



Science Based Targets

Science-based climate targets as the basis for a corporate climate strategy

1. INTRODUCTION

For some time now, the business community has increased its focus on climate change as one of the most pressing global challenges of our times. For companies, global warming and international attempts to curb it can bring considerable risks, but also opportunities for business development. In its → [Fifth Assessment Report](#)¹ published in 2013/2014, the Intergovernmental Panel on Climate Change (IPCC) highlights the measures needed to overcome the challenges presented by climate change. This involves keeping global warming below 2°C compared to pre-industrial temperatures to limit the irreversible damage to natural habitats, eco-systems and

biodiversity, as well as mitigating the adaptation costs of climate change in the economy, health and social systems. To increase the probability of averting any negative impact would require capping global warming at 1.5°C. The IPCC introduced the concept of a dynamic global “carbon budget”. This indicates the maximum total cumulative CO₂ emissions from the burning of fossil fuels and industrial processes that can be emitted into the atmosphere since the onset of industrialization, if compliance with certain global warming thresholds is to be achieved.² The IPCC sets at 2,900 gigatons the carbon budget that, if adhered to, would keep global warming below 2°C with a probability of at least 66%. By 2017, nearly 75% of the carbon budget (2,100 gigatons) has already been used up.³

GENERAL GUIDELINES:

1) Selecting a method: Companies should closely consider available SBT methods and their respective advantages and disadvantages, and select the method most suited to their requirements and situation. The SBTi Manual recommends that companies use the Sectoral Decarbonization Approach (SDA) or Mars method when developing science-based climate targets.

2) Interpretation of the results: Developing a SBT pathway acts as a valuable impetus for generating a corporate climate strategy and is a clear indication of the implications at company level for ensuring compatibility with the 2°C threshold.

3) Criteria for target setting: An official approval of science-based targets by the SBTi provides a clear benefit for corporate communication. The SBTi target assessment criteria provide help and guidance for the process of developing a science-based target.

4) Dealing with scope 3 emissions: If scope 3 emissions constitute more than 40% of the total corporate footprint, then they must be integrated into the target. The nature of individual targets is dependent on the emission hotspots in the value chain.

In 2015, at the 21st United Nations Climate Change Conference (COP 21), the international community adopted the legally binding Paris Climate Agreement, which aims to limit global warming to well below 2°C and, if possible, to a maximum 1.5°C. Its success depends on a corresponding contribution being made by companies. In view of this development more and more companies are explicitly addressing the question of how to make an appropriate contribution to curbing global warming as part of their efforts to revise their climate strategies.

These efforts are supported by the → [Science Based Targets Initiative](#)⁴ (SBTi), a partnership between CDP, UN Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The initiative aims to integrate “Science-Based Targets” (SBT) for the reduction of GHG emissions into standard corporate practice. A corporate target is considered “science-based”, if it is consistent with the degree of decarbonisation required by the IPCC to ensure compatibility with the 2°C threshold. The question is how to allocate the remaining carbon budget of maxi-

2 The budget refers intentionally to CO₂ emissions, rather than GHG emissions. Greenhouse gases other than CO₂ must also be drastically reduced to ensure compatibility with the 2°C threshold.

3 The New York Times illustrates the current status of global emissions in relation to the carbon budget based on up-to-date climate models: www.bit.ly/NYT-CarbonBudget

4 www.bit.ly/ScienceBasedTargets

1 www.bit.ly/IPCC-Report2014

mum 800 gigatons among sectors and individual companies. The SBTi provides companies with an overview of available methods for setting SBTs and develops the technical groundwork that enables the modelling of science-based emission reduction targets in key sectors. Furthermore, it offers a mechanism for assessing science-based targets, as well as an online platform for effective publicity. By the end of December 2017, 86 companies' targets had already been officially recognized as "science-based" by the initiative, and a further 247 had publicly declared their intention of adopting science-based targets within the next two years.

Within the Peer Learning Group Climate of the German Global Compact Network (DGCN), participating companies explored the challenges associated with developing 2°C climate targets, and discussed possible solutions, methods and applications directly with representatives from the initiative. This paper makes the core findings available to a broader audience, and opens them up for discussion.⁵

⁵ www.bit.ly/SBT-CompaniesTakingAction



The **Peer Learning Group Climate** was launched in 2015 by the Global Compact Network Germany (DGCN). It currently consists of 12 companies from chemical/pharmaceutical, energy, retail, service, transportation and technology industries. In webinars and face-to-face meetings, experts from large German companies exchange experiences relating to corporate climate management and collaborate on developing concrete solutions. Sustainable AG supports the working group by providing expert knowledge. Past topics have included 2°C climate strategies, GHG reduction target setting and science-based targets, data management, and scope 3 materiality and data collection.

2. SELECTED CHALLENGES AND QUESTIONS

2.1. Developing science-based targets in compliance with established methods

Companies that want to be forward-looking in their climate strategy and make an appropriate contribution to tackling the challenges of climate change, ask themselves how to best "translate" the globally targeted 2°C threshold into corporate level policy. The initial task of evaluating the full range of available methods and choosing the most suitable for company and sector can be difficult. Once a method has been selected, questions arise concerning the practicalities of applying it.

2.2. Interpretation of the results from SBT method application

SBT methods provide companies with a science-based, long-term reduction pathway for their scope 1, 2 and 3 emissions. This gives rise to the question of how to best evaluate these findings for their own company, and what steps to derive for the adoption of a climate target. This is especially true for companies running comparisons of different SBT methods, as these tend to produce varying results.

2.3. Official SBTi approval of SBT

Companies need to decide, whether a climate target developed using SBT methods should be submitted to the SBTi, or whether the SBT methods should be used for guidance purposes only. By adopting a 2°C climate target officially approved by the SBTi, and using their online platform to publicise this efficiently, an increasing number of companies are hoping to send a message to their stakeholders. However, it is not always clear which criteria have to be met, when defining climate targets to secure an approval by the initiative.

2.4. Setting approved targets for scope 3 emissions

For scope 3 emissions in particular, the target setting process can raise questions. Many companies only have limited access to data on scope 3 emissions, and question whether it is possible to directly influence GHG emissions in the value chain. The entire process, from initially estimating the relevance of scope 3 through to deriving and managing an SBTi approved target, presents a series of particular challenges.

3. POSSIBLE SOLUTIONS

3.1. Developing a SBT using approved methods

If companies want to gain an understanding of what their individual 2°C carbon budget and the corresponding emissions reduction pathway could look like in the context of their climate strategy development process, they are advised to review the available methods for deriving science-based targets.

Methods of science-based target setting

The → [SBTi-Website](#)⁶ introduces seven SBT methods that are recommended to companies for target setting. The SBTi → [Manual](#)⁷ republished in July 2017, only discusses six of these methods, leaving aside the “3% solution” method. This method was introduced in 2013 by the WWF and CDP, but only applies to American companies and the period up to 2020. Thus, this paper will only address six SBT methods.

Methods for science-based target setting always refer to the remaining carbon budget (as per the fourth or fifth IPCC Assessment Report), a scenario compatible with the 2°C threshold, as well as a method for allocating the remaining budget at the company level. The methods can essentially be grouped into three different approaches:

- ▶ **Sector-based approach**, based on an underlying allocation of the remaining carbon budget to sectors. The rationale for the budget allocation is the specific abatement potentials and technological options of the respective sectors as seen from a present-day perspective, as well as their growth expectations.
- ▶ **Absolute reduction approach**, based on the key message of the IPCC’s Fifth Assessment Report, namely that ensuring compatibility with the 2°C threshold requires a global absolute reduction in GHG emissions of 49 to 72% by 2050 as compared to the 2010 level.
- ▶ **Economic-based approaches**, which refer to the necessary relative reductions in emissions in relation to a company’s expected economic performance.

There are two main approaches to allocation at company level:

- ▶ **Contraction**, meaning that all companies reduce in equal measure their absolute emissions or their emissions in relation to the CO₂ budget or economic performance (i. e. kg CO₂e per unit of value added) between the base and target year. This approach does not take into account different emission intensities in the base year.
- ▶ **Convergence**, meaning that the emissions intensity of all companies within a sector (e.g. g CO₂e per kWh for all energy suppliers) converges to a common value by 2050 in compliance with a global 2°C scenario. This convergence mechanism can only be used with sector-specific approaches in sectors with homogenous physical activity indicators (e.g. tonne steel, kWh, square meter).

Tables 1, 2 and 3 present an overview of the six SBT methods, outlining their most important characteristics. Also presented is the respective allocation mechanism, the underlying 2°C scenario used, target characteristics, as well as a general categorization.

⁶ www.bit.ly/SBT-methods

⁷ www.bit.ly/SBT-SettingManual (Draft Version 3.0)

Sector-based method

Method & Developer	Allocation mechanism	Underlying scenario	Target characteristics	Categorization
Sectoral Decarbonization approach (SDA)⁸ Developed by the SBTi	Convergence of emissions intensity (sectors with homogeneous activity indicators) or contraction of absolute emissions (sectors with heterogeneous activity indicators)	2°C (2DS) IEA scenario (2016), including emissions and activity projections for each sector	Logic: <ul style="list-style-type: none"> Target is defined taking into account specific reduction potentials and growth expectations of each sector Input data: <ul style="list-style-type: none"> Scope 1 absolute emissions for the base year Scope 2 absolute emissions for the base year Physical activity or gross profit in the base year Growth expectation in physical activity by the target year (homogeneous sectors only) Output data: <ul style="list-style-type: none"> Scope 1 and 2 absolute emissions Emissions intensity 	Target type: <ul style="list-style-type: none"> Absolute target and intensity target (based on physical unit or value added) Advantages: <ul style="list-style-type: none"> Sector differentiation Excel-based tool⁹ (v8 2017) available for calculation, web-based version is planned Especially well-suited to companies in sectors with homogeneous activity indicators (iron & steel; cement; aluminium; paper and pulp; energy; to some extent transport and services/commercial buildings¹⁰) Ongoing further development & specification of additional sectors Regular updates Disadvantages: <ul style="list-style-type: none"> Very limited suitability for scope 3 emissions Currently cannot be used for the following sectors: agriculture, forestry, and other land use, oil and gas production, and residential buildings Note: <ul style="list-style-type: none"> Comprehensive description¹¹ (2015) of the method available from the SBTi Developed with broad stakeholder participation

Table 1: Characteristics of sector-based methods for science-based target setting, as per the SBTi¹²

Absolute reduction method

Method & Developer	Allocation mechanism	Underlying scenario	Target characteristics	Categorization
Contraction of absolute emissions ("Mars method")¹³ Developed by Mars, Inc.	Contraction of absolute emissions	usually the 2° scenario of the IPCC Fifth Assessment Report (reduction of 49-72% from 2010 to 2050); flexibility in choice of underlying scenario	Logic: <ul style="list-style-type: none"> Linear reduction by all stakeholders leading to compliance with the overall target Can be broken down to an annual reduction of 1.2 to 1.9% Input data: <ul style="list-style-type: none"> Absolute emissions (scopes 1-3) in the base year Growth expectation to the target year (specified by the choice of scenario) Output data: <ul style="list-style-type: none"> Absolute emissions (scope 1-3) in the target year 	Target type: <ul style="list-style-type: none"> Absolute target Advantages: <ul style="list-style-type: none"> Easy to use Can be used for scopes 1, 2 and 3 Disadvantages: <ul style="list-style-type: none"> Difficult to use for companies with strong growth expectations No tool available No sector differentiation Note: <ul style="list-style-type: none"> Mars, Inc. oriented themselves in the original application towards the upper end of the 2007 IPCC 2°C scenario range (50-80% reduction by 2050)

Table 2: Characteristics of absolute reduction methods for science-based target setting, as per the SBTi¹²

Economic-based methods

Method & Developer	Allocation mechanism	Underlying scenario	Target characteristics	Categorization
Green-house Gas Emissions per unit of value added (GEVA)¹⁴ Developed by Jorgen Randers, Norwegian Business School BI	Contraction of emissions intensity	IPCC Fourth Assessment Report (50-80% GHG reduction from 2007 to 2050; here 50%); assumed annual global economic growth of 3%; underlying scenario can be adjusted	Logic: <ul style="list-style-type: none"> Relative reduction based on value added Input data: <ul style="list-style-type: none"> Emissions intensity or absolute scope 1 and 2 emissions (combined or separately) in the base year Gross profit in the base year Growth expectation by the target year (specified by the choice of scenario) Output data: <ul style="list-style-type: none"> Intensity target or absolute target 	Target outcome: <ul style="list-style-type: none"> Intensity target based on value added in t CO₂e/US\$ or absolute target Advantages: <ul style="list-style-type: none"> Easy to use Disadvantages: <ul style="list-style-type: none"> Application limited to scope 1 & 2 No upgrade planned No tool available No sector differentiation Note: <ul style="list-style-type: none"> Description¹⁴ (2012) of the method available CSI, CSO and C-Fact are based on GEVA

8 www.bit.ly/SBT-SDA

9 www.bit.ly/ToolsBT

10 For an overview of current further developments of sector reduction pathways and expansion of sector coverage of the SDA tool, see the SBTi website: www.bit.ly/ToolSBT

11 www.bit.ly/SBT-SDA-Report2015

12 www.bit.ly/SBT-SettingManual (Draft Version 3.0)

13 www.bit.ly/Mars-ClimateActionPosition

14 www.bit.ly/SBT-GEVA-EnergyPolicy

Method & Developer	Allocation mechanism	Underlying scenario	Target characteristics	Categorization
BT Climate Stabilization Intensity (BT-CSI)¹⁵ Developed by the British Telecommunications - BT Group	Contraction of emissions intensity	IPCC Fourth Assessment Report (50-80% GHG reduction by 2050; here 80%); 5.9% annual economic growth; GHG intensity per unit of GDP must be reduced by 9.6% annually in industrialized nations by 2050 to be compatible with the 2°C threshold	Logic: <ul style="list-style-type: none"> ▶ Relative reduction based on value added ▶ All companies within a geographical unit (here: industrialized nations) reduce equally their GHG intensity per unit of value-added Input data: <ul style="list-style-type: none"> ▶ Combined scope 1 & 2 emissions intensity for the base year ▶ Gross profit in the base year ▶ Individual growth expectation to the target year ▶ Gross profit margin for the target year Output data: <ul style="list-style-type: none"> ▶ Combined scope 1 & 2 emissions intensity 	Target outcome: <ul style="list-style-type: none"> ▶ Intensity target based on value added in tCO₂e/million GDP Advantages: <ul style="list-style-type: none"> ▶ Underlying scenario assumptions can be adjusted ▶ Easy to use Disadvantages: <ul style="list-style-type: none"> ▶ Application limited to scope 1 & 2 ▶ No upgrade planned ▶ No tool available ▶ No sector differentiation Note: <ul style="list-style-type: none"> ▶ Description¹⁵ (2009) of the method available ▶ Developed for British Telekom ▶ Specification of GEVA with an ambitious scenario especially for companies in industrialized nations
CSO's Context-based carbon metric¹⁶ Developed by the Center for Sustainable Organizations (CSO)	Contraction of emissions intensity	SSP1-2.6 scenario, developed by a community of climate scientists as part of the Coupled Model Intercomparison Project (CMIP6); flexibility in choice of a different scenario	Logic: <ul style="list-style-type: none"> ▶ Relative reduction based on value added (or physical activity) ▶ Underlying scenario differentiates the generated reductions according to region ▶ Annual alignment of corporate emissions to the SBT pathway Input data: <ul style="list-style-type: none"> ▶ Separate input of absolute emissions and emissions intensity from scope 1, 2 and scope 3 (optional) ▶ Gross profit/revenue/physical activity in the base year ▶ Individual growth expectation for the target year Output data: <ul style="list-style-type: none"> ▶ Scope 1 and 2 absolute and intensity-based emissions 	Target outcome: <ul style="list-style-type: none"> ▶ Intensity target based on value added in tCO₂e/US\$ or absolute target Advantages: <ul style="list-style-type: none"> ▶ Excel-based tool¹⁷ (v5.5 2015) available free of charge ▶ Underlying scenario assumptions can be adjusted ▶ Can be used for scope 1–3 Disadvantages: <ul style="list-style-type: none"> ▶ Inherent uncertainty due to the need to convert from \$ to € ▶ No sector differentiation Note: <ul style="list-style-type: none"> ▶ Description¹⁸ of the method available ▶ Based on the GEVA method ▶ Originally developed in 2006 for Ben & Jerry's
Corporate Finance Approach to Climate-Stabilizing Targets (C-FACT)¹⁹ Developed by AUTODESK Sustainability Solutions	Contraction of emissions intensity	IPCC Fourth Assessment Report (50-80% GHG reduction by 2050; here 85% for industrialized nations), 50% for developing nations; flexibility in choice of scenario	Logic: <ul style="list-style-type: none"> ▶ Relative reduction based on value added Input data: <ul style="list-style-type: none"> ▶ Emissions intensity or absolute scope 1 and 2 emissions (in total or separately) in the base year ▶ Gross profit and turnover in the base year ▶ Growth expectation for the target year (specified by the scenario) Output data: <ul style="list-style-type: none"> ▶ Absolute emissions or emissions intensity reductions 	Target outcome: <ul style="list-style-type: none"> ▶ Absolute target or intensity target based on value added in tCO₂e/US\$ Advantages: <ul style="list-style-type: none"> ▶ Easy to use ▶ Can be used for scope 1–3 ▶ Underlying scenario assumptions can be adjusted ▶ Excel-based tool²⁰ available free of charge Disadvantages: <ul style="list-style-type: none"> ▶ Inherent uncertainty due to the need to convert from \$ to € ▶ No sector differentiation Note: <ul style="list-style-type: none"> ▶ Description¹⁹ of the method available

Table 3: Characteristics of economic-based methods for setting science-based target setting, as per the [SBTi²¹](#)

 15 www.bit.ly/btplc-CSI-Methodology

 17 www.bit.ly/CSO-CarbonMetricXLS

 19 www.bit.ly/GBT-GHG-WhitePaper

 21 www.bit.ly/GBT-SettingManual (Draft Version 3.0)

 16 www.bit.ly/CSO-ContextBasedMetrics

 18 www.bit.ly/CSO-CarbonMetricFAQ

 20 www.bit.ly/GBT-methods

Hannes Hofmann,
Corporate Development, TÜV Rheinland AG

“The SDA tool provided us a solid basis for the future reduction pathway required for a science-based target. We appreciate that the tool is able to work with climate data already available to us as part of our sustainability reporting. Moreover, there exists a transparent documentation of the methodology which can be easily understood by companies. On this basis, we will be able to convey our science-based target to our relevant stakeholders.”

Selecting a suitable method for SBT setting

Several factors play a role in the selection of a suitable SBT method, such as the company sector, availability of required input data, and the preferred target type. Before choosing a method, companies are advised to consider all established methods and their respective advantages and disadvantages, to help identify which could be suitable. The SBTi Manual recommends that companies use the SDA or Mars method when developing science-based climate targets.

While the SDA lends itself particularly well to certain sectors with homogeneous activity indicators, (currently, energy, iron & steel, cement, aluminium, paper and pulp and, to a certain extent, transport and services/commercial buildings), most other sectors are covered by the method as part of the broad “other industries” cluster. The SBTi is currently preparing guidelines and specific reduction pathways, with the help of relevant stakehold-

“We at ENTEGA in our role as a German energy supplier recognize our special obligation with regard to climate protection. The most material sector in the SDA method is power generation. Therefore, it’s a logical conclusion for us to use SDA.”

Michael Congdon,
Sustainability Management, ENTEGA AG

ers, for the retail, chemical/petrochemical, transport, buildings, and oil and gas sectors, as well as for financial institutions. It calls on companies and industries that currently consider the SDA of limited or no applicability for their business to play an active role in the further development of the existing approaches.²²

The Mars method is easy to use for setting targets, but the process presents particular challenges for new or fast-growing companies. The SBTi recommends companies using the Mars method to orient their absolute reductions towards the upper boundary of the range of percentage reductions put forward by global 2°C scenarios. Economic-based methods explicitly take into consideration the value added and company growth. However, the SBTi recommends only using these intensity-based methods, when the resulting reduction in emissions intensity is determined in conjunction with a reduction in absolute emissions compatible with the 2°C threshold.

Companies with activities in various sectors can also combine different methods when setting a science-based target. Here, the SDA can be used to define specific reduction pathways for different sections of a company that can be allocated to the sectors covered by the SDA.

The various methods have different degrees of suitability in setting target reductions for scope 3 emissions. The SDA, for instance, has only limited applicability, while the Mars method and other economic-based methods can be used for emissions from upstream and downstream activities.

Many companies, when they first tackle the topic, do not consider official assessment and approval of their science-based targets by the SBTi as being of primary concern. However, the approval criteria for SBTs and the supplementary recommendations provided by the initiative (see Section 3.3) can provide some helpful practical guidelines for selecting suitable methods and engaging in the target development process. In particular, they offer useful advice concerning science-based target setting for scope 3 emissions.

3.2. Interpretation of SBT method results

The corporate target setting process

Developing science-based GHG emission reduction pathways with the help of SBT methods can provide companies with valuable insights in the context of their climate strategy development. A direct comparison with GHG reduction pathways determined by a “bottom-up” analysis of cost-effective reduction potentials in the company often reveals a shortfall in terms of 2°C compatibility of the latter. This suggests the need for additional longer-term efforts on the part of the company, through, e.g. designing innovative business models, implementing ambitious measures, and

²² www.bit.ly/SBT-SectorDevelopmentFramework

using renewable energy sources, in order to manage climate risks and contribute appropriately to ensuring compatibility with the 2°C threshold.

The long-term planning required by such a process does not always correspond to typical company management cycles of one to five or even as many as 15 years. Estimating longer-term emission reductions up to 2050 involves anticipating potential technical progress, without there being any firm evidence that this progress will ever be achieved. Ultimately, each company will follow their own particular path in discussing longer-term climate targets and drawing conclusions for their climate strategy. What is important is that there is close collaboration between the different company departments, and clear commitment from management.

Guidelines for dealing with SBT method results

The SBTi demonstrates clearly that GHG emission reduction pathways, derived through the methods described above, represent a global minimum requirement for achieving compliance with the 2°C threshold. Companies from industrialised nations, in particular, when using methods based on the IPCC scenario for globally required GHG emissions reductions, should aim to align their targets with the upper end of the percentage band range. To achieve the 2°C scenario as outlined in the IPCC's 2014 Fourth Assessment Report, this means a global reduction of at least 72% by 2050.

Different methods produce reduction pathways with different levels of ambition. The SBTi recommends that companies always aim for the most ambitious outcome when setting corporate targets. To comply with the Paris Agreement, almost all stakeholders will have to become more ambitious in their targeted reduction levels. The underlying scenario for most methods is not compatible with the 1.5°C threshold, but rather with the 2°C threshold. In view of this, the SBTi has announced that its future work will target a more ambitious 1.5°C scenario, and anchor this in the SDA. Also with other methods or tools, users can use more ambitious scenarios.

Setting and tracking the progress of a science-based climate target is a dynamic process. Companies should not only track and evaluate their status and progress against their targeted SBT pathway on an ongoing basis, but should also adjust their target, if there is any significant change to the underlying parameters, such as the 2°C scenario, expectations of company growth or corporate structure.

3.3. Official SBT recognition by the SBTi

SBT validation process

Through the Science Based Targets Initiative and its → [online platform](#)²³ companies can publically commit themselves to setting a science-based target. This target can be composed of several targets, for example, for different scopes or varying timelines.

Within 24 months of committing to a target developed according to the methods described above, this should be submitted to the SBTi for assessment using the available form. The SBTi follows a set of steps: the initial appraisal, assignment to the team responsible for the assessment, the assessment process itself, a peer review carried out by the SBTi's technical working group, and, in controversial cases, a final decision from the steering committee. If a company's climate targets are recognized as "science-based", then this is communicated via the SBTi's online platform. The initiative provides a detailed → [step-by-step description](#)²⁴ of the process, from the declaration of intention to developing a target, through to submission of all the necessary documents.

Official criteria for recognizing a target as "science-based"

The SBTi specifies a → [list](#)²⁵ of 15 criteria that must be fulfilled for a climate target submitted by a company to be recognized as "science-based". These criteria cover the SBT operational boundaries, timeframe, level of ambition, requirements for dealing with scope 2 and scope 3 emissions, as well as the reporting and recalculation of targets. In addition, the SBTi makes 13 recommendations.

Table 4 provides an overview of these 15 criteria. Among them, "C4 – Base and target years", "C6 – Level of ambition", "C7 – Absolute vs. intensity", "C8 – Method validity" and "C11 – Boundaries" are considered of particular relevance, forming a type of key criteria.

The initiative also encourages companies to calculate and report their emissions in accordance with the → [Corporate Standard](#),²⁶ the → [Scope 2 Guidance](#)²⁷ and the → [Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#)²⁸ of the GHG Protocol.

²³ www.bit.ly/ScienceBasedTargets

²⁴ www.bit.ly/SBT-Guide

²⁵ www.bit.ly/SBTi-Criteria

²⁶ www.bit.ly/ghgp-AcRepStd

²⁷ www.bit.ly/Scope2-Guidance

²⁸ www.bit.ly/ghgp-Scope3AcRepStd

Science-based target boundary	
C1 – Scopes	The targets must cover company-wide scope 1 and scope 2 emissions, as defined by the GHG Protocol.
C2 – Significance thresholds	Companies may exclude up to 5% of their GHG scope 1 and 2 emissions (combined) in their GHG inventory and target.
C3 – Greenhouse gases	The targets must cover all relevant greenhouse gases as required per the GHG Protocol Corporate Standard.
Timeframe	
C4 – Base and target years	All submitted targets must cover a minimum timeframe of five and maximum of 15 years from the date of submission to the SBTi for an official validation. The SBTi recommends supplementing the target with a longer-term target (e.g. until 2050) for effective long-term GHG emission management and communication purposes.
C5 – Progress to date	Targets that have already been achieved before submission to the SBTi are not acceptable.
Level of ambition of targets	
C6 – Level of ambition	Targets must be consistent at least with the level of decarbonisation required to ensure compatibility with the 2°C threshold; increased efforts compatible with a 1.5°C threshold are encouraged.
C7 – Absolute vs intensity	Intensity targets are only acceptable if they bring about an absolute reduction compatible with a 2°C scenario, or are modelled using a sector reduction pathway or method approved by the SBTi (e.g. the SDA).
C8 – Method validity	Targets must be modelled using the most recent versions of the respective methods and tools as approved by the initiative. Targets based on previous versions of methods or tools can only be submitted within six months of being upgraded.
C9 – Combined scope targets	Targets can be set using combined scopes (scopes 1 & 2 or scopes 1–3). At least the scope 1 & 2 portion of the target must however be science-based.
Scope 2 targets	
C10 – Approaches	Companies need to clarify whether they are calculating their scope 2 base year emissions and tracking their target performance with the use of a location-based or market-based method as per the GHG Protocol Scope 2 Guidance.
Scope 3	
C11 – Boundary	Companies must perform a screening of all relevant scope 3 emission categories as per GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. If scope 3 emissions constitute more than 40% of total emissions, they must be included in the target. The target must cover the three most relevant scope 3 categories in order of emissions level, or two thirds of the total scope 3 emissions.
C12 – Ambition	Scope 3 targets should demonstrate clearly how the company is addressing the greatest emission sources in their value chain in line with current best practice.
C13 – Power generators that distribute fossil fuels	All power generators that distribute natural gas or other fossil fuels must set scope 3 targets for the use of sold products.
C14 – Scope 3 timeframe	See criterion “C4 – Base and target years”
Reporting of targets	
C15 – Frequency	The company must publish an annual report on their GHG inventory and progress against their targets.

Table 4: Criteria for approval of science-based targets by the SBTi (source: SBTi²⁹)

The SBTi does not evaluate company measures implemented to attain their target. However, when considering electricity or gas from renewable energy sources and offsets, the SBTi is guided by the GHG Protocol. Thus, offsets used to reduce GHG emissions are not counted towards target

attainment, while procuring “green electricity” or renewable gases are valid measures if accompanied by other measures. Attaining targets only by purchasing renewable energy certificates is not accepted by the SBTi.

3.4. Setting a recognized target for corporate scope 3 emissions

As of December 2017, the SBTi has not drawn up firm requirements for scope 3 emissions target setting comparable to those for scope 1 and 2 target development. The SBTi currently accepts both quantitative and qualitative targets for corporate scope 3 emission reductions, depending on the status and situation of the company. However, scope 3 targets should not lead to an increase in absolute scope 3 emissions. Therefore economic-based SBT approaches are not recommended unless they result in a reduction of absolute emissions.

As scope 3 target setting can be challenging for companies, the SBTi has identified a hierarchy of four approaches, listed in order from “most preferred” (1.) through to “least preferred” (4.), which appear in essence to be recommendations:

1. Percentage reduction in absolute scope 3 emissions (in line with a 2°C scenario) or intensity targets based on the SDA
2. Other scope 3 emission intensity targets
3. Absolute or intensity-based scope 3 targets related to activity data (e.g. reduction in energy use per sold product during period of utilization)
4. Scope 3 targets that actively influence the behaviour of suppliers (e.g. through individual target agreements) or clients (e.g. through product information)

Successful adherence to the criterion “C11 – Boundaries” initially requires basic data for scope 3 emissions in accordance with the → [GHG Protocol](#)³⁰. Here it is advisable to first estimate the level of scope 3 emissions, for example, on basis of the → [Scope 3 Evaluator](#)³¹ of Quantis and the GHG Protocol. If it transpires from this screening that scope 3 emissions constitute more than 40% of total emissions, then they must be incorporated into the target setting. Of the 168 targets, submitted by 76 companies, and approved by the SBTi up to the end of October 2017, 24% cover scope 1 to 3, 34% scope 3, and 42% scope 1 & 2. This demonstrates the relevance of scope 3 targets to most companies. Target definition as a rule requires initially collecting accurate data to ensure that in a follow-up to the target setting progress can be actively steered and tracked.³²

Targets can also be set for particularly relevant scope 3 categories. The target formulation must cover either the three most relevant scope 3 categories, or two thirds of the scope 3 footprint. Most of the objectives currently submitted to the SBTi cover the categories scope 3.1 “Purchased goods and services” and scope 3.11 “Use of sold products”. If 80% of GHG emissions in the supply chain, for instance, fall into scope 3.1 “Purchased goods and services”, then setting a scope 3 target for this category alone would suffice. Submitting a climate target to the SBTi involves transparent presentation of the results of the initial screening, in addition to providing information on all 15 scope 3 categories. The company must account for any category not covered due to being considered irrelevant from their perspective, e.g. through an explanation of the business model.

For science-based targets specific to the often particularly significant category scope 3.1 “Purchased goods and services,” the SBTi proposes three approaches:

1. Setting targets that reduce the absolute emissions or the emission intensity for a range of goods and services that constitute at least two thirds of the total scope 3.1 emissions, in line with a 2°C scenario
2. Setting targets that actively encourage the setting of SBTs for the most relevant tier 1 suppliers within a five-year framework; “relevant tier 1 suppliers” are here defined as
 - ▶ Suppliers that together constitute at least 50% of the purchase spend,
 - ▶ Suppliers that together account for at least 50% of the GHG scope 3.1 emissions or
 - ▶ All suppliers that individually account for at least 1% of the purchase spend or GHG scope 3.1 emissions.”
3. Other target formulations, that cover at least two-thirds of emissions related to purchased goods and services, whenever these targets are consistent with a 2°C scenario.”³³

In particular, the initiative advocates close collaboration with suppliers that are particularly relevant in terms of GHG emissions reduction, or incentivising active climate management by the suppliers through a procurement standard.

30 www.bit.ly/ghgp-Scope3AcRepStd

31 www.bit.ly/Scope3Evaluator

32 Advice for the calculation and balancing of scope 3.1 emissions can be found in the DGCN discussion paper “Scope 3.1 – Data collection and calculation of greenhouse gas emissions from purchased goods and services.” www.bit.ly/DGCN-DiscussionPaperS3K1

33 www.bit.ly/SBT-SettingManual (table 4-3, page 37–38)

4. CONCLUSION AND OUTLOOK

The ever-increasing number of companies that are exploring methods for setting 2°C climate targets demonstrates the momentum that has emerged in the economy since the COP21 climate change conference. More and more companies are making appropriate contributions through 2°C strategies to tackling climate change, thus sending a powerful message to investors, clients and staff. Other companies, meanwhile, are at least engaging with the logic of SBTs and are trying to understand the implications of applying them for their companies.

Science-based targets submitted thus far can be viewed on the SBTi's → [online platform](#)³⁴ and filtered according to sector and region. This can be helpful in providing guidance to companies, when they are defining their own targets. The initiative's aim is to have at least 300 companies with SBTs in place by 2020, which in total should amount to at least two gigatons of global GHG emissions. Thus, science-based target setting shall become a new standard of corporate practice.

ADDITIONAL INFORMATION FOR SUBMITTING TARGETS TO THE SCIENCE BASED TARGETS INITIATIVE:

- ▶ GHG emission data does not need to be verified. However, the SBTi reserves the right to carry out random spot checks, or in the case of discrepancies, comparisons with publically available information, e.g. from sustainability reports.
- ▶ According to the SBTi, a target can be "pre-tested" without this being made public. This means that targets can be submitted before obtaining agreement from management. The SBTi advises getting in touch at an early stage, so that any outstanding questions can be answered, and to receive initial recommendations.
- ▶ In general, it is not advised to submit targets between February and June, as the CDP deadline for submission of science-based targets in the reporting process is mid-April at the latest, thus resulting in a high number of submitted targets and associated delays.
- ▶ If a company has publically committed through the initiative to developing and submitting an SBT within two years, but fails to meet the deadline, then an extension can be granted. The company should always enter into negotiations with the initiative at an early stage.
- ▶ In the future the SBTi plans to differentiate between targets compatible with a global warming 2°C threshold and those compatible with a threshold that is substantially lower than 2°C.
- ▶ Currently (as at December 2017), the SBTi is considering the introduction of a fee for assessing and approving a SBT, so as to build up resources for the assessment process in view of the sharp increase in the number of participating companies.

³⁴ www.bit.ly/SBT-CompaniesTakingAction

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Through a series of discussion papers, the German Global Compact Network invites you to take part in a professional exchange of ideas covering the topics of climate management.

If you have any suggestions or additions to make to this paper, or would like to be an active participant in further discussions of the topics covered by the Peer Learning Group Climate, then please get in touch with

→ [✉ sophie.gagern@giz.de](mailto:sophie.gagern@giz.de)