to depart from a linear trajectory for emissions is possible, and Article 6.2 of the Paris Agreement provides a general framework for that. However, for companies to ensure alignment with a science-based approach, they must also adhere to the remaining cumulative emissions.
- The existing beta Claim leaves room for a substantial increase in scope 3 emissions before 2030. For this to be addressed in a structured way, it is suggested that the maximum emissions gap be calculated as a percentage of the trajectory emissions, not of the reported emissions.
- A set of five guardrails is suggested to be applied as companies implement the calculation procedures. Together, the guardrails act in a way that leaves room for fluctuation in emissions while not giving space for substantial increases in scope 3 emissions.
- Guardrail 4, which requires the maximum emissions gap to be limited to 24% of the trajectory emissions within target boundary, is a key parameter for the Claim.
- The analysis pointed to 24% as a value that adequately addresses the expected evolution of sector-level barriers to decarbonization, as inferred from the MPP data analysis. This is also the value that best balances the need to leave some room for emissions fluctuations with the imperative of allowing space for emissions reductions.
- The ideal phase-out year, previously 2035 in the beta Claim, was found to be 2038 in this analysis, as it is the year when hard-to-abate sectors are expected to converge with the ‘well below 2oC scope 3 pathway’ of the IPCC.
- Overall, the 24% maximum emissions gap and 2038 as the first year in which companies are no longer able to make a Scope 3 Claim appear to balance the need for stronger mitigation efforts with the challenge posed by decarbonization barriers.

2 | Introduction

The Voluntary Carbon Markets Integrity Initiative (VCMI) launched the beta version of the Scope 3 Claim in November 2023, requesting companies to purchase and retire high-quality carbon credits to take action for their scope 3 emissions[1] gap within target boundary according to the companies' own targets[2]. While aimed at stimulating more climate action, critics argued it could undermine corporate ambition and slow emissions reductions. To address these concerns, VCMI commissioned Accenture to refine the Claim through stakeholder consultations and incorporate feedback to ensure it aligns with science-based net-zero pathways and drives meaningful emissions reductions across corporate value chains. The findings are presented below.

2.1 Previous Efforts in Scope 3 Claim Development

The beta version of the VCMI Scope 3 Claim (2) consisted of the following features:

- The Claim requested companies to take action for scope 3 emissions gap within target boundary by purchasing and retiring high-quality carbon credits.
- To make the Claim, companies had to comply with the VCMI Foundational Criteria as well as demonstrate their progress towards meeting scopes 1 and 2 emissions reduction targets.
- To ensure the Claim gives space for companies to address their scope 3 emissions within target boundary as fully as possible, the Claim calculation and guardrails specified that:
    - The number of high-quality carbon credits used must not exceed 50% of a company's scope 3 emissions within target boundary in the year it is making the Claim.
    - The emissions gap is defined as the difference between the companies most recently reported scope 3 emissions and their calculated scope 3 emissions for the same year, based on the level of emissions on a trajectory consistent with the company`s science-aligned target.
    - Credits used to make a Scope 3 Claim must decrease over time, leading to their complete phase-out no later than 10 years after the first Claim.

2.2 Objectives of this Study

Accenture conducted a review and assessment of the Scope 3 Claim with the following objectives:

- **Assessment of existing emission calculation methodologies**
    - Review of the main existing methodologies and reports to assess emissions reduction trajectories and gap calculations.
    - Review stakeholder feedback regarding current methods and further issues to be addressed.
- **Emissions gap calculation methodologies**
    - Based on inputs from the assessment, develop a methodology to track the scope 3 emissions gap in relation to the trajectory emissions without resorting to a linear curve.
    - Define an upper bound to the annual scope 3 emissions gap.

[1] Scope 3 emissions, when mentioned in this document, refer to emissions within the boundaries defined by companies while following the standards defined by science-aligned target setting organizations. The same applies to the scope 3 emissions reduction targets.
[2] This report covers absolute quantitative emissions reduction targets, which, according to SBTi (14), represent 57% of the scope 3 targets currently used by companies, or 99% according to MSCI (9). The methodology can be applicable to intensity-based targets subject to minor adjustments.

- **Credit limits and phase-out period guardrails for Scope 3 Claim**
    - Refine the suggested criteria and guardrails on the maximum number of high-quality carbon credits requested to be used throughout the phase-out period, providing a rationale for each methodological approach.
    - Define requirements, recommendations, and guardrails in collaboration with VCMI.
    - Provide a methodology with a roll-out plan containing the optimal phase-out year and carbon credit allocation (%) based on defined criteria.

After this introduction, the study provides a summary of insights derived from a broad assessment of existing methodologies and frameworks, including the VCMI materials (section 3). It then proceeds to discuss the Scope 3 Claim development (section 4), which is divided into five parts: 4.1. Key concepts and Claim process; 4.2. Requirements and Recommendations; 4.3. Scope 3 emissions gap calculation; 4.4. Methodology for defining the guardrails; and 4.5. Sensitivity analysis. Section 5 then presents recommendations and considerations for future iterations of the methodology. Section 6 is an Appendix with extensive documentation to the existing methodology, data used, and findings, pain points and feedback for the Scope 3 Claim. Finally, section 7 discusses risks and limitations to the study.

3 | Insights from emissions calculation methodologies and data

The summary insights presented below were derived from a detailed assessment of thirteen emission mitigation frameworks and methodologies and seven sector- and company-level datasets. A detailed presentation of both frameworks and datasets is provided in the Appendix (Section 6.1).

1. The studied methodologies follow a science-based, carbon budget approach to limiting global temperature increase.

- The target setting methods studied align with keeping global temperature increase at the 1.5oC or well below 2oC levels.
- The IPCC AR6 mitigation pathways carry an important level of uncertainty as to the expected trajectory of emissions, but for the short term (present to ~2040), most scenarios present a linear or nearly-linear trajectory (12) (15).

2. There are no consolidated methods for determining the annual scope 3 emissions trajectory for near-term corporate targets.

- The Paris Agreement Article 6.2 (11) provides a general framework for the definition of an indicative multi-year trajectory based on a single-year target (NDC).
- While that framework is a solid basis for a Scope 3 Claim, the Paris Agreement is guided by the principle of sovereignty.
- Therefore, Article 6.2 guidance is generic and does not include a particular restriction on how carbon emissions should decline, leaving it to nation-states to ensure that their indicative multi-year emissions trajectory is "consistent with implementation and achievement of the NDC" (11 p. 19).

3. Emissions reduction targets are typically set based on linear trajectories, but non-linear curves are allowed.

- Progress assessment methodologies typically set objectives for target years by considering year-on-year linear trajectories aligned with carbon budgets (3).

- However, in their monitoring report, the SBTi calculates the evolution of emissions relative to the base year for a given year, the percentage of target already achieved, and the ratio between emissions for the given year and emissions for the year of the near-term target (23). They do not consider annual progress relative to an emissions trajectory in their monitoring indicator.
- CDP recognizes that trajectories may not be linear and allows companies to build annual targets or establish intermediate targets with linear trajectories between them (16) (5).
- The MPP data, which provides mitigation pathways at the sector-level, shows that, for most hard-to-abate industries such as aviation, cement, steel, and chemicals, commonly present in scope 3 emissions, the expected decarbonization trajectories are not linear. Rather, they may rise in initial years before sloping down (13).

4. Although most companies are behind in their reduction targets, those that are in line with scopes 1 and 2 have limited emissions gaps.

- Studies estimate that more than 80% of the world's largest companies globally have not yet set climate targets, and approximately 60% of companies are below their reduction targets considering linear trajectories (17).
- SBTi's monitoring report (18) indicates that about 3/4 of companies have scope 3 emissions increasing compared to the base year, while the remaining are either in line with the base year or reducing emissions.
- However, among companies in line with scopes 1 and 2 targets, 100% of emissions gaps are smaller than 50% of their total scope 3 emissions (9).
- The tech and professional service sectors experienced the most significant reductions, primarily due to decreased business travel, which was significantly impacted during the COVID-19 pandemic (18).

5. While supply chain emissions represent an important fraction of overall emissions, scope 3 mitigation frameworks are still under development.

- Scope 3 data are more difficult to gather as it requires input from external stakeholders and the understanding of intricate carbon foot printing metrics.
- For scope 3 emissions, the SBTi validates targets with less ambitious reductions without necessarily associating them with temperature categories as in the case of scopes 1 and 2, indicating a degree of flexibility. Intensity targets are greater in case absolute emissions outpace carbon budget due to business growth. Engagement targets are also permitted (19).
- Two thirds of companies with SBTi scope 3 targets have opted for an Absolute Contraction Approach (ACA) (14). According to SBTi guidelines, ACA is the approach with the widest applicability across sectors and types of companies.
- According to SBTi (14) and MSCI (14), 57% and 99% respectively of companies' scope 3 science-based targets are of the absolute contraction type (as opposed to intensity-based or engagement targets).

6. Hard to abate sectors have implications to scope 3 emissions of many industries.

- Hard-to-abate sectors such as cement, steel, heavy transportation, aviation, maritime transportation, and chemicals are relevant for the scope 3 emissions of many industries and services (20).

- The Energy and Utility sectors play key roles in allowing other industries to meet targets, which requires them to be early movers in the decarbonization effort (21).
- Studies show that emissions from hard-to-abate sectors will have slower reduction trajectories due to technological readiness issues and the difficulty of replacing emission-generating assets with long lifespans (20) (13).
- Sectors with limited technology readiness such as the cement industry, will have longer need for carbon credits and compensation for emissions (21).

7. The IPCC assesses a large set of variables and scenarios to build its mitigation pathways, and these can be used to understand the likelihood of a near-term alignment with the Paris Agreement objectives.

- Models with different levels of granularity and assumptions are used to identify possible scenarios for future emissions.
- The results of these can be compared to normative decarbonization pathways to understand the likelihood keeping global temperature increase at the 1.5oC or well below 2oC levels.
- However, limitations with the IPCC scenarios include that they tend to have low granularity, that they are often not based on a sector-level understanding of technological barriers, and that their time horizons are very long term.

4 | Scope 3 Claim development

4.1 Key concepts

This section provides a summary of key concepts relevant for the Scope 3 Claim.

Key concept 1. Emissions gap. The left panel of Figure 3 shows that calculating an emissions gap requires two pieces of information: reported scope 3 emissions within target boundary and scope 3 trajectory emissions within target boundary, the latter of which may informed by an SBTi-like linear trajectory, as shown in the figure.

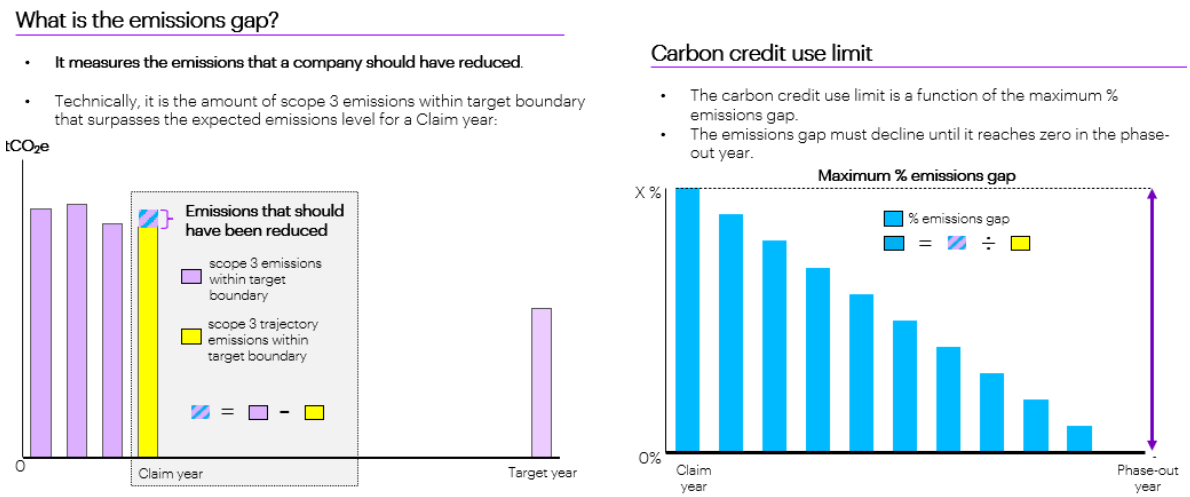


Figure 3 – Emissions gap and carbon credit use limit.
Source: Elaborated by the authors.

Key concept 2. Carbon credit use limit. The panel on the right of Figure 3 shows that it is a function of the maximum % gap required by the Scope 3 Claim. In the Scope 3 Beta Claim, for example, that maximum gap was 50% of the reported emissions within target boundary. Moreover, the maximum amount of credits used in a Scope 3 Claim will decline over time.

4.2 Requirements and Recommendation

Based on the assessment of requirements established in the beta version, along with the feedback received from stakeholders, this section presents new requirements and recommendations, providing a detailed rationale and impacts for each suggestion. At the end of the section, it discusses other considered requirements that have not been selected.

5.2.1 Suggestion for updated and new requirements and recommendations

The following additional requirements and recommendations are put forth:

(1) Requirement: Publicly disclose that the company has not reduced its scope 3 emissions as expected in the Claim year and disclose the emissions gap.

Companies are required to publicly disclose:

- Their base year, base year emissions within target boundary, science-aligned scope 3 absolute target and near-term target year, and whether their targets are multi-year or single-year, according to their SAT public commitment.
- Trajectory emissions for the current year as derived from the company's emissions trajectory.
- Current scope 3 GHG emissions within target boundary, by GHG scope 3 category.
- Volume of the gap at current year (reported emissions within target boundary minus trajectory emissions within target boundary), both in absolute terms and as a percentage of the trajectory emissions within target boundary at current year.
- Methods used for monitoring progress of emissions reduction initiatives.
- Clearly state that current scope 3 emissions did not meet the company's trajectory emissions within target boundary for the year.

Rationale:

- Addresses concern A.
- The Scope 3 Claim can sometimes be misinterpreted as a replacement for scope 3 emissions reduction.
- Relevant public statements, including but not limited to an article by New Climate Institute (2023) (22), have argued that the Claim leaves open more than enough room for companies to use carbon credits as an alternative, rather than a complement, to cutting their own emissions.
- The public disclosures clarify to the stakeholders that: independent of the use of high-quality carbon credits, the company has not reduced emissions as expected for the current year.
- Hence, the company is retiring high-quality carbon credits for its scope 3 emissions gap, instead of substituting for their own scope 3 emissions reduction efforts.
- Moreover, companies have responsibility for reducing their emissions as part of a collective effort to achieve net-zero by 2050. They need to be transparent about their decarbonization progress, including when they fall behind on their intended emissions reduction pathway.

Impacts:

- The public disclosures demonstrate corporate responsibility and can increase company accountability for climate commitments. This builds transparency, trust, and credibility in the company's sustainability efforts.
- By publicly sharing their emission data, companies enable stakeholders to track and monitor progress in emissions reduction over time.
- The stakeholders can differentiate between companies with higher or lower gaps.

(2) Requirement: Publicly disclose the barrier(s) faced by the company to reduce scope 3 emissions as well as the actions already taken, their estimated impact in current emissions and action plan designed to overcome such barriers.

Companies are required to:

- Describe the barriers faced and how they challenge the company's scope 3 emissions reduction.
- Report the actions taken by the company to reduce scope 3 emissions and their estimated impact in emissions reduction accomplished by the company.
- Report the mitigation actions planned with their associated timeline, including how they are integrating carbon metrics into its internal procurement processes (i.e., internal processes a company conducts to manage its supply chain. Examples of metrics include current and expected percentage of contracts with Greenhouse Gas (GHG) emissions clauses, current and expected percentage of suppliers providing GHG emission inventories etc.). For the subsequent years and follow-on claims, report the progress made on the mitigation actions previously defined, indicating if they have followed their planned timeline or not and quantifying results (e.g., in terms of procurement practices, GHG emissions reduced etc., according to the company's actions and timelines).

Rationale:

- Addresses concerns A and B.
- Companies face significant challenges when reducing their scope 3 emissions. Moreover, a large portion of the companies that reported on scope 3 emissions do not have emissions reduction action plans in place. A report commissioned by CDP in 2023 (23) found that, on average, only 37% of total emissions from Purchased Goods and Services and Use of sold products are addressed through emissions reduction initiatives by corporate in 2022.
- Market evidence, such as The Climate Board (2024) (24), show that the recognition of challenges faced by companies in reducing scope 3 emissions and broadened climate strategy approach will lead to more companies cutting down their emission.
- One of the key elements of this requirement includes integrating carbon metrics into a company's internal procurement processes. In the 2022 CDP Supply Chain report (25), 39% of respondents reported that they engaged their suppliers on climate-related issues and 36% of respondents planned to incorporate sustainability KPIs in supplier contracts within 2 years. Engaging suppliers on sustainability initiatives allows companies to channel their decarbonization efforts throughout their upstream value chain while also creating a win-win scenario that benefit the suppliers.

Impacts:

- The disclosures reflect the difficulties companies face in keeping up with pathways and show responsibility to reduce the gap, which builds transparency, trust, and credibility in the company's sustainability effort.
- Disclosing the barriers and how companies plan to overcome them in terms of actions and timeline show commitment to reducing supply chain emissions.
- Disclosing the action plan to reduce emissions allows stakeholders to monitor companies' progress on said actions on subsequent years and follow-on claims.

(3) Recommendation: Develop and disclose the company's carbon credit procurement guidelines.

Companies are recommended to develop and disclose their carbon credit procurement guidelines.

Rationale:

- Addresses concern C.
- A carbon credit procurement guideline is an important tool for companies to engage with voluntary carbon markets (26). With it, companies can specify criteria for carbon credits that (i) meet the Integrity Council for the Voluntary Carbon Market (ICVCM) Core Carbon Principles; (ii) ensure that the purchase of carbon credits represents mitigation—either emissions reductions or removals—achieved outside the value chain of the company; both of which are requirements from the VCMI's Claims Code of Practice; and that (iii) align with the company's overall climate strategy and net-zero transition plan.
- A carbon credit procurement guideline allows companies to take the heterogeneous characteristics of carbon credits into account, including co-benefits such as local community economic development and biodiversity protection, in a systematic way when purchasing carbon credits.
- One approach that was initially considered invited companies to "explain how the high-quality carbon credits portfolio used for the scope 3 Claim relate to the sources of scope 3 emissions within the emissions gap". However, this was replaced for a more structural, forward-looking recommendation for a carbon credits procurement guideline.

Impacts:

- Companies that make a Scope 3 Claim for multiple years will feel the need to fulfill this recommendation, which can drive a more structured approach to dealing with voluntary carbon markets.
- By showing a thoughtful, intentional, and systematic approach to how they procure carbon credits, companies demonstrate transparency and accountability to stakeholders regarding their climate mitigation efforts.

  The guideline would allow companies to be more assertive about the impact of their carbon credit choices and to plan for investments that will contribute to remove barriers to decarbonization.

5.2.2 Requirements considered, but not included

Requirement: Publicly disclose level of quality of scope 3 data to provide transparency.

Companies should use and publicly disclose the data and GHG Protocol methods used to calculate scope 3 emissions:

- Company should disclose the GHG Protocol method used and data type for each scope 3 category in the inventory.
- Only scope 3 emissions calculated using the supplier-specific or the hybrid method, as specified by the GHG Protocol scope 3 emission calculation technical guidance (27), will be eligible for the scope 3 claim.

Rationale:

- One key challenge regarding scope 3 emissions is the complexity on measuring supply chain emissions.
- If scope 3 emissions are measured based on very aggregate data sources, the emissions gap and the Scope 3 Claim calculations will be inaccurate. Low quality of scope 3 emissions data may compromise credibility of the Scope 3 Claim because of inaccuracy and unreliability.

- GHG Protocol outlines four methods for calculating scope 3 based on different data types: Supplier-specific method, Hybrid method, Average-data method, and Spend-based method. Supplier-specific method requires companies to collect product-level cradle-to-gate GHG inventory data from goods or services suppliers, while hybrid method uses a combination of supplier-specific activity data (where available) and secondary data to fill the gaps.
- Both methods require companies to collect data from the suppliers. The data is the most accurate because it relates to the specific good or service purchased. Wherever supplier-specific data is not available, companies can use secondary data to fill the gaps.
- With more accurate data, companies can provide more transparency to their emissions and the result of emission mitigation actions, as well as avoid variations in scope 3 emissions estimation from changes in data source.

Impacts:

- Companies need to take ownership of the scope 3 emissions within their business practices. Given that only scope 3 emissions using supplier-specific or hybrid methods are eligible for the claim, companies would be incentivized to prioritize suppliers that can provide scope 1 and 2 GHG emission data. This requirement would further embed supplier engagement within the GHG inventory process.
- The disclosure would allow stakeholders to accurately interpret and contextualize the scope 3 emissions figures. This would prevent misunderstanding or overreliance on data with significant uncertainties.

Reason for excluding this requirement:

- Acquiring detailed emissions data from suppliers can be difficult, as not all suppliers track or report their emissions. The quality and accuracy of supplier-provided data can vary significantly across industries and regions.
- Suppliers may become reluctant to participate in emissions data collection and sharing because it involves more work and expense.
- To summarize, the requirement is very resource-intensive and challenging to implement due to data availability and supplier engagement requirements, hence it was excluded from the suggested requirements.

4.3 Scope 3 Emissions Gap Calculation

4.3.1 How and why to calculate the emissions gap.

When considering a Scope 3 Claim, companies are looking for ways to take action in their scope 3 emissions gap. For that, they need to implement the following steps.

Step 1. Determine how much the company would have emitted if following a science aligned trajectory towards its target.

Report scope 3 trajectory emissions within target boundary for the Claim year.

A linear approach—as in the left panel in Figure 4—is the standard procedure to determine how much a company would have emitted if following a science aligned trajectory towards its target. However, stakeholders consulted by the VCMI recognize that, due to different internal and external circumstances, companies' emissions do not necessarily follow a linear trajectory. To account for that, companies can opt to employ a non-linear approach, as in the right panel of Figure 4.

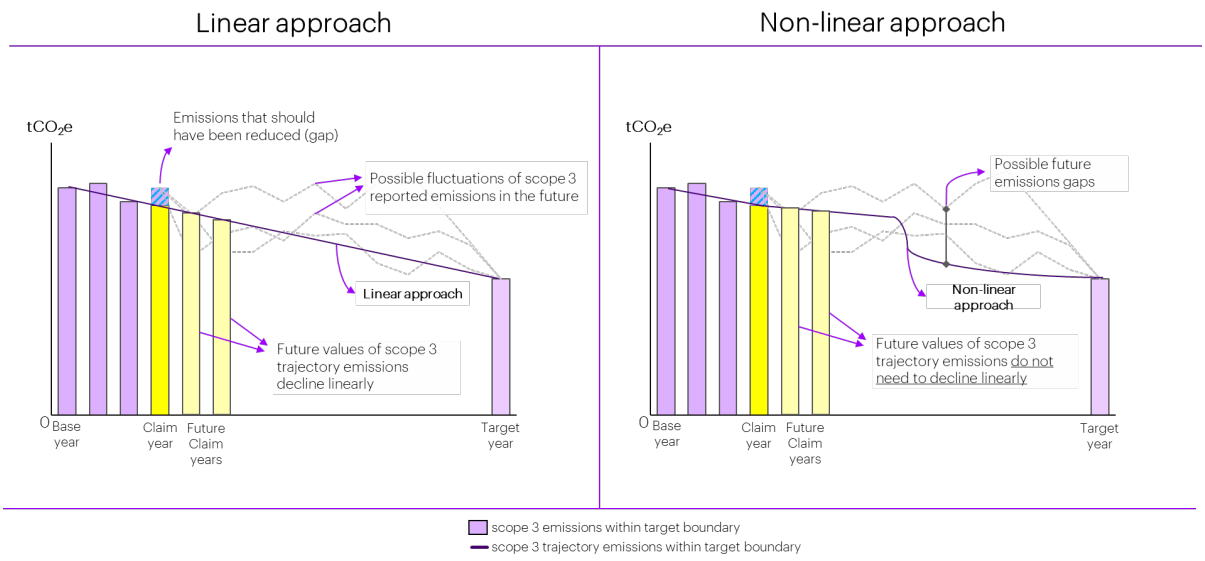


Figure 4 – Linear and non-linear approaches to emissions gap calculation.
Source: Elaborated by the authors.

Linear approach: to obtain the scope 3 trajectory emissions within target boundary for the Claim year, t, companies with an SBTi target can use the "calculations" sheet in their SBTi target setting tool (3). Companies with other science-aligned targets can use Equation 1:

$$\text{(Eq. 1) Scope 3 trajectory emissions within target boundary (t)} = base\ year\ emissions \times \left[1 - \left[\frac{(base\ year\ emissions - target\ year\ emissions)}{(base\ year\ emissions \times (target\ year - base\ year))} \times (claim\ year - base\ year)\right]\right]$$

For example, in Figure 5:

✓ Scope 3 trajectory emissions within target boundary (2025) = $100 \times \left[1 - \left[\frac{(100-67{,}5)}{(100 \times (2033-2021))} \times (2025 - 2021)\right]\right]$ = 89.17.

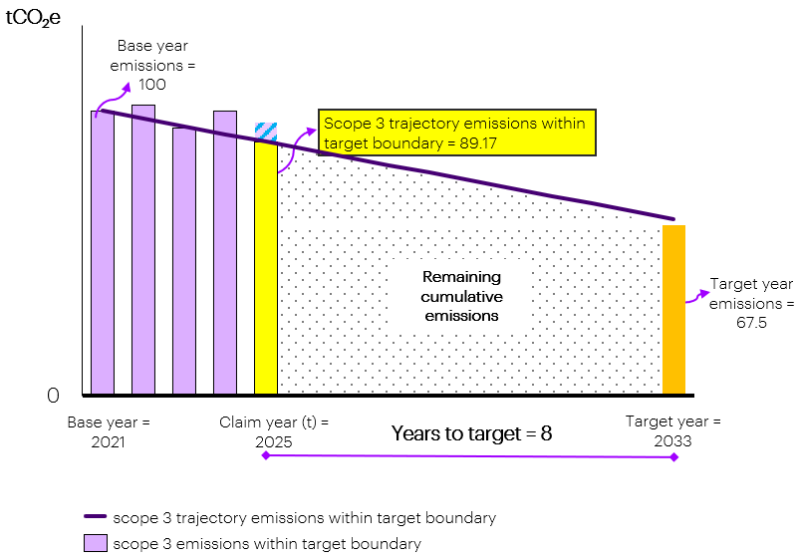


Figure 5 – Elements of the methodology to emissions gap calculation.
Source: Elaborated by the authors.

Non-linear approach: companies opting to depart from a linear approach must define a scope 3 trajectory emission within target boundary (t) that is consistent with the implementation and achievement of their near-term science-aligned target. For that, they must observe the following guardrails:

Guardrail 1. in the first Claim year, define a value that is not higher than that obtained with the linear approach (using Equation 1).

Guardrail 2. In subsequent Claim years, the value may remain stable or fluctuate, but must not increase with respect to the first Claim year.

Rationale:

- Addresses concern C.
- The linear approach is compatible with the SBTi target setting tool (3).
- Companies for which the linear approach does not accurately describe their reality can opt to present a non-linear scope 3 trajectory emissions level.
- The non-linear approach allows companies to present scope 3 trajectory emissions that more accurately translate challenges and barriers to mitigate their scope 3 emissions.
- The guardrails are intended to (i) ensure that the scope 3 trajectory emissions level, while able to fluctuate, does not increase above a certain level, and (ii) to ensure that companies are not encouraged to deplete their remaining cumulative emissions in early years of the Claim.

Step 2. Limit trajectory emissions to the remaining cumulative emissions.

Calculate the remaining cumulative emissions until the target year (area under the linear trajectory in Figure 5).

If making a Scope 3 Claim for the first time (first Claim year, t): use Equation 2:

(Eq. 2) $Remaining\ cumulative\ emissions\ (t) = (Years\ to\ target + 1) \times (scope\ 3\ trajectory\ emissions\ within\ target\ boundary\ (t)\ +\ target\ year\ emissions)/2$

In Figure 5, for example:

Remaining cumulative emissions (2025) = $(8 + 1) \times (89.17 + 67{,}5)/2 = 705.01$

If making a Scope 3 Claim in subsequent years, t+1, t+2 etc:

(Eq. 3) $Remaining\ cumulative\ emissions\ (t+1) = remaining\ cumulative\ emissions\ (t) - scope\ 3\ trajectory\ emissions\ within\ target\ boundary\ (t)$

And apply the guardrail:

Guardrail 3. Companies must ensure that the remaining cumulative emissions are not depleted before their near-term target year.

For that, use Equation 4:

(Eq. 4) $Remaining\ cumulative\ emissions\ (t) > target\ year\ emissions \times (Years\ to\ target + 1)$

In the example above: 705.01 > 67.5 x 9 | 705.01 > 607.5

For Claims in 2026 and 2027, assuming the company used a linear approach:

- ✓ Remaining cumulative emissions (2026) = 705.01 – 89.17 = 615.84 > 540.
- ✓ Remaining cumulative emissions (2027) = 615.84 – 86.46 = 529.38 > 472.5.

Rationale:

- Addresses concerns B, C and D.
- The remaining cumulative emissions are an estimate of how much a company can emit in the future to be consistent with the implementation and achievement of their near-term science-aligned target.
- Although there is evidence that the relationship between cumulative emissions and global temperature may not be linear, calculating the remaining cumulative emissions based on the linear approach (as in Equation 2) is a practical way to incorporate cumulative emissions into near-term science-aligned targets.
- Companies opting for a non-linear approach will use the calculated remaining cumulative emissions as a compass to know when their scope 3 trajectory emissions need to slope down. This provides transparency as to how companies can remain aligned to science until their near-term target year.
- For science-aligned targets to be achievable, companies must have remaining cumulative emissions for all the years leading to their target year.

Step 3. Calculate the emissions gap for the Claim year.

Calculate the emissions gap and determine the carbon credit use limit.

Use Equation 5 to calculate the emissions gap:

(Eq. 5) $Emissions\ gap\ (t) = reported\ emissions\ within\ target\ boundary\ (t) - scope\ 3\ trajectory\ emissions\ within\ target\ boundary\ (t)$

For example, in Figure 5:

✓ Emissions gap (t) = 96 – 89.17 = 6.83.

To determine the carbon credits use limit, apply the following guardrails:

Guardrail 4. The maximum emissions gap is 24% of the scope 3 trajectory emissions within target boundary in the Claim year.

Guardrail 5. The last year in which a Scope 3 Claim can be made is 2037.

Rationale:

- Addresses concerns A, B and D.
- The maximum emissions gap guardrail ensures that companies are given substantial room to take emissions reduction action.
- The phase-out year guardrail ensures that action through the Claim is discontinued when the most important barriers to decarbonization are overcome and companies are able to reach their expected emissions reduction levels.
- By having the maximum emissions gap as a function of the scope 3 trajectory emissions, and not of the reported emissions, guardrail 4 ensures that the emissions gap is anchored by the remaining cumulative emissions.
- The maximum emissions gap and phase-out year are derived from a data analysis of IPCC Sixth Assessment Report emissions pathways (15) and MPP (2022) emissions pathways (13) for hard-to-abate sectors (see section 4.4).
- The maximum emissions gap is further informed by an assessment of SBTi company-level data (18) (see section 4.4).
- 24% may be a high value for the maximum emissions gap as it is based on the analysis of hard-to-abate sectors. The analysis of a broader set of sectors, including energy and agriculture, could result in a lower value (see section 4.4).
- Even so, the company-level data show that 25% of companies that are on track in scopes 1 and 2 and have a positive scope 3 gap would be left out with this parameter value, a non-negligible share (see section 4.4).
- The 2037 value for the phase-out is subject to the same caveats. Assessing sectors that go beyond the hard-to-abate group could result in an earlier year (see section 4.4).

4.3.2 Methodology application case.

Illustrative example 1.

Company A has committed to the following scope 3 absolute target:

✓ Reduce scope 3 emissions from the categories purchased goods and services, upstream transportation and distribution and downstream transportation and distribution in 30% by 2032, from a 2022 base year.

Company A has reported the following scope 3 emissions within the target boundary:

✓ 2022: 1,000,000 tCO2e
✓ 2023: 1,100,000 tCO2e

To make its first Claim for 2023, Company A must make the required disclosures and consider implementing the recommendation from the Scope 3 Claim. Then, it should implement calculation step 1: Determine how much the company would have emitted if following a science aligned trajectory towards its target. Since it is the first Claim year,

Company A uses Equation 1:

$$\text{Scope 3 trajectory emissions within target boundary (t)} = \textit{base year emissions} \times \left[1 - \left[\frac{(\textit{base year emissions} - \textit{target year emissions})}{(\textit{base year emissions} \times (\textit{target year} - \textit{base year}))} \times (\textit{claim year} - \textit{base year})\right]\right]$$

$$\text{Scope 3 trajectory emissions within target boundary (2023)} = 1{,}000{,}000 \times \left[1 - \left[\frac{(1{,}000{,}000 - 700{,}000)}{(1{,}000{,}000 \times (2032 - 2022))} \times (2023 - 2022)\right]\right]$$

$\text{Scope 3 trajectory emissions within target boundary (t)} = 970{,}000$ Calculate the cumulative emissions from the first Claim year to the near-term target year.

The maximum scope 3 trajectory emissions within target boundary for the first Claim year would be 970,000, thus the value presented for the scope 3 trajectory for the first Claim can be 970,000 or lower.

Then, implement calculation step 2: Limit trajectory emissions to the remaining cumulative emissions. Since it is the first Claim year, it uses Equation 2:

$$\textit{Remaining cumulative emissions}\ (t) = (\textit{Years to target} + 1) \times (\textit{scope 3 trajectory emissions within target boundary}\ (t) + \textit{target year emissions})/2$$

$$\textit{Remaining cumulative emissions}\ (2023) = (9 + 1) \times (970{,}000 + 700{,}000)/2 = 8{,}350{,}000$$

The company needs to ensure that guardrail 3 is met—ensure that the remaining cumulative emissions are not depleted before their near-term target year, by applying Equation 4:

$$\textit{Remaining cumulative emissions}\ (t) > \textit{target year emissions} \times (\textit{Years to target} + 1)$$

$$\textit{Remaining cumulative emissions}\ (2023) > (700{,}000 \times (9 + 1)) \mid 8{,}350{,}000 > 7{,}000{,}000$$

Finally, implement calculation step 3: Calculate the emissions gap for the Claim year. Using Equation 5:

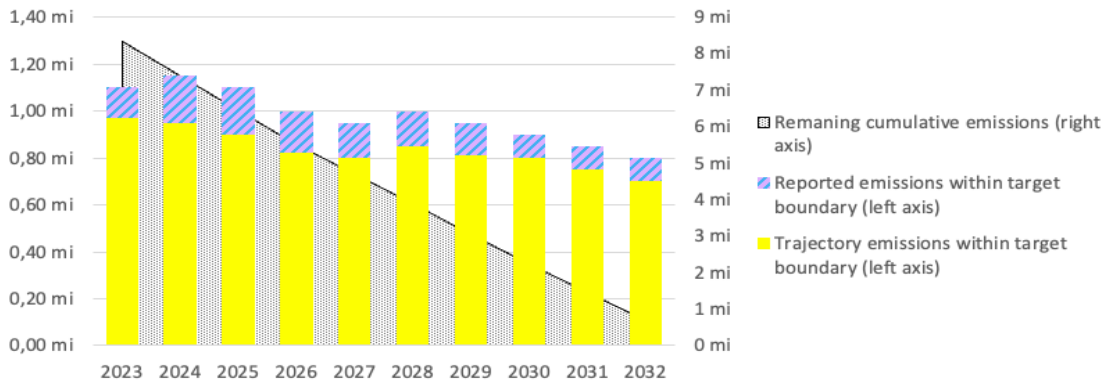
$$\textit{Emissions gap}\ (t) = \textit{reported emissions}\ (t) - \textit{scope 3 trajectory emissions within target boundary}\ (t)$$

$$\textit{Emissions gap}\ (2023) = 1{,}100{,}000 - 970{,}000 = 130{,}000$$

By 2032, when looking back at the Claims made by Company A, an overview of its disclosed emissions could be as follows:

Figure 6. 2025-2032 Disclosed emissions for Company A.
Source: Elaborated by the authors.

Table 1 2023-2032 Disclosed emissions for Company A



	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Reported emissions within target boundary	1,100,000	1,150,000	1,100,000	1,000,000	950,000	1,000,000	950,000	900,000	850,000	800,000
Trajectory emissions within target boundary	970,000	950,000	900,000	820,000	800,000	850,000	810,000	800,000	750,000	700,000
Emissions gap	130,000	200,000	200,000	180,000	150,000	150,000	140,000	100,000	100,000	100,000
Remaining cumulative emissions	8,350,000	7,380,000	6,430,000	5,530,000	4,710,000	3,910,000	3,060,000	2,250,000	1,450,000	700,000

Source: Elaborated by the authors.

4.3.3 Pros and Cons

The methodology aims to strike a balance between being simple and straightforward on the one hand and providing enough calculation precision and clarity about the necessary guardrails on the other. As such, it includes two requirements and one recommendation that were not present in the beta Claim, one additional calculation step and one additional guardrail.

It remains comprehensive and grounded in science by resorting to the principle of disclosing and respecting remaining cumulative emissions.

Below is an assessment of the pros and cons of this method:

Pros

- ✓ Cross-sector—applies to all companies.
- ✓ Companies can incorporate challenges and barriers into their approach to calculating emissions gaps.
- ✓ Trajectory emissions are reported for the Claim year only.
- ✓ Aligned with the foundations of science-based targets through remaining cumulative emissions.

Cons

- ✓ When opting for a non-linear approach, there is no future trajectory for stakeholders to monitor and plan for prospective emissions.
- ✓ The method may still be overly complicated.

4.3.4 Methodology application beyond intensity-based targets

Although the methodology is based on absolute emissions targets, it is applicable beyond those with minor adjustments. For intensity-based targets (tCO_2e/output, where output is a physical or monetary measure of the company's production level) the adaptation required is relatively simple as the SBTi provides a scope 3 emissions pathway for intensity targets, which requires a 7% yearly emissions reduction for the WB2 scenario. In this case, however, the calculation of metrics stipulated in absolute levels, such as the emissions gap, the maximum credit limit, and the remaining cumulative emissions would need to be multiplied by the relevant denominator, which would be assessed yearly for the Claim.

It must be noted that, in the scenario where companies increase their output (the denominator of the intensity fraction)—for example, doubling their output between the base year and the target year, the absolute emissions level will not observe the same degree of reduction as the intensity emissions. Indeed, it is a feature of intensity-based emissions metrics that, when output increases, absolute emissions increase. This is an outcome of any intensity-based SAT and not a specific feature of the suggested Scope 3 Claim methodology. Instead, what is a specific feature of the suggested methodology is that, when output increases, the amount of carbon credits required by the Claim will also increase.

For the engagement targets, the challenge is different. Here, measuring progress, or the lack thereof, requires information that are not normally publicly disclosed by companies. For example, typical engagement targets state that X% of the company's suppliers by spend in category 1 of scope 3 will have SBT approved by a certain fiscal year. For that target to be assessed, the company would need to disclose the names of the companies that compose that group of suppliers. Moreover, even if that information were disclosed, calculating a gap would require some sort of understanding of the relative weight of each supplier, making it unlikely that the current methodology could be easily adapted to engagement targets.

Finally, for mixed targets, to the extent that they include absolute or intensity-based targets, they could be addressed by the approach presented in this report or by its adaptation to intensity targets. The engagement component, as mentioned, is unlikely to be addressable by a simple variation of the approach in this report. One important consideration for the case in which companies with mixed targets are accepted as able to make a Scope 3 Claim, if the engagement component of their mixed target is not addressed by a specific Claim methodology, is that the overall emissions reduction to be achieved may be lower since part of the target is being left out of the Claim.

4.4 Methodology for defining the guardrails

This section presents the data analysis used for the development of guardrails 4—maximum emissions gap and 5—phase out year.

4.4.1. Maximum emissions gap (guardrail 4)

What is the maximum level for an emissions gap that should be required to stimulate scope 3 mitigation action while allowing companies to show effort in transitioning to net zero?

The maximum acceptable size of the emissions gap must be based on the inherent challenges that companies face to decarbonize their scope 3 in line with a science-aligned trajectory emissions curve.

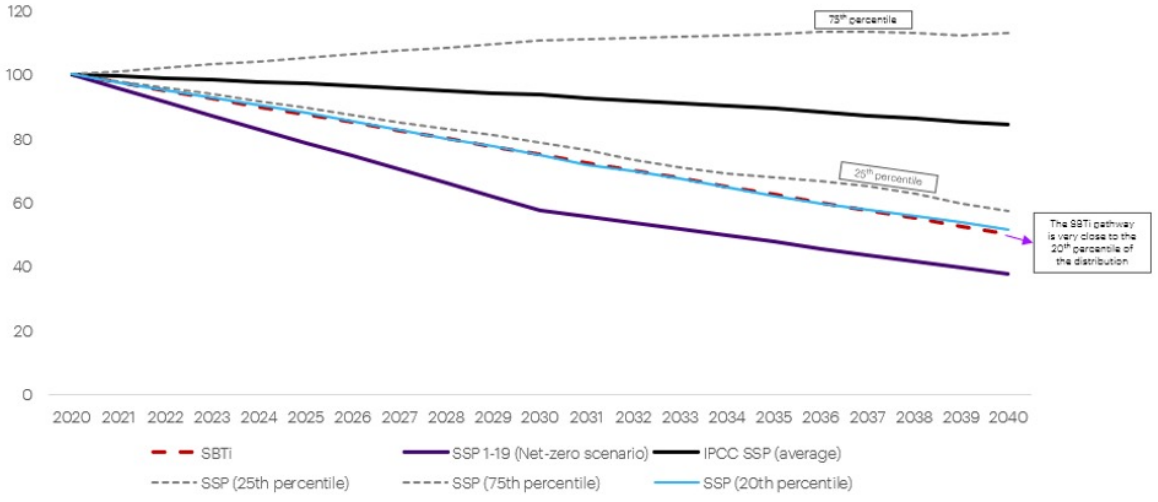
The first step was the study of the mitigation pathways in the Sixth Assessment Report of the IPCC (AR6) (12). The dataset[3] with over 693 thousand rows, where each row represents a specific scenario for a given model type, parameter set, output variable, region, and measurement unit, was initially filtered to include only tCO_2e as the output variable, for a set 1 of 9,760 scenarios. Then, it was further filtered to remove all scenarios except the SSP (Shared Socioeconomic Pathways), for a set 2 with 200 scenarios.

For both sets, scenarios without values for any year between 2020 and 2040 were removed, as well as all years beyond 2040. Then, an index equal to 100 was created for each scenario for the year 2020, so that all scenarios were starting from an equal basis. Finally, the following calculations were made for each set:

- Average scenario – a single row was calculated with the average value across observations for each year between 2020 and 2040.
- k^{th} percentile scenario – where k equals 20, 25 and 75. For each year from 2020 to 2040, the value closer to the relevant percentile of the distribution of values within that year was selected. The resulting k^{th} percentile is composed of the chosen values for all the years.

In Figure 7, the average, the 20th, 25th and 75th percentiles of AR6's Shared Socioeconomical pathways (SSP) emissions (tCO2e) from 2020 to 2040 were plotted against the SBTi's well-below 2° C pathway decarbonization ambition (i.e. 2.5% reduction per year).

The graph superimposes an SBTi target curve from 2020 to 2040 on mitigation pathways from the IPCC AR6, including an average, cross-pathway curve, a specific net-zero scenario and kth percentile curves:



Sources: IPCC AR6 and SBTi target setting tool.

[3] All datasets used in this study are presented in detail in the Appendix, section 6.2.

Figure 7. IPCC AR6 mitigation pathway curves and SBTi WB2°C emissions reduction pathway (2020-2040).

Source: elaborated based on (15).

The graph shows that all the IPCC AR6 SSP mitigation pathways present nearly-linear trajectories between 2020 and 2040. This pattern was also true for a broader assessment that included all the mitigation pathways available, showing that in all cases, trajectories reflecting a fine-grained view of mitigation curves which aligns with the SBTi line at some point, were not be found.

The graph also shows that the 20th percentile curve very closely follows the SBTi WB2 curve, implying that 80% of the SSP scenarios are above the SBTi pathway. In the analysis with all scenarios, 75% of the scenarios are above the SBTi curve. It can be concluded that the IPCC pathways cover a very broad set of assumptions and simulation methods to deliver a vast set of long-term decarbonization scenarios, but when zooming in on the short-term (from present to ~2040), most scenarios (including adopting the full range of scenarios and focusing on the SSP scenarios) yield nearly-linear trajectories, which makes it challenging to obtain the nuanced view (i.e.: a decarbonization curve whose behavior reflects fine-grained assumptions on technological barriers between the present and 2040) necessary to answer the questions posed here.

As a second step, the Mission Possible Partnership mitigation pathways (13) for seven hard-to-abate sectors were analyzed. The MPP data were standardized to 100 for the base year (2020) for all seven sectors. While the analysis relies on an MPP Average Sectoral Curve, the curves for the individual sectors are presented below for completeness. The data for each sector as well as an average sectoral curve were plotted against the SBTi's well-below 2° C emissions reduction commitment (i.e. 2.5% reduction per year) from 2020 to 2040 (Figure 8).

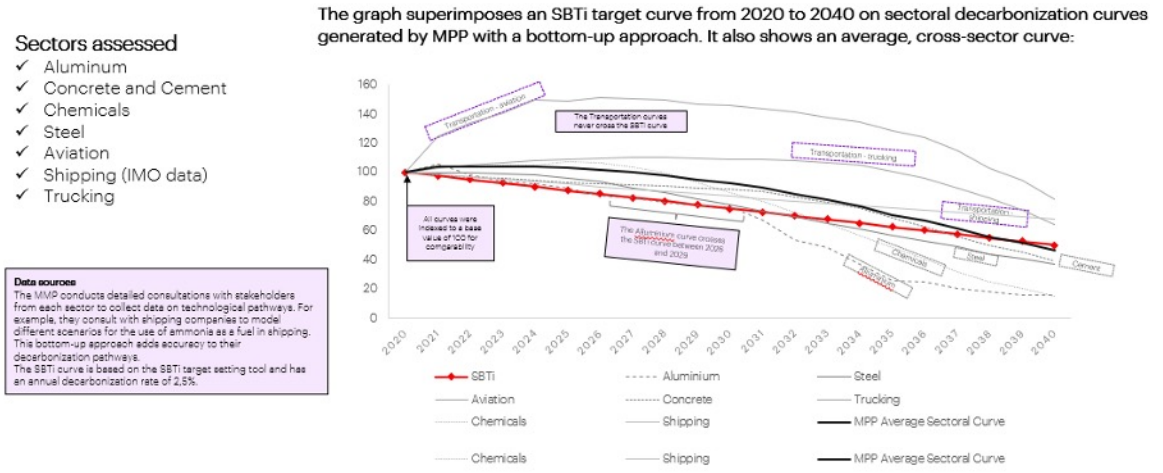


Figure 8. MPP sectoral decarbonization curves and SBTi WB2 ° C emissions reduction pathway (2020-2040).

Source: elaborated based on (13).

By comparing each sector's decarbonization curve with the SBTi WB2° C trajectory, the aviation, shipping, and trucking sectors showed the highest emissions gaps, while the other sectors had lower emissions gaps, including the aluminum sector with a gap that was close to zero from the early years. When looking at the MPP average sectoral decarbonization pathway, a tendency of an increasing emissions gap was seen until 2030, when the gap peaks at 24%. Then, a gap-closing trend emerges, with the gap fully closing by 2038. This shows that companies whose scope 3 emissions are largely dependent on these seven sectors would see, in average, a maximum gap of 24% of the trajectory emissions within target boundary.

The fact that the MPP data focuses on hard-to-abate sectors means that the conclusions above are conservative. With that in mind, the 24% result is interpreted as representing the maximum distance acceptable, between the present and the phase-out year, for scope 3 emissions to lie above a WB2 pathway. The 2038 result is interpreted as the year in which decarbonization barriers are overcome with respect to the WB2 scope 3 objectives.

These parameters were further assessed by looking at company level data from the SBTi 2022 Monitoring Report (18). The data cover the progress of companies in reaching their absolute contraction targets for scopes 1, 2 and 3. The expected progress on the most recent reporting year (t) was calculated as follows:

$$Expected\ progress\ (t) = expected\ \%\ reduction\ in\ target\ year \times \%\ of\ target\ timeframe\ elapsed\ (t)$$

Then, the expected reduction was compared with the reported reduction by the company for the reporting year. If the reported reduction in year t was greater than or equal to the expected reduction in year t, or a zero or negative gap compared to the expected progress, the company was deemed to be making progress. This analysis makes it possible to create filters for companies that are or are not making progress on their scopes 1 and 2 or scope 3 targets.

To verify if companies were making progress and the emissions gap in relation to the expected progress, the emissions gap was calculated for each company as a percentage of their linear trajectory emissions:

$$Emissions\ gap\ (t)\ = \frac{[1 - reported\ reduction\ (t)] - [1 - expected\ progress\ (t)]}{[1 - expected\ progress\ (t)]}$$

The analysis of the SBTi company-level data revealed that, among companies that were making progress for scopes 1 and 2, ~55% were making progress in scope 3, as shown in Figure 9. Thus, around 45% of these companies had emissions gaps and needed to take action for their situation.

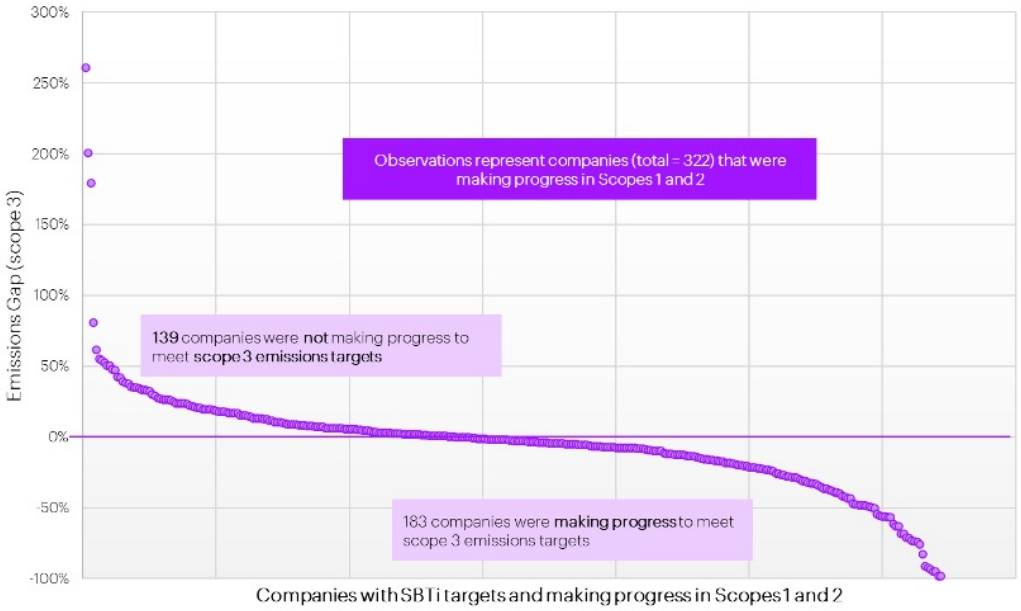


Figure 9 - Emissions gap of companies with SBTi targets and making progress towards their scope 1 and 2 targets.

Source: elaborated based on (18).

Zooming in on companies that were making progress in scopes 1 and 2 but not in scope 3 (total of 139), the scope 3 emissions gaps of companies lied between a maximum value of 260% of trajectory emissions and a minimum value of 0.2%. Within this range, 75% of companies had an emissions gap of 24% or less and 50% have an emissions gap of 11.6% or less, as in Figure 10.

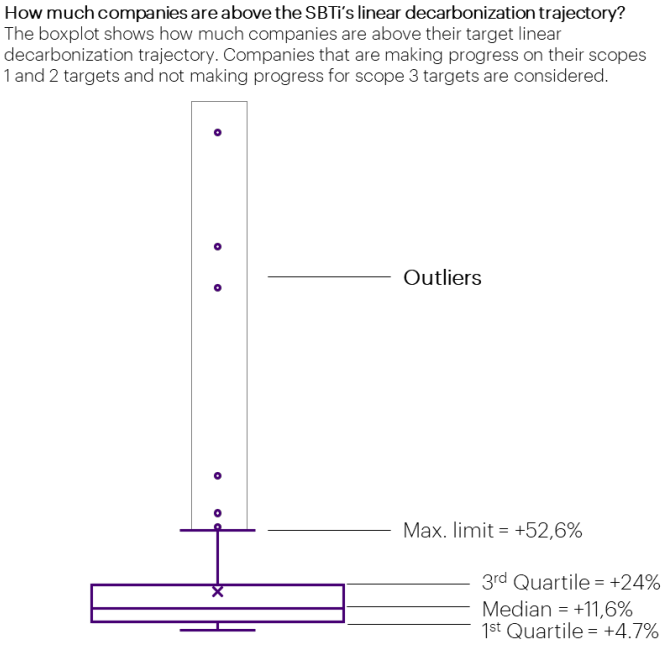


Figure 10 - Boxplot analysis on the scope 3 emissions gap of companies with SBTi targets and making progress towards their scope 1 and 2 target.

Source: elaborated based on (18).

Using the most common statistical definition of outliers, companies above the statistical maximum limit of 52.6% were considered outliers. Those that lie between the 3rd percentile (24%) and the maximum limit (53%) belong to the Q4 cluster, while those with gaps between 24% and 12% are in Q3, those with gaps between 11.6% and 4.7% are in Q2 and those with gaps lower than 4.7% are in Q1.

Based on the above, it is suggested that 24% could be used as the maximum acceptable emissions gap (an assessment of this is provided in section 4.5). This would address the challenges that companies face for scope 3 decarbonization while leaving out 25% of companies with the highest gaps.

4.4.2 Phase-out year (guardrail 5)

The MPP data can be used to identify the year in which the MPP average sectoral curve crosses with the SBTi WB2° C trajectory emissions. As seen in Figure 8, the average sectoral curve intersects with the SBTi curve in 2038. This means that, by 2038, the average projected trajectory for the seven hard-to-abate sectors no longer shows an emissions gap.

As mentioned earlier, it should be considered that the MPP data analysis may represent a conservative outcome for the phase-out year due to consideration of hard-to-abate sectors. Thus, the 2038 encompasses a phase-out year for those companies with easy and hard-to-abate scope 3 emissions.

Based on this, it is concluded that the use of carbon credits should phase-out by 2038.

4.4.3 Additional guardrails

Finally, a guardrail is necessary to ensure that companies show measurable results of their commitment to reduce scope 3 emissions. This guardrail will prevent companies from making a Claim when their reported emissions within target boundary are above a certain threshold. At the same time, the guardrail must allow for some fluctuation in emissions which can arise due to various unpredictable circumstances.

Hence, the suggestion is to adopt the trajectory emissions in the first Claim year as the overall cap of trajectory emissions in target boundary, so that companies can fluctuate their expected trajectory but not in an unrestricted manner. Additionally, it is essential that the trajectory emissions in the first Claim year are somehow limited. The suggestion is for the first Claim year trajectory emissions to be limited to those on the linear approach, so it is reassured that companies are presenting a descending emissions trajectory compared to their base year.

The guardrails are subjected to a sensitivity analysis that discusses the effects of each guardrail on distinct company cases to understand the effectiveness of the guardrails to ensure that the Claim objectives are being attained. Observation that (i) lie above the third quartile (that is, the 25% of observations with the highest values) and (ii) whose values are higher than 1.5 x interquartile range (where the interquartile range is the distance between the first and third quartiles) are considered outliers.

The threshold value that separates the outliers from the rest of the distribution, obtained using the definition in footnote 4.

[4] Observation that (i) lie above the third quartile (that is, the 25% of observations with the highest values) and (ii) whose values are higher than 1.5 x interquartile range (where the interquartile range is the distance between the first and third quartiles) are considered outliers.

[5] The threshold value that separates the outliers from the rest of the distribution, obtained using the definition in footnote 4.

4.5 Sensitivity analysis

This section presents a sensitivity analysis of the maximum emissions gap guardrail and a simulation of the impacts of the guardrails on typical company profiles.

4.5.1 Maximum emissions gap (guardrail 4)

Guardrail 4 limits the emissions gap of companies making a Claim to 24% of the trajectory emissions within target boundary. Its objective is to balance out the recognition of the challenges to scope 3 decarbonization and the need to limit companies from increasing their total emissions. To what extent is the value of 24%, derived from a sector-level analysis, targeting the expected set of companies? Are there other threshold values that can better strike the necessary balance?

To answer these questions, the following datasets were used:

- company-level data from the SBTi 2022 Monitoring Report (18) on emissions gaps;
- company-level data from the Transition Pathway Initiative (TPI, 2023) (28) on climate performance;
- company-level data from the Corporate Climate Responsibility Monitor (CCRM, 2024) (29) on climate performance; and
- CDP climate score (2023) (31) data.

Initially, the SBTi company-level data were partitioned into four clusters. Each cluster included 25% of observations (cluster 1 to cluster 4, where cluster 1 has the lowest emissions gaps values and cluster 4 the highest values), as in Table 2. This type of partitioning is a standard approach to understand the characteristics of a data distribution. For example, cluster 1 had emissions gap values ranging from 0% to 4.6%. Cluster 4, on the other hand, had gap values ranging from 24% to 260%, but then the outliers—companies with extremely high emissions gaps—were moved to a separate group, leaving the upper threshold for cluster 4 in 52.6%. All datasets used in this study are presented in detail in the Appendix, section 6.2.

Table 2 - Partition of company dataset into clusters.

	Number of companies	Minimum gap	Maximum gap
Cluster 1	35	0%	4.6%
Cluster 2	35	4.6%	11.6%
Cluster 3	35	11.6%	24%
Cluster 4	27	24%	52.6%
Outliers	7	52.6%	

Source: elaborated based on (18).

[6]All datasets used in this study are presented in detail in the Appendix, section 6.2.

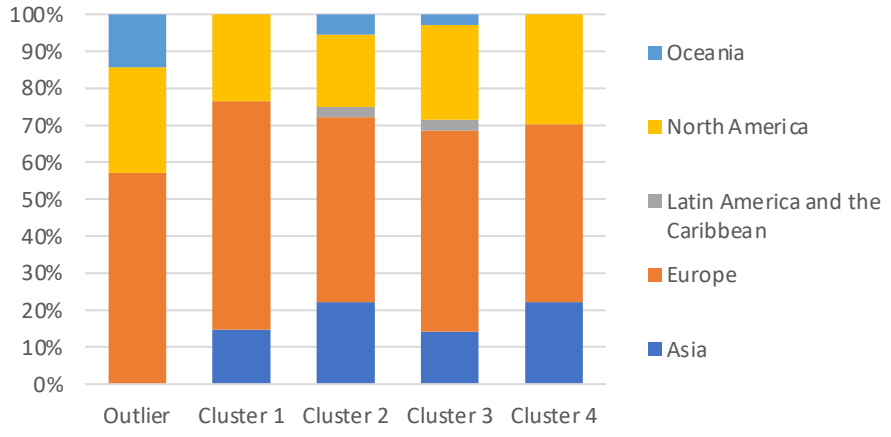


Figure 11 - Region distribution for clusters, SBTi companies and SBTi companies with a scope 3

Source: elaborated based on (18).

Next, the clusters were matched to other company-level data in search for evidence of climate performance. First, they were cross-referenced with the TPI database which has information on Management Quality (a qualitative indicator) and Carbon Performance (quantitative, based on emissions data). However, only a small subset of the companies (~15%) was present in the TPI data. For that subset, the Management Quality indicator had very little variation across companies, providing no added value to the analysis, and Carbon Performance data were not available for the matched subset of companies. Given these shortcomings, the TPI database was not further assessed.

Second, the clusters were also cross-referenced with the CCRM data, which provides qualitative indicators or companies' Transparency and Integrity in reducing their own emissions and in managing unabated and residual emissions. However, the report has a smaller sample size of only 51 companies and only one of those could be matched to the SBTi company-level data, so the CCRM data could not be used in the sensitivity analysis.

Third, the CDP climate score data for 2020-2022 were assessed. The climate scores are qualitative grades (D- to A, where A is the best) given to companies based on information self-reported to the CDP climate change questionnaire. A CDP climate score index was created to put the qualitative scores in a numeric scale: each score received an index from 1 to 8 (D- =1, D=2 [...], A=8). As a result, the scores could be averaged out by cluster among all companies and years. Confidence intervals with a 5% significance level were calculated for each cluster, denoted by the error bars in Figure 12.

Which limits the likelihood that the results are driven by sampling issues alone to 5%.

[7] Which limits the likelihood that the results are driven by sampling issues alone to 5%.

Figure 12 - Mean CDP climate score index by cluster, 2020-2022.

Source: elaborated based on (30).

Note: the error bars represent 95% confidence intervals (CI). The fact that all the CIs overlap means that the mean CDP climate score indexes are not significantly different among groups.

While at first sight the results might suggest that clusters 2 and 4 presented the highest overall climate performance, the confidence intervals show that the results are not statistically different among clusters. The absence of a statistically significant difference in climate performance with regards to the emissions gap clusters was further corroborated by a simple statistical regression[8].

Conclusions

- The analysis did not show a noticeable association between emissions gaps as measured by the SBTi Monitoring Report data and emissions and climate performance as measured by the CDP GHG emissions and climate scores data.
- The existing evidence did not indicate that different levels of climate performance can be identified for different levels of emissions gap, either 24%, 11.6% or other values.
- If anything, companies in clusters 2 and 4 might show superior climate performances, as opposed to companies in clusters 1 and 3, making it difficult to define a threshold that clearly separates out companies with higher from companies with lower performance indicators.

Limitations

- SBTi and CDP are voluntary frameworks, so companies in the datasets are those that have shown a minimum level of engagement. Therefore, the data are not representative of a broader universe of companies.
- The CDP data are self-reported by companies and compiled by the CDP for standardization and consistency. However, the data may or may not have been externally verified, so there may be a high level of heterogeneity in data quality.

4.5.2 Impact of guardrails on companies

8 A statistical regression of emissions gaps on the mean CDP climate score index was carried out with an intercept and a total of 81 observations. The resulting coefficient of determination, R2, was very close to zero at 0.0032 and the coefficient of the CDP climate score index had a p-value of 0.615, indicating a very low chance of a significant association between the variables.

This section explores potential impacts of the guardrails on company profiles. Do the guardrails give space for companies facing mitigation challenges to work on reducing scope 3 emissions? Could the guardrails give space for companies with good mitigation results to have a loser approach to scope 3 emissions?

To assess that, a three-step approach was employed: (i) a set of five company profiles was created. These are thought to be indicative of the typical characteristics of companies in the scope 3 decarbonization space and will be used to explore the implications of the guardrails. (ii) A maximum-stress scenario was created both for the beta Claim and for the suggested Scope 3 Claim to visualize how much companies making a Claim could emit in a worst-case scenario. (iii) Finally, by crossing (i) and (ii), it is possible to visualize how companies may be impacted by the guardrails.

Company profiles

The profiles were elaborated to reflect five possible scenarios of the evolution of a company's reported scope 3 emissions, as in Table 3.

Table 3 - Company profile definitions with rates of change in scope 3 emissions.

Profile 1	Rapid emissions increase	+4%/year
Profile 2	Emissions increase	+2%/year
Profile 3	Constant emissions	0%/year
Profile 4	Emissions reduction	-3%/year
Profile 5	Rapid emissions reduction	-5.25%/year

Source: Elaborated by the authors.

Every profile is assumed to face the same scope 3 target scenario: reduce scope 3 emissions by 50% by 2035, from a 2025 base year[9]. The companies are making their first Claim in 2026. The resulting scenarios of scope 3 target and emissions are as follows:

The 50% reduction target for scope 3 emissions was set for this representation, as it allows for clear visualization of the sensitivity analysis. It is aligned with the well-below 2° C pathway, as set by the Corporate Near-Term Tool (43).

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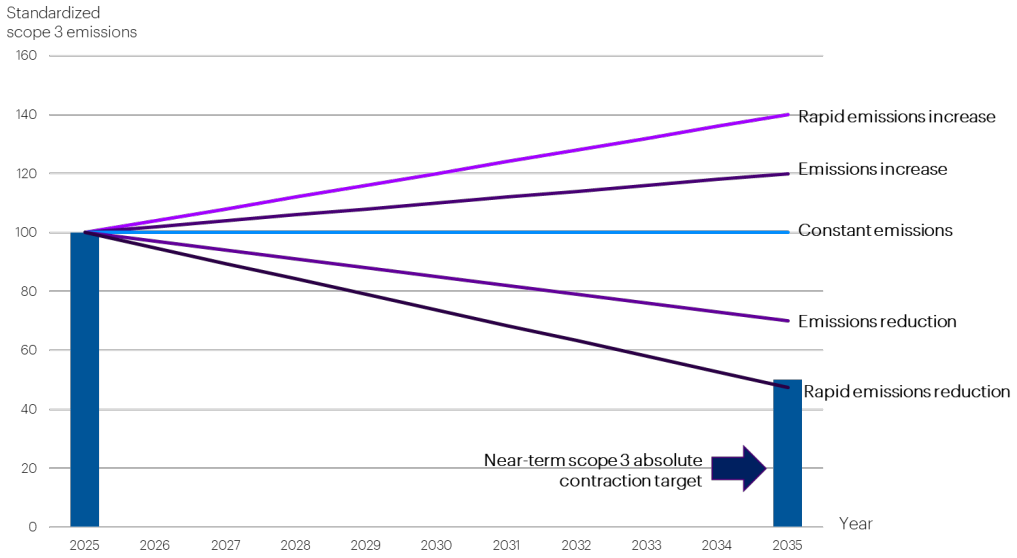


Figure 13 - Company profiles with base year scope 3 emissions, scope 3 near-term target, and future scope 3 reported emissions within target boundary.

Source: Elaborated by the authors.

The rapid emissions increase profile is used to represent companies facing important challenges to decarbonization and that may or may not be able to make a Claim at different years, depending on the Claim's methodology. The emissions increase, constant emissions and emissions reduction profiles are used to represent companies that are closer to the situation where they can make a Claim, if not at all years at least for a certain number of years. Finally, the rapid emissions reduction profile is used to represent a company that is unlikely to need to make a Scope 3 Claim but could nevertheless envisage a Claim under some future circumstances.

Maximum-stress scenarios

The beta Claim and the suggested Scope 3 Claim are stressed to their limits to show how much scope 3 emissions companies could report while making a Claim. For both scenarios, the scope 3 target is the same as in the company profiles: reduce scope 3 emissions by 50% by 2035, from a 2025 base year. The companies are making their first Claim in 2026.

For the beta Claim, the following guardrails were assumed:

- Maximum emissions gap = 50% of reported scope 3 emissions until 2029 and 25% from 2030.
- The emissions gap must decline over time, leading to its complete phaseout no later than 10 years after the first claim is made, or by 2035, whichever is the earlier.

For the suggested Scope 3 Claim, the following guardrails were assumed:

- In the first Claim year, the trajectory emissions level is the same as in the linear approach (guardrail 1).
- In subsequent Claim years, trajectory emissions may remain stable or fluctuate, but do not increase with respect to the first Claim year (guardrail 2).
- The remaining cumulative emissions are not depleted before their near-term target year (guardrail 3).
- The maximum emissions gap is 12% / 24% / 50% of the scope 3 trajectory emissions within target boundary in the Claim year (guardrail 4).
- The last year in which a Scope 3 Claim can be made is 2037 (guardrail 5).

Figure 14 presents the result for both scenarios and provides the sum of reported emissions over the period, which indicates the highest volume of emissions that companies making a Claim could potentially have

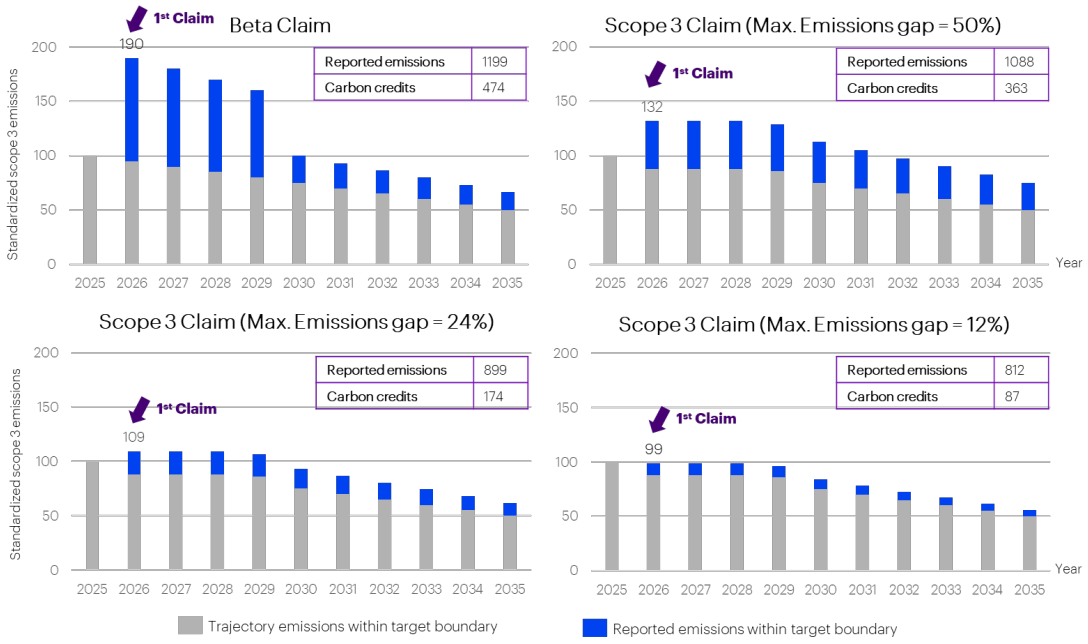


Figure 14 - Beta Claim and Scope 3 Claim comparison in the maximum stress case

Source: Elaborated by the authors.

Takeaways

- The comparison between the beta Claim and the suggested Scope 3 Claim, at the top row of Figure 14 where both scenarios have the same maximum emissions gap level (50%), singles out the effects of the guardrails.
    - The suggested guardrails are associated with a smoother reported emissions path, without the large jumps seen in the beta Claim, and with less space for an increase in emissions.
    - In the suggested Scope 3 Claim, the guardrails are associated with a lower scope 3 reported emissions trajectory over a 10-year period. This leads to a lower total volume of emissions: 899 as compared to 1199 in the beta Claim (25% less).
    - Also, the maximum possible increase in emissions with respect to the base year is 32% for the suggested Scope 3 Claim versus 90% for the beta Claim.
- The scenarios at the bottom of Figure 14 show how more restrictive maximum emissions gaps operate as compared to the beta Claim's 50% level.
    - All three scenarios—50%, 24% and 12%—are associated with a smooth reported emissions curve, without major jumps as in the beta Claim.
    - Whilst the 50% maximum emissions gap gives space to a substantial increase in emissions as compared to the base year (+32%), the 24% maximum emissions gap implies a more restrictive outcome, at only 9%.
    - The 12% maximum emissions gap does not allow for an increase in emissions with regards to the base year. In fact, it allows for at most a 1% decrease, which is a very restrictive scenario.

Impact of guardrails on company profiles

This section presents the comparative analysis for the five company profiles. In the presentation of the first company profile, a detailed explanation of the graphs and their interpretation is provided.

Rapid emissions increase profile. The case of a company that is increasing its emissions at 4% per year aligns with the situation of companies whose scope 3 relies heavily on air transportation, for example, and that need to increase the use of those transportation services. As shown in the Mission Possible Partnership (13) data, the aviation industry emissions trajectory is subject to high barriers to decarbonization, so companies whose emissions are dependent on that sector can face significant barriers to scope 3 mitigation.

What is in the graph?

- The graph superimposes the company emissions profile with the maximum-stress scenario for each version of the Claim.
- The box inside the graph presents the following information:
- Total volume of the reported scope 3 emissions for the 10-year period, which is the same for both Claim scenarios.
- Total cumulative emissions for the period, the same for both scenarios.
- Total volume of carbon credits required, a function of the emissions gaps and of the different guardrail sets used in each scenario.
- Required reductions, equal to the total volume of scope 3 emissions that would need to be reduced for the company to be able to make a Claim at every year.

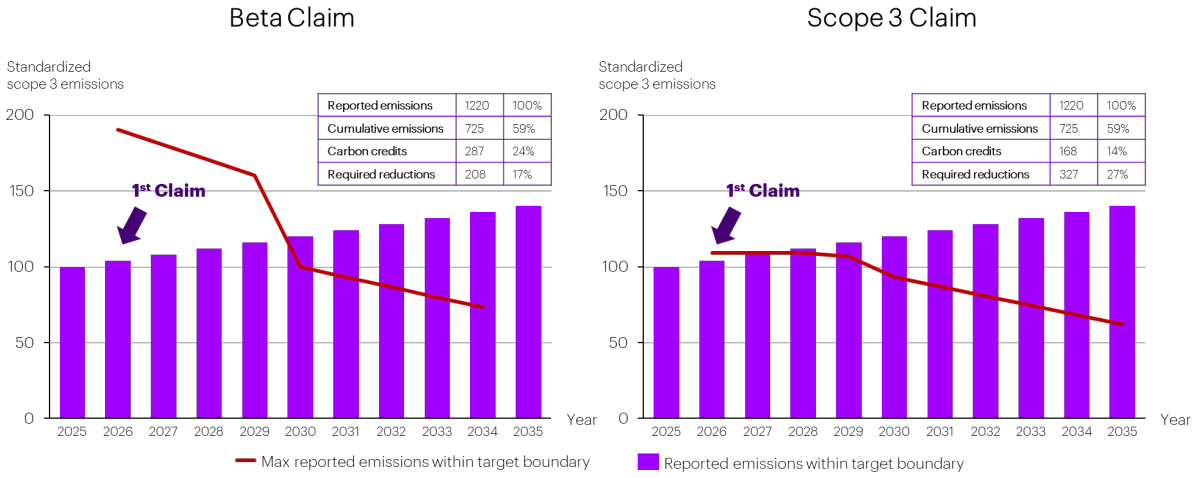


Figure 15 - Beta Claim and Scope 3 Claim comparison in the rapid emissions increase profile.

Source: Elaborated by the authors.

How to interpret the results?

- In the beta Claim, the company is able to make the claim until 2029. During that period, it can increase its scope 3 emissions substantially and still be able to make a Claim, which implies that the advantage of being engaged in the Claim is counterbalanced by the disadvantage of allowing for higher emissions. By 2030, however, due to the change in the maximum emissions gap (from 50% to 25% of reported emissions within target boundary—red curve), the company would need to reduce emissions to be able to make a Claim.
- In the suggested Scope 3 Claim, the company is able to make the Claim until 2027. During that period, it has almost no room to increase scope 3 emissions, implying that the advantaged of being able to make the Claim is reinforced by the need to keep scope 3 emissions under control. By 2028, due to the increase in its emissions, the company is unable to fulfill the guardrails and thus to make a Claim.
- If the company were to reduce its scope 3 emissions to make a Claim every year, it would have to reduce 208 in the beta Claim (17% of the total reported emissions) or 327 in the suggested Scope 3 Claim (27%).

Takeaways

- In general, this company profile may achieve substantial emissions reductions by engaging early on with the suggested Scope 3 Claim. However, with a 27% overall required reduction, this profile could become unable to make a Claim towards the mid-years.
- In both versions of the Claim, this company profile has the potential to be engaged in early years, but it needs to engage its supply chain to make substantial reductions relatively early on to continue being able to make a Claim.
- In the beta Claim, the company has space to substantially increase its scope 3 emissions in first four years. If this happens, then it will be much more difficult for the company to reduce emissions in 2030 and after to continue being able to make the Claim.
- In the suggested Scope 3 Claim, the company has very limited room to increase emissions and needs its supply chain to start making reductions from 2028. The reductions required become substantial from 2030 onwards, suggesting that the company would be very challenged to be able to stay in the Claim in later periods.

Emissions increase profile.

This profile represents companies that are increasing emissions at 2% per year, thus not making progress towards in their scope 3 targets. In the short-term (2026-2030), this profile's emissions are on average 25% higher than the linear decarbonization trajectory. This is comparable to a subset of approximately 6% of companies in the SBTi database (18) that were making progress in scopes 1 and 2 but had scope 3 emissions gaps 20-30% above the linear decarbonization trajectory for the years 2021-2022.

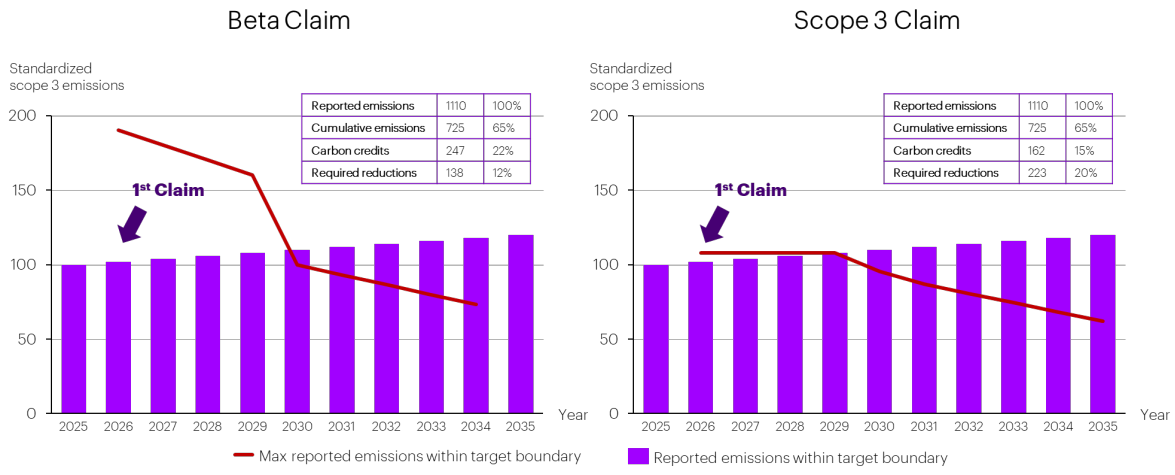


Figure 16 - Beta Claim and Scope 3 Claim comparison in the emissions increase profile

Source: Elaborated by the authors.

Takeaways

- In general, this company profile may achieve important emissions reductions by engaging early on with the Scope 3 Claim. The fact that it is given some (limited) room for emissions fluctuations up to 2028 is also an advantage. With a 20% overall required reduction, this profile would need to make substantial effort to remain able to make a Claim towards the late years.
- In comparison to the rapid emissions increase profile, there are the following differences:
    - The required emissions reductions to stay in the Claim are lower, so there is a higher chance that this company profile obtains results towards the mid-years.
    - However, for the beta version, there is even more room to increase emissions in the first four years (2025-2029).

Constant emissions profile.

This profile represents companies that are neither increasing nor reducing emissions, thus not making progress towards in their scope 3 targets. For comparison, in the SBTi database (18), approximately 11% of companies had between a 2% reduction and a 2% increase in reported emissions relative to their base year.

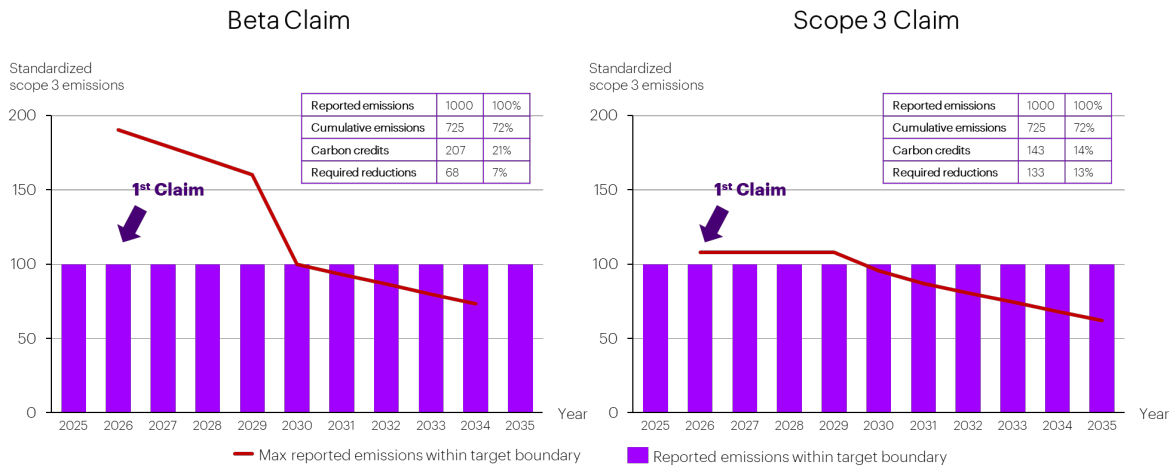


Figure 17 - Beta Claim and Scope 3 Claim comparison in the constant emissions profile.

Source: Elaborated by the authors.

Takeaways

- In general, the suggested version of the Scope 3 Claim gives space for this company profile to reach the necessary level of emissions reductions (13%) in order to make a Claim across the whole period, with some leverage for fluctuations until 2029.
- In comparison to the rapid emissions increase profile, there are the following differences:
    - The required emissions reductions to stay in the Claim are substantially lower.
    - The suggested Scope 3 Claim leaves some room for emissions fluctuations until 2029, then requires increasing emissions reductions.
    - However, for the beta version, there is even more room to increase emissions in the first four years (2025-2029).

Emissions reduction profile

This profile represents companies that are reducing emissions but not completely aligned with their scope 3 targets. These companies have emissions that are on average 17.5% higher than the linear decarbonization trajectory. For comparison, in the SBTi database (18), approximately 10% of companies making progress for scopes 1 and 2 had emissions 10-20% higher than their linear decarbonization trajectory for the years 2021-2022.

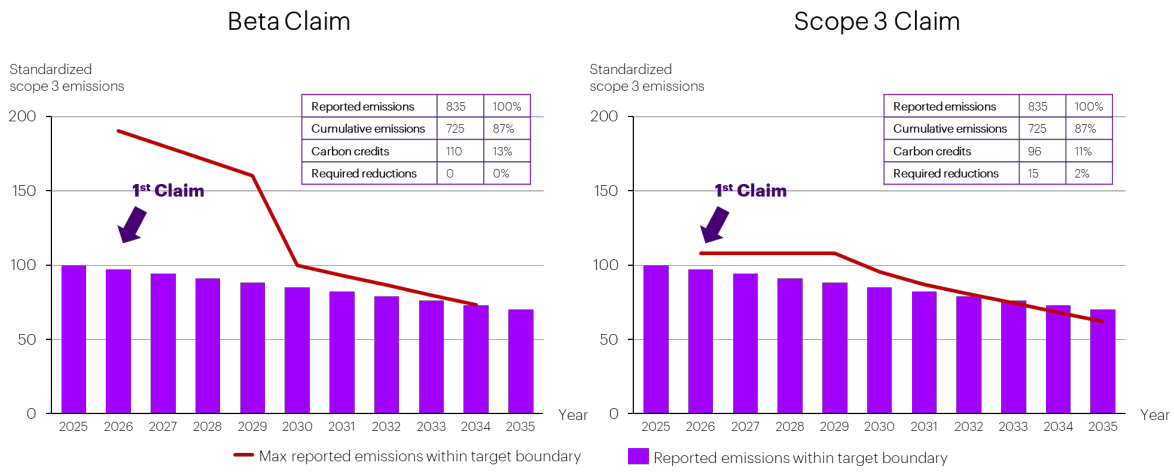


Figure 18 - Beta Claim and Scope 3 Claim comparison in the emissions reduction profile.

Source: Elaborated by the authors.

Takeaways

- In general, the suggested version of the Scope 3 Claim provides a reasonable framework for this company profile to reach the necessary level of emissions reductions (2%) in order to make a Claim across the whole period, with good leverage for fluctuations until 2031. The Claim could give some space for the company to increase emissions in the early years.
- In both versions of the Claim, this company profile has limited need to make a Claim until 2030. Then, it has the potential to be engaged during most of the remaining period.
- In the beta Claim, the company has a lot of space to increase its scope 3 emissions leading up to 2030 (up to 36%) and still be able to make a Claim. However, if the company does increase their emissions, then it will be much more difficult for it to continue being able to make the Claim after 2030.
- In the suggested Scope 3 Claim, the company has some room to allow for emissions fluctuations (up to 8%) until 2031. The company needs its supply chain to start making further reductions (as compared to the trajectory on the graph) from 2032.

Rapid emissions reduction profile

This profile represents companies that are making progress toward their scope 3 targets, with an annual reduction of 5.25%. These companies have emissions approximately 2% lower than their linear decarbonization trajectory. For comparison, in the SBTi database (18), approximately 5% of companies making progress for scopes 1 and 2 had a comparable profile in the years 2021-2022.

It should be noted that companies in this profile are candidates for another VCMI Claim, the Carbon Integrity Claim, which applies to companies not facing challenges to mitigate emissions. The Carbon Integrity Claim requires that companies have lower emissions than in their base year, are on track to reach their near-term targets and fulfill other requirements. To the extent that a Scope 3 Claim applies to companies that are facing challenges to mitigate scope 3 emissions, companies in this profile are unlikely to be candidates for a Scope 3 Claim.

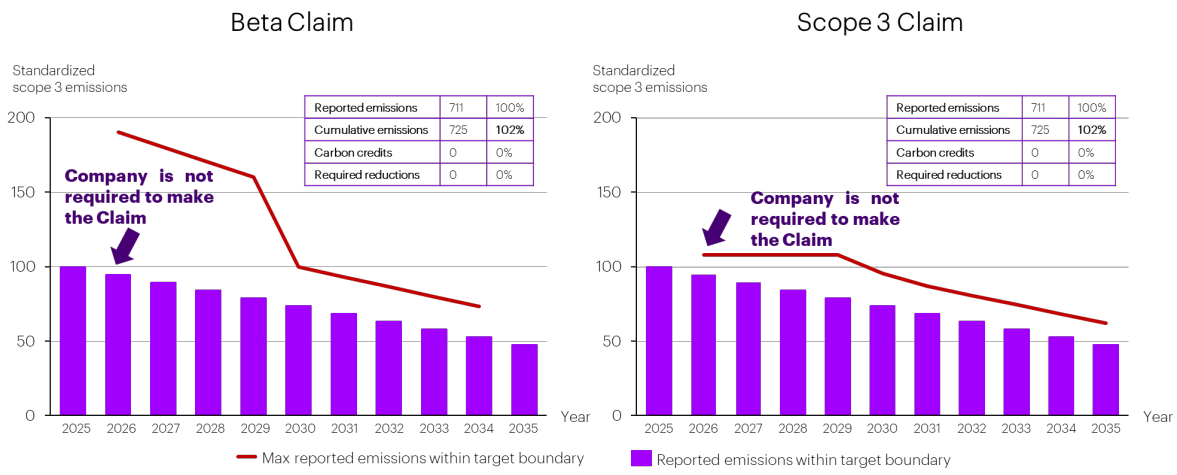


Figure 19 - Beta Claim and Scope 3 Claim comparison in the rapid emissions reduction profile.

Source: Elaborated by the authors.

Takeaways

- In general, this company profile does not need to make a Scope 3 Claim, unless new decarbonization barriers appear in the future. Companies in this profile are likely to be looking at a Carbon Integrity Claim.
- In comparison with the emissions reduction profile:
  - This company has no need to make a Claim at any time as it is already in line with reaching its target.
  - In spite of that, the availability of a Scope 3 Claim gives room for possible future emissions increases (with respect to the trajectory on the graph) to be accommodated by a Claim.
  - In the beta Claim, the company has a lot of space to increase its scope 3 emissions (with respect to the trajectory on the graph) over the entire period and still be able to make the Scope 3 Claim.
  - In the suggested Scope 3 Claim, the company has more room to increase emissions (with respect to the trajectory on the graph) across the whole period while still being able to make a Claim (up to 29% increase possible).
  - Even if this company profile has space to increase emissions and still be able to make a Scope 3 Claim, this company is also given space to maintain its emissions reduction trajectory and make a Carbon Integrity Claim.

Conclusions

- Companies are in almost all cases able to make a Claim in the initial years.
- Then, depending on their profile, they are either able to continue making a Claim (companies reducing emissions) or no longer able (companies not reducing emissions). The longer a company is able to make a Scope 3 Claim the more it will engage with the process of assessing its emissions gap on a yearly basis.
- There is a potential trade-off between making a Scope 3 Claim available to companies that are on an increasing emissions trajectory versus making it available to companies that are on track to reach their targets. Company profiles at the two extremes—rapid increase and rapid reduction—could be impacted by the Claim in different ways:
  - The rapid increase companies may be given room for emissions reductions, although they face a substantial challenge to be able to continue making a Claim.

    - The rapid reduction companies are likely to not be looking at a Scope 3 Claim as they are good candidates for a Carbon Integrity Claim. However, the possibility of a Scope 3 Claim still gives room for these companies to increase emissions up to a certain level and be able to make a Scope 3 Claim.
- Companies in the middle profiles—increasing, constant, and reducing emissions—are the ones most likely to make the Claim as the level of effort required for them to remain able to make a Claim is less substantial.
    - Those in the increasing emissions profile have limited leverage for emissions fluctuations.
    - Companies in the constant emissions and in the emissions reduction profiles are given room for emissions fluctuations.

Those with constant emissions and those with declining emissions are subject to the best equilibrium between leeway for fluctuating emissions (but not for a substantial rise) and space to implement decarbonization efforts.

Limitations

- The company profiles are only indicative of the typical characteristics of relevant companies and may not be fully representative of the relevant universe of companies.
- The scenarios mentioned in the analysis are hypothetical and may not materialize depending on a several factors, including:
    - Extent to which companies are aware of the Scope 3 Claim;
    - Landscape of alternative frameworks and methodologies;
    - Evolution of structural barriers to decarbonization.

5 | Recommendations and Future Considerations

The methodology advanced in this report has undergone more than three rounds of reviews and evaluations. The process included sector- and company-level data assessments, incorporation of feedback from multiple stakeholders, and thorough review and discussion of draft scenarios. Consequently, it provides a robust foundation for the refinement of the beta Scope 3 Claim.

Given the VCMI's statement that a full launch of the Scope 3 Claim will occur in early 2025, it is suggested that the content of this report be summarized for presentation to stakeholders during the public consultation, and that the feedback be incorporated into the material. Additionally, it is recommended that the main features of the approach be tested with individual stakeholders in small group discussions to gather reactions, insights, and further refinements. This will ensure that the final outcome is as lean and effective as possible.

Finally, the sector-level pathways that are being developed by the SBTi for sectors such as electricity; cement; forests, land and agriculture; and others, need to be closely monitored as companies are expected to rapidly migrate to those methodologies.

6 | Appendix.

6.1 Extensive documentation of methodologies

The first step of the study was to collect information on methodologies, standards, codes of practice and tools available to help companies define their decarbonization journeys. A total of thirteen decarbonization methodologies ranging from reports on state of the market to frameworks establishing mitigation targets were assessed to identify best practices and implications to the Scope 3 Claim, as summarized in Table 4.

Table 4 - Documents analyzed and summarized in the assessment.

Categories	Organization	Document (with link)
VCMI Claim Methodologies.	VCMI	Claims Code of Practice (2023) (4)
	VCMI	Scope 3 Flexibility Claim (2023) (2)
Target setting and Emission Accounting.	SBTi	Science-Based Target Setting Manual (2024) (32)
	SBTi	Pathways to Net-Zero: SBTi Technical Summary (2021) (11)
	SBTi	Foundations of Science-based Target Setting (2019) (10)
	UNFCCC Paris Agreement	Article 6.2. Manual for the accounting, reporting and review of cooperative approaches (2023) (33)
	GHG Protocol	Scope 3 Accounting and Reporting Standard (2023) (6)
Decarbonization pathways.	IPCC	IPCC AR6 Scenarios Database (2022) (15)
Market Views.	MSCI	Using carbon credits to meet corporate climate targets (2023) (9)
	IEA	Net-zero by 2050 (2022) (20)
Regulation and Disclosure.	CDP	Corporate Environmental Action Tracker Methodology (2022) (16)
Net-zero Guidelines.	ISO	Net-zero Guidelines (2022) (34)
	UTS	Sectoral Pathways to Net-zero Emissions (2020) (21)
Carbon Credits.	IETA	Guidelines for high integrity use of carbon credits (2024) (17)

Source: Elaborated by the authors.

Each document is summarized below, including a general description of its contents, pros and cons and findings.

6.1.1 VCMI Claims Code of Practice.

Table 5 - Summary of the VCMI Claims Code of Practice (2023) (4)

Objective	Provide guidance to companies and non-state actors on the credible use of carbon credits and how to communicate their use as part of science-aligned net-zero decarbonization pathways.
Summary of the methodology	1. Comply with the Foundational Criteria. 2. Select a Claim and demonstrate progress towards emissions reduction targets. 3. Meet the required carbon credit use and quality thresholds. 4. Obtain third-party assurance following the VCMI Monitoring, Reporting and Assurance (MRA) Framework.
Guiding Principles	• High Ambition. • High Integrity.
Pros and cons	Pros: • Decarbonization efforts and mitigation hierarchy as a requirement. • Guidance as to what constitutes a 'high quality' carbon credit. • Claims will be verified by third parties. • Claims support companies above and beyond their emission targets for Carbon Integrity Claims. Cons: • High cost of scopes 1 and 2 emissions assurance for companies. • Claims do not consider the sector specificities of high-emitting sectors.
Findings	• Based on science-aligned targets to contribute to reaching net-zero emissions no later than 2050. • Minimizes risk of greenwashing by assessing the quality of carbon credits via the ICVCM Core Carbon Principles and a 3rd party verification. • Holistic approach incorporating an evaluation of companies' current and target greenhouse gas (GHG) emissions as well as financial allocation, governance, and strategy towards meeting an emissions reduction target.

Source: Elaborated by the authors.

Methodology deep dive

Key Insights

- VCMI's Claims build upon reference frameworks such as the GHG Protocol for emissions inventories, SBTi for emissions reduction targets, and ICVCM for the assessment of carbon credit quality.
- Any claim requires companies to demonstrate progress towards meeting their emissions reduction targets, which can be done on an absolute or intensity basis.
- The carbon credits within the Carbon Integrity Claims do not count as internal emissions reductions that a company undertakes to meet its own decarbonization targets.
- VCMI does not differentiate between reduction or removal credits within the assessment of Carbon Integrity Claims.

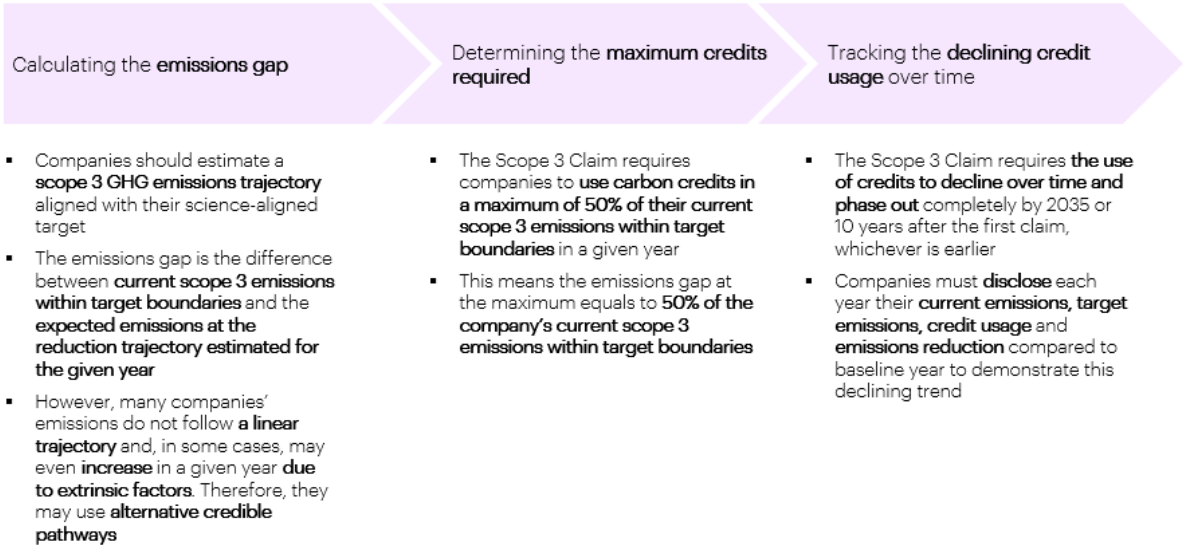
6.1.1 VCMI Scope 3 Claim.

Table 6 - Summary of the Beta version of Scope 3 Claim (2023) (2).

Objective	Support companies that currently face Scope 3 emissions reduction challenges to return to the emissions reduction trajectory and given them space to make progress towards meeting their near-term targets.
Summary of the methodology	1. Comply with the Foundational Criteria. 2. Make progress towards meeting scopes 1 and 2 emissions reduction targets. 3. Use high-quality carbon credits to take responsibility for scope 3 emissions gap. 4. Disclose all information required on obtaining third-party assurance.
Guiding Principles	• High Ambition. • High Integrity.
Pros and cons	Pros: • Ensures companies have maximized efforts to reduce their scope 3 emissions (via guardrails). • Creates demand for carbon credit and facilitates growth and development of the Voluntary Carbon Market. • Gives space for action over inaction. Cons: • Potential perception of disincentivizing companies' internal decarbonization action. • Companies could significantly increase their scope 3 emission up to 2030 under the 50% flexibility threshold.
Findings	• Many companies are facing challenges to meet their scope 3 emissions reduction targets. • The claim is designed to help companies return to the emissions reduction trajectory. Scope 3 emissions are often the largest part of their carbon footprint but the hardest to control directly. • To enable the Scope 3 Claim, companies must determine their scope 3 emissions gap and the maximum number of credits that need to be purchased and retired.

Source: Elaborated by the authors.

Methodology deep dive



Key Insights

Technical difficulties and concerns arise when performing these calculations:

- How to determine when a company is making progress towards meeting its science-aligned target in the interim years between base year and target year.
- The 50% flexibility threshold may not align with 1.5° C pathway as companies can significantly increase their scope 3 emissions.
- The 10-year phase-out is too distant to act as an effective guardrail against companies using the Scope 3 Claim in the short to medium term as the rule for carbon credit uses will most likely change given the rapidly evolving climate science and regulation.

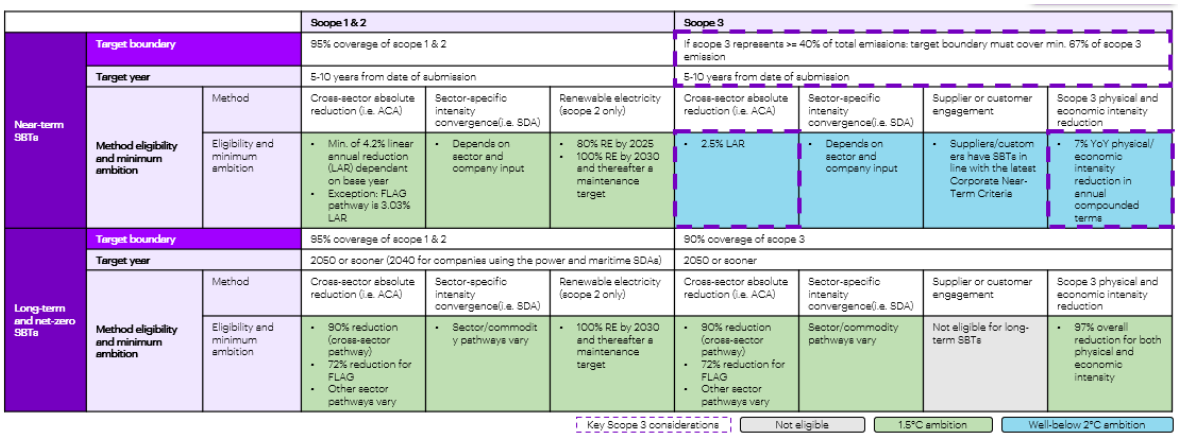
6.1.3 SBTi – Setting science-based targets.

Table 7 - Summary of the SBTi – setting science-based targets (2024) (32).

Objective	Help companies set GHG emissions reduction targets aligned with limiting global temperature rise to 2° C
Summary of the methodology	1. Commit to setting science-based targets. 2. Develop near-term and long-term science-based targets. 3. Submit target for validation. 4. Announce the target. 5. Disclose progress. 6. Target recalculation protocol.
Guiding Principles	• Value chain net-zero achievement. • Paris Agreement and Sustainability Development Goals aligned. • Mitigation Pathways aligned to 1.5oC. • Economic feasibility of business models under net-zero scenario.
Pros and cons	Pros: • Clear and science-based pathway. • Credible and standardized process. • Robust and defensible as they are grounded in climate science. • Enhances transparency and accountability around a company's climate action. Cons: • Availability and quality of GHG emissions data. • Base year choice can be a matter of strategic behavior, despite guardrails in place. • Some SBTs may not be ambitious enough. • Complex and resource-intensive on setting Scope 3 emission targets. • Does not provide mechanisms to ensure expected emissions reduction.
Findings	• SBT shows companies how much and how quickly they need to reduce their GHG emissions to prevent the worst effects of climate change. • A near-term SBT ensures that companies are taking short term action while a long-term target serves as a north-star for long-term strategic and investment decisions. • SBTi requires company to disclose progress annually providing visibility on how the climate strategy is being implemented and providing transparency on progress against targets.

Source: Elaborated by the authors.

Methodology deep dive



			Scope 1 & 2			Scope 3			
Near-term SBTs	Target boundary		95% coverage of scope 1 & 2			If scope 3 represents >= 40% of total emissions: target boundary must cover min. 67% of scope 3 emission			
	Target year		5-10 years from date of submission			5-10 years from date of submission			
	Method eligibility and minimum ambition	Method	Cross-sector absolute reduction (i.e. ACA)	Sector-specific intensity convergence(i.e. SDA)	Renewable electricity (scope 2 only)	Cross-sector absolute reduction (i.e. ACA)	Sector-specific intensity convergence(i.e. SDA)	Supplier or customer engagement	Scope 3 physical and economic intensity reduction
		Eligibility and minimum ambition	• Min. of 4.2% linear annual reduction (LAR) dependant on base year • Exception: FLAG pathway is 3.03% LAR	• Depends on sector and company input	• 80% RE by 2025 • 100% RE by 2030 and thereafter a maintenance target	• 2.5% LAR	• Depends on sector and company input	• Suppliers/customers have SBTs in line with the latest Corporate Near-Term Criteria	• 7% YoY physical/economic intensity reduction in annual compounded terms
Long-term and net-zero SBTs	Target boundary		95% coverage of scope 1 & 2			90% coverage of scope 3			
	Target year		2050 or sooner (2040 for companies using the power and maritime SDAs)			2050 or sooner			
	Method eligibility and minimum ambition	Method	Cross-sector absolute reduction (i.e. ACA)	Sector-specific intensity convergence(i.e. SDA)	Renewable electricity (scope 2 only)	Cross-sector absolute reduction (i.e. ACA)	Sector-specific intensity convergence(i.e. SDA)	Supplier or customer engagement	Scope 3 physical and economic intensity reduction
		Eligibility and minimum ambition	• 90% reduction (cross-sector pathway) • 72% reduction for FLAG • Other sector pathways vary	• Sector/commodity pathways vary	• 100% RE by 2030 and thereafter a maintenance target	• 90% reduction (cross-sector pathway) • 72% reduction for FLAG • Other sector pathways vary	Sector/commodity pathways vary	Not eligible for long-term SBTs	• 97% overall reduction for both physical and economic intensity

Key Scope 3 considerations | Not eligible | 1.5°C ambition | Well-below 2°C ambition

Key Insights

- Companies can decide on the timing of their target submission to the SBTi. For early entrants, the base year will be further away from the target year, while for late entrants the opposite will happen. When the base year is closer to the target year (late entrants), the SBTi requires a steeper decarbonization slope. This allows for different entry points to be in line with cumulative emissions. It also implies that, for late entrants, remaining cumulative emissions will be lower than for early entrants (18; 16).
- If a company's scope 3 emissions within target boundaries are 40% or more of total emissions, these emissions must be included in the company's near-term science-based targets. The scope 3 target boundary must collectively cover at least two-thirds (67%) of the company's total reported and excluded scope 3 emissions.
- The minimum ambition for scope 3 near-term SBTs using the Absolute Contraction Approach (ACA) is 2.5% linear annual reduction rate to align with a well-below 2° C pathway and 7% year-on-year reduction in physical/economic intensity.
- There is no confirmed approach for when companies reach the year of their near-term targets. When this happens, they will probably be required to evaluate progress against the target, update or set new targets according to the applicable guidance available at that year.
- The SBTi claims that broad target boundaries and ambition are required for companies to make credible near-term and net-zero commitments. Nevertheless, the standard acknowledges that these efforts should be counterbalanced as there are significant challenges faced by companies when decarbonizing their scope 3 (13).
- The SBTi gives companies the opportunity to face those challenges on the near-term, by allowing companies to (i) present scope 3 targets that do not cover all material scope 3 emissions but at least 67% of them as well as (ii) choose between a less restrictive emissions pathway (i.e. limiting warming to well-below 2° C) and a most restrictive emissions pathway (i.e. limiting warming to 1.5° C) when presenting their targets (18; 4).
- For the long-term science-based target, companies are required to present scope 3 targets that cover all material scope 3 emissions (90% of their inventory) as well as align to the limiting warming to 1.5° C scenario. Additionally, companies may opt for engagement and emissions intensity targets, what provides room for adjustments for scope 3 targets in companies, especially for those that are prioritizing growth (4).

Table 8 - Different target-setting methods under the SBTi.

	Absolute contraction approach (ACA)	Physical intensity target (Sectoral Decarbonization approach; SDA)	Economic intensity targets (Greenhouse Gas Emissions Per Unit of Value Added; GEVA)	Supplier or customer engagement target
Approach	ACA sets an equal absolute percentage emissions reduction requirement for all companies, regardless of their characteristics.	SDA sets targets based on sector-specific decarbonization pathways aligned with the Paris agreement goals. It considers sector-specific characteristics and convergence towards a common emissions intensity by 2050.	GEVA sets targets based on a company's emissions intensity per unit of inflation-adjusted gross profit, using an economy-wide emissions intensity pathway.	Supplier or customer engagement approach focuses on reducing emissions in a company's value chain.
Scopes	Scopes 1, 2 and 3. 67% companies use ACA for scope 3 (14).	Primarily designed for scopes 1 and 2, and scope 3 if the specific category is covered by the methodology.	Scope 1, 2 and 3.	Scope 3.
Data	Only requires a company's total emissions forecast.	Detailed data on a company's activities, emissions, and growth projections by sector.	Company-specific emissions intensity and gross profit data.	Detailed tracking and management of supplier/ customer emissions data and target progress.
Flexibility	One-size-fits-all approach regardless of company characteristics.	Allows for differentiated decarbonization pathways across sectors.	More suitable for companies with diverse business activities.	Addresses the challenge of directly controlling scope 3 emissions but requires extensive value chain engagement.

Source: Elaborated by the authors.

6.1.4 Greenhouse Protocol Scope 3 Standard.

Table 9 - Summary of the GHG Protocol Corporate Value Chain (scope 3) Accounting and Reporting Standard (2023) (27).

Objective	Provide requirements and guidance for companies and other organizations to prepare and publicly report a GHG emissions inventory that includes indirect emissions resulting from value chain activities (i.e., scope 3).
Summary of the methodology	• Define business goals. 1. Review accounting and reporting principles. 2. Identify scope 3 activities. 3. Set the scope 3 boundary. 4. Collect data. 5. Allocate emissions. 6. Set a target (optional) and track emissions over time. 7. Assure emissions (optional). 8. Report emissions.
Guiding Principles	• Relevance. • Completeness. • Consistency. • Transparency. • Accuracy.
Pros and cons	Pros: • One of the most widely recognized corporate standards globally. • Flexibility to companies according to their sector, data availability etc. • Regular updates and revisions to ensure continuous improvement. Cons: • Can be complex to implement for organizations with limited expertise. • Resource intensive, which may be prohibitive for smaller organizations. • Optional assurance process. • Does not require companies to set a target.
Findings	• Being one of the most widely recognized and used standards, the GHG protocol provides a common and comparable framework for organizations to report their emissions. • The GHG Protocol has a comprehensive coverage of emissions by providing dedicated standards for scope 1, 2 and 3 emissions. • Development of sector-specific guidance documents providing tailored instructions for specific industries, ensures emissions accounting reflects sectoral nuances and best practices. • As the step of setting emissions reduction targets is optional, the methodology does not ensure companies are working towards reaching Net-zero by 2050.

Source: Elaborated by the authors.

Methodology deep dive

Steps	Key requirements
2 Review Accounting & Reporting Principles	▪ Follow the principles of **relevance, completeness, consistency, transparency, and accuracy**
4 Set The Scope 3 Boundary	▪ Account for **all scope 3 emissions** and disclose and justify any **exclusions** ▪ Account for emissions from each **scope 3 category** (beside) according to the minimum boundaries
7 Set A Target (Optional) & Track Emissions Over Time	▪ Choose a scope 3 **base year** and justify the selected year ▪ Develop a **base year emissions recalculation policy** ▪ **Recalculate** base year emissions in case of **significant changes**
9 Report Emissions	**Publicly report** the following information ▪ **A scope 1 and scope 2 emissions** report in conformance with the GHG Protocol ▪ **Total scope 3 emissions** reported separately by scope 3 **category** in **metric tons of CO2** ▪ List of **scope 3 categories and activities included and excluded** from the inventory (and reason why) ▪ For each category, a description of the **types and sources of data, methodologies and assumptions** used

Scope 3 Categories

Upstream

1. Purchased goods and services
2. Capital goods
3. Fuel- and energy-related activities (not included in scope 1 or scope 2)
4. Upstream transportation and distribution
5. Waste generated in operations
6. Business travel
7. Employee commuting
8. Upstream leased assets

Downstream

9. Downstream transportation and distribution
10. Processing of sold products
11. Use of sold products
12. End-of-life treatment of sold products
13. Downstream leased assets
14. Franchises
15. Investments

Key insights

- Although the protocol does not require companies to set targets, it provides a methodology for companies that choose to do so.
- The protocol offers methodological options adapted to different organizations (e.g., consolidation by equity share, financial control or operational control).
- The reporting methodology ensures different organizations follow similar requirements to be publicly disclosed so results are comprehensible and comparable.

6.1.5 MSCI – Using carbon credits to meet corporate climate targets.

Table 10 - Summary of MSCI – Using carbon credits to meet corporate climate targets (2023) (9)

Objective	Provide an analysis of the potential impact of allowing companies to use carbon credits as part of their climate mitigation efforts.
Summary of the report	1. Extent of on/off-track in relation to climate performance. 2. Cost of abatement vs climate outcomes. 3. Flexibility analysis—allowing carbon credits to bridge scope 3 emissions gap for SBTi targets. 4. Impact of lowering the minimum threshold of carbon credit use to make an enterprise-wide VCMI claim.
Guiding Principles	• Science-aligned targets. • Incentive for SBT adoption. • Internal emissions reduction priority for scopes 1 and 2. • Carbon credits as a tool for lower abatement costs.
Pros and cons	Pros: • Provide analysis of progress related to meeting scope 3 emissions reduction targets by sector. • Provide cost of abatement for different sectors and consider the correlation with adoption of science aligned targets. Cons: • Does not consider non-linear pathways for emissions reduction. • Does not consider causality between the cost of abatement and science-aligned target setting. • Does not consider that emissions could increase with the flexibility claim.
Findings	• 60% of the companies are currently below their scope 3 emissions target (with respect to the near-term target year) considering an SBTi aligned target. • Companies in line with scopes 1 and 2 targets (with respect to the near-term target year), and therefore eligible for using carbon credits for scope 3 emissions (n = 295), have gaps below 50%, allowing them to cover 100% of their gaps with carbon credits in the initial years. • Although the flexibility rule would not provide incentive for more effort in the initial years, as it lowers the cost of abatement (by using carbon credits to meet targets), it would incentivize other companies to seek science-aligned targets.

Source: Elaborated by the authors.

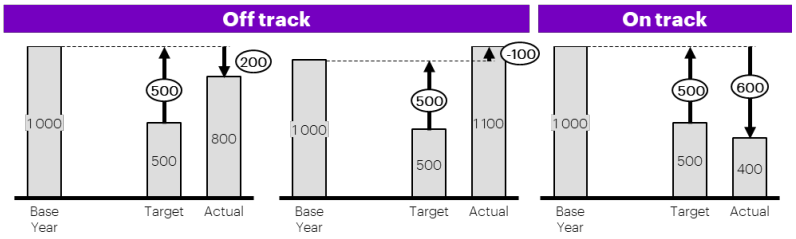
Methodology deep dive

Progress Assessment

The extent of on or off-track is calculated as a **percentage of absolute emissions**

The calculation is as follows:

$$\text{Target completion gap (\%)} = 1 - \frac{\text{base year emissions} - \text{reporting year emissions}}{\text{base year emissions} - \text{target year emissions}} \times 100$$



Credit Thresholds

MSCI's analysis of companies that are on-track for scope 1 & 2 emissions, shows that **all companies' scope 3 emissions gap are less than 50% of their scope 3 most recent year's emissions.**

Over time however, as the **threshold use of carbon credits declines, abatement of scope 3 emissions needs to increase** to meet the scope 3 target, as shown by MSCI figures named "VCMI 'bronze' tier illustration – differing credit use thresholds" in the Using carbon credits to meet corporate climate targets report, page 29.

Key insights

- The sector with the largest off-track emissions gap is Manufacturing. However, Manufacturing also has the largest on-track performance, indicating a great divergence in maturity in the sector.
- For the most recent emissions, reducing the threshold from 50% to 30% of emissions would reduce the number of companies able to use credits by around 20%.

6.1.6 IEA – Net-zero by 2050.

Table 11 - Summary of IEA - Net-zero by 2050 (2021) (35).

Objective	Provide an analysis on how the sectoral emissions pathways are impacted by global transformations in energy sources until 2050.
Summary of the report	The report provides insights on decarbonization trends, key milestones and decision points and the impact on decarbonization across the most important economy sectors affected regarding energy sources divided by: 1. Fossil fuel supply 2. Low-emission fuel supply 3. Electricity sector
Guiding Principles	• Fair inclusive energy transitions. • Technical feasibility. • Cost-effectiveness. • Focus on internal reductions and technology-driven removals.
Pros and cons	Pros: • Considers the impacts of energy transition across sectors. • Provides curves of decarbonization from 2020 to 2050. • Differentiates emerging economies from developed ones. Cons: • Does not provide details of trajectories, decisions, and milestones between 2020 and 2030. • Does not cover emissions from industrial process or any other apart from energy sources.
Findings	• Around 60% of heavy industries (cement, steel, and chemicals) emissions reductions rely on technology that is not available or economically feasible today such as hydrogen from renewable sources and carbon capture, utilization, and storage. • Because heavy industries are part of highly competitive and low margin global trading markets, and rely on very capital intensive and long-lived equipment, they have a slower pace of technology substitution. • Aviation and shipping, which are very important sources of scope 3 emissions, would still account for 330 MtCO2e by 2050.

Source: Elaborated by the authors.

Methodology deep dive

Sectoral decarbonization

According to the report, the energy sector would reduce emissions more abruptly, while sectors highly relevant for scope 3 such as **transportation and heavy industry have almost flat emissions until 2030**. This is very relevant in terms of designing emission flexibility curves, as these movements occur independently of company actions. On the other side **companies can expect energy emissions to fall without much effort**.

Figure 3.1: CO_2 emissions by sector in the NZE from the IEA - Net-zero by 2050 report, page 100, shows that **"Emissions fall fastest in the power sector, with transport, buildings and industry seeing steady declines to 2050.** Reductions are aided by the increased availability of low-emissions fuels"

Heavy industries slow pace

Emissions from heavy industry have a slow pace of reduction due to the **difficulty in replacing their assets.** Companies would have to **anticipate their investments to substitute high emission equipment** significantly**.** The needed disbursement **would likely drastically reduce their margins, which is highly sensitive in competitive commodity markets.**

Figure 3.17: CO_2 emissions from existing heavy assets in the NZE from the IEA – Net-zero by 2050 report, page 124, shows that "Intervening at the end of the next 25-year investment cycle could help unlock 60 Gt CO2, around 40% of projected emissions from existing heavy industry assets".

Key insights

- Forcing the acceleration of transport and heavy industries transition would increase the costs of logistics, raw materials and goods purchased by manufacturing industries.
- Too much flexibility could reduce the carbon price to the point where it disincentivizes cooperative efforts between manufacturing and basic industries to accelerate the transition to achieve lower emission intensities.

6.1.7 CDP - Corporate Environmental Action Tracker Methodology.

Table 12 - Summary of CDP – Corporate Environmental Action Tracker Methodology (2022) (16).

Objective	The Corporate Environmental Action Tracker (CEAT) provides an aggregated overview of the climate action status among companies disclosing through CDP.
Summary of the Methodology	1. Indicators and categorization • Disclosure • Governance • Target setting • Strategy and Transition Plan • Target Attainment 2. Data preparation • Emission filtering • External data sources
Guiding Principles	• Be rooted in science. • Bring in scope all business and institutions. • Provide an enforcement mechanism. • Cultivate environment for innovation and advancing disclosure maturity. • Ensure policy consistency in disclosure requirements.
Pros and cons	Pros: • Recognizes that there are nonlinear patterns of action regarding emissions and other environmental actions. • Allows companies, when possible, to construct their annual curves or include intermediate targets. Cons: • Although CDP recognizes the use of carbon credits as a complementary strategy to exceed climate ambitions, the methodology does not address any specific measures regarding the use of carbon credits.
Findings	• CDP considers tracking emissions for scopes 1, 2, and 3 as "on track" based on the achievement of a target for a given year, considering a linear curve between base year and target year, or a curve based on what companies report as intermediate targets, creating linear curves between these milestones. • CDP acknowledges that curves may not be linear and explicitly establishes some standards for curve behavior.

Source: Elaborated by the authors.

Methodology deep dive

CDP Target Attainment Categories	
Category	**Definition**
On track	Actual emissions in the most recent reporting year are below expected emissions under the stated target on a linear reduction path*
Almost on track	Actual emissions in the most recent reporting year are at most one year behind the emissions reduction under a linear reduction path.
Not on track	Actual emissions in the most recent reporting year are higher than expected for the year prior to the most recent year, under a linear reduction path.
Limited data	Organizations have targets, but the information about the targets is incomplete or inconsistent and did not allow calculation of target attainment as above. Typical reasons for incomplete / inconsistent data include: Targets covering < 75% of company emissions*, target years before or equal to base years, missing base year emissions, missing target scopes.
No target	Organizations without targets.

The CDP authorizes companies to establish year-to-year or intermediate targets and assumes linear trajectories between them as stated below:

"For this analysis, we have chosen to compare actual emissions to an expected, linear reduction path in the absence of year-by-year target information. In practice, companies may foresee non-linear paths: some may plan greater reductions at first, reaping 'quick wins', then slowing down later, others may need time to put measures in place and see steeper reductions in later years. Note that where companies did provide intermediate target year information (for the same target, i.e., same base year and scope definition), we have taken this into account, i.e., we have only assumed linear paths between the individual interim target points."

Key insights

- CDP's target attainment categories differentiate between companies on track with their targets, those at most 1 year behind or more than 1 year behind, which incentivizes companies to limit their delay to at most 1 year.
- The "limited data" category also provides additional information in case a company has incomplete or inconsistent data.
- CDP recognizes companies' different maturity may lead to different non-linear curves and enables companies to set their own interim targets, assuming then linear pathways between them.

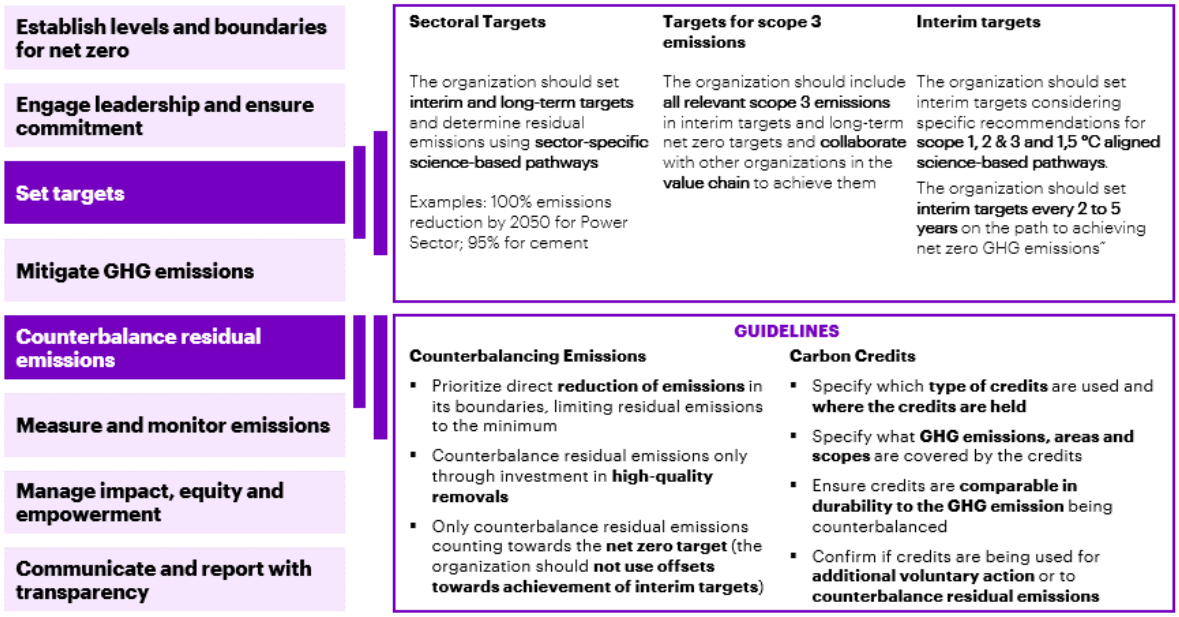
6.1.8 The ISO Net-zero Guidelines.

Table 13 - Summary of the ISO Net-zero Guidelines (2022) (34).

Objective	Complement voluntary initiatives and facilitate alignment, so that any organization looking to make or support a net-zero claim takes a similar approach regardless of the initiative it is associated with.
Summary of the Methodology	"Net-zero" and related terms definition. 1. Key principles for organizations aiming to achieve net-zero GHG emissions. 2. Actionable guidance on emissions reduction measures and carbon offset. 3. Transparent communication and reporting of progress to net-zero.
Guiding Principles	• Alignment. • Urgency. • Ambition. • Prioritization. • Decision-making based on scientific evidence and indigenous knowledge. • Risk-based. • Credibility. • Transparency, integrity, and accountability. • Equity and justice.
Pros and cons	Pros: • Provide a common definition and understanding of net-zero and related terms. • The 9 key principles provide a robust framework. • Developed through broad consensus involving over 1,200 experts from 100+ countries. Cons: • Not a formal ISO standard. • Guidance-based, not requirement-based. • Unclear decarbonization pathway.
Findings	• The guidelines define net-zero and related concepts, clarifying the differences between net-zero, carbon neutrality, and zero carbon. Net-zero means balancing any remaining greenhouse gas emissions with removals from the atmosphere. • The guidelines offer actionable guidance on reducing emissions through measures like improving energy efficiency and switching to renewable energy, as well as using high-quality carbon credits for any residual emissions that cannot be eliminated. • The guidelines complement ISO's existing standards on greenhouse gas quantification and climate change adaptation, providing a global, harmonized approach to net-zero that can be applied by businesses, governments, and other entities.

Source: Elaborated by the authors.

Methodology deep dive



Key insights

- The guidelines provide a common and global approach for various organizations to achieve net-zero GHG emissions.
- Organizations are oriented to set targets consistent with 50 % global GHG emissions reductions by 2030 (from a 2018 global baseline), achieving net-zero by 2050 at the latest.

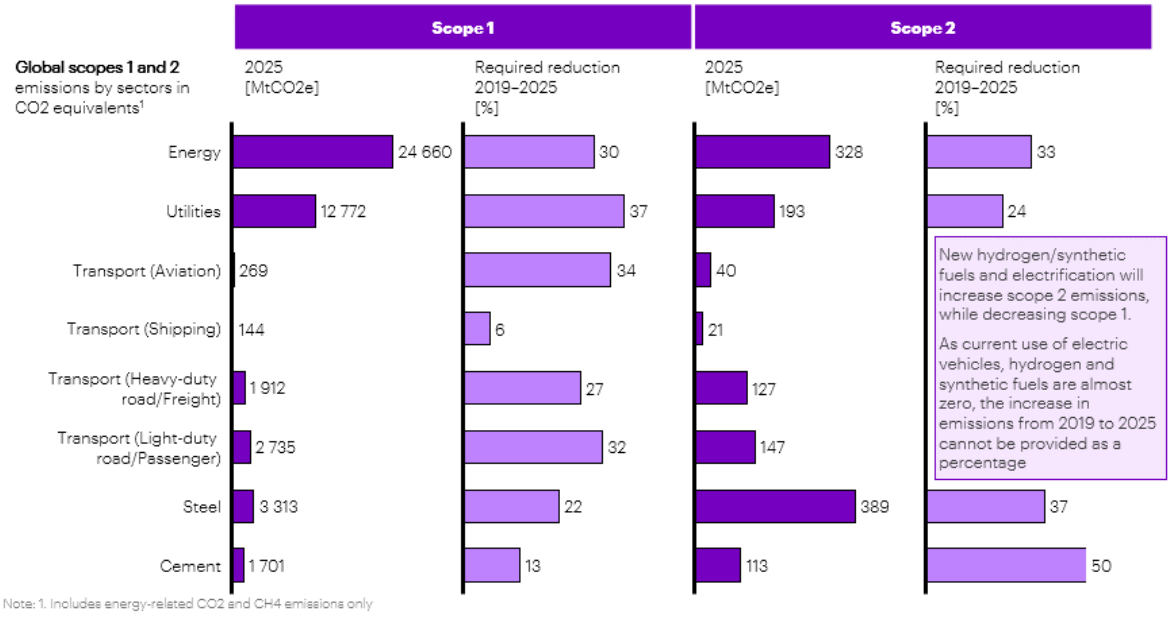
6.1.9 UTS – Sectoral Pathways to Net-zero Emissions.

Table 14 - Summary of UTS – Sectoral Pathways to Net-zero Emissions (2020) (21).

Objective	Assess key high emitting sectors and their potential for decarbonization in the near and longer terms.
Summary of the Methodology	1. Identify priority sectors: Energy, Utilities, Steel, Cement and Transport. 2. Provide carbon emissions milestones (scopes 1 and 2), energy intensity and carbon intensity milestones in 5-year intervals for the five sectors across three regions (OECD Europe, OECD North America, and Global). 3. Provide in-depth research and modelling for two industry sectors: Steel and Cement.
Guiding Principles	• Maintain the temperature increase below 1.5° C with 66% probability. • Decarbonization achievable based on current technologies. • Decarbonization economically viable and cost competitive in the mid to long term.
Pros and cons	Pros: • Sector specific emission curve to reach net-zero. • Intermediary emission targets by sector every 5 years. • Identifies the sector with highest need for carbon credits in the longer term. Cons: • Limited to high emitting sectors. • Does not cover scope 3 emissions. • Data presented in CO2 equivalents includes CO2 and CH4 but does not include any other GHG. • Presents only one possible pathway to net-zero.
Findings	• This study derives decarbonization pathways for five key high emitting sectors, on the assumption to achieve net-zero emissions by 2050. • Global and regional scopes 1 and 2 emissions must decrease by around 28% (± 5%) between 2021 and 2025, with some differences across sectors. • Based on current technologies, the process emissions of the Cement industry cannot be reduced to zero. • To reach the goal of remaining well below 2 ° C above pre-industrial levels, the study recommends 3 high-level sector-specific policies: (1) Introduction of carbon pricing; (2) Phase-out of global fossil fuel subsidies; (3) implementation of reforestation policies.

Source: Elaborated by the authors.

Methodology deep dive



Key insights

- The Energy and Utility sectors play key roles in allowing all other industries to meet the 1.5° C target, which requires them to be the first movers to decarbonize energy.
- While the technologies to avoid process-related emissions in the Energy, Utilities, and Transport sectors are available, the Steel and Cement industries will require more time to develop them.
- The study recommends that the Cement industry, notably, support projects to expand nature-based solutions for negative emissions.

6.1.10 IETA – Guidelines for high integrity use of carbon credits.

Table 15 - Summary of IETA – Guidelines for high integrity use of carbon credits (2024) (17).

Objective	Help companies globally to incorporate high quality carbon credits into their broader climate strategy encompassing setting a net-zero ambition, and near- and long-term decarbonization targets.
Summary of the Methodology	1. Demonstrate support for the Paris agreement goals. 2. Quantify and publicly disclose scopes 1, 2, and 3 emissions profiles. 3. Establish a net-zero decarbonization pathway and near-term targets. 4. Use carbon credits in line with the mitigation hierarchy. 5. Ensure that only high-quality carbon credits are used. 6. Transparently disclose use of carbon credits.
Guiding Principles	• Mitigation Hierarchy. • Science aligned targets. • Paris Agreement goals alignment. • Transparent disclosure of emissions and carbon credit use.
Pros and cons	• Pros: • Establish that only high-quality credits be used, respecting the mitigation hierarchy. • Recognizes the differences between emissions reductions and offsetting, so that carbon credits are used to a greater extent where there is a higher likelihood of non-mitigation. • Cons: • Considers that gap, especially in scope 3 emissions and hard-to-abate sectors, can be compensated with carbon credits to reach targets.
Findings	• The Allied Offset study estimates that some 81% of the world's largest companies globally have not yet set climate targets. This represents ~7.5GT CO2e (scope 1 and 2 only) which are not subject to any form of reduction target. • Based on historical data of companies with net-zero emissions reduction pathways, emissions have been higher than Paris aligned pathways by 26% (scope 1 and 2) and 62% of scope 3. • Hard-to-abate sectors, namely steel, cement, trucking, shipping, chemicals, aluminum, and aviation, have a greater challenge to deliver reductions at a pace aligned with the Paris Agreement goals. Based on various decarbonization scenarios developed by the Mission Possible Partnership, the gap in 2030 to a Paris aligned pathway is between 2.5 to 7.5 Gt CO2e.

Source: Elaborated by the authors.

Methodology deep dive

Demonstrate Support For The Paris Agreement Goals

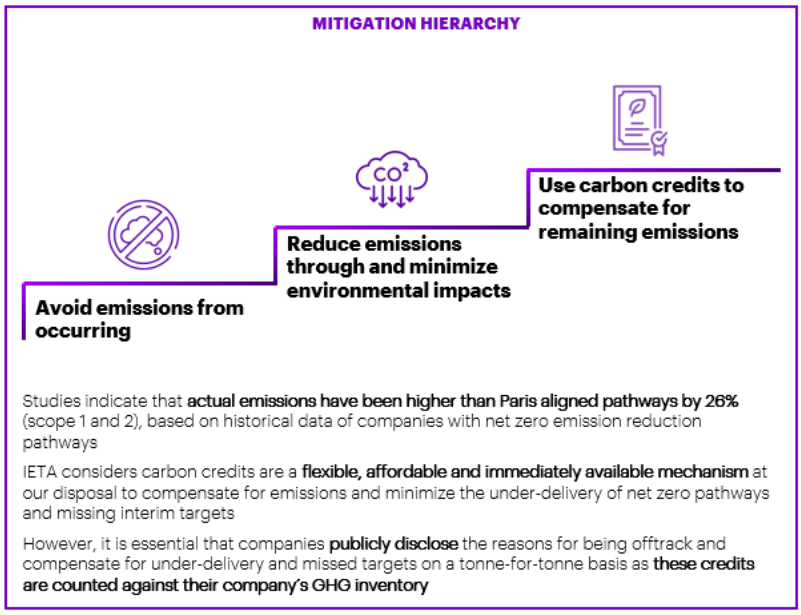
Quantify And Publicly Disclose Scope 1, 2, And 3 Emissions Profiles

Establish A Net Zero Decarbonization Pathway And Near-term Targets

Use Carbon Credits In Line With The Mitigation Hierarchy

Ensure That Only High-quality Carbon Credits Are Used

Transparently Disclose Use Of Carbon Credits



Key insights

- As there is a strong likelihood of companies missing near- and long-term net-zero targets, IETA emphasizes on the use of carbon credits immediate and rigorously.
- The guidelines focus on quantifying and disclosing emissions transparently, establishing ambitious net-zero pathways, and selecting/using high-quality carbon credits prudently to ensure the delivery of net-zero pathways.

6.1.11 The Paris Agreement, Method for applying corresponding adjustments.

Table 16 - Summary of Reference Manual – The Paris Agreement, Method for applying corresponding adjustments (2024) (33)

Objective	Explain the methods to apply corresponding adjustments under Article 6 of the Paris Agreement, particularly for countries with different types of NDC targets.
Summary of the Methodology	1. Indicative multi-year emissions trajectory method (single-year Nationally Determined Contribution—NDC—targets). 2. Multi-year emissions trajectory method (multi-year NDC targets).
Pros and cons	Pros: • Create language for the definition of an indicative emissions curve. • Addresses issue of single year emissions target. • Track progress in implementing a target (NDC). • Enables flexibility. • Promotes transparency. Cons: • Relies on principle of sovereignty. • Lack of guardrails to ensure minimum requirements are met. • Potential disincentive for ambition.
Findings	• Countries are not required to update or change their NDCs to participate in Article 6 mechanisms. This provides flexibility in maintaining their existing NDC targets while engaging in cooperative approaches. • Countries can employ flexible methods to design a multi-year NDC curve based out of a single year NDC, allowing them to transfer mitigation units—internationally transferred mitigation outcomes (ITMOs)—between countries. • These methods are designed to ensure transparency, accuracy, completeness, comparability, and consistency in the application of corresponding adjustments, while also ensuring that participation in cooperative approaches does not lead to a net increase in emissions across participating Parties. • Countries must choose one method and apply it consistently throughout their NDC period.

Source: Elaborated by the authors.

Methodology deep dive

Table 17 - Method for applying corresponding adjustments.

Method	Description	Applicable to
Indicative multi-year emissions trajectory method.	• Provide "an indicative multi-year emissions trajectory, trajectories or budget for the NDC implementation period that is consistent with implementation and achievement of the NDC". To respect sovereignty and national circumstances, there are no hard constraints on how this should be implemented except the requirement of consistency with the NDC. • Describe the method and explain how the "emissions trajectory, trajectories or budget" was estimated.	Single-year NDC
Multi-year emissions trajectory method.	• Calculate a multi-year emissions trajectory or budget for the NDC implementation period. • Describe the method and explain how the "emissions trajectory, trajectories or budget" was estimated.	Multi-year NDC

Source: Elaborated by the authors.

Key insights

- Countries with a single-year NDC target can provide an indicative multi-year emissions trajectory or budget for the NDC implementation period before applying annual corresponding adjustments for the total amount of ITMOs transferred and used each year.
- However, the specific decisions on NDC targets and trajectories remain at the discretion of individual countries. Article 6 does not prescribe a methodology for countries to set their NDC trajectories, instead requiring countries to describe their own methodology and how the presented trajectories or budget were estimated.
- The flexibility concept here is a helpful contribution for a methodological proposition to calculate emissions gaps for companies with a near-term scope 3 emissions reduction target. However, in the case of companies adopting a Scope 3 Claim, the principle of sovereignty needs to be replaced by additional constraints that ensure that targets will be met according to a science-aligned emissions trajectory.

6.1.12 SBTi – Pathways to net-zero.

Table 18 - Summary of SBTi - Pathways to net-zero SBTi Technical Summary (2021) (11) and Foundations of science-based target setting (2019) (10).

Objective	Explain the SBTi's approach to determining 1.5° C-aligned pathways for corporate target-setting, updating an approach originally published in 2019.
Summary of the Methodology	1. Developing a cross-sector pathway based on updated estimates of remaining emissions budgets. 2. Using a comprehensive scientific assessment to define the cross-sector GHG emissions corridor and pathway, avoiding over-reliance on top-down scenarios. 3. Updating the boundary of the corridor or pathways to cover main GHG emissions from energy supply, transport, industry, and buildings. 4. Considering synergies and trade-offs between different mitigation pathways and Sustainable Development Goals (SDGs).
Pros and cons	Pros: • Provides a scientifically robust approach to setting corporate net-zero targets, using mitigation pathways from the IPCC AR5. • Aligns with the latest climate science and the 1.5° C goal of the Paris Agreement. • Considers broader sustainability goals beyond just emissions reduction. Cons: • Mitigation pathways used are a diverse set of estimates including top-down and scenarios driven by socioeconomic and demographic variables. • Reliance on AR5, which is now outdated. • Scenarios that are driven by intrinsic, bottom-up industry-level consideration are present, but only part of the full set. • Certain sectors are left out of the analysis because they are treated separately in sector-specific pathways. • Most pathways are filtered out on normative grounds—do not align with 1.5 or WB2 goals.
Findings	• In July 2021, the SBTi announced plans to increase the minimum ambition of all new science- based targets (SBTs) from well-below 2° C to 1.5° C above pre-industrial levels. • The approach incorporates newer estimates of the remaining emissions budget and uses a more comprehensive scientific assessment, based on IPCC AR5 mitigation pathways. • The methodology considers the synergies and trade-offs between different mitigation pathways and SDGs. • The cross-sector pathway covers main GHG emissions from energy supply, transport, industry, and buildings, rather than all GHG emissions. • The approach disaggregates the remaining CO2 budget into different emissions corridors, providing a more detailed understanding of necessary reductions in various areas.

Source: Elaborated by the authors.

Methodology deep dive

Table 19 - How SBTi developed its cross-sector pathway.

Step	Details
1. Developing a cross-sector pathway based on updated estimates of remaining emissions budgets	• Uses updated estimates of remaining emissions budgets. • Covers all Kyoto Protocol GHG emissions except Forest, Land and Agriculture (FLAG) emissions and emissions from landfill waste and fluorinated gases.
2. Using a comprehensive scientific assessment to define the cross-sector GHG emissions corridor and pathway	• Goes beyond filtering only top-down scenarios. • The original approach (16) filtered out the majority of the scenarios (129 out of 177) in order to obtain a subset that (i) is consistent with a temperature limit of at least WB2, (ii) does not rely on certain assumptions regarding BECCS, (iii) have a peak emissions year in 2020-2025 (not before, not after), and (iv) show a linear reduction rate for the period 2020-2035 that is less ambitious than the 20th percentile. • Draws from peer-reviewed studies such as IEA (2021) Net-Zero Roadmap and Roe et al. (2019) 'Contribution of the land sector to a 1.5ºC world'.
3. Updating the boundary of the corridor to cover main GHG emissions	• Focuses on emissions from energy supply, transport, industry, and buildings, rather than all GHG emissions. • Excludes FLAG emissions, which are covered by separate sector-specific pathways. • Excludes emissions from landfill waste and fluorinated gases due to lack of data. • Aims to provide a more accurate representation of the main sources of GHG emissions.
4. Considering synergies and trade-offs between different mitigation pathways and Sustainable Development Goals	• Evaluates how different mitigation strategies impact various Sustainable Development Goals. • Aims to maximize positive impacts and minimize negative consequences across multiple sustainability dimensions. • Ensures that emissions reduction strategies align with broader sustainable development objectives. • Helps in developing more holistic and balanced approaches to climate action.

Source: Elaborated by the authors.

Key insights

- SBTi developed a cross-sector pathway by using a comprehensive scientific approach, which is based on a comparative assessment of top-down mitigation scenarios and sectoral studies, and principled judgements.
- The approach to building an envelope of decarbonization pathways is both normative and descriptive, that is, it establishes the most feasible approach (descriptive) that is aligned with a certain goal (1.5ºC or WB2ºC—normative).
- The method was designed in 2019 and updated in 2021, and uses scenarios from the Integrated Assessment Modeling Consortium (IAMC), which is the backbone to IPCC scenarios.
- The scenarios that made it to the final SBTi envelope of pathways have a strong normative component.

6.1.13 IPCC AR6 Scenarios

Table 20 - Summary IPCC AR6 Scenarios Database (2022) (15).

Objective	Present an ensemble of quantitative, model-based pathways underpinning the Sixth Assessment Report (AR6) of Working Group III by the Intergovernmental Panel on Climate Change (IPCC).
Summary of the Methodology	1. Collect and assess quantitative, model-based scenarios related to the mitigation of climate change. 2. Expanded scenarios to include energy, emissions, and sectoral scenarios from global to national scales. 3. Contains 3,131 quantitative scenarios that derive from 188 modelling frameworks and 95+ model families that are either globally comprehensive, national, multi-regional or sectoral.
Pros and cons	Pros: • IPCC scenarios are easily accessible. • Large set of pathways with a rigid scientific backbone. • Includes both normative pathways (i.e.: those that are built with the goal of reaching a certain target) and descriptive pathways (those that are not forced to reach a target). • Includes socioeconomic, demographic, and sector-driven pathways. Cons: • Scenarios are not built for short term analysis, so the granularity between present and ~2040 is very limited. • In general, the spatial / within-sector resolution is also limited as scenarios need to encompass large geographies.
Findings	• While most scenarios have a lot spatial/within-sector resolution, the large number of scenarios allows for a statistical assessment of the scenario distribution. • Filtering-out scenarios based on their intrinsic characteristics and assumptions is challenging due to the complexity and large quantity of scenarios. • Zooming in on the short term—the period between present and ~2040—provides nearly-linear results when filtering out normative scenarios. • When averaging out the short-term scenarios (present to ~2040), most curves do not meet the SBTi well-below 2 degrees pathway.

Source: Elaborated by the authors.

The IPCC provides various mitigation pathways in its reports, such as those found in the AR6 (Sixth Assessment Report) (12). These pathways outline different scenarios and strategies for reducing greenhouse gas emissions to limit global warming. Cumulative emissions within the period of global emissions reduction, outlined as carbon budgets in IPCC reports, are significant, as they correlate with the temperature levels targeted by models—as seen in Figure 22. There is evidence that cumulative emissions can have non-linear effects on temperature levels, which could occur if certain temperature thresholds were reached, generating a cumulative effect (36). For example, the partial melting of permafrost could release a significant amount of greenhouse gases into the atmosphere, accelerating the warming effect.

As observed in Figure 7, the trajectory for mitigating global net emissions as projected by the IPCC between 2020 and 2040, which roughly corresponds to the near-term targets, is very close to linear. This implies that not only achieving the percentage reductions in emissions by a given year is important, but also maintaining cumulative emissions for the period is relevant to increase the chances of keeping the expected global temperature levels. Thus, maintaining cumulative emissions as a target for companies to achieve is imperative. Doing so ensures that corporate emissions reduction efforts remain in harmony with global climate objectives, supporting the broader goal of limiting temperature rise and mitigating the adverse impacts of climate change.

6.2 Description of sector and company-level datasets used in the study

This section describes the data sources used in the study.

Table 21 - Datasets used in the analysis

Dataset	Type	Description	Variables used	Source
CDP GHG Emissions Dataset 2023 and CDP Scores 2023	Company-level	• Self-reported data from CDP questionnaires. • Includes detailed data cleaning procedures to harmonize data across companies. • Data start in 2020 and include 13,500+ companies.	• Scope 3 emissions within target boundary for 2020-2023, tCO2e. • CDP score for the climate change questionnaire for 2020-2022 (levels A to D).	CDP 2023 (30) (31)
Corporate Climate Responsibility Monitor (CCRM) 2024	Company-level	• Integrity of 2030 and net-zero climate pledges. • 51 companies, in-depth analysis of 20. • Automotive, electric utilities, fashion, and food/agriculture.	• Reducing own emissions (5-point rating scale). • Responsibility for unabated and residual emissions (5-point rating scale).	CCRM 2024 (29)
IPCC AR6 Scenarios Database 2022	Global pathways	• Ensemble of quantitative, model-based pathways • 3,131 quantitative. scenarios deriving from 188 modelling frameworks. • Global, national, multi-regional or sectoral scenarios.	• Shared Socioeconomic Pathways for 2020-2040, tCO2e.	IPCC 2022 (15)
Mission Possible Partnership 2022	Sector-level	• Decarbonization projections in 7 hard-to-abate sectors: aluminum, cement, chemicals, steel, aviation, shipping, and trucking. • Detailed bottom-up assessments of the key decarbonization levers in each industry. • Scenario assessments for the levers, reflecting a careful understanding of possible future emissions pathways.	• Emissions pathways, 2020-2040, tCO2e.	MPP 2022 (13)
SBTi Monitoring Report 2022	Company-level	• Measures emissions gaps with respect to scope 3 target boundaries. • 2,079 companies as of 31/12/2022. • Includes data from the SBTi target setting process, responses to CDP questionnaires and other publicly disclosed information. • Companies were given the chance to suggest data corrections.	• Target type. • Base year. • Target year. • Target progress (%) compared to target base year value. • Target elapsed timeframe.	SBTi 2022 (18)
Transition Pathway Initiative (TPI)	Sector-level	• 600+ companies, 16 high-carbon sectors. • Sector-specific decarbonization benchmarks. • All GHG information are based on emission intensities, not on absolute emissions.	• Management quality indicator (levels 0 to 4).	TPI 2023 (28)

Source: Elaborated by the authors.

6.3 Findings, pain points and feedback

This section provides a summary of the feedback that has been received, relevant for the Scope 3 Claim, along with a view of how to ensure that every piece of feedback is addressed in the new version.

Table 22 - General feedback items

Finding/Pain point/Feedback	Origin	How to address
Transparency on how to demonstrate progress.	VCMI Claims Code Background Document (37)	Final version of the Scope 3 Claim must ensure transparency in demonstrating progress on emissions reduction as a requirement for companies, including requesting companies to publicly state current emissions, trajectory emissions within target boundary, emissions gap and reductions made.
Clarity that decarbonization in scopes 1 and 2 is a requirement.	VCMI Claims Code Background Document	Final version of the Scope 3 Claim must clarify this requirement, including potential updates to selected language and expressions.
Clarity that the Claim does not use carbon credits toward emissions goals.	VCMI Claims Code Background Document	Final version of the Scope 3 Claim must clearly define that the use of credits is to get companies back on the emissions reduction trajectory and not to meet committed reduction targets, therefore requiring mitigation actions as a requirement for companies to use the Claim.
Avoid interpretation that credits can be substitute for emissions reductions.	VCMI Claims Code Background Document	Final version of the Scope 3 Claim must clearly state that the Claim and the use of credits are only applicable for companies that are taking actions to reduce their supply chain emissions, which will be evaluated in the form of requirements or guardrails on the limit of credits.
Claim not counting towards targets reduces companies' interest and incentives for more climate action.	VCMI Claims Code Background Document	Research suggests Scope 3 Claim will accelerate and deepen GHG mitigation globally (9). The final version of the Claim should ensure companies use high-quality credits in addition to emissions reduction actions.
Corporates would be left unaccountable for climate targets.	Carbon Pulse (38)	The final version of the Scope 3 Claim should hold companies accountable for acting to reduce their gaps until reaching their near-term targets.
The Claim calls on companies to use carbon credits to address a large share of scope 3 emissions, which for many companies represents a very significant portion of overall emissions.	Sustainable Views (8)	The final version of the Scope 3 Claim should clarify that the use of credits does not count toward reaching decarbonization targets. Guardrails will be added to limit the maximum gap allowed for companies to make the claim.
It must be very clear that the purchase of credits is not a way to meet scope 3 reduction targets.	Sustainable Views	The final version of the Scope 3 Claim should clarify that the use of credits does not count towards reaching decarbonization targets.
With the claim, the most ambitious pledges are reduced to marginal reductions requiring only business-as-usual developments.	NewClimate Institute (22)	The final version of the Scope 3 Claim should require companies to take action to reduce their supply chain emissions and progress on them yearly, as well as limit the total gap allowed via guardrails for the credit use.
The new claim leaves open enough room for companies to use carbon credits as an alternative, rather than a complement, to cutting their own emissions.	NewClimate Institute	The final version of the Scope 3 Claim should require companies to take actions to reduce their supply chain emissions and progress on them yearly, as well as limit the total gap allowed via guardrails for the credit use.
The degree and timeframe of the claim needs to be tighter than those proposed in the beta version.	NewClimate Institute	The final version of the Scope 3 Claim should stipulate the degree and timeframe of the Claim, supported by a careful assessment of evidence.

Source: Elaborated by the authors.

Table 23 - Emissions gap calculation feedback

Finding/Pain point/Feedback	Origin	How to address
Clarity on calculation of emissions gap.	VCMI Claims Code Background Document (37)	The gap calculation methodology must have simple and clear rules, easy to measure and report.
Simpler emissions trajectory consistent with science-based target.	VCMI Claims Code Background Document	This point should be addressed by ensuring that emission curves have clear rules and always consider alignment with remaining cumulative emissions according to Target Setting standards and IPCC criteria.
Science-based targets are aligned with linear trajectories that represent carbon budgets.	Accenture Analysis	Emission curves should consider non-linear trajectories; however, they should adhere to the remaining cumulative emissions so that emissions above the linear trajectory are accounted for in future reduction calculations until the targets are reached.
Emissions reduction targets are typically set based on linear trajectories, but non-linear curves are allowed (e.g. CDP).	Accenture Analysis, CDP (16)	The gap calculation methodology will consider elements of non-linearity from The CDP approach.
Hard to abate sectors have implications to scope 3 emissions of many industries.	Accenture Analysis	The characteristics of hard-to-abate sectors are somewhat addressed in target setting methodologies (e.g., SBTi minimum threshold for scope 3 emissions is lower than scopes 1 and 2). Non-linear trajectories will be considered to accommodate initial difficulties in reducing emissions associated with these industries in the early years.

Source: Elaborated by the authors.

Table 24 - Carbon credit use feedback

Finding/Pain point/Feedback	Source	How to address
Divergence between being on track and bridging the gap.	VCMI Claims Code Background Document (37)	The final version of the Scope 3 Claim should clarify that the use of credits does not replace the need for companies to reach their targets.
2035 phase-out problematic for hard-to-abate.	VCMI Claims Code Background Document	The phase-out of credit use is assessed on a cross-sector basis and acts as a guardrail of the Scope 3 Claim aligned with the principles of immediate action and mitigation hierarchy.
50% limit removes incentive to purchase credits.	VCMI Claims Code Background Document	As already addressed by VCMI, establishing the limit is important to maintain the mitigation hierarchy. The initial % of carbon credit limit and its phase-out will be reviewed, potentially reducing it to limit the increase in emissions allowed by the claim.
Companies buying different amounts of credit having the same Claim.	VCMI Claims Code Background Document	This feedback can be addressed with tighter requirements for companies to publicly disclose their current emissions, trajectory emissions within target boundary and the emissions gap.
Difficulty to quantify use of credits ahead of time.	VCMI Claims Code Background Document	Companies are free to define their own trajectory emissions within target boundary according to the methodology provided, either linear or non-linear. This, along with a forecast of the reported emissions within target boundary, should allow companies to make plans.
The Claim allows some companies to increase emissions up to 2030 as a result.	Carbon Pulse (38)	The guardrails for use and phase-out of carbon credits should reach zero by the phase-out year in order to promote immediate action and mitigation hierarchy.
Allowing credits for only a portion of scope 3 emissions is overly restrictive.	Rubicon Carbon (39)	The guardrails for credit use should be restrictive so that the Claim respects the mitigation hierarchy. Providing flexibility in letting companies define their own non-linear trajectories that respect the carbon budget should also have an impact in limiting the emissions gap as companies will be more accountable to follow their self-defined trajectories.
The requirement to phase-out the use of credits by 2035 will strongly limit investment in the voluntary carbon market.	Rubicon Carbon	The phase-out year is designed to encourage companies to progressively scale up their direct emissions reduction efforts.
Although most companies are behind in their emissions reduction trajectories (e.g., haven't set targets or are not following the trajectory emissions to reach them), the companies that are in line with scopes 1 and 2 emission trajectories have gaps lower than 50%.	Accenture Analysis	One of the objectives of the Scope 3 Claim is for companies to purchase and retire high-quality carbon credits in addition to emissions reduction actions. The final version of the Scope 3 Claim should aim for an ideal balance between (1) enabling multiple companies to make the Claim so that they initiate and make progress on their emissions, and (2) limiting the emissions gap allowed via guardrails to incentivize immediate action and the mitigation hierarchy to reduce emissions.

Source: Elaborated by the authors.

7 | Limitations

The methodology put forward is the result of a deep dive study of relevant frameworks and dataset associated with a close collaboration with the VCMI team and its stakeholders during a 12-week period. Notwithstanding that, the methodology is limited by several factors, including:

- Possible short-term changes in frameworks that are closely related to the Scope 3 Claim, including but not limited to methodological developments in the SBTi target setting mechanism;
- Inherent uncertainties in mitigation pathways data and in company-level data;
- Quality of scope 3 data in company-level datasets such as SBTi (18) and CDP (30), including issues of self-reporting and selection bias;
- Limitation of the Mission Possible Partnership data to seven hard-to-abate sectors;
- Assumptions about the ability and interest of companies to engage in a process that can be costly such as assuring GHG inventories on an annual basis.

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