



# Science Based Targets

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

## 1. CONTEXT

### The science behind climate change

Climate change is one of the most pressing issues of our time and is now more than ever a major concern for the global economy. For business, global warming and global efforts to limit it can result in considerable risks, but can also create opportunities for business development. The Intergovernmental Panel on Climate Change (IPCC), in its Special Report on Global Warming of 1.5°C<sup>1</sup>, published in 2018, shows that the earth has already warmed by an average of 1°C compared to pre-industrial levels. At this stage of global warming, drastic consequences of climate change like extreme weather events causing droughts or floodings, sea-level rise and dying coral reefs are already being observed. With every further degree of temperature rise, climate change impacts will become significantly worse. It is therefore imperative to limit global warming to a maximum of 1.5°C compared to pre-industrial times. Staying under this threshold will significantly lower climate-related risks and irreversible damage to natural habitats, ecosystems and biodiversity. At the same time, it will also keep the costs of adapting to climate change in the economy, health care and social systems within reasonable limits.

The IPCC introduced the concept of a dynamic global “carbon budget”. It determines the maximum amount of global CO<sub>2</sub> emissions that can be released into the atmosphere before crossing certain temperature thresholds of global warming.<sup>2</sup> To determine the carbon budget, global CO<sub>2</sub> emissions from the combustion of fossil fuels and industrial processes are cumulatively added up since the start of industrialization. The IPCC estimates that the carbon budget consistent with limiting global warming to a maximum of 1.5°C by 2100 with a probability of at least 66% is around 2,620 gigatonnes. The budget for limiting global warming to a maximum of 2°C (66% probability) is around 3,370 gigatonnes. As of today, however, approx-

## GENERAL RECOMMENDATIONS

**1) Level of ambition:** In order to make a meaningful contribution to tackling climate change, companies should set science-based climate targets in line with limiting global warming to 1.5°C. Targets in line with the well below 2°C limit are the minimum acceptable level of ambition.

**2) Interpreting the results:** The development of science-based climate targets offers a valuable starting point for the development of a corporate climate strategy. It shows what it takes to comply with the 1.5°C or well below 2°C limit at the company level and to what extent existing measures can contribute to the chosen level of ambition.

**3) Criteria for target setting:** An official approval of science-based targets by the SBTi provides a clear benefit for corporate communication. The criteria specified by the SBTi for target validation offer helpful orientation when formulating climate targets. What's more, even if an official target validation by the SBTi is not desired, they can still be used as benchmarks of current best practice.

**4) Dealing with scope 3 emissions:** If scope 3 emissions constitute more than 40% of the total corporate carbon footprint, a target for scope 3 emissions is mandatory according to the SBTi. While the nature of individual targets depends on the emission hotspots in the value chain, targets should result in a reduction of scope 3 emissions.

imately 2,270 gigatonnes of CO<sub>2</sub> have already been emitted, which means that 90% of the carbon budget for 1.5°C and 67% of the budget for 2°C has already been used up.<sup>3</sup> If global warming is to be successfully limited to a maximum of 1.5°C, a remaining carbon budget of approx. 350 gigatonnes applies. This could be exhausted in just over eight years if global CO<sub>2</sub> emissions are not reduced drastically from the current level of about 42 gigatonnes per year. To limit warming to 2°C, about 1,100 gigatonnes of CO<sub>2</sub> emissions or a hypothetical 26 years of emissions at current levels remain.

<sup>1</sup> Intergovernmental Panel on Climate Change (2018): Global warming of 1.5°C. [www.bit.ly/SR15Report](http://www.bit.ly/SR15Report)

<sup>2</sup> The budget deliberately refers to CO<sub>2</sub> emissions and not GHG emissions. Greenhouse gases other than CO<sub>2</sub>, such as methane and sulphur dioxide, must also be drastically limited in order to successfully meet the 1.5°C limit.

<sup>3</sup> The Mercator Research Institute on Global Commons and Climate Change (MCC) uses a “CO<sub>2</sub> clock” to illustrate how much of the carbon budget specified by the IPCC for compliance with the 1.5°C and 2°C temperature thresholds is still available. [www.bit.ly/carbon-clock](http://www.bit.ly/carbon-clock)

## Paris Agreement

In 2015, at the 21<sup>st</sup> United Nations Climate Change Conference (COP 21), the international community adopted the Paris Agreement. With this legally binding agreement, the international community has committed itself to limiting global warming to “well below 2°C” compared to pre-industrial temperatures and to pursuing efforts to limit global warming to 1.5°C. The goals of the Paris Agreement can only be achieved with a corresponding contribution from the business sector, which is increasingly demanded by politicians, the financial sector and civil society. In this context, more and more companies explicitly consider the question of how to make an adequate contribution to limiting global warming when revising their climate strategy.

## The Science Based Targets Initiative

The Science Based Targets initiative (SBTi)<sup>4</sup>, a partnership between CDP, the United Nations Global Compact, the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF), supports companies in their efforts to manage their climate impacts. The initiative aims to make “Science Based Targets” (SBTs) for the reduction of greenhouse gas (GHG) emissions standard business practice. A corporate GHG emission reduction target is considered “science-based” if it is in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement. The key question is, how to allocate the remaining carbon budgets associated with the 1,5°C and well below 2°C goal from the Paris Agreement among sectors and individual companies.

The SBTi provides companies with an overview of available methodologies for setting SBTs and contributes to the further development of the methodologies. In April 2019, the SBTi published major updates to the scientific foundations of science-based target setting. It also revised the available methodologies, the criteria for target setting and the available Excel tools for target development. These changes are taken into account in the new issue of this discussion paper. Since the summer of 2018, the SBTi has been working on these updates with a Scientific Advisory Group, consisting of representatives of the

4 Science Based Targets Initiative (2019): Website. [www.bit.ly/ScienceBasedTargets](http://www.bit.ly/ScienceBasedTargets)

▶ The **Peer Learning Group Climate** was launched in 2015 by the Global Compact Network Germany (DGCN). It currently consists of 9 companies from various sectors, including retail, energy, chemical/pharmaceutical, service and technology. During webinars and in-person meetings, experts from large German companies exchange their experiences with corporate climate action and work together to develop concrete solutions. sustainable AG supports the working group by providing expert knowledge and moderating its meetings. Past discussion topics have included climate strategies, greenhouse gas (GHG) emission reduction targets and science-based targets, GHG data management as well as scope 3 materiality assessment and data collection.

IPCC, the Potsdam Institute for Climate Impact Research, the International Energy Agency and the Stockholm Resilience Center.<sup>5</sup> The SBTi also offers a validation mechanism and an online platform for effective public communication of SBTs. As of the end of August 2019, more than 240 companies had already had their targets officially approved by the initiative as “science-based” and an additional 370 companies had publicly announced that they would set SBTs within a two-year timeframe.<sup>6</sup> As of 15 October 2019, companies may only submit climate targets to the SBTi that are consistent with the revised target validation criteria and methods.

## The German Global Compact Network Peer Learning Group on Climate

In 2017, participating companies of the Peer Learning Group on Climate of the German Global Compact Network (DGCN) explored the challenges of developing <2°C climate targets. They discussed various approaches, methodologies and applications directly with representatives from the SBTi. In 2019, the EU Peer Learning Group Climate also addressed the issue of Science Based Targets with the participation of a total of 20 large companies from Europe. This paper makes the core findings regarding challenges and solutions available to a broader audience and opens them up for discussion.

5 Science Based Targets Initiative (2019): Foundations of Science-Based Target-Setting. [www.bit.ly/SBT-Foundations](http://www.bit.ly/SBT-Foundations)

6 Science Based Targets Initiative (2019): Companies taking action. [www.bit.ly/SBT-CompaniesTakingAction](http://www.bit.ly/SBT-CompaniesTakingAction)

## 2. CHALLENGES AND QUESTIONS

### Developing SBTs in line with established methodologies

Companies striving to be innovative in their climate strategy and to make a meaningful contribution to tackling climate change must ask themselves how to best translate the globally targeted 1.5°C or well below 2°C warming limit into corporate strategies and policies. The initial task of evaluating the full range of available methodologies, understanding their logic and assumptions and choosing the most suitable method for the company and its sector can be daunting. Moreover, once a method has been selected, questions arise concerning the practicalities of applying it.

### Interpreting the resulting targets set with the SBT method

SBT methodologies provide companies with science-based, long-term reduction pathways for their scope 1, 2 and 3 emissions, in line with the 1.5°C or well below 2°C temperature limit scenarios. 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.

### Official approval of science-based targets by the SBTi

By adopting a climate target that is science-based, officially approved by the SBTi and communicated externally via the initiative's platform, an increasing number of companies hopes to send a strong signal to their stakeholders. However, it is not always clear which criteria have to be met to secure approval by the SBTi. In general, companies can choose whether a climate target developed using SBT methodologies will be submitted to the SBTi for validation, or whether the SBT methodologies are used as guidance and a best practice benchmark only.

### Setting SBTi approved targets for scope 3 emissions

Setting SBTs for scope 3 GHG emissions is particularly challenging. Many companies only have limited access to data on scope 3 emissions, question whether it is possible to directly influence GHG emissions in the value chain and are reluctant with regard to target setting. The entire process, from initially estimating the materiality of scope 3 emissions through setting and managing an SBTi approved target, presents a series of unique challenges.

## 3. POSSIBLE SOLUTIONS

### 3.1. Developing a science-based target using approved methodologies

In order to gain an understanding of what science-based climate targets would mean in the context of developing a corporate climate strategy, companies should first become familiar with the available methodologies for science-based target setting and the assumptions and scientific foundations behind them. As of 15 October 2019, the SBTi only accepts climate targets that are consistent with the latest findings of climate science, aiming to limit global warming to a maximum of well below 2°C or even better 1.5°C. The basic methodology for the development of science-based climate targets corresponds to these levels of ambition and is in line with the goals of the Paris Agreement. As a result, targets consistent with limiting warming to 2°C will no longer be approved and existing 2°C targets must be revised by 2025.

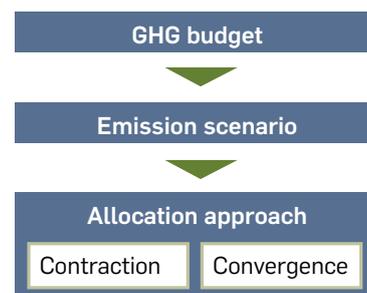
#### The foundations of setting science-based targets

SBT methodologies comprise three core components: a carbon or GHG budget, emission scenarios and an allocation approach.<sup>7</sup> Emission scenarios and an allocation approach are required to break down the remaining global emission budgets determined by the respective aspired temperature thresholds to the corporate level.

#### GHG budgets

Determining the remaining global emission budget, the SBTi does not only consider CO<sub>2</sub> but also other climate-relevant greenhouse gases, as these are also relevant for many companies. In contrast to the Special Report of the IPCC mentioned above, which refers to the remaining 'carbon budget', the SBTi makes reference to the remaining 'GHG budget'. The latter describes the amount of anthropogenic greenhouse gases that can still be emitted before certain thresholds of global warming are reached.

Figure 1: The three core elements of SBT methods



Source: Adapted from the SBTi

<sup>7</sup> The section on the methodological principles of SBT methods is based on Science Based Targets Initiative (2019): Foundations of Science-Based Target-Setting. [www.bit.ly/SBT-Foundations](http://www.bit.ly/SBT-Foundations)

As of 2017, the SBTi estimates the remaining GHG budget for staying below the 1.5°C temperature threshold to be 990 GT CO<sub>2</sub> equivalents (CO<sub>2</sub>-eq). This includes 670 gigatonnes of carbon and 320 tonnes for other greenhouse gases.<sup>8</sup> The budget is calculated based on a 50% probability of limiting warming to 1.5°C. To limit temperature rise to well below 2°C, the SBTi estimates the remaining GHG budget to be 1,540 GT CO<sub>2</sub> equivalents (CO<sub>2</sub>-eq). This includes 1,220 gigatonnes of CO<sub>2</sub> and 320 tonnes of other greenhouse gases.<sup>9</sup> It is based on a 66% probability of limiting warming to 2°C.

#### Emission scenarios

Scenarios describe a hypothetical future and the path leading to that future. They show potential ways in which emission reductions can be achieved under different socio-economic and political circumstances that are consistent with the disposable GHG budget that corresponds to set temperature thresholds. In some scenarios, cumulative GHG emissions initially overshoot the budget globally and must then be reduced by an even larger amount in later years in order to stay below the respective temperature threshold by 2100.

When developing the absolute contraction method (described in more detail below), the SBTi looked into 177 emission scenarios from 25 climate models to determine global emission pathways aligned with well below 2°C and 1.5°C temperature thresholds. From the initial set of scenarios, a final envelope of 20 1.5°C scenarios and a final envelope of 28 well below 2°C scenarios were selected. The SBTi dismissed scenarios which did not stay within the respective GHG budget, did not keep the respective temperature threshold with the specified minimum probability, and did not reach a peak in global emissions at the latest between 2019 and 2020, amongst others.

#### Allocation approach

An allocation approach refers to the way the GHG budget underlying a given emission scenario is allocated among companies within the same level of disaggregation (e.g. in a region, in a sector or globally). The SBT methodologies are based on two main allocation approaches:

- **Convergence** means that all companies in a given sector reduce their emission intensity to a common value (e.g. x g CO<sub>2</sub>-eq per kWh for all energy suppliers) by 2050 as per the respective scenario. The convergence approach can only be used in homogenous sectors with sector-specific emission scenarios and physical activity indicators (e.g. tonnes of GHG emissions per tonnes of

aluminum). Accordingly, the extent to which a company's emission intensity must be reduced by the target year depends on the baseline value in the base year, the company's expected growth, relative to that of the sector and the sector intensity target value.

- **Contraction** means that all companies reduce their absolute emissions or relative emissions per unit of value added at the same rate between the base year and the target year. This approach does not take into account different emission intensities in the base year and assesses only forward-looking ambition.

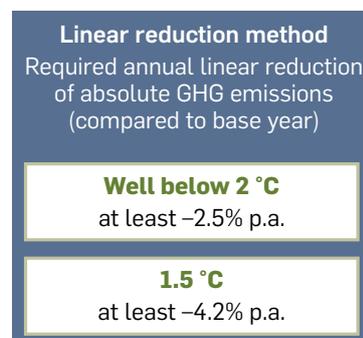
#### Approved methods for defining science-based climate targets (scope 1&2)

Following the revisions made to the SBT methodologies in 2019, only two central, high-quality methodologies remained available for setting science-based climate targets of well below 2°C or 1.5°C: the absolute contraction method and the sectoral decarbonization approach (SDA).

#### The absolute contraction method

The absolute contraction method is based on the simple assumption that global warming can be successfully limited to well below 2°C or 1.5°C if all players worldwide reduce their absolute GHG emissions between the base and target year to the extent required by the emission scenarios of the respective temperature threshold. Accordingly, the absolute contraction method is suitable for companies in all sectors. It is important to note that corporate absolute GHG emission reduction targets, developed using this method, can also be converted into relative climate targets (e.g. per unit of output or revenue), for example to help communication of SBTs with external stakeholders. The SBTi, however, evaluates the absolute reduction performance when validating targets.

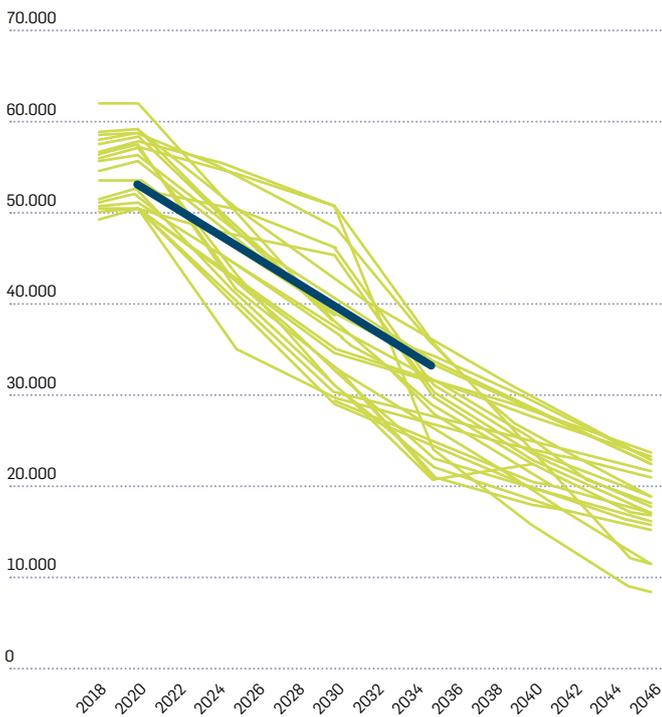
Figure 2: Required annual reduction rates for absolute contraction



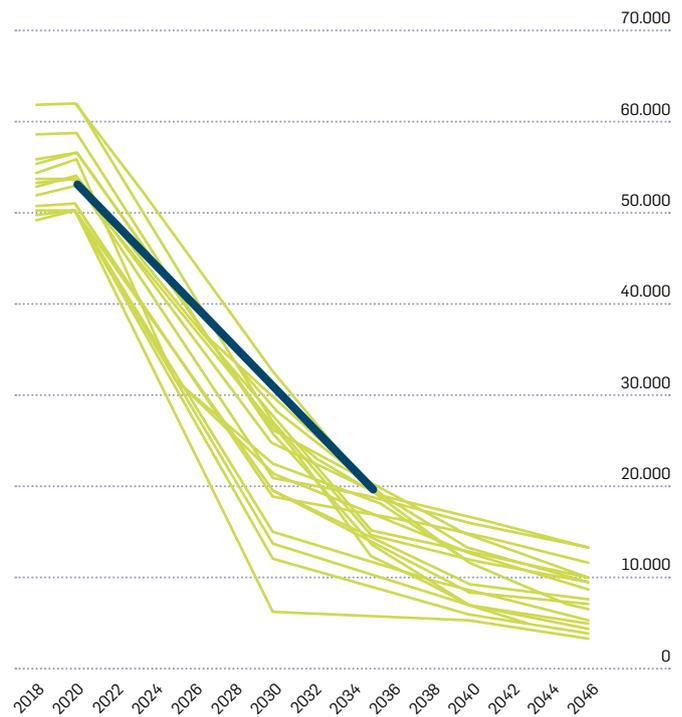
Source: Adapted from the SBTi

<sup>8</sup> The deviation from the carbon budget of 350 GT mentioned in Chapter 1 results from the fact that SBTi uses the older carbon budget estimates from the fifth IPCC Assessment Report (2015) (+260 GT compared to IPCC Special Report 1.5°C residual carbon budget 2019), assumes a lower probability of target achievement (+160 GT) and takes into account the estimated effects of non-instantaneous earth system feedbacks that reduce the budget (-100 GT).

<sup>9</sup> The deviation from the carbon budget of 1,000 GT mentioned in Chapter 1 results from the fact that SBTi uses the older carbon budget estimates from the fifth IPCC Assessment Report (2015) (+220 GT compared to IPCC Special Report 1.5°C residual carbon budget 2019) and takes into account the estimated effects of non-instantaneous earth system feedbacks that reduce the budget (-100 GT).

**Figure 3:** Emission pathways of well below 2°C scenarios up to 2050

Source: Own illustration adapted from SBTi

**Figure 4:** Emission pathways of 1.5°C scenarios up to 2050

Source: Own illustration adapted from SBTi

To determine the absolute GHG emission reduction rates required by companies, the SBTi departed from the range of emission pathways of the selected 20 1.5°C scenarios and 28 well below 2°C scenarios described above (see Figure 3 and 4). It determined the required annual minimum reduction rate between 2020 and 2035 in the 1.5°C and well below 2°C scenario envelope that is required to successfully keep the respective temperature threshold. The black line in Figures 3 and 4 shows the respective minimum GHG emission reduction rate. Accordingly, successfully limiting global warming to well below 2°C requires companies to reduce their absolute GHG emissions linearly by an average of at least 2.5% per year relative to the base year. As such, for a 2018 base year, at least 17.5% reduction is required by 2025 and 30% absolute reduction by 2050. To limit global warming to 1.5°C, GHG emissions must be reduced linearly by an average of at least 4.2% per year relative to the base year. For a 2018 base year, this corresponds to an emission reduction of at least 29.4% by 2025 and 50.4% by 2050.

While the majority of well below 2°C emission scenarios generally run more-or-less linearly until 2050 (see Figure 3), 1.5°C scenarios require a significantly higher reduction rate in the medium term, followed by a shallower slope thereafter (see Figure 4). This means that for the time being, the absolute contraction method can only be applied in the short to medium term. The SBTi offers an Excel-based tool that allows companies to apply the absolute contraction method to their base year scope 1 and 2 data to determine Science Based Targets for the desired

target year (maximum 2035).<sup>10</sup> For more details on the absolute contraction method, see Table 1.

#### *The Sectoral Decarbonization Approach*

The Sectoral Decarbonization Approach (SDA) is a sector-specific approach for setting emission intensity targets. The SDA assumes global convergence of key sectors' emissions intensity by 2060 consistent with the global temperature thresholds of well below 2°C and 1.5°C. An intensity target is defined by a reduction in emissions relative to a company's specific physical activity metric (e.g. tonne CO<sub>2</sub>-eq per tonne product produced or per square metre of service area).<sup>11</sup> Within each sector, companies can derive their science-based GHG emission reduction targets based on their relative contribution to the total sector activity and their initial CO<sub>2</sub> intensity relative to that of the sector.

To this end, the SDA breaks down the global GHG budget by sector. Furthermore, it makes assumptions on each sector's projected activity growth and emissions development until 2060. The SDA uses the "Beyond two degrees" (B2DS) scenario from the 2017 report of the International Energy Agency Energy Technology Perspectives (IEA ETP). This report contains emission and activity projections at sector level and differentiates between technical GHG emission abatement options by sector.<sup>12</sup> Since the

<sup>10</sup> Science Based Targets Initiative (2019): Science-based Target Setting Tool Version 1.1. [www.bit.ly/SBTi-Tool](http://www.bit.ly/SBTi-Tool)

<sup>11</sup> Science Based Targets Initiative (2019): Science-Based Target Setting Manual. [www.bit.ly/SBTi-Manual](http://www.bit.ly/SBTi-Manual)

<sup>12</sup> International Energy Agency (2017): Energy Technology Perspectives 2017. [www.bit.ly/IEA\\_ETP2017](http://www.bit.ly/IEA_ETP2017)

IEA does not currently provide sector-specific 1.5°C scenarios, the SDA method cannot be used to develop 1.5°C targets. Currently, the SDA can be applied with the SBT tool for the following sectors (activity indicator in brackets)<sup>13</sup>:

- ▶ Power generation (MWh)
- ▶ Iron and steel (metric tons of crude steel)
- ▶ Aluminum (metric tons of aluminum)
- ▶ Cement (metric tons of cement)
- ▶ Pulp and paper (metric tons of pulp and paper)

As part of a special project in 2018, the SDA was also developed for the passenger and freight transport sectors (based on passenger-kilometers and ton-kilometers). It can be used in combination with the SBTi SDA Transport Tool.<sup>14</sup> Moreover, in 2019, the SDA and a corresponding tool were developed for manufacturers of light passenger vehicles (based on units sold).<sup>15</sup>

Tables 1 and 2 provide an overview of the absolute contraction method and the SDA, describing their main characteristics.

**Table 1:** Characteristics of the absolute contraction method

Method & Developer	Allocation mechanism	Underlying scenario	Characteristics of the defined target	Classification
<b>Absolute contraction method</b> <sup>16</sup> Method originally developed by the company Mars; further developed by SBTi (2019)	Contraction	Envelope of emission scenarios from well-established climate models in line with limiting global warming to well below 2°C (28 scenarios) or 1.5°C (20 scenarios)	<b>Logic:</b> <ul style="list-style-type: none"> <li>▶ Absolute contraction applied to all companies leads to the required global GHG emission reductions</li> <li>▶ Annual reduction of at least 2.5% relative to the base year to be aligned with limiting warming to well below 2°C</li> <li>▶ Annual reduction of at least 4.2% relative to the base year to be aligned with limiting warming to 1.5°C</li> </ul> <b>Input data:</b> <ul style="list-style-type: none"> <li>▶ Base year</li> <li>▶ Target year</li> <li>▶ Absolute base year emissions (disaggregated by scopes)</li> </ul> <b>Output data:</b> <ul style="list-style-type: none"> <li>▶ Percent reduction between base year and target year</li> <li>▶ Absolute emissions (disaggregated by scope) per year</li> </ul>	<b>Target type:</b> <ul style="list-style-type: none"> <li>▶ Absolute target</li> <li>▶ May be converted by the company into an intensity target</li> </ul> <b>Strengths:</b> <ul style="list-style-type: none"> <li>▶ Free excel tool available<sup>17</sup></li> <li>▶ Well documented scientific background<sup>18</sup></li> <li>▶ Simple, straightforward approach</li> <li>▶ Applicable for scope 1, 2 and 3</li> <li>▶ Easy to communicate</li> </ul> <b>Weaknesses:</b> <ul style="list-style-type: none"> <li>▶ Past GHG emission reduction measures not taken into account</li> </ul>

**Table 2:** Characteristics of the sectoral decarbonization approach

Method & Developer	Allocation mechanism	Underlying scenario	Characteristics of the defined target	Classification
<b>Sectoral Decarbonization Approach (SDA)</b> <sup>19</sup> Method developed by the SBTi (2015)	Convergence (homogeneous sectors)	Scenario "Beyond two degrees" (B2DS) from the IEA ETP (2017)	<b>Logic:</b> <ul style="list-style-type: none"> <li>▶ Target defined taking into account sector-specific mitigation potentials and projected growth</li> </ul> <b>Input data:</b> <ul style="list-style-type: none"> <li>▶ Base year</li> <li>▶ Target year</li> <li>▶ GHG emissions in base year (disaggregated by scope)</li> <li>▶ Activity in base year (in square meters, tonne output, MWh, etc.)</li> <li>▶ Growth projections until target year</li> </ul> <b>Output data:</b> <ul style="list-style-type: none"> <li>▶ Absolute emissions and percentage change of scope 1 &amp; 2 by target year</li> <li>▶ Emission intensity and its percent change for scope 1 &amp; 2 by target year</li> </ul>	<b>Target type:</b> <ul style="list-style-type: none"> <li>▶ Absolute target and/or intensity target</li> </ul> <b>Strengths:</b> <ul style="list-style-type: none"> <li>▶ Consideration of specific sector characteristics regarding GHG emission reduction potentials</li> <li>▶ Consideration of past commitments (via intensity)</li> <li>▶ Free excel tool available<sup>17</sup></li> <li>▶ Comprehensive description of the method (2015)<sup>20</sup></li> <li>▶ Continuous development and specification of other sectors</li> </ul> <b>Weaknesses:</b> <ul style="list-style-type: none"> <li>▶ Very limited suitability for scope 3 emissions</li> <li>▶ Applicable only to selected homogeneous sectors</li> </ul>

13 Science Based Targets Initiative (2019): Science-based Target Setting Tool Version 1.1. [www.bit.ly/SBTi-Tool](http://www.bit.ly/SBTi-Tool)

14 Science Based Targets Initiative (2019): Sectoral Decarbonization Approach – Transport Tool (Version 1.1). [www.bit.ly/SDA\\_Transport-Tool](http://www.bit.ly/SDA_Transport-Tool)

15 Science Based Targets Initiative (2019): Science-based target setting – Manufacturing of passenger light-duty vehicles (Scopes 1&2). [www.bit.ly/SDA\\_PLDV-Tool](http://www.bit.ly/SDA_PLDV-Tool)

16 Science Based Targets Initiative (2019): Foundations of Science-Based Target-Setting. [www.bit.ly/SBT-Foundations](http://www.bit.ly/SBT-Foundations)

17 Science Based Targets Initiative (2019): Science-based Target Setting Tool Version 1.1. [www.bit.ly/SBTi-Tool](http://www.bit.ly/SBTi-Tool)

18 Science Based Targets Initiative (2019): Foundations of Science-Based Target-Setting. [www.bit.ly/SBT-Foundations](http://www.bit.ly/SBT-Foundations)

19 Science Based Targets Initiative (2019): Sectoral Decarbonization Approach. [www.bit.ly/SBT-SDA](http://www.bit.ly/SBT-SDA)

20 Science Based Targets Initiative (2015): Sectoral Decarbonization Approach (SDA): A Method for Setting Corporate Emission Reduction Targets in Line with Climate Science. [www.bit.ly/SBT-SDA-Report2015](http://www.bit.ly/SBT-SDA-Report2015)

### Selecting a suitable method for setting Science Based Targets (scope 1&2)

With the reduction of the number of available target-setting methodologies, from formerly seven to two, selecting a suitable method for developing Science Based Targets has become much simpler for companies. Now, selecting a suitable SBT methodology primarily depends on the sector the company belongs to. Table 3 summarizes the SBTi recommendations for selecting a suitable SBT methodology for various sectors. The SBTi invites companies to participate in the further development of available sector pathways and tools.<sup>21</sup>

Companies operating in more than one sector may combine different methodologies when setting a science-based target. For instance, the SDA may be used to identify specific reduction paths for different segments of a company that fall within the sectors covered by this methodology. For other organizational areas, the absolute contraction method may be applied.

Many companies initially do not consider an official SBTi validation and approval as being of primary concern in their target setting. Nevertheless, the SBTi's validation criteria and associated recommendations (see Section 3.3) provide helpful practical guidelines for selecting and applying suitable target setting methodologies and serve as orientation regarding the current best practice of corporate climate target setting.

**Table 3:** Recommended methods for various sectors according to SBTi<sup>22</sup>

Sector	Recommended approach (scope 1&2)	Available Tool
<b>Power generation</b>	SDA (scope 1)	Science-Based Target Setting Tool (2019) <sup>23</sup>
<b>Aluminum</b>		
<b>Services/Commercial buildings</b> incl. trade, retail, financial institutions, food and lodging, real estate, public administration, health		
<b>Iron &amp; steel</b>	SDA or absolute contraction	
<b>Pulp and paper</b>		
<b>Cement</b>		SDA Transport Tool (2018) <sup>24</sup> ; SDA PLDV-Tool (2019) <sup>25</sup> ; guidance document (2018) <sup>26</sup> available
<b>Transport services</b> (Passenger and freight transport)		
<b>Chemical and petrochemical industry</b>	Absolute contraction; SDA under development <sup>27</sup>	
<b>Apparel and footwear</b>	Absolute contraction; see guidance document <sup>28</sup>	Science-Based Target Setting Tool (2019)
<b>Financial institutions</b>	Absolute contraction; scope 3 method under development <sup>29</sup>	
<b>Oil and gas</b>	Options to validate targets available from the SBTi upon request; SDA under development <sup>30</sup>	Not available
<b>All other sectors</b>	Absolute contraction	Science-Based Target Setting Tool (2019)

21 Science Based Targets Initiative (2019): SDA Sector Development. [www.bit.ly/SBT\\_Sector-Development](http://www.bit.ly/SBT_Sector-Development)

22 Science Based Targets Initiative (2019): Science-Based Target Setting Manual. [www.bit.ly/SBTi-Manual](http://www.bit.ly/SBTi-Manual)

23 Science Based Targets Initiative (2019): Science-based Target Setting Tool Version 1.1. [www.bit.ly/SBTi-Tool](http://www.bit.ly/SBTi-Tool)

24 Science Based Targets Initiative (2019): Sectoral Decarbonization Approach – Transport Tool (Version 1.1). [www.bit.ly/SDA\\_Transport-Tool](http://www.bit.ly/SDA_Transport-Tool)

25 Science Based Targets Initiative (2019): Science-based target setting – Manufacturing of passenger light-duty vehicles (Scopes 1&2). [www.bit.ly/SDA\\_PLDV-Tool](http://www.bit.ly/SDA_PLDV-Tool)

26 Science Based Targets Initiative (2018): Transport Science-Based Target Setting Guidance. [www.bit.ly/SBT-Transport-Guidance](http://www.bit.ly/SBT-Transport-Guidance)

27 Science Based Targets Initiative (2019): Chemicals and Petrochemicals. [www.bit.ly/SBT\\_Chemicals](http://www.bit.ly/SBT_Chemicals)

28 Science Based Targets Initiative (2019): Apparel and Footwear Sector Science-Based Targets Guidance. [www.bit.ly/SBT\\_Apparel-Footwear](http://www.bit.ly/SBT_Apparel-Footwear)

29 Science Based Targets Initiative (2019): Financial Institutions. [www.bit.ly/SBT\\_Financial-Institutions](http://www.bit.ly/SBT_Financial-Institutions)

30 Science Based Targets Initiative (2019): Oil and Gas. [www.bit.ly/SBT\\_Oil-And-Gas](http://www.bit.ly/SBT_Oil-And-Gas)

### 3.2. Interpretation of SBT method results in the process of developing a climate strategy

#### The internal process of corporate climate target setting

Since the signing of the Paris Agreement in 2015, social awareness of climate change has increased significantly. The effects of climate change have been observed in various regions around the world and as a result, politicians are being increasingly called upon to take action. At the same time, stakeholder expectations regarding an adequate corporate response to the global challenge of climate change increase. Developing science-based GHG emission reduction pathways can provide companies with a solid backbone for developing their initial climate strategy. A direct comparison of the GHG reduction pathways determined within the company by a “bottom-up” analysis of emission reduction potentials, e.g. from increasing energy efficiency, often reveals a “gap” between the latter and SBTs. This suggests that companies need to take additional long-term actions to manage climate risks and make an effective contribution to limiting global warming. These may include implementing innovative business models, effective mitigation measures (possibly with longer amortization periods) and switching to renewable energy sources.

Successfully managing climate impacts and risks requires long-term planning which often is at odds with the common short-term strategic cycles of companies. To gauge the opportunities and possibilities for long-term emissions reductions by 2050, companies must also anticipate technological innovations. However, there is no guarantee that these solutions will actually materialize. Ultimately, each company will follow their own particular path in setting longer-term climate targets and developing their climate strategy. In this process, close collaboration between the different company segments and clear commitment from management is of utmost importance.

**Michael Goebbels**  
Director Corporate Responsibility, Metro AG

*Our sustainability balance (Sustainable Value Creation model) has shown that METRO AG has negative environmental impacts especially in the upstream and downstream value chain. As a result, we had to expand our climate target to include scope 3 emissions. With external support, including from CDP, we were able to clearly structure our response and tackle the complex calculations surrounding our climate target. This has made our work much easier.*

#### Guidelines for interpreting results from the SBT methodology

The SBTi has made clear that GHG emission reduction pathways, derived with the methods described above, represent a global minimum requirement for limiting global warming. This is partly due to the fact that the science-based emission reduction pathways, even if implemented globally, only have a 50% probability of successfully limiting global warming to the respective temperature threshold. To increase the chances for successfully limiting warming, actors from industrialized countries in particular must increase their level of ambition.

Different methodologies for target setting produce reduction pathways with different levels of ambition. The SBTi recommends that companies always aim for the most ambitious outcome when setting corporate targets.

Setting and tracking the progress of a science-based climate target is a dynamic process. Companies should track and evaluate their status and progress against their targeted SBT pathway on an ongoing basis. Targets should also be adjusted, if there are any significant changes to underlying parameters, such as the scientific foundation of the climate scenario, growth forecasts or corporate structure.

### 3.3. SBTi approval of science-based targets

#### The SBT validation process

Through the SBTi and its online platform<sup>31</sup> companies can publicly commit themselves to setting a SBT. This target can be composed of several sub-targets, e.g. for different scopes of emissions or varying timeframes.

Within 24 months of committing to setting SBTs, companies should submit their target to the SBTi for validation. The target must be developed using the methodologies described above, and companies must use the application form provided by the initiative to submit their request for validation. The next steps on the part of the SBTi include a preliminary review of the target, the assignment of a team responsible for the validation process, the conduction of the actual target validation, a peer review by the SBTi Technical Working Group and, in controversial cases, a final review by the SBTi Steering Committee. Once a company's climate target is successfully recognized as “science-based”, it is listed on the SBTi website. A detailed step-by-step guide covering the full validation process, from declaring a commitment to develop a science-based target to submitting all the necessary documents is available from the SBTi.<sup>32</sup>

In February 2019, a fee has been introduced (\$4,950 + VAT) to cover the SBTi costs of reviewing submitted climate targets. The fee includes up to two target assess-

<sup>31</sup> Science Based Targets Initiative Website. [www.bit.ly/ScienceBasedTargets](http://www.bit.ly/ScienceBasedTargets)

<sup>32</sup> Science Based Targets Initiative (2019): Step-By-Step Guide. [www.bit.ly/SBT-Guide](http://www.bit.ly/SBT-Guide)

ments. Companies can choose between one preliminary and one official validation or two official validations. Further information can be found in the SBTi FAQs.<sup>33</sup>

**Official criteria for approving a climate target as “science-based”**

The SBTi specifies 23 criteria<sup>34</sup> (version 4.0) that must be met for a company’s climate target to be recognised by the initiative as “science-based”. In addition, the criteria define current best practice in the development of corporate climate strategies and can also be used by companies as guidance in this area, even if validation of targets by the SBTi is not planned.

The criteria cover operational system boundaries, timeframes, levels of ambition, requirements for addressing scope 2 and scope 3 emissions, sector-specific guidelines, reporting and recalculation of targets. In addition, the SBTi makes 13 recommendations for target setting. In

April 2019, SBTi published their first “Target Validation Protocol”<sup>35</sup>, which offers helpful information to interpret the validation criteria and should be used as a supplementary tool when setting SBTs. The 23 criteria (C1-23) and selected recommendations (“R”) of the SBTi are summarized in Table 4. In addition, the table contains information from the Target Validation Protocol, which helps to interpret the criteria.

The initiative also encourages companies to calculate and account for their emissions according to the Corporate Standard<sup>36</sup>, the Scope 2 Guidance<sup>37</sup> and the Corporate Value Chain (Scope 3) Accounting and Reporting Standard<sup>38</sup> of the GHG Protocol.

33 Science Based Targets Initiative (2019): Frequently Asked Questions. [www.bit.ly/SBT\\_FAQ](http://www.bit.ly/SBT_FAQ)

34 Science Based Targets Initiative (2019): SBTi Criteria and Recommendations (Version 4.0). [www.bit.ly/SBTi-Criteria\\_4-0](http://www.bit.ly/SBTi-Criteria_4-0)

35 Science Based Targets Initiative (2019): Target Validation Protocol (Version 1.0) [www.bit.ly/SBT\\_Target-Validation](http://www.bit.ly/SBT_Target-Validation)

36 World Resources Institute & World Business Council for Sustainable Development (2011): The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard (Revised Edition). [www.bit.ly/ghgp-AcRepStd](http://www.bit.ly/ghgp-AcRepStd)

37 World Resources Institute (2015): Greenhouse Gas Protocol Scope 2 Guidance. [www.bit.ly/Scope2-Guidance](http://www.bit.ly/Scope2-Guidance)

38 World Resources Institute (2013): Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. [www.bit.ly/ghgp-Scope3AcRepStd](http://www.bit.ly/ghgp-Scope3AcRepStd)

**Table 4:** Criteria for approval of science-based targets by the SBTi

System boundaries for science-based targets	
<b>C1 – Scopes</b>	The targets must cover the company’s scope 1 and scope 2 emissions, as defined by the GHG Protocol Corporate Standard. <b>R1 - Subsidiaries:</b> SBTi recommends that only the parent company submits targets, but subsidiaries may submit separate targets.
<b>C2 – Significance thresholds</b>	Companies may exclude up to 5% of scope 1 and scope 2 emissions combined in the boundary of the inventory and target.
<b>C3 – Greenhouse gases</b>	The targets must cover all relevant greenhouse gases as required per the GHG Protocol Corporate Standard. Greenhouse gas exclusions may not exceed 5% of total scope 1 and 2 emissions.
<b>C4 – Bioenergy accounting</b>	Direct emissions from the combustion of biomass and biofuels, as well as GHG removals associated with bioenergy feedstock, must be included alongside the company’s inventory and must be included in the target boundary when setting a science-based target and when reporting progress against that target. If biogenic emissions from biomass and biofuels are considered climate neutral, the company must provide justification of the underlying assumptions.
Target timeframe	
<b>C5 – Base and target years</b>	Targets must cover a minimum of 5 years and a maximum of 15 years from the date the target is submitted to the SBTi for an official validation <b>R4 – Target year:</b> The SBTi recommends supplementing the target with a longer-term target for a timeframe of >15 years (e.g. 2050). To be approved by the SBTi, the targets must be in line with the minimum level of decarbonization required to limit global warming to well below 2°C.
<b>C6 – Progress to date</b>	Targets that have already been achieved by the date they are submitted to the SBTi are not acceptable. The SBTi uses the year the target is submitted to the initiative (or the most recent completed GHG inventory) to assess forward-looking ambition. The most recent completed GHG inventory must not be earlier than two years prior to the year of submission. <b>R3 – Base year:</b> The SBTi recommends choosing the most recent year for which data is available as the target base year.

Level of ambition	
<b>C7 – Level of ambition</b>	At a minimum, scope 1 and scope 2 targets have to be consistent with the level of decarbonization required to keep global temperature increase to well below 2°C compared to pre-industrial temperatures, though companies are encouraged to pursue greater efforts towards a 1.5°C trajectory. Both the target timeframe ambition (base year to target year) and the forward-looking ambition (most recent year to target year) must meet this ambition criteria.
<b>C8 – Absolute vs. intensity</b>	Intensity targets for scope 1 and scope 2 emissions are only eligible when they lead to absolute emission reduction targets in line with climate scenarios for keeping global warming to well below 2°C or when they are modelled using an approved sector pathway. Absolute reductions must be at least as ambitious as the minimum of the range of emissions scenarios consistent with the well below 2°C goal, or aligned with the relevant sector reduction pathway within the Sectoral Decarbonization Approach.
<b>C9 – Method validity</b>	Targets must be modelled using the latest version of methods and tools approved by the initiative. Targets modelled using previous versions of the tools or methods can only be submitted to the SBTi for an official validation within 6 months of the publication of the revised method or the publication of relevant sector-specific tools.
<b>C10 – Combined scope targets</b>	Targets can be set using combined scopes (scopes 1+2 or scopes 1+2+3). <ul style="list-style-type: none"> <li>▶ If the combined scope 1+2+3 target is not in line with a well below 2°C scenario: the scope 1+2 portion must be in line with a well below 2°C scenario and the scope 3 portion of the target has to meet the ambition requirements outlined in C19.</li> <li>▶ If the combined scope 1+2+3 target is in line with a well below 2°C scenario: the combined scope 1+2 portion of the target must be in line with a well below 2°C scenario, regardless of the scope 3 portion ambition.</li> </ul>
<b>C11 – Offsets</b>	The use of offsets is not counted as emission reduction toward the progress of companies' science-based targets. The SBTi requires that companies set targets based on emission reductions through direct action within their own operations or their value chains. Offsets are only considered to be an option for companies wanting to finance additional emission reductions beyond their science-based targets.
<b>C12 – Avoided emissions</b>	Avoided emissions fall under a separate accounting system from corporate inventories and do not count toward science-based targets.

Scope 2 targets	
<b>C13 – Approaches</b>	Companies shall disclose whether they are using a location-based or market-based approach as per the GHG Protocol Scope 2 Guidance to calculate base year emissions and to track performance against a science-based target. Companies shall use a single, specified scope 2 accounting approach ("location-based" or "market-based") for setting and tracking progress toward an SBT.
<b>C14 – Renewable electricity</b>	Targets to actively source renewable electricity at a rate that is consistent with well below 2°C scenarios are an acceptable alternative to scope 2 emission reduction targets. The SBTi has identified 80% renewable electricity procurement by 2025 and 100% by 2030 as thresholds (portion of renewable energy over total energy use) for this approach in line with the recommendations of RE100. Companies that already source electricity at or above these thresholds shall maintain or increase their use share of renewable electricity to qualify.

Scope 3	
<b>C15 – Scope 3 screening</b>	Companies must complete a scope 3 screening for all relevant scope 3 categories in order to determine their significance as per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.
<b>C16 – Requirements to have a scope 3 target</b>	If a company's relevant scope 3 emissions are 40% or more of total scope 1, 2, and 3 emissions, a scope 3 target is required. All companies involved in the sale or distribution of natural gas or other fossil fuel products shall set scope 3 targets for the use of sold products irrespective of the share of these emissions compared to the total scope 1, 2, 3 emissions of the company.
<b>C17 – Boundary</b>	Companies must set one or more emission reduction targets and/or supplier or customer engagement target that collectively cover at least 2/3 of total scope 3 emissions in conformance with the GHG Protocol Corporate Value Chain (scope 3) Accounting and Reporting Standard.
<b>C18 – Timeframe</b>	Emission reduction targets must cover a minimum of 5 years and a maximum of 15 years from the date the company's target is submitted to the SBTi for an official validation. Companies are encouraged to develop such long-term targets up to 2050 in addition to the required mid-term targets. Long-term scope 3 targets must comply with C19 to be considered ambitious.

Scope 3	
<b>C19 – Level of ambition for scope 3 emission reductions target</b>	<p>Emission reduction targets (covering the entire value chain or individual scope 3 categories) are considered ambitious if they fulfill any of the following:</p> <ul style="list-style-type: none"> <li>▶ <b>Absolute:</b> Absolute emission reduction targets that are consistent with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures, in accordance with C7 (at least 1.23% p.a. compared to the base year).</li> <li>▶ <b>Economic intensity:</b> Economic intensity targets that result in at least 7% year-on-year improvement of emissions per unit value added.</li> <li>▶ <b>Physical intensity:</b> Intensity reductions aligned with the relevant sector reduction pathway within the Sectoral Decarbonization Approach; or targets that do not result in absolute emissions growth and lead to linear annual intensity improvements equivalent to 2% linear, at a minimum.</li> </ul>
<b>C19.1 – Supplier or customer engagement targets</b>	<p>Company targets to drive the adoption of science-based emission reduction targets by their suppliers and/or customers are considered acceptable when the following conditions are met:</p> <ul style="list-style-type: none"> <li>▶ <b>Boundary:</b> Companies may set engagement targets around relevant and credible upstream or downstream categories.</li> <li>▶ <b>Formulation:</b> Companies shall provide information in the target language on what percentage of emissions from relevant upstream and/or downstream categories is covered by the engagement target or, if that information is not available, what percentage of annual procurement spend is covered by the target.</li> <li>▶ <b>Timeframe:</b> Companies' engagement targets must be fulfilled within a maximum of 5 years from the date the company's target is submitted to the SBTi for an official validation.</li> <li>▶ <b>Level of ambition:</b> The company's suppliers/customers shall have science-based emission reduction targets in line with SBTi resources.</li> </ul> <p><b>R9 – Supplier/customer engagement:</b> Companies should recommend their suppliers or customers to consult SBTi guidance documents and tools to set science-based targets. Official validation of suppliers' targets by SBTi is recommended, but not required.</p>
<b>C19.2 – Fossil fuel sale, transmission and distribution</b>	<p>Companies that sell, transmit, or distribute natural gas or other fossil fuel products shall set absolute or intensity percentage-based emission reduction scope 3 targets for the use of sold products that are consistent with the level of decarbonization required to keep global temperature increase well below 2°C compared to pre-industrial temperatures.</p>

Sector-specific guidelines	
<b>C20 – Requirements from sector-specific guidance</b>	<p>Companies should follow requirements for target setting and minimum ambition levels as indicated in relevant sector-specific methods and guidance at the latest 6 months after the sector guidance publication. A list of sector-specific guidelines and requirements is provided in the Target Validation Protocol.<sup>39</sup></p>

Reporting on the targets	
<b>C21 – Frequency</b>	<p>The company shall publicly report its company-wide GHG emissions inventory and progress against published targets on an annual basis.</p>

Target recalculation and validity	
<b>C22 – Targets recalculations</b>	<p>To ensure consistency with the most recent climate science and best practices, targets must be reviewed and, if necessary, recalculated and revalidated, at a minimum, every 5 years. The latest year in which companies with already approved targets must revalidate is 2025. Companies with an approved target that requires recalculation must follow the most recently applicable criteria at the time of resubmission.</p>
<b>C23 – Target validity</b>	<p>Companies with approved targets must announce their target publicly on the SBTi website within 6 months of the approval date. Targets unannounced after 6 months will have to go through the approval process again, unless a different publication timeframe was agreed with the SBTi.</p>

<sup>39</sup> Science Based Targets Initiative (2019): Target Validation Protocol (Version 1.0). [www.bit.ly/SBT\\_Target-Validation](http://www.bit.ly/SBT_Target-Validation)

### 3.4. Development of a SBTi-approved target for corporate scope 3 emissions

In most sectors the largest share of total emissions is found in the upstream and downstream value chain within the 15 categories of scope 3 emissions as defined by the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.<sup>40</sup> With the update of its methodologies and criteria, the SBTi has significantly sharpened and more narrowly defined the requirements for corporate targets with regard to scope 3 emissions. This approach stresses that companies aspiring to be leaders and to making a valuable contribution to limiting global warming must address their emission hotspots along the entire value chain. In practice, companies face particular challenges when it comes to GHG accounting, developing suitable measures and projects along the value chain and measuring emission reductions. The German Global Compact Network, WWF and other organizations have recognized these challenges and are working with companies to find workable solutions.

#### Verifying the relevance of scope 3 targets

According to the SBTi criteria, companies must carry out at least an initial scope 3 screening in order to be able to determine whether GHG emissions from upstream and downstream activities account for more than 40% of total emissions (scope 1+2+3) (criterion C15). If the 40% threshold is exceeded, a scope 3 target is required (criterion C16).

The Quantis Scope 3 Evaluator<sup>41</sup> is helpful for an initial, pragmatic estimation of scope 3 emissions. It relies on an estimation based on purchasing expenditure for many of the scope 3 categories (purchasing of goods and capital goods, waste disposal, logistics, business travel). If the initial screening shows a high relevance of scope 3 emissions, calculating a scope 3 GHG inventory with higher data quality is recommended. Then, for example, primary data from suppliers or at least weight-based data from life cycle analysis databases can be used to de-

termine upstream GHG emissions stemming from purchased goods and services. A solid data quality lays the groundwork for setting scope 3 targets and managing emission reductions along the value chain.

#### Target types and available methodologies for developing scope 3 targets

In principle, there are three types of scope 3 targets: absolute reduction targets, emission intensity targets and supplier/customer engagement targets. The scope 3 target must account for at least 66% of scope 3 emissions (criterion C17). The excel-based Science-Based Target Setting Tool provided by the SBTi can be used for the first two target types.<sup>42</sup>

#### Absolute reduction targets for scope 3

As for scope 1 and 2 emissions (Chapter 3.1), companies may also set absolute reduction targets for scope 3 emissions. These have a high level of reliability for climate protection and are easy to communicate. While for scope 1 and 2 a minimum ambition level of well below 2°C (2.5% emission reduction per year) for climate targets is required, for scope 3 the SBTi requires as of October 2019 an annual linear reduction rate of at least 1.23% per year compared to the base year (criterion C19 and Target Validation Protocol). This corresponds to the degree of decarbonization required to meet 2°C climate goals with a 50% probability. These requirements are less stringent than those for scope 1 and 2 emissions. The SBTi acknowledges that scope 3 emissions by definition have to be addressed in shared responsibility with other actors along the value chain and can therefore not be directly influenced by the reporting company to the same extent as scope 1 and 2 emissions.

#### Emission intensity targets

Equally admissible under the SBTi criterion C19 are intensity targets. These may be related to physical activity indicators or units of value added.

#### Andreas Kröhling

Senior Expert Corporate Responsibility, Deutsche Telekom AG

*The main challenges in setting science-based targets lie in the area of scope 3 emissions. First, the calculation of scope 3 emissions is subject to much greater uncertainties than the calculation of scope 1 and scope 2 emissions. Second, the opportunities for managing GHG emissions in the upstream and downstream value chain are much more limited. Last but not least, the development of scope 3 emissions depends on numerous external factors that are difficult to predict over a period of more than 10 years. We have therefore opted for a relative scope 3 target, aiming to reduce GHG emissions per customer. This approach also ensures broad internal support.*

<sup>40</sup> World Resources Institute (2013): Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. [www.bit.ly/ghgp-Scope3AcRepStd](http://www.bit.ly/ghgp-Scope3AcRepStd)

<sup>41</sup> Greenhouse Gas Protocol & Quantis (2019): Scope 3 Evaluator. [www.bit.ly/Scope3Evaluator](http://www.bit.ly/Scope3Evaluator)

<sup>42</sup> Science Based Targets Initiative (2019): Science Based Target Setting Tool Version 1.1. [www.bit.ly/SBTi-Tool](http://www.bit.ly/SBTi-Tool)

To assure a sufficient level of ambition of physical intensity targets, these need to be determined using the Sectoral Decarbonization Approach or need to lead to linear annual intensity improvements of at least 2% per physical activity unit (unit sold, square meter, tonne of product sold, etc.), while they may not lead to an absolute increase in emissions at the same time. For example, the Sectoral Decarbonization Approach can be applied to targets for scope 3 category 1 “Purchased Goods and Services” if sectors covered by the Sectoral Decarbonization Approach, such as aluminum and steel, account for a large proportion of purchasing. For targets related to external transport services (people or goods) and the use phase of sold cars and commercial vehicles, the SBTi Transport Tool<sup>43</sup> should be used.

Intensity targets, related to a unit of value added, represent a further acceptable target setting option for scope 3 emissions. These are based on the contraction allocation approach and assume a reduction in the global emission intensity per unit of value added. The “Greenhouse Gas Emissions per Unit of Value Added” (GEVA) method formulates intensity reductions in tonnes of CO<sub>2</sub>-eq per US\$ value added. Under the GEVA method, SBTi requires a minimum reduction in intensity of 7% per year (compared to the previous year). This corresponds to an absolute reduction in GHG emissions of 75% between 2010 and 2050.<sup>44</sup> According to SBTi calculations, this level of ambition roughly lies between a 2°C and a well below 2°C climate goal. Unlike the Absolute Contraction and SDA methods, however, the GEVA method is subject to larger uncertainties with regard to keeping the global emission budget in line with (well below) 2°C. GEVA assumes that all companies are growing at the same rate,

equal to that of global GDP. Given the volatility of economic indicators, this method is not regarded as being equally robust than the other methods and may therefore only be used for the development of scope 3 targets. If companies wish to apply the GEVA method to develop scope 1 and 2 targets, they must also apply the absolute contraction method simultaneously.

*Supplier or customer engagement targets*

If absolute or intensity-related GHG emission reductions in the upstream and downstream value chain are difficult to verify, e.g. due to the high complexity of the supply chain or inadequate scope 3 data quality, supplier or customer commitment to set climate targets offers a suitable alternative. Targets must then be set by suppliers or customers within a maximum of five years and meet the requirements of the SBTi (criterion C19.1) - even if a validation of the target by the SBTi is not mandatory. With supplier and customer engagement targets, the responsibility for reducing emissions is shifted along the value chain. At best this leads to all actors gradually setting climate targets for scope 1, scope 2 and – if relevant – scope 3 emissions. The SBTi allows this target type for all relevant upstream or downstream scope 3 categories.

Similarly to other target types, two-thirds of total scope 3 emissions must be covered by supplier and customer engagement targets (criterion C17). Accordingly, if GHG emissions from purchased goods and services are highly relevant, it is legitimate, for example, to focus on the suppliers with the largest purchasing volume. Companies must indicate in the target text which percentage of emissions from relevant upstream and/or downstream scope 3 categories falls within the engagement target (criterion C19.1).

**Table 5:** Intensity contraction method per unit of added value based on SBTi

Method & Developer	Allocation mechanism	Underlying scenario	Characteristics of the defined target	Classification
<p><b>Greenhouse Gas Emissions per unit of value added (GEVA)</b></p> <p>Developed by Jorgen Randers, Norwegian Business School BI; adapted from SBTi<sup>44</sup></p>	Contraction of intensity	IPCC 5th Assessment Report RCP 2.6 <2°C scenario (72% global reduction by 2050)	<p><b>Logic:</b></p> <ul style="list-style-type: none"> <li>▶ Relative reduction based on one unit value added contribution</li> </ul> <p><b>Data input:</b></p> <ul style="list-style-type: none"> <li>▶ Base year</li> <li>▶ Target</li> <li>▶ Base year emissions (disaggregated by scope)</li> <li>▶ Contribution of added value in base year</li> <li>▶ Estimated change in value added contribution up to target year</li> </ul> <p><b>Output data:</b></p> <ul style="list-style-type: none"> <li>▶ Emission reduction relative to the financial performance of the company</li> </ul>	<p><b>Target as result:</b></p> <ul style="list-style-type: none"> <li>▶ Intensity target based on value added contribution in t CO<sub>2</sub>-eq/ US\$</li> </ul> <p><b>Strengths:</b></p> <ul style="list-style-type: none"> <li>▶ Easily applicable</li> </ul> <p><b>Weaknesses:</b></p> <ul style="list-style-type: none"> <li>▶ Uncertain adherence to GHG budget</li> <li>▶ Unrealistic assumption of homogeneous global growth</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>▶ Description of the method<sup>44</sup> (2012) available</li> </ul>

43 Science Based Targets Initiative (2019): Sectoral Decarbonization Approach – Transport Tool (Version 1.1). [www.bit.ly/SDA\\_Transport-Tool](http://www.bit.ly/SDA_Transport-Tool)

44 Science Based Targets Initiative (2019): Science-Based Target Setting Manual. [www.bit.ly/SBTi-Manual](http://www.bit.ly/SBTi-Manual)

Jorgen Randers (2012): Greenhouse Gas Emissions Per Unit Of Value Added (“GEVA”) - A Corporate Guide To Voluntary Climate Action. [www.bit.ly/SBT-GEVA-EnergyPolicy](http://www.bit.ly/SBT-GEVA-EnergyPolicy)

#### 4. EXAMPLES OF SBTS FROM GERMAN COMPANIES

In Germany, a growing number of companies is committing to reducing their GHG emissions in line with the goals of the Paris Agreement and the requirements of the SBTi. Table 5 shows five recent examples of corporate science-based targets officially approved by the SBTi. The ambition levels of the climate targets are based on

the 2°C or well below 2°C limit. At the time of publication, no German company had set a target in line with the 1.5°C limit approved by SBTi yet. This is expected to change with the new requirements of the SBTi coming into force from October 2019.

**Table 6:** Examples of science-based climate targets of German companies validated by SBTi<sup>45</sup>

Company	Sector	Target scope 1&2	Target scope 3
<b>Deutsche Telekom</b>	Tele-communications	The German telecommunications company Deutsche Telekom AG commits to reduce absolute Scope 1&2 GHG emissions 90% by 2030 from a 2017 base-year. Deutsche Telekom AG commits to increase annual sourcing of renewable electricity from 41% in 2017 to 100% by 2021.	Deutsche Telekom AG commits to reduce Scope 3 GHG emissions 25% per customer by 2030 from a 2017 base-year.
<b>Heidelberg Cement</b>	Construction materials	German multinational building materials company HeidelbergCement commits to reduce scope 1 GHG emissions 15% per ton of cementitious materials by 2030 from a 2016 base year. HeidelbergCement also commits to reduce scope 2 GHG emissions 65% per ton of cementitious materials within the same timeframe. <sup>46</sup>	Not relevant
<b>Metro</b>	Trade	Metro commits to reduce scope 1 emissions (e.g. fluorinated gases from refrigeration in wholesale stores) and scope 2 emissions (e.g. emissions from purchased electricity) 60% per square meter of selling and delivery space by 2030 from a 2011 base year.	METRO AG commits to reduce absolute scope 3 GHG emissions 15% by 2030 from a 2018 base year.
<b>PUMA</b>	Textiles, clothing, luxury goods	PUMA commits to reduce absolute scope 1 and 2 GHG emissions 35% by 2030 from a 2017 base year.	PUMA commits to reduce scope 3 GHG emissions from purchased goods and services 60% per million euro sales by 2030 from a 2017 base year
<b>thyssenkrupp</b>	Construction and engineering	thyssenkrupp commits to reduce absolute scope 1 and 2 GHG emissions 30% by 2030 from a 2018 base year.	thyssenkrupp commits to reduce absolute scope 3 GHG emissions 16% by 2030 from a 2017 base year.

<sup>45</sup> Science Based Targets Initiative (2019): Companies taking action. [www.bit.ly/SBT-CompaniesTakingAction](http://www.bit.ly/SBT-CompaniesTakingAction)  
 Metro AG (2019): METROs Klimastrategie hat ein bestätigtes deutlich-unter-2°C Ziel. [www.bit.ly/SBT\\_Metro](http://www.bit.ly/SBT_Metro)

<sup>46</sup> Biofuel emissions and the binding of carbon dioxide in connection with the use of bioenergy are taken into account in the target.

## 5. CONCLUSION AND OUTLOOK

The ever-increasing number of companies exploring ways to set climate targets in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement, demonstrates the momentum that has emerged in the global economy since the COP21 climate change conference.

A growing number of companies is making meaningful contributions in the fight against climate change and are setting themselves science-based targets officially validated by the SBTi. With a 1.5°C climate strategy, they send a powerful message to their investors, clients and employees. Meanwhile, other companies are at least starting to engage with the SBT logic and methodologies and are trying to understand the implications of adopting SBTs for their companies.

Science-based targets submitted to date can be viewed on the SBTi's online platform<sup>47</sup> and filtered by sector and geographic region. Targets published externally provide guidance to other companies when they are defining their own targets. From October 2019 on, the SBTi will also indicate the level of ambition for each target published on their website, highlighting those in line with the 1.5°C global warming limit.

The SBTi strives to establish SBTs as a new standard of business practice, and it is well under way to reaching this goal. The key factors for success will be the continuous development and update of approaches to reducing corporate GHG emissions in line with the latest climate science, providing reliable and user friendly tools and target setting methodologies as well as offering a professional service for validating climate targets. With the revisions made in April 2019, the SBTi has taken a big step forward in this direction.

<sup>47</sup> Science Based Targets Initiative (2019): Companies taking action. [www.bit.ly/SBT-CompaniesTakingAction](http://www.bit.ly/SBT-CompaniesTakingAction)

### FURTHER READING

*Intergovernmental Panel on Climate Change (2018):*

Global warming of 1.5°C.

Available online:

[www.bit.ly/SR15Report](http://www.bit.ly/SR15Report)

*Science Based Targets Initiative (2019):*

Foundations of Science-Based Target-Setting.

Available online:

[www.bit.ly/SBT-Foundations](http://www.bit.ly/SBT-Foundations)

*Science Based Targets Initiative (2019):*

Science-Based Target Setting Manual.

Available online:

[www.bit.ly/SBTi-Manual](http://www.bit.ly/SBTi-Manual)

*Science Based Targets Initiative (2019):*

SBTi Criteria and Recommendations (Version 4.0).

Available online:

[www.bit.ly/SBTi-Criteria\\_4-0](http://www.bit.ly/SBTi-Criteria_4-0)

*Science Based Targets Initiative (2019):*

Target Validation Protocol (Version 1.0).

Available online:

[www.bit.ly/SBT\\_Target-Validation](http://www.bit.ly/SBT_Target-Validation)

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## JOIN THE DISCUSSION!

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 on the topics covered by the Peer Learning Group Climate, please get in touch with

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