SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

SBTi CHEMICAL SECTOR PATHWAYS AND IMPLEMENTATION CRITERIA: BASIS FOR CONCLUSIONS REPORT

Version 1.0

December 2025

ABOUT SBTi

The Science Based Targets initiative (SBTi) is a corporate climate action organization that enables companies and financial institutions worldwide to play their part in combating the climate crisis. We develop standards, tools and guidance which allow companies to set GHG emissions reductions targets in line with what is needed to keep global heating below catastrophic levels and reach net-zero by 2050 at the latest. The SBTi is incorporated as a UK charity, with a subsidiary SBTi Services Limited, which hosts target validation services (together with SBTi, the “SBTi Group”).

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This document is issued by the SBTi. Any feedback on the SBTi resources can be submitted to info@sciencebasedtargets.org for consideration of the SBTi.

VERSION HISTORY

Version	Change/update description	Release date	Effective dates
Version 1.0	• Initial version of the SBTi Chemical Sector Pathways and Implementation Criteria: Basis for Conclusions Report	December 2, 2025	December 2, 2025

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1. INTRODUCTION

1.1 About this document

This Basis for Conclusions Report accompanies, but is not part of, the SBTi Chemical Sector Pathways and Implementation Criteria ("pathways criteria document"). It summarizes the considerations of the Science Based Targets initiative (SBTi) in developing the criteria and the SBTi's responses to the significant issues raised. It includes feedback received on the drafts during the public consultations held from 15 May 2024 to 1 August 2024 and 12 November 2024 to 10 January 2025 and feedback received over the development of the project by the project's expert advisory group (EAG) and participants in the project's pilot testing phase through consultation surveys, meetings, and direct comments via email and in-person workshops. All comments received, together with an analysis of the issues raised, were considered by the SBTi.

This Basis for Conclusions Report aims to:

- Summarize the development process to date, demonstrating how the Procedure for Development of SBTi Standards has been implemented, and, if relevant, clearly describe any departure from the approved procedure together with the justification for any such departure;
- Explain the main issues and concerns raised during the process, and explain how these have been responded to;
- Summarize all comments received during the last periods of consultation and an explanation of how these comments have been responded to in the formalization of the final draft of the standard.

The Chemicals Sector Project Terms of Reference can be found here. The links to the SBTi Chemical Sector Pathways and Implementation Criteria consultation questionnaire(s) and public consultation submissions can be found in Annexes A and B of this document. The links to the public consultation report(s) can be found in Annex C.

1.2 Objectives for the development of the SBTi Chemical Sector Pathways and Implementation Criteria

The SBTi Chemical Sector Pathways and Implementation Criteria document aims to support GHG emissions reduction by providing a sector-specific set of pathways for companies with activities related to the chemicals sector to use when setting science-aligned climate targets. The objective of the project is to establish activity-specific pathways and methods that will apply to companies operating in the global chemical manufacturing sector to detail the minimum requirements to be followed to set 1.5°C-aligned science-based climate targets. To date, the SBTi has not published chemicals sector-specific guidance or criteria. Overall, the SBTi Chemical Sector Pathways and Implementation Criteria project supports the SBTi in achieving its mission and vision by addressing the emissions intensive chemicals sector through the establishment of pathways that recognize the challenges and opportunities in the chemicals sector to drastically reduce GHG emissions. Alongside existing resources for the cement and iron and steel sectors, the SBTi Chemical Sector Pathways and Implementation Criteria will ensure the SBTi's coverage of these three highest emitting

industrial sectors. A detailed description of the objectives of this project is outlined in the Chemicals Sector Project Terms of Reference here.

1.3 Development process of the SBTi Chemical Sector Pathways and Implementation Criteria

The SBTi initiated the Chemicals Sector Development Project in 2022 prior to the adoption of the Standard Operating Procedures (SOP) for the Development of SBTi Standards. Despite beginning prior to the current SOP's adoption, the project has been developed following the principles of a transparent multi-stakeholder development process that is central to all SBTi's technical development[1]. The SBTi published an initial status report on the sector in January 2023. The researching and drafting phases of the project were completed between January and November 2023. An Expert Advisory Group (EAG) was formed to provide advice to inform the development of the SBTi Chemical Sector Pathways and Implementation Criteria. During the project, members were added to the EAG in an effort to seek better alignment with the SBTi's best practices for EAG composition. Please find the composition of the EAG here. The SBTi Chemical Sector Pathways and Implementation Criteria document was developed by the SBTi with advisory support from Guidehouse.

Once the drafting phase was completed, the SBTi Chemical Sector Pathways and Implementation Criteria document was approved by the Technical Council in March 2024 and a first public consultation was initiated between 15 May 2024 to 1 August 2024.

The first public consultation was followed by further research and drafting alongside an advisory meeting with the EAG. A second public consultation was conducted between 12 November 2024 to 10 January 2025. A period of pilot testing was then conducted between January and March 2025.

This Basis for Conclusions Report was approved by the Chief Technical Officer on August 28, 2025 and the Technical Council approved the final SBTi Chemical Sector Pathways and Implementation Criteria on September 18, 2025.

The development process of SBTi Chemical Sector Pathways and Implementation Criteria followed a streamlined version of the procedures outlined in the *Standard Operating Procedure (SOP) for Development of SBTi Standards* because the project was already in an advanced stage of development before the date the procedure was formally adopted; however, the SBTi aimed to adhere to the procedures and processes where possible, including following the consultation and approval requirements required by the SOP for new normative developments.

1.4 How the SBTi Chemical Sector Pathways and Implementation Criteria document meets the content quality criteria specified in the *Standard Operating Procedure (SOP) for Development of SBTi Standards*

The objective of SBTi is to provide requirements and guidelines to non-state economic actors to set and implement targets to mitigate their value chain emissions and to align business practices with the transformation needed to reach net-zero emissions at the global

[1] See footnote 2 to Paragraph 10 in the Standard Operating Procedure (SOP) for Development of SBTi Standards.

level consistent with pathways that limit warming to no more than 1.5°C by the end of the century with no or limited overshoot in a manner that strives for equity and does not compromise environmental sustainability outcomes.

Requirement	Description of how the SBTi Chemical Sector Pathways and Implementation Criteria document meets this requirement
Be developed to be applicable to entities operating in corporate and financial sectors, and entities in a specific sector or cluster of subsectors	Provides tailored criteria applicable to a specifically defined scope of companies operating in the global chemicals sector. The criteria have been developed using global stakeholders consultations, including pilot testing, and input from subject matter experts, in order to ensure maximum feasibility of adoption.
Be consistent with the objective of SBTi standards as stated in paragraph 11 of the *Standard Operating Procedure (SOP) for Development of SBTi Standards*	Includes criteria that are aligned with the SBTi's Corporate Net-Zero Standard v1.3 and Near Term Criteria v5.2, intended to address the most significant sources of emissions in the chemicals sector value chain(s).
Be informed by the best available science, as defined by international consensus bodies like the Intergovernmental Panel on Climate Change (IPCC), and best practice in climate target setting and climate mitigation at the time of standard development	All criteria were developed based on credible and publicly available sources of data, such as the IPCC and IEA data sets, and other peer-reviewed sources, as outlined in the Chemicals Sector Pathways Synthesis Report.
Include relevant quantitative and qualitative metrics to deliver on the objective of the SBTi standards	The criteria include relevant quantitative emissions and non-emissions indicators upon which targets may be set using defined pathways. Additional criteria address qualitative requirements related to specific methods for reporting performance and target achievement.
Be auditable, verifiable and/or measurable	Each criteria contains clear requirements against which compliance may be assessed. As part of the target validation process, Criteria Assessment Indicators, which translate each requirement and recommendation into conformity assessment control points, are then used by

	SBTi Services Ltd to evaluate and determine conformance.
Be easily understood by all relevant stakeholders	The criteria were written to ensure clarity of intent and expectations for all requirements. The document has undergone a thorough sense check, from both a technical content and language perspective by providing the opportunity for both internal and public feedback on its content. The SBTi made several revisions to the criteria to improve clarity based on feedback received during these consultations. Additionally, while the working language for SBTi resources is English, where appropriate, the SBTi shall arrange translations of the criteria into languages other than English.
Meet or exceed the requirements in the countries where the standard is applied, including at a minimum meeting all regulatory requirements as applicable	In addition to meeting applicable requirements in the SBTi Chemical Sector Pathways and Implementation Criteria document, companies are responsible for meeting or exceeding the national, subnational, and regional legislation and/or regulation in the countries where the criteria are applied on topics covered therein.
Be designed to support accurate, specific and transparent claims supported by evidence, avoiding misleading statements or claims	The criteria were developed to provide a credible representation of climate alignment for the activities addressed. The SBTi requires that all claim content related to status with the SBTi adhere to all current generally applicable claim requirements.
Be designed to support the generation and submission of data necessary to assess and monitor performance against science-based targets and demonstrate the efficacy of the SBTi Standards in achieving their objectives	The metrics used in the criteria were developed to be feasible and measurable indicators of performance against underlying pathways, while ensuring the credibility of the target as a legitimate measure of company climate performance.
Be developed in accordance to the process described in the *Standard Operating Procedure (SOP) for Development of SBTi Standards*	Section 1.3 of this Basis for Conclusions Report details the development process of the SBTi Chemical Sector Pathways and Implementation Criteria document.

Aim for compatibility with other relevant standards.	To the extent possible, the SBTi has ensured compatibility with complementary standards, most notably the GHG Protocol.

1.5 Scope of external consultation(s)

The first public consultation draft of the SBTi Chemical Sector Pathways and Implementation Criteria document was open for public comment, as required by the *Standard Operating Procedure (SOP) for Development of SBTi Standards* from 15 May 2024 to 1 August 2024. After revisions were made based on feedback received during this first consultation period, a second open public consultation was held from 12 November 2024 to 10 January 2025. The objective of the public consultations was to gather feedback from a diverse group of stakeholders on the full consultation drafts of the criteria and supporting material. Respondents were invited to submit their feedback on specific consultation questions using multiple choice questions, as well as provide topic-specific and general written feedback via a consultation survey. The intended outcomes of the consultations were to elicit input on the technical feasibility, clarity, and expected impact of the criteria.

1.6 Overview of first public consultation comments

Respondents to the first public consultation of the Consultation Draft were asked to submit comments through an online survey. The link to the survey was made available on the SBTi's Chemicals Sector webpage and was shared via the SBTi's social media channels and newsletter. Respondents could also submit additional feedback via email to chemicals@sciencebasedtargets.org.

A total of 67 public survey submissions from individuals and organizations was received on the first consultation draft. 12 respondents submitted additional information directly via email, outside of the survey. The submissions came from academia, the corporate sector (both in and outside the chemicals sector), financial institutions, industry associations, NGOs, and professional services companies. Please see a breakdown of responses by stakeholder group in Annex C. The full list of public consultation comments is referenced in Annex B. A First Public Consultation Report and Feedback Log were published and are available on the SBTi's webpage.

During the first public consultation, the SBTi sought input from stakeholders representing a balance of interests in the subject matter and in the geographic scope to which the standard applies. The public consultation sought to overcome barriers faced by stakeholder groups who have been under-engaged or under-represented, by identifying stakeholder groups that are not adequately represented and proactively seeking their contributions.

Annex C sets out our analysis of the public consultation feedback by stakeholder groups and regions. From this analysis, we found that the number and variety of stakeholders that submitted comments are representative of all the key groups identified in SBTi's initial stakeholder analysis; however, gaps in participation were still identified, including a lack of respondents from Latin America and relatively fewer respondents from civil society as compared to the industrial sector.

1.7 Overview of second public consultation comments

Revisions were made to the first public consultation draft of the criteria, which were summarized and published in a summary of the main changes along with the second public consultation draft. Respondents to the second public consultation of the Consultation Draft were asked to submit comments through an online survey, which focused on key areas of revision to the first consultation draft. The link to the survey was made available on the SBTi's Chemicals Sector webpage and was shared via the SBTi's social media channels and newsletter. Respondents could also submit additional feedback via email to chemicals@sciencebasedtargets.org.

A total of 65 public survey submissions from individuals and organizations was received on the first consultation draft. 3 respondents submitted additional information directly via email, outside of the survey. The submissions came from academia, the corporate sector (both in and outside the chemicals sector), industry associations, NGOs, and professional services companies. Please see a breakdown of responses by stakeholder group in Annex C. The full list of public consultation comments is referenced in Annex B.

During the second public consultation, the SBTi sought input from stakeholders representing a balance of interests in the subject matter and in the geographic scope to which the standard applies. The second public consultation sought to overcome barriers faced by stakeholder groups who have been under-engaged or under-represented, by identifying stakeholder groups that are not adequately represented and proactively seeking their contributions.

Annex C sets out our analysis of the public consultation feedback by stakeholder groups and regions. From this analysis, we found that the number and variety of stakeholders that submitted comments are representative of all the key groups identified in SBTi's initial stakeholder analysis. This includes a larger representation of respondents from Latin America, a region that was not represented during the first public consultation.

1.8 Overview of feedback received during project implementation

Feedback was also received through engagement with the project's EAG. EAG engagement included eight meetings with the full EAG, four meetings with a subgroup of the EAG to discuss specific topics, numerous bilateral ad hoc meetings with EAG experts, a two-day in-person workshop, several surveys, and via direct review/feedback of the expert draft of the criteria by EAG members. Input from the EAG was reviewed and considered during the drafting and consultation phases of the project. Additional consultations were conducted through bi-lateral meetings with sector and subject matter experts outside of the EAG and related initiatives. The SBTi received nine direct letters, requests, and/or position papers via email in addition to consultation survey input. All feedback received outside of the official consultation processes was logged and considered by the SBTi

1.9 Pilot testing

The SBTi also conducted pilot testing after the second public consultation. 11 companies accepted invitations to participate, five of which submitted data for the SBTi's review using a draft SBTi Chemical Sector Pathways and Implementation Criteria document. The 11 invitees collectively encompassed all the main groupings of activities within the scope of the criteria. Companies headquartered in Africa, Asia Pacific, Europe and North America were

invited to participate. The 5 participants that submitted data included organizations headquartered in Europe, Africa, and North America.

The main results of the pilot testing were positive regarding the underlying content, usability and auditability of the majority of the criteria. A few challenges were identified, namely in the clarity of the applicability of certain criteria, as well as in the tools to be used during the validation process, such as the form used for data collection. The SBTi has decided to address these by adding additional language and instructions to improve clarity. Additionally, the SBTi discovered that the applicability thresholds for several criteria were not leading to the expected outcomes for companies with significant emissions from applicable activities. Adjustments to the applicability calculations for several criteria have been made to ensure targets are required for companies with substantial emissions from relevant activities. More details on the pilot testing process and outcomes is included in the Pilot Testing Report.

1.10 Methodology for feedback analysis

This section outlines the approach applied to analyze stakeholder feedback received during the development of SBTi Chemical Sector Pathways and Implementation Criteria. All feedback received during the development of the criteria through the public consultations and other feedback channels (see 'Scope of external consultations' section), were collated into Feedback Logs. The SBTi Project Team led analysis of the feedback with the support of an external technical partner.

All submitted feedback was considered in the analysis. Written comments submitted by multiple respondents that were materially similar were grouped and presented once in the Feedback Log. The number of respondents providing the comment is indicated in the Log.

Feedback to survey questions and written comments were categorized by topic and by stakeholder cohort. Additional written comments were received to open-ended prompts in the consultation surveys. To maximize transparency, written comments have been included in the Feedback Log as received, except any potentially identifying information in the comment text, such as organization names, was redacted in order to maintain anonymity of the respondent. In total, there were 629 individual written[2] items of feedback received through the public consultation surveys analyzed to inform the development of the SBTi Chemical Sector Pathways and Implementation Criteria. Additional comments were also received and considered via EAG input, direct feedback via email, and feedback from participants of the pilot testing.

For stakeholders that provided feedback to the public consultations, it was not compulsory to respond to all feedback questions. For stakeholders that submitted feedback via means other than the public consultations, the content and scope of the feedback was at their discretion. Qualitative and quantitative feedback was received. In the public consultation surveys, respondents were able to respond to topic-focused multiple choice questions, with an additional option to provide written comments for each topic. General qualitative feedback was also collected via the surveys. Qualitative feedback was analyzed by the grouping of main thematic elements, and direct analysis of additional comments.

[2] Total written comments have been quantified before aggregation of substantially similar comments. The Project Feedback Logs include aggregated comments as a single entry, including the number of respondents that provided the comment.

Quantitative feedback, in the form of the multiple choice survey questions, was analyzed based on the overall answers to the questions, taking into account the stakeholder group of the respondent. This consideration was made due to a disproportionately high number of responses from stakeholders from the chemicals sector itself. Analysis of quantitative feedback also involved a review of the qualitative written feedback, which typically included the respondents' rationale for their answer.

In all cases, critical and/or constructive qualitative comments were considered based on (but not limited to) the topic and theme, taking into account the frequency of the theme's occurrence among multiple respondents' comments, the relevance of the feedback to the criteria, and the adherence of the comment to the SBTi's technical framework. For the second public consultation, a summary of common themes in written feedback by topic was generated using AI. This summary was corroborated based on the Project Team's direct review of individual comments as well. In some cases revisions were made based on individual or infrequent comments to improve the accuracy and clarity of the criteria. Also, revisions were made based on specific comments provided by key stakeholder groups if it was determined that the comment represented a legitimate concern, and that addressing the concern would not undermine the credibility of the criteria. In other cases, common comments were not addressed if it was determined that they could not be addressed due to a lack of available data, or that they would jeopardize the effectiveness of the criteria if implemented. Responses have not been provided for every written comment; however, responses to main themes and common comments in the feedback were provided in the First Public Consultation Report, the Main Changes Document for the Second Public Consultation Draft, and in this Basis for Conclusions Report.

The SBTi issued a public call for relevant companies to voluntarily support piloting the implementation of the draft standard. At the end of the pilot testing process, companies were given the opportunity to answer a survey with the Chemicals Sector Project Team.

Feedback was also received by SBTi validation services on the feasibility of validating companies against the standard. SBTi validation services provided a summary report on the pilot testing outcomes from their perspective, including a list of recommendations for improvements to the criteria.

Inputs from pilot testing informed adjustments made to the draft, in particular in how the applicability of certain criteria is to be determined and improvements to clarity and descriptions of how criteria are to be used.

The decision-making process for inclusion or exclusion of feedback was at the discretion of the SBTi considering:

- The intent and goals of the criteria,
- The SBTi's existing target-setting framework, and
- The feasibility of implementing feedback based on the availability of credible data.

The steps in this decision-making process involved a consideration of options to address each major thematic group of comments, and evaluation of the feasibility of these options, and a decision by the SBTi Chemicals Sector Project Team on how each comment group would be addressed.

2. SIGNIFICANT ISSUES AND SBTi RESPONSES

This section covers the main issues and concerns raised during the development of the SBTi Chemical Sector Pathways and Implementation Criteria project and how they have been addressed by the SBTi. It summarizes the significant issues raised through various feedback channels, specifically comments raised through the public consultation process, EAG meetings, workshops, emails, etc. For the purposes of this Basis for Conclusions Report, issues have been deemed significant if they were repeatedly raised during the consultation process, were raised by a significant number of respondents, or involved concerns about significant risks arising from the criteria.

Significant issues presented in this section are organized by topic, with general issues listed at the end.

Comments related to the overall concept or format of the SBTi Chemical Sector Pathways and Implementation Criteria are excluded from this Basis for Conclusions Report, except if the feedback is required to understand other proposed changes. Minor editorial comments were reviewed and directly incorporated into criteria by the SBTi and are therefore also excluded from this report.

2.1 Primary chemical (ammonia, methanol, high value chemicals) activity-specific emissions intensity convergence pathways

Description	**Issue 1.** Feedback on the defined minimum and mandatory boundary of the activity-specific pathways for target-setting on emissions from the production of primary chemicals, using the sectoral decarbonization approach (SDA).
Method(s) of feedback	• Quantitative feedback during first public consultation • Qualitative feedback during first public consultation • Feedback from the project EAG • Written comments received directly by the SBTi via email
Summary of feedback received	Quantitative feedback • Summary of responses to first public consultation survey questions *"Do you think that the SBTi's proposed SDA target-setting method for ammonia / methanol / high value chemicals production is appropriate for setting targets on emissions intensity from this production?"* have been published in the First Public Consultation Feedback Report. Samples of common qualitative feedback • The SDA target boundaries should use a "cradle-to-gate" basis to ensure the greatest amount of comparability between companies. There are also potential issues related to data security and competition law in sharing primary data from direct company operations vs. cradle-to-gate product carbon footprint data. This

	implies that the SDA method would be very difficult to implement for primary chemical customers that cannot obtain primary data from their suppliers. ● Including emissions that may be within the operational boundaries of two or more companies within the SDA boundary would make it impractical for such companies to utilize the SDA method. ● The assumed speed of development of low-carbon technologies in the primary chemical pathways is too high, making the pathways too ambitious. ● Multiple comments received that were supportive of SDA target-setting methods as proposed.
Changes (if any) implemented	Prior to the second public consultation, the SBTi included a new criterion (CHEM-C10 in the 2nd Public Consultation Draft) that clarifies when, and how, companies may combine targets that are set using the SDA method with targets set using the absolute reduction method on upstream scope 3 emissions, if certain requirements are met. Following the consultation process, the SBTi removed criterion CHEM-C10 because this criterion described requirements that are not specific to the chemicals sector, and are therefore better addressed elsewhere in the SBTi framework.
Rationale	<u>Primary Chemical Pathways</u> The SBTi recognizes that emissions reductions from primary chemical products will require significant changes in the technologies currently used to produce these chemicals, as well as in the supporting infrastructure needed for these technologies, such as the availability of reliable renewable electricity. The SBTi bases its target-setting methods on credible and plausible emissions scenarios that are aligned with a 1.5°C level of ambition. For sector-specific methods this includes an assumed carbon budget for the boundary of emissions sources included in the methods' boundaries. The SBTi has based the activity-specific target-setting pathways for each primary chemical on the International Energy Agency's (IEA's) Net Zero Emissions by 2050 Scenario[3], as outlined in the Chemicals Sector Pathways Synthesis Report. This emissions scenario is an output of a technology-rich model that includes an evaluation of technological readiness for new production routes while ensuring the sectoral carbon budget is maintained. The IEA NZE scenario adheres with the SBTi's principles for pathways, and thus is a legitimate source for the primary chemical activity-specific pathways. <u>Activity-specific target-setting method boundary</u>

[3] IEA. (2021). Net Zero by 2050: A Roadmap for the Global Energy Sector. License: CC BY 4.0. IEA, Paris. Retrieved from https://www.iea.org/reports/net-zero-by-2050.

	Regarding the use of the proposed “cradle-to-gate” basis for the activity-specific target boundaries, the SBTi acknowledges that such a basis could provide benefits described by stakeholders, such as improved comparability across companies with differing business models and alignment with commonly available product carbon footprint (PCF) data for sold primary chemicals. The SBTi also recognizes that the availability of primary data from primary chemical suppliers may be limited, or there may even be regulatory barriers to obtaining this data due to competition law, for companies using the pathways for scope 3 targets. In addition to meeting all applicable criteria, companies are responsible for meeting or exceeding the national, subnational, regional, legislation and/or regulation in the countries where the criteria are applied on topics covered in the criteria. However, for this first version of the SBTi Chemical Sector Pathways and Implementation Criteria, we are basing the primary chemical activity-specific target boundaries on a narrower boundary that aligns with the underlying IEA NZE emissions scenario. The rationale for this decision includes: 1) The preservation of subsectoral carbon budgets is essential to the SDA method. This is due to the function of the SDA method itself, which calculates targets on a specific boundary of emissions sources using company-specific input data. The SDA ensures the conservation of a fixed carbon budget that is associated with the underlying pathway’s emissions boundary (in this case, the IEA NZE scenario). Combining emissions from within the pathway’s emissions boundary with emissions outside the boundary (such as upstream emissions from feedstock or fuel production) could jeopardize the subsectoral carbon budget because emissions reductions within the boundary would not be guaranteed. This is especially problematic when the combined emissions include upstream scope 3 emissions that are outside the chemicals sector. Achievement of targets set using the SDA method is thus necessary to ensure progress in emissions reductions from the critical activities within the chemicals sector covered by activity-specific pathways. This is consistent with the application of the SDA method for targets in other SBTi sector resources, such as the Cement Sector Guidance. 2) Notwithstanding #1, to be feasibly included within the target boundary, accurate upstream scope 3 emissions data related to each chemical’s production would need to be estimated and included within the activity-specific pathway(s). Data is lacking on exact feedstock and fuel use, by year, for the IEA NZE scenario for methanol and HVC. While paths to estimating such data may be explored, assumptions would be needed of the global volumes of feedstocks and fuels used to produce these chemicals using the technologies assumed in the scenario, as well as energy and production efficiencies for each process. Such assumptions

	would introduce significant levels of uncertainty into the calculation. While more data on feedstock and fuel usage is available from the IEA for ammonia production, significant estimates would still be required to develop a full pathway. This introduction of additional error and uncertainty in the sector pathway would further jeopardize the integrity of the carbon budget for primary chemical production itself. The SBTi is committed to continually reviewing and improving our resources. Revisions to the target-setting methods for the chemicals sector, including the basis for primary chemical activity-specific pathways, may be explored in future work.

Description	**Issue 2.** Treatment of ammonia for energy purposes within the SBTI's ammonia production activity-specific target boundary.
Method(s) of feedback	● Qualitative feedback during first public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Samples of common qualitative feedback</u> ● The use of ammonia in energy-related applications is expected to grow; therefore, such production should be included within the scope of the criteria, and within the SDA target-setting boundary for ammonia.
Changes (if any) implemented	The SBTi has developed an additional activity-specific pathway for emissions from ammonia production activities that encompasses both ammonia produced for non-energy and energy uses.
Rationale	Emissions and production volumes from ammonia intended for energy carrier purposes (e.g., as a fuel in the maritime sector) are not included within the data for ammonia production from the IEA NZE scenario, which is the basis for the initial proposed activity-specific pathway for ammonia. While this production is modeled, it has been considered within the energy sector rather than the chemicals sector by the IEA. Within the IEA's NZE scenario, hydrogen and ammonia production for energy purposes is expected to grow. However, such production represents markets that are not significant today. In the NZE scenario, this new demand is met solely via low-emissions production technologies because the use of ammonia as an energy carrier typically presents advantages over fossil fuel alternatives only if the ammonia was produced using such low-emissions technologies. This implies that little to no additional net direct emissions are generated by producing hydrogen and/or ammonia for these new energy markets.

	For this reason, the SBTi has developed a pathway that includes only ammonia production for non-energy applications. This ensures that emissions from such production for existing markets are reduced, and it ensures that the pathway for producers that are focused only on non-energy markets may utilize a pathway that is consistent with the IEA modeling for such production. Additionally, the SBTi has developed an alternative activity-specific pathway for emissions from ammonia production activities that includes production for all end uses. This additional pathway includes estimates of ammonia production intended for energy purposes from the IEA NZE scenario. The SBTi has assumed that the additional production does not contribute additional direct emissions, since its production will come from low-emissions technologies; however, in reality some direct emissions will occur due to incomplete capture rates on fossil fuel based production with carbon capture and storage (CCS). The SBTi may investigate refinements to this approach in future work. This pathway provides an option for companies that wish to include emissions from ammonia production for both non-energy and energy uses within their target boundary. The SBTi recognizes that this combined pathway may allow for emissions intensity convergence targets to be set on ammonia production that is intended as an energy carrier, even though this production is assumed to produce minimal direct CO_2 emissions in the IEA modeling. However, in practice, for ammonia to be recognized as a low-emissions energy source, it should be produced using low-emissions production methods.

Description	**Issue 3.** The SBTi's ammonia production activity-specific pathway does not include CO_2 emissions from the use-phase of urea as a fertilizer. While such emissions are not directly emitted during production, they are unavoidably emitted in the use-phase when the urea is used as a fertilizer.
Method(s) of feedback	● Qualitative feedback during first public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Samples of common qualitative feedback</u> ● The majority of CO_2 produced while manufacturing urea is captured and utilized in the product itself. These CO_2 emissions are not directly emitted during production, but they are emitted in the use-phase when the urea is used as a fertilizer. Therefore, these emissions should be included as scope 1 emissions for the urea producer, and included within the ammonia production SDA target boundary, as they are unavoidable in the use-phase.

	• Feedback was also received that supported maintaining consistency with the GHG Protocol that CO_2 emissions from the use-phase of urea fertilizers should be reported in scope 3 for urea producers.
Changes (if any) implemented	None
Rationale	The SBTi recognizes that CO_2 emissions that occur in the use-phase of urea-based fertilizers cannot be abated once applied in the field. This implies any mitigation of such emissions would need to occur via the manufacture of the urea itself, either through reduced reliance on urea-based fertilizers (demand reduction), or through the use of alternative non-virgin fossil sources of carbon. Accounting for CO_2 from the use-phase of urea-based fertilizers in scope 1 of the urea producer would necessitate a change from the GHG accounting requirements of the GHG Protocol, which requires that emissions associated with sold products that occur in a company's value chain outside their operational boundary must be accounted for in scope 3. The SBTi is maintaining consistency with the GHG Protocol that CO_2 emissions occurring in the use-phase of sold urea-based fertilizers should be accounted for in scope 3 category 11. Such accounting recognizes the importance of full value-chain emissions accountability. This situation is not wholly unique in industry. For example, sellers of certain transport fuels must account for use-phase emissions that cannot be abated at the point of use. Similarly, sellers of carbonated beverages must account for the ultimate unabatable emissions of the CO_2 that has been incorporated into their product. Maintaining consistency with the GHG Protocol would also avoid a situation in which companies must utilize different accounting methods for different purposes. Further, there are actions that producers of urea can take to mitigate the emissions from the release of CO_2 in the use-phase. These include the use of bio-based feedstocks to produce the ammonia and urea, or the use of green-hydrogen based ammonia combined with CO_2 of a biogenic origin or from direct air capture (DAC).

Description	**Issue 4.** Establishment of a single activity-specific pathway for each primary chemical group, based on the global average pathway, ignores differences between geographic regions.
Method(s) of feedback	• Qualitative feedback during first public consultation • Feedback from the project EAG

Summary of feedback received	<u>Samples of common qualitative feedback</u> ● The proposed SDA pathways do not consider regional differences that may present unique challenges due to the responsibilities and capabilities of different regions to provide supporting infrastructure or renewable power.
Changes (if any) implemented	None
Rationale	The SBTi recognizes that every geographic region has unique challenges, and opportunities, when it comes to the ability to align with emissions scenarios that are aggregated at the global level. There are numerous methods for allocating global carbon budgets to the regional level that each consider different strategies for proportioning this data (e.g., historical responsibility, equity, energy security, etc.) While this is true for the chemicals sector as well, for the initial version of the pathways criteria document, the SBTi has chosen to develop chemicals-specific pathways at the global level. More research may be done for future revisions of the pathways, to assess whether regional pathways or methods may be feasible. Such research will include an evaluation of the availability of data on which to base the pathways, as well as an assessment of whether regional pathways would present a fair and practical delineation in targets for companies that may be based in one region, but have operations in multiple regions.

2.2 Target requirements for scope 1 N_2O emissions from nitric acid production

Description	**Issue 5.** Criterion that requires an additional target on N_2O emissions intensity from nitric acid production if certain conditions are met is unnecessary and goes beyond the SBTi's typical framework.
Method(s) of feedback	● Quantitative feedback during first public consultation ● Qualitative feedback during first public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> ● Summary of responses to the first public consultation survey questions *"Do you agree that the SBTi should require companies to set a separate target on emissions of N_2O from nitric acid production, if they meet the applicability criteria described in the consultation draft?"* and "*Do you agree with the SBTi's proposed target threshold of 0.5 kg N_2O per tonne of nitric acid produced?*" have been published in the First Public Consultation Feedback Report. <u>Samples of common qualitative feedback</u>

	• Separate targets on N_2O emissions from nitric acid should not be required as it goes above any beyond requirements in other sectors
Changes (if any) implemented	None
Rationale	The SBTi develops sector specific target-setting methods to address both the unique challenges and opportunities to reduce emissions within the sector. The SBTi feels that specific targets on the production of nitric acid present a low risk, high reward opportunity to incentivize emissions reductions on this highly abateable source of N_2O emissions. By not requiring individual targets on nitric acid production, companies with unabated N_2O emissions may first address these emissions to meet their broader target, and thus be less incentivized to pursue other meaningful actions in the short term.

2.3 Criteria describing options for combined targets

Description	**Issue 6.** Options provided for combining targets set using the SDA method and targets set using other methods on scope 1 and 2 are not sufficient.
Method(s) of feedback	• Quantitative feedback during second public consultation • Qualitative feedback during second public consultation • Feedback from the project EAG
Summary of feedback received	Quantitative feedback • Summary of responses to the second public consultation survey questions *"Do you agree that criterion CHEM-C5 presents an appropriate option for companies to combine SDA targets and other scope 1 and 2 targets?"* have been published in the Second Public Consultation Feedback Report. Samples of common qualitative feedback • It should be allowable that targets set using different methods that are combined on an absolute emissions basis should be achieved on an aggregated basis. Subtargets to be met separately should not be required.
Changes (if any) implemented	Following the consultation process, the SBTi removed the criteria describing requirements for combining targets.
Rationale	The SBTi recognizes that combining targets may increase flexibility at the expense of transparency on individual target achievement. However, the criteria that had been included in the draft are not specific to the chemicals sector, and are therefore better addressed elsewhere in the SBTi framework.

Description	**Issue 7.** Options provided for combining scope 3 targets set using the SDA method and targets set using other methods on scope 3 are not sufficient.
Method(s) of feedback	● Quantitative feedback during second public consultation ● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> ● Summary of responses to the second public consultation survey questions *"Do you agree that criterion CHEM-C10 presents an appropriate option for companies to combine SDA targets in scope 3 and other scope 3 targets?"* have been published in the Second Public Consultation Feedback Report. <u>Sample of common qualitative feedback</u> ● It may be infeasible for companies to obtain the data needed to differentiate sources of emissions in upstream scope 3 category 1.
Changes (if any) implemented	Following the consultation process, the SBTi removed the criteria describing requirements for combining targets.
Rationale	The SBTi recognizes that the availability of primary data from their suppliers may be limited, or there may even be regulatory barriers to obtaining this data due to competition law, for companies using criteria combining scope 3 targets. We emphasize that in developing and achieving targets, companies must comply with all applicable regulations. The SBTi is committed to continually reviewing and improving our resources. Future revisions to the target-setting methods for the chemicals sector, including options for setting scope 3 targets on significant sources of scope 3 emissions, may be explored in future work. The SBTi recognizes that combining targets may increase flexibility at the expense of transparency on individual target achievement. However, the criteria that had been included in the draft are not specific to the chemicals sector, and are therefore better addressed elsewhere in the SBTi framework.

2.4 Criteria requiring mandatory coverage on scope 3 category 1 emissions from directly purchased primary chemicals

Description	**Issue 8.** Mandatory scope 3 category 1 target coverage requirement for companies purchasing primary chemicals directly.

Method(s) of feedback	• Quantitative feedback during first public consultation • Qualitative feedback during first public consultation • Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> • Summary of responses to the second public consultation survey questions *"Do you agree that targets on scope 3 category 1 emissions from purchased primary chemicals should be required, regardless of the contribution of these emissions towards their total scope 1, 2, and 3 inventory?"* have been published in the First Public Consultation Feedback Report. <u>Samples of common qualitative feedback</u> • Companies should have the flexibility to choose the most cost-effective manner for achieving their emission reduction goals. • Setting a separate target on primary chemicals will bring an additional tracking burden to companies. In addition, it will not help to speed up reducing emissions, as these materials will very likely already be prioritized assuming they represent a significant proportion of the total emissions for many chemical companies. • It is difficult for the downstream user to be able to fully distinguish if a chemical that they purchase is primary chemical or a mixture (e.g. due to impurities in the purchased chemical), and hence difficult to set meaningful targets only covering primary chemicals in scope 3 category 1. • Strongly agree that targets on scope 3 category 1 emissions from purchased primary chemicals should be required, regardless of the contribution of these emissions toward total scope 1, 2 and 3 inventory. It is critical to discourage the possibility of 'scope leakage', i.e. outsourcing production of primary chemicals from scope 1 into scope 3 category 1 emissions from purchased goods and services.
Changes (if any) implemented	The SBTi removed all criteria that mandated minimum scope 3 target coverage for specific categories of emissions following the consultation phase.
Rationale	In anticipation of updates to the SBTi's scope 3 target-setting framework as part of the SBTi Corporate Net Zero Standard (CNZS) v2.0 revision process, criteria requiring minimum scope 3 target coverage on emissions from purchased primary chemicals and emissions from the use-phase of urea based fertilizers has been removed from the SBTi Chemical Sector Pathways and Implementation Criteria document. The framework for setting scope 3 targets is expected to be significantly redefined in the CNZS revision, reducing the importance of sector-specific coverage requirements on certain scope 3 categories.

2.5 Criteria on activity-specific target-setting pathways for scope 3 category 11 emissions of N_2O from sold nitrogen fertilizers

Description	**Issue 9.** The chosen metric of absolute emissions for the activity-specific pathways introduced specifically for scope 3 category 11 emissions of N_2O from the use-phase of sold nitrogen fertilizers is not appropriate for this source of emissions.
Method(s) of feedback	• Quantitative feedback during first public consultation • Qualitative feedback during first public consultation • Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> • Summary of responses to the first public consultation survey questions "*Do you agree that absolute emissions reduction is an appropriate metric for setting targets on N_2O emissions from the use of nitrogen fertilizers?"* have been published in the First Public Consultation Feedback Report. <u>Samples of common qualitative feedback</u> • An intensity-based metric for N_2O emissions from the fertilizer use-phase would be a better indicator, as this would incentivize more efficient fertilizer use, would reflect improvements in use of nitrification inhibitors, and would acknowledge the continued demand for synthetic nutrient fertilizers to meet food demand. • Fertilizer use and demand varies significantly by region, due to various factors such as economic growth projections, climate, and crop types. A global average emission reduction metric is not appropriate for all companies.
Changes (if any) implemented	None
Rationale	The SBTi worked to develop an activity-specific pathway for scope 3 category 11 N_2O emissions from sold nitrogen fertilizers because of the significance of these emissions in scope 3 of fertilizer producers in the chemicals sector, and because the SBTi's existing scope 3 target-setting framework was seen as inappropriate to this particular source of emissions. The SBTi recognizes the benefits of a metric based on emissions intensity for emissions of N_2O from the use of nitrogen fertilizers. However, for this first version of the SBTi Chemical Sector Pathways and Implementation Criteria, we have utilized an absolute emissions metric for the following reasons: 1) A method based on emissions intensity per unit of crop would require global, crop-specific, and region-specific pathways, since nitrogen uptake differs by crop and by geographic location; however, the SBTi was not able

	to identify consistent pathways with an appropriate level of transparency and granularity on which to base such pathways. 2) An emissions intensity metric would need to be paired with a metric on total crop production that is attributable to the company setting the target. Otherwise increases in applied nitrogen, and thus N_2O emissions, may not align with those in the underlying pathway. This data may prove difficult for companies to obtain at the level of detail needed when the crop production occurs in their product's use-phase. Due to a lack of current pathway data for a potential intensity metric, and concerns about data availability and measurability, we did not establish an emissions intensity-based method at this time. The SBTi believes that a metric on absolute N_2O emissions does capture improvements to both nitrogen use efficiency (NUE) and reductions in emissions from the use of nitrification inhibitors. Improvements in NUE would imply a moderated demand for fertilizers to achieve the same crop output, since the added nitrogen is used more efficiently. The SBTi is committed to continually reviewing and improving our resources. Future revisions may explore different metrics and methods in the fertilizer use-phase for chemical companies that produce and sell nitrogen fertilizers or their components.

Description	**Issue 10.** The level of ambition of the new target-setting pathways introduced specifically for scope 3 category 11 emissions of N2O from the use-phase of sold nitrogen fertilizers.
Method(s) of feedback	● Quantitative feedback during first public consultation ● Qualitative feedback during first public consultation ● Quantitative feedback during second public consultation ● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> ● Summary of responses to the first public consultation survey questions: ○ *Do you think that the proposed near-term absolute emissions reduction pathways presented in criteria CHEM-C8 of the consultation draft is an appropriate level of ambition for N2O emissions from the use of sold nitrogen fertilizers in scope 3 category 11?, and* ○ *Do you think that the proposed near-term absolute emissions reduction pathways presented in criteria*

	CHEM-C8 of the consultation draft is an appropriate level of ambition for N2O emissions from the use of sold nitrogen fertilizers in scope 3 category 11? have been published in the First Public Consultation Feedback Report. ● Summary of responses to the second public consultation survey questions: ○ *Do you think that the proposed near-term absolute emissions reduction pathways presented in criterion CHEM-C8 of the consultation draft is an appropriate level of ambition for N2O emissions from the use of sold nitrogen fertilizers in scope 3 category 11?, and* ○ *Do you think that the proposed long-term absolute emissions reduction pathways presented in criterion CHEM-C9 of the consultation draft is an appropriate level of ambition for N2O emissions from the use of sold nitrogen fertilizers in scope 3 category 11?* have been published in the second Public Consultation Feedback Report Samples of common qualitative feedback ● The ambition does not take into account food security issues and growing demand for fertilizers. ● The proposed pathways were based on averaging findings out of three scenarios of three studies of which underlying assumptions are different from studies referred to by IPCC, referring to levers beyond the influence of the fertilizer producer or assumptions which are not transparent.
Changes (if any) implemented	Prior to the second public consultation, the SBTi revised the activity-specific pathway for the optional target-setting method for N_2O emissions in scope 3 category 11 from the use-phase of sold nitrogen fertilizers. The revised pathway incorporates a broader set of emissions scenarios from the sixth Assessment Report (AR6) of the IPCC while also considering several focused studies on emissions from the use of synthetic nitrogen fertilizers. The development of the revised pathway is described in detail in the Chemicals Sector Pathways Synthesis Report.
Rationale	The SBTi expanded the envelope of scenarios used to develop this sector-specific pathway in order to recognize a wider set of models that remain aligned with a 1.5°C level of ambition.

2.6 Target requirements for the activity-specific alignment pathway on shares of purchased carbon-containing feedstocks from alternative sources

Description	**Issue 11.**

	Necessity of inclusion of an additional target requiring a minimum % share of purchased carbon-based feedstocks from alternative (non-virgin fossil) sources.
Method(s) of feedback	• Quantitative feedback during first public consultation • Qualitative feedback during first public consultation • Feedback from the project EAG
Summary of feedback received	Quantitative Feedback • Summary of responses to the first public consultation survey questions *"Do you agree that a target requiring a minimum percentage of carbon-based alternative feedstocks is an appropriate metric for increasing the usage of these materials in the chemicals value chain, and thus increasing circularity and reducing the reliance on virgin fossil-based materials?*" have been published in the First Public Consultation Feedback Report. Qualitative Feedback • Mandatory targets on increasing shares of alternative feedstocks should be a replacement for, or an alternative to, relevant scope 3 emissions targets (e.g., category 1 and category 12 related to carbon-based feedstocks/products). • Direct requirements to source alternative feedstocks could risk the pursuit of less sustainable alternatives in the near term, which could bring side effects or increased life cycle emissions vs. the fossil sources. • We view (feedstock targets and emissions targets) as additional to each other and trying to accomplish different things, both of which are necessary for the transition. Emissions targets, the (scope 3 category 1) target specifically, and the feedstock target are all important, separate parts of the guidance.
Changes (if any) implemented	Following the consultation phase, the SBTi has revised the pathways document to make target-setting on shares of sourced alternative feedstocks recommended rather than mandatory. Additionally, the SBTi has removed the requirement that alternative feedstocks of biogenic origin shall not be associated with deforestation. This requirement is being considered as a more broadly applicable requirement related to sourcing of biogenic materials as part of the revisions to CNZS v2.0.
Rationale	An optional target on sourcing of alternative feedstocks will allow for the recognition of companies that have made sourcing of these materials a part of their climate strategy, while acknowledging that the use of these materials may vary depending on the circumstances of individual companies.

	The SBTi agrees that an expansion in the use of alternative feedstocks must be associated with real and demonstrable reductions in GHG emissions across the value chain of the companies sourcing and selling these materials. We recognize there is a risk in setting targets directly on shares of sourced alternative feedstocks, as these feedstocks have the potential to carry negative burdens not only on GHG emissions, but also in other key sustainability areas such as land use impacts. However, there is consistency among published emissions scenarios that a decrease in reliance on virgin fossil materials as feedstock is an important factor for the sector to reach net zero. For this reason, the optional alternative feedstock target is being proposed as an addition to the SBTi's standing requirements on emissions reduction targets. Companies must also account for the full value chain GHG emissions impacts related to the alternative feedstock in the GHG inventory, similarly to traditional feedstocks, using best practices for GHG emissions inventory development. In this way companies are incentivized to pursue sustainable alternate sources of carbon that support their broader emissions reduction targets.

Description	**Issue 12.** Definition of "alternative feedstock" should include circular materials from mechanical recycling.
Method(s) of feedback	● Qualitative feedback during first public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Sample of qualitative feedback</u> ● Mechanically recycled carbon should be included as an option for alternative feedstock.
Changes (if any) implemented	Prior to the second public consultation, the SBTi revised the draft criteria to include an option under the alternative feedstock target-setting method where companies may include mechanically recycled feedstocks as part of their target threshold, and as part of their performance metric. Companies may also choose to use the option that excludes mechanically recycled materials. This option has been added in recognition that mechanically recycled materials may be valuable as alternative material sources within the sector's value chain.
Rationale	The SBTi added an option to include alternative feedstocks produced from mechanically recycled sources of carbon in recognition of these materials availability to companies that fall within the scope of the SBTi Chemical Sector Pathways and Implementation Criteria document. Because this source of carbon was not considered in the initial development of the target threshold pathway, additional analysis was required to determine an alternate pathway that includes mechanically recycled carbon. Because

	feedstocks from mechanically recycled sources may not be available to all actors in the value chain, particularly producers of primary chemicals, inclusion of these materials within a target boundary is optional. If included, a company must utilize a more ambitious target threshold pathway that considers mechanically recycled materials.

Description	**Issue 13.** The current environment in the sector does not support a rapid near-term expansion in alternative feedstock materials throughout the chemicals value chain.
Method(s) of feedback	• Quantitative feedback during first public consultation • Qualitative feedback during first public consultation • Quantitative feedback during second public consultation • Qualitative feedback during second public consultation • Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> • Summary of responses to the first public consultation survey questions *"Do you agree with the proposed minimum thresholds of sourced alternative feedstocks that are presented in the draft chemicals sector target-setting tool?*" have been published in the First Public Consultation Feedback Report. • Summary of responses to the second public consultation survey questions "*Do you agree with the proposed minimum thresholds of sourced alternative feedstocks that are presented in the draft Chemicals Sector Target-Setting Tool? Note there are different thresholds depending on whether mechanically recycled materials are included"* have been published in the second Public Consultation Feedback Report. <u>Samples of qualitative feedback</u> • The lack of currently available alternatives in the market would make it difficult for companies to commit to meeting the required thresholds. • Using a "one-size-fits-all approach" to the target threshold is not appropriate considering the widely diverse range of processes/products within the sector scope. Some companies may easily meet the threshold, while others may not have viable alternatives available.
Changes (if any) implemented	Following the consultation phase, the SBTi has revised the pathways document to make target-setting on shares of sourced alternative feedstocks recommended rather than mandatory.
Rationale	An optional target on sourcing of alternative feedstocks will allow for the recognition of companies that have made sourcing of these materials a part

	of their climate strategy, while acknowledging that the use of these materials may vary depending on the circumstances of individual companies.

Description	**Issue 14.** New scope 3 GHG accounting methods applicable to the chemicals sector should be included in the criteria.
Method(s) of feedback	● Qualitative feedback during first public consultation ● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Qualitative feedback</u> ● Use of alternative scope 3 GHG accounting methods should be implemented to incentivize increases in alternative sources of carbon, rather than mandates on alternative feedstocks. Such methods may include: ○ A “circular cut-off method” that uses circular product content as the cut-off criteria for calculating end-of-life emissions, or ○ A required application of a minimum emission factor at end-of-life for sold products.
Changes (if any) implemented	None
Rationale	The SBTi agrees that improvements in scope 3 accounting, especially for categories 1 and 12, could help harmonize a shift towards alternative sources of carbon with documentable decreases in supply chain emissions. In this first version of the SBTi Chemical Sector Pathways and Implementation Criteria document, the SBTi will not directly endorse or require new or revised GHG accounting methods (such as the circular cut-off method) that have not yet been adopted in the GHG Protocol standards. We feel that the best mechanism to properly vet and evaluate such methods is via a dedicated evaluation and stakeholder engagement process focused on emissions accounting, such as those managed by the GHG Protocol. Alignment with the GHG Protocol’s GHG accounting standards remains a critical component of the SBTi’s framework.

2.7 Allowances and requirements related to the use of mass balance chain-of-custody systems in setting and meeting targets

Description	**Issue 15.** Feedback regarding how the use of chain-of-custody methodologies for meeting targets should be addressed in the SBTi Chemical Sector Pathways and Implementation Criteria document.

Method(s) of feedback	• Qualitative feedback during first public consultation • Quantitative feedback during second public consultation • Qualitative feedback during second public consultation • Feedback from the project EAG
Summary of feedback received	Quantitative feedback • Summary of responses to the second public consultation survey questions *"Do you think criterion CHEM-C12 presents appropriate requirements for the use of the mass balance approach for chemical companies, pending future requirements from the SBTi and/or GHG Protocol?*" have been published in the second Public Consultation Feedback Report. Samples of qualitative feedback • The use of mass balance models, without restrictions, should be acceptable for meeting targets in the chemicals sector. This includes multi-site boundaries and/or multi-site transfer of attribute credits. • The use of book-and-claim systems in the chemicals sector should be allowed to remove barriers to companies pursuing more sustainable materials. • The use of book-and-claim systems should not be acceptable for demonstrating progress towards targets. Caution should be exercised regarding methods where there is a loss of physical or chemical connectivity between process inputs and sold products. • (The current criteria) is a sound approach. I agree with the need to use market based approaches to drive the chemical sector and the requirements introduced are conservative enough to prevent greenwashing and criticism. It is a good idea to be conservative while the work on EACs is not finalized by SBTi and the GHGP
Changes (if any) implemented	Following the consultation phase, the SBTi has removed the criterion regarding use of mass balance chain-of-custody models from the pathways document.
Rationale	The use of mixed chain-of-custody systems, like the mass balance approach, and other market-based instruments such as Environmental Attribute Certificates (EACs) in the SBTi framework is being considered as part of the revisions to the CNZS v2.0. In anticipation of further guidelines around the use of such models in the CNZS v2.0, the SBTi has decided to remove any chemicals sector-specific criteria or guidance. In future work the SBTi may consider sector-specific guidance or requirements as necessary to build on the CNZS framework.

Description	**Issue 16.**

	Feedback on how the SBTi should align with other organizations that set standards, requirements, or guidance regarding chain-of-custody models and market-based instruments to avoid conflicting requirements.
Method(s) of feedback	● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Samples of qualitative feedback</u> ● Comments were received emphasizing the need for alignment with existing and emerging standards like ISO 13662, Together for Sustainability (TfS), and ISCC. ● Concerns were raised about ongoing developments by the SBTi and GHG Protocol that risk conflicting with the SBTi Chemical Sector Pathways and Implementation Criteria.
Changes (if any) implemented	Following the consultation phase, the SBTi has removed the criterion regarding use of mass balance chain-of-custody models from the pathways document.
Rationale	The use of mixed chain-of-custody systems, like the mass balance approach, and other market-based instruments such as Environmental Attribute Certificates (EACs) in the SBTi framework is being considered as part of the revisions to the CNZS v2.0. In anticipation of further guidelines around the use of such models in the CNZS v2.0, the SBTi has decided to remove any chemicals sector-specific criteria or guidance. In future work the SBTi may consider sector-specific guidance or requirements as necessary to build on the CNZS framework.

2.8 Treatment of chemicals sector processes and other topics not directly addressed via sector-specific criteria

Description	**Issue 17.** Feedback on the lack of sector-specific approaches for several chemicals sector products, activities, and sources of emissions.
Method(s) of feedback	● Quantitative feedback during first public consultation ● Qualitative feedback during first public consultation ● Quantitative feedback during second public consultation ● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> ● Summary of responses to the first public consultation survey questions *“Do you think that the SBTi’s 1.5°C-aligned cross-sector absolute emission reduction pathway is appropriate for setting targets on emissions from the self-generation of electricity and heat*

	for manufacturing non-primary chemicals?" have been published in the First Public Consultation Feedback Report. Samples of qualitative feedback ● There needs to be a sector-specific pathway established for products other than primary chemicals. The IEA NZE scenario includes non-primary chemicals in its modeling framework, and provides emissions data for the entire chemicals sector (primary and non-primary chemicals). ● There should be a method that allows companies to set combined cradle-to-grave emissions targets across all scopes, using full sectoral data. ● The criteria does not address all activities that may have significant or hard-to-abate emissions, such as the production of carbon black, phosphoric acid, and refrigerants. ● A commenter in the chemicals sector noted their organization has used the cross-sector absolute reduction method to validate targets with the SBTi, and therefore a sector-specific absolute reduction pathway is not necessary.
Changes (if any) implemented	Following the consultation process, the SBTi included a new activity-specific pathway for use in setting targets on scope 1 emissions from the non-primary chemical production activities, based on the IEA NZE scenario.
Rationale	The SBTi did not initially include an activity-specific absolute reduction pathway for scope 1 emissions from non-primary chemical production activities due to the lack of granularity in the modeling data available for this diverse set of emissions sources in the IEA NZE scenario. Following the consultation process, the SBTi has implemented an activity-specific pathway for scope 1 emissions from non-primary chemical production, intended to cover direct CO_2 emissions within the chemicals sectoral boundary from processes other than those used to produce primary chemicals or nitric acid. This pathway was added in recognition that the default SBTi cross-sector pathway does not necessarily provide a viable alternative to the IEA NZE scenario for emissions from non-primary chemical production. It also better aligns with anticipated revisions to the CNZS to focus on more granular activity-specific emissions pathways. Since the cross-sector pathway is an aggregation of global emission pathways that encompass emissions from all sectors, it presents issues regarding a lack of granularity, compounded by the inclusion of other unrelated sources of emissions. Therefore, the IEA NZE scenario has been used to establish the pathway for scope 1 emissions from non-primary chemical production activities.

	The segment of “non-primary chemicals” is widely diverse, from major intermediate chemicals (e.g. propylene oxide) to specialty chemicals. These products may require high temperature heating, low temperature heating, or a combination of both. Thus, in future work the SBTi may develop additional activity or technology-specific target-setting methods at a more granular level if sufficient data is available.

Description	**Issue 18.** Feedback on a lack of sector-specific approaches for emissions related to the consumption of electricity by companies in the chemicals sector.
Method(s) of feedback	● Quantitative feedback during first public consultation ● Qualitative feedback during first public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Quantitative feedback</u> ● Summary of responses to the first public consultation survey questions *“Do you think that the SBTi’s 1.5°C-aligned cross-sector absolute emission reduction pathway is appropriate for setting targets on emissions from the self-generation of electricity and heat for manufacturing non-primary chemicals?*” have been published in the First Public Consultation Feedback Report. <u>Sample of qualitative feedback</u> ● There needs to be a sector-specific pathway established for electricity consumption, both for scope 2 emissions and for self-produced power in the sector.
Changes (if any) implemented	None
Rationale	The SBTi has not not developed sector-specific pathways for self-generated power because: ● We have not identified chemicals sector-specific emissions scenarios for self-generated power in the sector that describe a net-zero aligned trajectory. ● Electrolytic “green hydrogen”-based production for methanol and ammonia begins to emerge in 2030 in the IEA NZE scenario. Increases in electricity consumption for this production must, by definition, come from renewable sources, which will not contribute to emissions, and will thus already be lower than the power sector emissions intensity. ● Self-generated power from waste heat and steam that originate from primary chemical production will be accounted for as heat related emissions in the activity-specific target boundaries.

	In future revisions to the criteria, the SBTi may evaluate additional activities depending on developments in the availability of data and other considerations.

Description	**Issue 19.** Stakeholders requested clearer guidance on GHG accounting, across all scopes, related to products manufactured using biogenic materials.
Method(s) of feedback	● Qualitative feedback during first public consultation ● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Sample of qualitative feedback</u> ● There is a need for more guidance on GHG emissions accounting for biobased materials used to produce chemicals, specifically recognizing the potential emissions benefits from these materials.
Changes (if any) implemented	None
Rationale	The SBTi recognizes the need for clarity and consistency in the accounting guidelines around the use of biobased materials as feedstocks in the chemicals sector. Due to the pending release of the GHG Protocol's Land Sector and Removals Guidance, which is expected to contain additional guidelines on biogenic emissions accounting, the SBTi has chosen not to establish new criteria on the topic at this time. Upon release of the Land Sector and Removals Guidance, the SBTi will evaluate whether revisions are needed to our criteria.

Description	**Issue 20.** Comments regarding the exclusion of hydrogen, ammonia, and methanol production for energy purposes within the primary chemical SDA target boundaries.
Method(s) of feedback	● Qualitative feedback during first public consultation ● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Sample of qualitative feedback</u> ● The exclusion of ammonia used as an energy carrier from the SDA (target boundary) makes combined target setting under CHEM-C5, based on downstream application very complex. This becomes even more complex to implement for hybrid plants (e.g. Steam Methane Reforming + electrolysis) where ammonia is being produced in the same production unit both for the fertilizer production and energy markets.

	• Commenters disagreed with the exclusion of ammonia used as an energy carrier from SDA (target boundary). Concerns that this requirement is disregarding the ground realities of the processes and will be very difficult to operationalize. Since the SDA excludes such ammonia, a company establishing such clean ammonia capacity does not have any way of demonstrating alignment with 1.5 degrees under SBTi / chemical sector SDA, and it would be subject to developing ACA targets even when the emissions from the onset are close to zero. To rectify this situation, we suggest that the SDA clarifies this point.
Changes (if any) implemented	The SBTi has developed an additional activity-specific pathway for emissions from ammonia production activities that encompasses both ammonia produced for non-energy and energy uses.
Rationale	The SBTi recognizes that the complex market for ammonia may make it challenging for companies to estimate (and/or exclude) the required data for setting a target using the activity-specific pathway for ammonia production for non-energy purposes only. Emissions and production volumes from ammonia intended for energy carrier purposes are not included within the data for ammonia production from the IEA NZE scenario, which is the basis for the proposed activity-specific pathway for ammonia. This production is modeled, however it has been considered within the energy sector rather than the chemicals sector. Within the IEA's NZE scenario, hydrogen and ammonia production for energy purposes is expected to grow. However, such production represents markets that are not significant today. In the NZE scenario, this new demand is met via low-emissions production technologies because the use of ammonia as an energy carrier typically presents advantages over fossil fuel alternatives only if the ammonia was produced using such low-emissions technologies. This implies that little to no additional net direct emissions are generated by producing hydrogen and/or ammonia for these new energy markets. For this reason, the SBTi has developed a pathway that includes only ammonia production for non-energy applications. This ensures that emissions from such production for existing markets are reduced, and it ensures that the pathway for producers that are focused only on non-energy markets may utilize a pathway that is consistent with the IEA modeling for such production. Additionally, the SBTi has developed an alternative activity-specific pathway for emissions from ammonia production activities that includes production for all end uses. This additional pathway includes estimates of ammonia production intended for energy purposes from the IEA NZE scenario. The SBTi has assumed that the additional production does not

	contribute additional direct emissions, since its production will come from low-emissions technologies; however, in reality some direct emissions will occur due to incomplete capture rates on fossil fuel based production with carbon capture and storage (CCS). The SBTi may investigate refinements to this approach in future work. The treatment of hydrogen production with the SBTi framework is described in more detail in the SBTi Chemical Sector Pathways and Implementation Criteria Explanatory Document. In future work the SBTi may investigate additional pathways for other chemical products, such as methanol, that have applications for use as energy carriers.

2.9 Applicable sector scope and inclusion of pharmaceutical manufacturers

Description	**Issue 21.** Inclusion of pharmaceutical production as an activity within the scope of the SBTi Chemical Sector Pathways and Implementation Criteria document.
Method(s) of feedback	● Qualitative feedback during second public consultation ● Feedback from the project EAG
Summary of feedback received	<u>Samples of qualitative feedback</u> ● Pharmaceutical products are highly regulated and subject to onerous product registration processes. The impact of the alternative feedstock target requirements on medicine registrations within specific markets is not clear and is therefore a potential barrier to pharma companies' ability to meet targets. ● The alternative feedstock criterion should not apply to pharmaceutical companies. Pharmaceutical companies would depend on chemical companies to make alternative feedstocks available. In addition, because the pharmaceutical industry is so heavily regulated, registration timelines should be taken into account to allow product manufacturing processes to be updated and re-registered with regulators.
Changes (if any) implemented	Following the consultation phase, the SBTi has revised the pathways document to make target-setting on shares of sourced alternative feedstocks optional rather than mandatory.
Rationale	The SBTi recognizes that pharmaceutical production activities differ from chemical production in a variety of ways. By revising the alignment pathway for the sourcing of alternative feedstocks to be an optional target, the SBTi has addressed some of the concerns around the inclusion of pharmaceutical production within the chemicals sectoral boundary. An optional target on sourcing of alternative feedstocks will allow for the

	recognition of pharmaceutical companies that have made sourcing of these materials a part of their climate strategy, while acknowledging that the use of these materials may vary depending on the circumstances of individual companies. Further, the IEA includes pharmaceutical production within its boundary of the chemicals sector in the NZE scenario modeling. As the basis for the primary and non-primary chemical activity-specific pathways for the chemicals sector, the SBTi has kept alignment with the sectoral boundary of the IEA NZE scenario.

ANNEX A: PUBLIC CONSULTATION DOCUMENT(S) AND QUESTIONNAIRE(S)

Background Documents for the SBTi Chemical Sector Pathways and Implementation Criteria

- Sector Assessment: Barriers, Challenges, and Opportunities for Chemical Companies to Set Science-Based Targets
- Science Based Target Setting in the Chemicals Sector: Status Report

SBTi Chemical Sector Pathways and Implementation Criteria First Public Consultation documents

- Chemicals Sector Guidance First Consultation Draft
- Chemicals Sector Target-Setting Tool First Consultation Draft
- Data Supplement for Reviewers of the Chemicals Sector Guidance First Consultation Draft

SBTi Chemical Sector Pathways and Implementation Criteria Second Public Consultation and Pilot Testing documents

- Chemicals Sector Target-Setting Criteria Second Consultation Draft
- Chemicals Sector Target-Setting Tool Second Consultation Draft
- Chemicals Sector Target-Setting Criteria Supplemental Data Memorandum Second Consultation Draft
- Main Changes Document: Chemicals Sector Target-Setting Criteria Second Consultation Draft
- Chemicals Pilot Test Participant TOR

ANNEX B: FULL SET OF PUBLIC CONSULTATION SUBMISSIONS

- Chemicals Sector Project First Public Consultation Feedback Log
- Chemicals Sector Project Second Public Consultation Feedback Log

ANNEX C: PUBLIC CONSULTATION REPORT(S)

- Chemicals Sector Project First Public Consultation Feedback Report
- Chemicals Sector Project Second Public Consultation Feedback Report
- Chemicals Sector Pilot Testing Report

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION