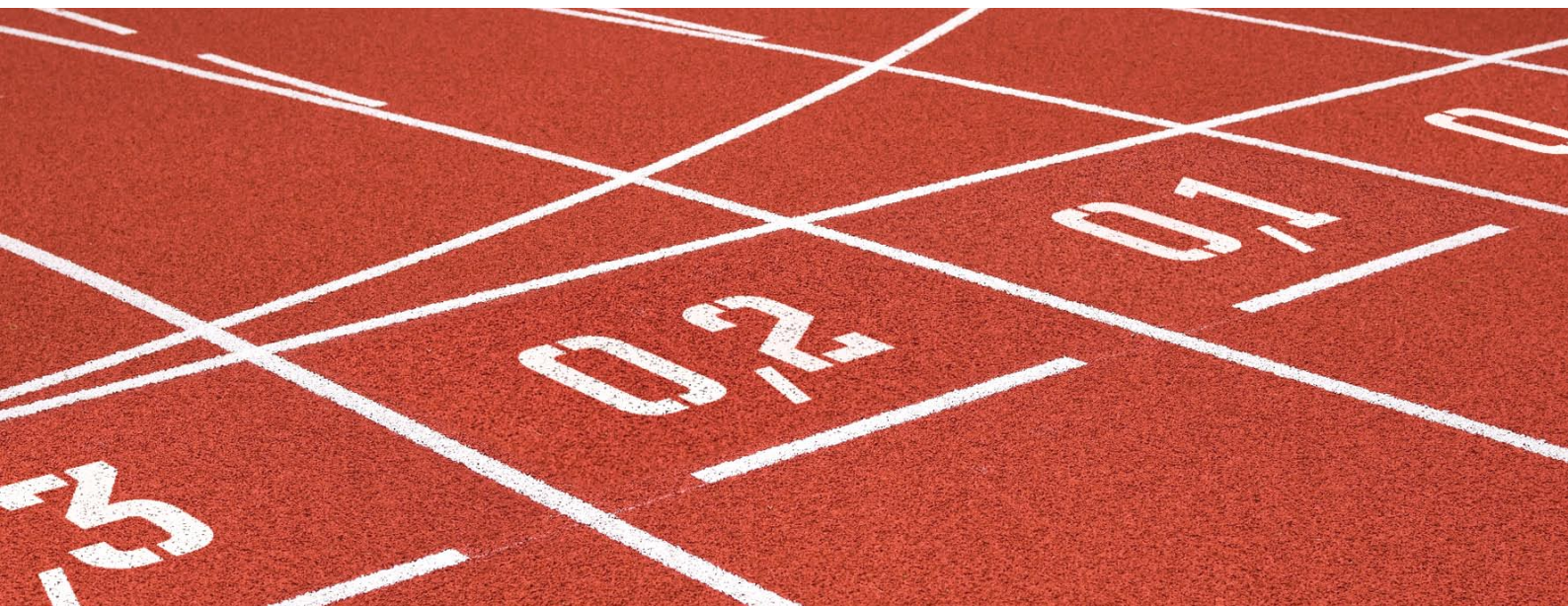


econsense

# Accelerating the Race to Net Zero

How Companies Set, Implement, and Benefit from **Science-Based Targets**





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## Executive Summary

Five years after its adoption, the Paris agreement continues to drive climate action around the globe. This is evident from the recent surge of net-zero commitments both on a national and a company level. Nine out of ten of the world's largest economies have pledged to become carbon neutral. Likewise, many of the world's largest corporations, including in hard-to-abate sectors, are declaring their net-zero aspirations. In this context, science-based target setting will likely become the new gold standard of corporate climate targets.

### **What are science-based targets and how are they related to net-zero targets?**

Science-based targets (SBTs) are actionable short-to midterm emission reduction targets which are in line with what climate science deems necessary to meet the requirements of the Paris agreement, i.e., to limit the global temperature rise to well-below 2°C, ideally 1.5°C. Offsetting – either through compensation or carbon dioxide removal (CDR) – does not count toward SBTs. This makes SBTs more credible in the eyes of investors and policymakers and differentiates them from many net-zero targets. The Science Based Targets initiative (SBTi), which was founded in 2015, has emerged as the main driver of science-based target setting in companies.

### **How does the target setting process work?**

Companies engaging in climate action with the SBTi can choose between two methods and two ambition levels. The two methods are absolute contraction and sectoral decarbonization, and they differ in their applicability to different sectors and emission scopes. The two ambition levels derive from the pathways of the Paris agreement: well-below 2°C or 1.5°C.

### **How can companies support target achievement?**

Science-based target setting is not a mere technical exercise. Instead, it requires companies to seek a close fit between their climate commitments and

their governance structures. Five success factors can be identified:

- Close match between SBTs and corporate strategy
- Buy-in by top management
- Clear definition of responsibilities
- Leveraging strategic stakeholder management
- Internal and external promotion of commitments

Four corporate examples from Ecosense member companies on the development of key performance indicators, carbon shadow pricing, linking executive pay to SBT achievement, and the inclusion of employees show how governance instruments can underpin target achievement.

### **How can companies benefit from SBTs?**

Developing SBTs requires a significant internal investment, but the effort pays off: Companies with SBTs are better positioned vis-à-vis external stakeholders such as investors, customers, and policymakers and can seize the benefits of strategic and operational improvements. These include increased investor confidence, less uncertainty with regard to future regulation and policy, improved profitability, and competitive advantages through innovation.

### **Are SBTs a win-win for companies and climate?**

SBTs also have their limitations. First, they will only have a genuine impact on the global race to net zero if more companies in high emission sectors (e.g., steel, automobile manufacturing) and from developing countries join the initiative. Second, not all sectors find it equally easy to adopt the SBT methodology, either because products are very heterogeneous (e.g., in the chemical sector) or because technologically feasible 1.5°C-pathways have not yet been developed (e.g., in aviation). Third, SBTs are partly criticized for not being ambitious enough. They are based on the assumption that every economic actor will contribute its “fair share” to cutting back emissions. But is this assumption realistic? And how do you determine a company's fair share in the first place?

### **Is science-based target setting here to stay?**

In the run-up to the 2021 UN Climate Change Conference (COP26), the focus of corporate and policy-makers' attention will shift from climate targets to climate impact, especially in corporate value chains. In addition, companies need to scrutinize not only the impact their operations have on climate change, but also the impact of climate change on their business models. It is critical to understand that having climate targets aligned with a 1.5°C pathway is not the same as having a business model adapted to a world that will be at least 1.5°C warmer on average.

In the near future, science-based target setting may be used to improve the environmental governance of other planetary boundaries beyond GHG emissions (e.g., biodiversity loss) as evidenced by new initiatives which are starting to form.

*It should be noted that this paper, when referring to science-based targets (SBTs), denotes emission reduction targets validated through the Science Based Targets Initiative (SBTi). This paper does not endorse the initiative, but it acknowledges that the SBTi has come to embody science-based target setting.*

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## List of Abbreviations

CapEx	Capital expenditure
CDP	Carbon Disclosure Project
CDR	Carbon dioxide removal
CO <sub>2</sub>	Carbon dioxide
ESG	Environmental, Social, and Governance
EU	European Union
GDP	Gross domestic product
GHG	Greenhouse gases
IPCC	International Panel on Climate Change
KPI	Key performance indicator
NDC	Nationally determined contributions
NPV	Net present value
OECD	Organization for Economic Co-operation and Development
SBT	Science-based target
SBTi	Science Based Targets initiative
SDA	Sectoral decarbonization approach
SDGs	Sustainable Development Goals
SMEs	Small and medium-sized enterprises
UNGC	United Nations Global Compact
US	United States of America
WRI	World Resources Institute
WWF	World Wide Fund for Nature



## 1. Introduction: Science-Based Target Setting and the Race to Net Zero

Five years after its adoption, the Paris agreement continues to drive climate action. The global race to net zero is accelerating both on a country and a company level. Nine out of ten of the world's largest economies, including China and Japan, the first and fifth largest emitters of greenhouse gas (GHG) emissions, have pledged to become carbon-neutral no later than 2050 (or 2060, in the case of China). In total, almost 130 countries, representing roughly two thirds of global GHG emissions, are considering net-zero targets or have already adopted them.<sup>1</sup> Likewise, many of the world's largest companies, including in hard-to-abate sectors, are lining up to announce their net-zero aspirations. In this context, science-based target setting is gaining momentum and will likely become the new gold standard of corporate practice.

Science-based target setting is based on the idea of a global GHG budget, i.e., the premise that there is a fixed amount of GHG emissions which can be released into the atmosphere before global warming exceeds certain temperature thresholds. This global budget is then apportioned to the private sector.<sup>2</sup> The International Panel on Climate Change (IPCC) estimates that – starting at the end of 2017 – the remaining carbon budget<sup>3</sup> for the 1.5°C goal amounts to roughly 420 gigatons (Gt) of carbon dioxide (CO<sub>2</sub>) emissions. Assuming yearly emissions of roughly 42 Gt, this carbon budget will be used up by 2027. The carbon budget in line with the 2°C goal would be depleted in roughly 25 years.<sup>4</sup>

Hence, science-based target setting owes part of its legitimacy and credibility to the fact that it changes the reference point of corporate climate targets. Historically, companies have had an inward-looking perspective on their emission reduction potential (“what is achievable and economically feasible?”). In contrast, science-based target set-

ting establishes an external threshold, namely the requirements set by the Paris agreement, as the new reference point for corporate climate targets (“what is necessary?”).

Ever since its foundation in 2015, the Science Based Targets initiative (SBTi) – a collaboration between the Carbon Disclosure Project (CDP), the United Nations Global Compact (UNGC), the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF) – has become the main driver of science-based target setting in companies. The initiative aims to support the private sector in setting climate targets that correspond to the latest findings of climate science. More specifically, the SBTi shows companies by how much and how quickly they need to curb emissions to become compatible with the trajectories of the Paris agreement – well-below 2°C or 1.5°C. As of April 2021, more than 1,300 companies worldwide have pledged themselves to taking climate action with the SBTi.<sup>5</sup> Similarly, roughly half of the econsense member companies have SBTi-approved climate targets or are in the process of developing them.

As one element of state-of-the-art corporate climate strategies, SBTs pose operational challenges. Even more importantly, they require a strategic fit with the overall business strategy as well as an adaptation of corporate governance structures and instruments. To discuss both the technical and the strategic aspects of the SBTi process, econsense launched an exchange between practitioners in the fall of 2020. The findings form the basis of this paper.

Having read this paper, the reader will know how science-based target setting works and which governance instruments can help companies achieve such targets. The paper also explains the benefits as well as the limits of SBTs. It concludes with a brief outlook on the future of science-based target setting and its applicability to different areas.

1 Climate Action Tracker (2020)

2 SBTi (2020a)

3 Note that the IPCC works with carbon budgets (CO<sub>2</sub> emissions only) whereas the SBTi works with GHG budgets.

The SBTi uses a GHG budget of 990 Gt of CO<sub>2</sub> equivalents and 1,540 Gt of CO<sub>2</sub> equivalents for the 1.5°C and the well-below 2°C scenario, respectively.

4 IPCC (2018)

5 SBTi (2021)

## How are SBTs Related to Corporate Net-Zero Targets?

The number of net-zero targets on a national as well as a company level has skyrocketed after the Paris agreement was adopted. The European Union (EU), the United States (US), China and the tech giant Microsoft are only a couple of recent examples. According to the IPCC, net-zero emissions are reached when “anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.”<sup>6</sup>

Net-zero targets are closely intertwined with SBTs, but they usually differ in their time horizon and the value they assign to three different climate mitigation strategies: reduction, compensation, and removal of carbon or GHG emissions.<sup>7</sup> Reduction refers to measures that companies adopt to prevent, reduce, or eliminate GHG emissions along their value chains. Compensating GHG emissions means that a company seeks to prevent, reduce, or eliminate GHG emissions outside of its value chain. Finally, a removal strategy implies that a corporation removes carbon from the atmosphere, either through nature-based solutions (e.g., reforestation) or technical solutions (e.g., direct air capture). Hence, both compensation and removal strategies can be summarized under the term “offsetting”.<sup>8</sup>

**Science-based targets (SBTs)** are climate goals in line with what the latest climate science considers necessary to meet the goals of the Paris agreement – limiting global warming to an increase of well-below 2°C in comparison to pre-industrial levels and pursuing efforts to limit warming to 1.5°C. They are action-oriented, short- to midterm

targets with a time horizon of five to 15 years. SBTs focus on emission reduction only – offsetting emissions does not count toward SBTs.

**Net-zero targets**, currently seen as the ultimate proof of climate leadership, go one step further than SBTs. They generally combine ambitious emission reduction targets in the short- to midterm with high-quality offsets (through compensation and removal). Offsets can be used both in the transition to net zero (i.e. emissions that are not covered by a company’s SBTs) and at net zero (i.e. for residual emissions). However, there is no universally accepted definition yet of what constitutes a net-zero target, which makes comparisons difficult. Net-zero targets differ from each other in three aspects, (1) their scope, i.e. which emissions they cover (CO<sub>2</sub> emissions only, all GHG emissions, or a subset)<sup>9</sup>, whether they only cover emissions under the direct control of the company or include value chain emissions, and whether and which kind of offsetting is allowed, (2) their adequacy and fairness, i.e. the question if and which particular sectors or countries should lead the way, and (3) concrete roadmaps to reach net zero, including interim milestones and implementation plans.<sup>10</sup> Recognizing the lack of a universal definition, the SBTi has launched a process for the development of a global standard. It proposes to define net zero as “a state in which the activities within the value chain of a company result in no net impact on the climate from GHG emissions. This is achieved by reducing value chain GHG emissions, in line with 1.5°C pathways, and by balancing the impact of any remaining GHG emissions with an appropriate amount of carbon removals.”<sup>11</sup>

**Figure 1: Classification of Corporate Climate Targets**

Corporate climate mitigation strategies

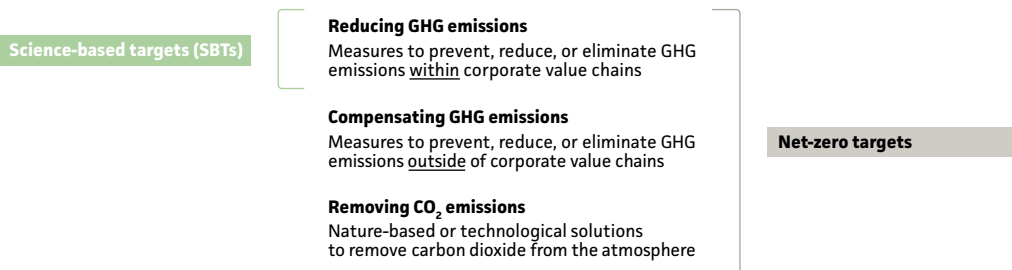


Illustration based on SBTi (2020e)

6 IPCC (2018)

7 While reduction and compensation measures generally focus on all relevant GHG emissions as specified in the GHG protocol, removal strategies currently focus on CO<sub>2</sub> only. So far, methods for the removal of other GHG emissions (e.g., methane, nitrous oxide) from the atmosphere have not been discussed.

8 SBTi (2020e)

9 Strictly speaking, climate neutrality refers to all GHG emissions whereas carbon neutrality tackles CO<sub>2</sub> emissions only. Yet, these terms are not used consistently throughout the public discourse.

10 Rogelj (2021)

11 SBTi (2020e)



**Figure 2: Definition of GHG Emission Scopes**




Scope	Indicative share of total footprint
<b>Scope 1 emissions</b> Direct emissions from sources owned and controlled by a company	
<b>Scope 2 emissions</b> Indirect emissions from the generation of purchased electricity, steam, heat, and cooling consumed by a company	
<b>Scope 3 emissions</b> Indirect emissions from upstream and downstream activities in the value chain of a company	

Illustration based on Greenhouse Gas Protocol (2015)

## 2. Getting Started: Guidance on the Technicalities of the SBTi Process

The SBTi process can be summarized in four steps: committing to, developing, submitting, and announcing SBTs. After committing to the initiative, a company has 24 months to develop, submit, and publish its SBTs. The focus of this chapter is on the development of SBTs.

### 2.1 The Science Behind Science-Based Target Setting: Choosing the Right Methodology

In terms of methodology, science-based target setting is based on three components: a GHG budget, emission scenarios, and allocation approaches. The GHG budget refers to the amount of GHG emissions that can be released into the atmosphere before global warming exceeds certain temperature thresholds. Emission scenarios model how the GHG budget can be distributed over time. Finally, the allocation approach determines how the GHG budget is apportioned to companies according to a specific scenario. The SBTi distinguishes between two different allocation approaches: convergence and contraction. Allocation based on convergence means that all companies of a given sector reduce their emissions in-

tensity to the same value by a given date, whereas allocation by contraction refers to an absolute linear emission reduction irrespective of initial emission levels.<sup>12</sup> The difference between the two allocation approaches is illustrated by Figure 3.

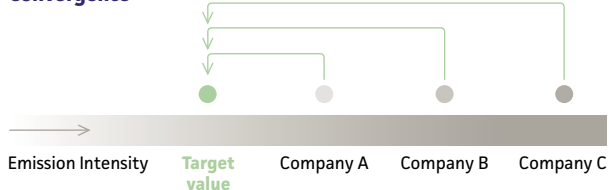
The SBTi currently allows corporations to set SBTs using two separate methods: absolute emission contraction and sectoral decarbonization. They differ in their applicability to different sectors and emission scopes.

Absolute emission contraction builds on the assumption that global warming can successfully be halted at 1.5°C or well-below 2°C, respectively, if all actors curb their absolute emissions between the base year and the target year by the amount required by a specific emissions scenario. It is hence applicable to companies of all sectors and requires them to reduce their emissions linearly each year by 4.2% to be compatible with the 1.5°C trajectory or by 2.5% to align with the well-below 2°C pathway.

The sectoral decarbonization approach (SDA) is based on allocation by convergence, as it assumes that the global emissions intensity of key sectors will converge to a common value by 2060. By its nature, it is best suited for homogenous sectors with an adequate activity indicator (e.g., tons of

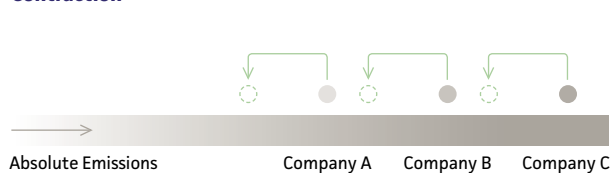
**Figure 3: Two Allocation Methods: Convergence and Contraction**

**Convergence**



Allocation by convergence takes into account the previous climate performance of companies (as expressed in their emission intensity). Hence, company C has a longer way to go than company A, which already has a lower emission intensity.

**Contraction**



Allocation by contraction does not take into account the previous climate performance of companies. Hence, all three companies have to reduce their emissions at the same rate.

Illustration based on SBTi (2020a)

CO<sub>2</sub> equivalents per ton of aluminum). The SDA approach comes with two main caveats: It is not available for all sectors<sup>13</sup>, and it cannot yet be used to calculate 1.5°C-compatible goals.<sup>14</sup>

**Recommendation:** The choice of the correct method mainly depends on the sector a company operates in. The SBTi provides guidance on the recommended method for each sector.<sup>15</sup> The econsense member companies recommend using the SDA method where available.

*Examples of econsense member companies using the absolute contraction approach for scopes 1 and 2:*

- **Bayer AG** is committed to reducing absolute scope 1 and 2 GHG emissions by 42% by 2029 from a 2019 base year.
- **Volkswagen AG** is committed to reducing absolute scope 1 and 2 GHG emissions by 30% by 2030 from a 2018 base year.

*Examples of econsense member companies using the SDA approach for scopes 1 and 2:*

- **HeidelbergCement** is committed to reducing scope 1 GHG emissions by 15% per ton of cementitious materials by 2030 from a 2016 base year. It also commits to reduce scope 2 GHG emissions by 65% per ton of cementitious materials within the same timeframe.
- **RWE AG** is committed to reducing scope 1 and 2 GHG emissions by 50% per kWh by 2030 from a 2019 base year.

## 2.2 The Time Horizon: Choosing the Right Base and Target Year

To consistently track progress of the SBTs, companies need to choose a base and a target year. The base year should be the most recent year for which emissions data are available, it should be representative of a company’s GHG emissions profile, and it should entail sufficient forward-looking ambition (i.e., go beyond the current ambition level).<sup>16</sup> Also, it should be noted that companies can use a starting year that is different from the base year when communicating their targets externally.

SBTs have a short- to midterm perspective, which is why they must cover a minimum of five years and a maximum of 15 years from the year of submission to the initiative. In addition, companies are encouraged to develop longer-term targets until 2050.

**Recommendation:** It is recommended to use the same base and target year for all midterm SBTs submitted. Companies wanting to use 2020 as their base year should consult with the initiative as the emission profile might be distorted due to the global COVID-19 pandemic.

<sup>13</sup> The sectors for which sector-specific pathways are available in the science-based target setting tool are power generation, iron and steel, cement, aluminum, pulp and paper, and services-buildings.

<sup>14</sup> The power sector is currently the only exception as a 1.5° compatible SDA pathway was published in June 2020.

<sup>15</sup> SBTi (2020c)

<sup>16</sup> The SBTi uses the time horizon from the most recent year to the target year to assess whether the targets have “sufficient forward-looking ambition”.

## 2.3 Aim for 1.5°C or Well-Below 2°C: Choosing the Right Ambition Level

When it comes to the ambition level of corporate scope 1 and 2 targets, companies theoretically have the choice between targets consistent either with the 1.5°C or the well-below 2°C pathway. While the SBTi encourages all companies to align with the more ambitious 1.5°C pathway, the well-below 2°C trajectory can still be chosen, and no indication has been given as to whether or when the latter may be phased out. Previously, the initiative has also accepted 2°C targets. Those are no longer eligible and need to be revalidated no later than 2025. Scope 3 targets do not necessarily need to be science-based, but they need to be ambitious, measurable, and based on emission hotspots along the value chain.<sup>17</sup>

**Recommendation:** If a 1.5°C pathway is available for the sector a company operates in, the company should always strive to be as ambitious as possible. 1.5°C-compatible SBTs come with higher credibility, as many external stakeholders such as investors and policymakers are highly aware of the difference.

## 2.4 General Criteria for Credibility for all Three Emission Scopes

The SBTi has defined several criteria which corporate climate targets have to meet in order to receive SBTi validation.

- Targets must include at least scope 1 and scope 2 emissions, 5% of which may be excluded from the emissions inventory and target setting.
- Targets must cover all GHG as defined in the GHG Protocol Corporate Standard.
- Intensity targets for scope 1 and scope 2 emissions are only legitimate if they lead to the reduction of emissions in absolute terms.
- Companies may define targets that combine emission scopes (e.g., a combined scope 1 and 2 target or a combined scope 1, 2, and 3 target).
- Targets must be reviewed and, if necessary, recalculated and revalidated at least every five years.

- Offsets and avoided emissions must not be included in SBTs.

### Deep Dive: Rules for Setting Scope 1 and 2 Targets

- Companies should disclose whether their scope 2 emissions are calculated using a location-based or a market-based approach.<sup>18</sup> Target setting and progress tracking should be based on the same method.
- Instead of scope 2 emission reduction targets, companies may choose to use renewable electricity procurement targets. The SBTi considers a share of 80% renewable electricity until 2025 and 100% until 2030 to be consistent with a 1.5°C scenario.

### Deep Dive: Rules for Setting Scope 3 Targets

- Companies need to conduct a scope 3 emissions screening to determine their relevance.
- If scope 3 emissions amount to more than 40% of the total carbon footprint, a scope 3 target is required. All companies selling or distributing natural gas and/or other fossil fuel-derived products need a scope 3 target irrespective of the share of scope 3 emissions relative to their total carbon footprint.
- Scope 3 targets must cover at least two thirds of total scope 3 emissions.
- Scope 3 targets can address either total scope 3 emissions or single categories.
- There are three options for setting scope 3 targets:
  - Absolute targets must be compatible with a 2°C scenario as a minimum.
  - Physical intensity targets have to be modeled using the respective SDA method or leading to an annual linear reduction rate of at least 2%; or economic intensity targets which will lead to an annual linear reduction rate of at least 7%.
  - Supplier engagement targets need to address the relevant scope 3 emission categories and must be set within five years of target submission.<sup>19</sup>

<sup>17</sup> SBTi (2020c)

<sup>18</sup> The location-based method represents the average emissions intensity of the grids at the location of the corporate site. In contrast, the market-based method focuses on emissions from energy contracts and instruments chosen by the reporting company.

<sup>19</sup> SBTi (2020b)

### 3. More than Number Crunching: How Good Governance Supports Target Achievement

The SBTi process can be summarized in four steps: committing to, developing, submitting, and announcing SBTs. After committing to the initiative, The SBTi process requires technical know-how regarding the emission reduction potential of different measures and the modelling of future emissions. But developing and particularly attaining SBTs is far from being merely a technical exercise. In fact, companies need to seek a close fit between their climate commitments and their internal governance structures. This includes the definition of responsibilities, internal stakeholder management, monitoring and steering of the relevant decarbonization programs as well as communication. While some decarbonization measures, especially those that address scope 1 and 2 emissions, can be devised top-down, good climate-related governance shows in the implementation of decentralized carbon reduction measures in the value chain.

A governance structure that is aligned with a company's SBTs comes with a multitude of benefits: It significantly enhances the probability of a company achieving its climate targets while also preparing it for the worst-case scenario of missing them. It facilitates continuous compliance with the SBTi criteria and recommendations (e.g., with regards to reporting and target recalculation). Finally, climate governance is not only helpful when it comes to SBTs, it also prepares a company for upcoming regulation and the requirements of new initiatives when managing climate-related risks and opportunities.

This chapter first presents five success factors of good climate governance before showcasing four corporate examples of governance instruments central to the attainment of SBTs.

#### 3.1 Five Success Factors of Climate-Related Governance

##### **Close Match Between SBTs and Corporate Strategy**

It is crucial to closely link a company's SBTs to its corporate strategy to safeguard credibility and resilience even in turbulent times. A close alignment ensures that current and future business activities are compatible with achieving climate targets. SBTs can help push forward the internal discussion on allocating resources toward low-carbon activities. They also foster an organizational design which incorporates climate action and strategic trade-offs between business models viable in today's or tomorrow's carbon-constrained economy. Once the overall strategy is aligned, it needs to be cascaded down to the business unit level.

##### **Top Management Buy-In**

The SBTi relies on actionable short- to midterm climate targets with a time horizon of five to 15 years. As the average tenure of S&P 500 CEOs is roughly seven years<sup>20</sup>, SBTs represent a considerable risk for the management board. Therefore, it is crucial for the board to be fully informed about the methodology of science-based target setting, peer benchmarking, the business model implications and costs as well as the consequences, should the company miss its SBTs. Ideally, a sponsor from the management or leadership team will champion the initiative and monitor target achievement. Then, the adoption of climate performance metrics to support target achievement becomes more likely.

##### **Definition of Clear Responsibilities**

SBTs need to be embedded in the corporation's organizational structure. The responsibility for steering their development will usually lie with the sustainability team. However, companies should avoid silo thinking and management regarding climate targets. One suggestion is to appoint sustainability leads for each board unit; another is to set up a sustainability council involving different business units. This way, the overall targets can be broken down to the differ-

ent business units. This underlines the importance of their contribution and ensures that the climate impact is considered in the decision-making process.

### Leveraging Strategic Stakeholder Management

The road to achieving SBTs is essentially a strategic change management program. As such, it is vital to have a clear picture of the internal stakeholders who need to be kept informed or even convinced of the initiative. It is the sustainability team's responsibility to anticipate who will benefit and who may lose out from ambitious climate targets. Stakeholders, whose support is critical for the success of the overall process, include the management board, strategy, finance and reporting, investor relations, and communications. Since all these departments will need to get involved multiple times during the SBTi journey, it is crucial to set up collaboration channels early on.

### External and Internal Promotion of Commitments

Communication is a central governance instrument in the context of SBTs. A company's commitments should be acknowledged and promoted externally and internally. External communication channels include the website and social media channels of the SBTi as well as the company, financial and non-financial reports, and investor roadshows. Internal communication should aim to create transparency with regard to the SBTs and their contribution to the future viability of the company. They should also motivate employees to get engaged in the decarbonization journey.

**Figure 4: Five Success Factors of Climate-Related Governance**



## 3.2 Corporate Examples of Climate-Related Governance

### Measuring and Monitoring the Carbon Footprint: Volkswagen's Decarbonization Index

**VOLKSWAGEN**  
AKTIENGESELLSCHAFT

*The decarbonization index (German: DekarbonisierungsindeX, DKI) is the*

*prime KPI of Volkswagen's decarbonization strategy. It captures the average CO<sub>2</sub> emissions of a vehicle over its life cycle (measured in tons of CO<sub>2</sub> equivalents per vehicle). It is applied to the passenger car producing brands in the three main markets EU, China, and the US. The DKI comprises both the direct and indirect emissions of the producing plants (scope 1 and 2 emissions) and the emissions arising in the upstream and downstream value chain (scope 3 emissions), i.e. in the extraction of raw materials, the use phase, and the recycling phase. Thus, the DKI ensures life cycle CO<sub>2</sub> thinking throughout the whole company: from portfolio and fleet emission planners to purchasing, production, business travel, and the finance department. In 2020, the DKI amounted to 43 tons of CO<sub>2</sub> equivalents per vehicle. From the base year 2015 until 2025, Volkswagen intends to decrease the DKI by 30 percent.*

*The DKI was first reported in Volkswagen's Group annual report for the reporting year 2019 and has therefore undergone a testing for "reasonable assurance". Internally, the DKI has been used since 2018 to steer the decarbonization program activities. In a biannual rhythm, the DKI prognosis for the upcoming ten years is reported to the Volkswagen Group board of management and to the brands' CEOs. Thus, the decarbonization index helps to make the carbon footprint changes transparent that are induced by the technology shift to e-mobility. The extent of reductions becomes visible as well as new emission hotspots that need to be tackled, e.g., in battery supply chains. This quantitative insight strongly supports strategic decision-making. Including the DKI in the Group's strategic KPI set underlines the board's commitment to climate protection and raises awareness for life cycle thinking among Volkswagen Group employees.*

To make a company's carbon footprint relevant to all management decisions, it is essential to define a KPI for climate performance just as one would for financial performance. A climate performance KPI enhances the probability of meeting defined climate commitments. It can be tailored to the individual company where it improves the analysis of emission hotspots and supports the adoption of differentiated measures. First, a KPI can help to operationalize the SBT by translating the SBTi logic of defining targets per emission scopes into a logic that is tailored to the steering level of a company. Volkswagen, for example, defined its KPI and its targets on the basis of its predominant steering level, namely the individual vehicle. Second, a KPI promotes the adoption of a holistic perspective, as emission hotspots in the life cycle of a product or service are identified and their future development is projected. The transformation toward e-mobility is one example of shifting emission hotspots: While today, the majority of emissions arise in the user phase of the vehicle through the combustion of fuels, the future emission hotspots will likely be located in the sourcing and production phase, since batteries have a significant carbon footprint. Third, an internationally operating company can use the KPI to differentiate between markets and thus factor in different ecosystems and regulatory schemes. Fourth, a climate performance KPI helps with the development of differentiated decarbonization measures which can tackle emission hotspots while taking into account the ecosystem and regulatory environment. Finally, a clear advantage of a climate performance KPI is the fact that the degree of target achievement can be consistently tracked over time through a single indicator. As such, progress can also be transparently communicated both internally and externally.

### **Making Carbon Emissions Decision-Relevant: Carbon Pricing at Bayer**

Carbon pricing, whether in a regulatory scheme like the European Emissions Trading System (EU-ETS) or in a corporate setting, follows the rationale that carbon emissions need to be assigned a price which reflects the long-term damage they do to the climate.

From a corporate perspective, there are different approaches to carbon pricing. Carbon fees and carbon shadow prices – or a combination of both – are among the most common options. While carbon fees assign a “real” monetary value to carbon emitting activities, e.g., business travel, carbon shadow prices are fictitious, as they are usually higher than prevailing market prices. Shadow prices function like a risk-management tool for evaluating investments and providing guidance for corporate strategy. As such, they are especially useful for companies with long-lived capital assets which are at a risk of becoming stranded assets in the future.<sup>21</sup> The main motivation of companies adopting internal carbon shadow prices is to better understand and anticipate climate-related business risks and opportunities and move toward investment activities which will be robust even in environments with stricter carbon constraints.<sup>22</sup> The carbon price level can be based on damage cost<sup>23</sup> (to the environment and society at large), mitigation cost for achieving an internal climate goal, or an external reference point (e.g., prices from EU-ETS).<sup>24</sup> Carbon prices can be uniform or differentiated with regard to location or business units as well as static or dynamic over time.<sup>25</sup>



*As part of its SBT, Bayer is committed to reducing emissions by purchasing 100% electricity only from renewable sources. Bayer also plans to invest EUR 500 million in energy efficiency measures until 2030. To steer investments, an internal CO<sub>2</sub> incentive of EUR 100 per ton of CO<sub>2</sub> has been included in the cost calculation of CapEx projects. This incentive applies to all CO<sub>2</sub> emission reduction initiatives with the exception of emissions from purchased electricity, which are to become zero with the 2030 target of 100% purchased*

21 C2ES (2017)

22 CDP (2017)

23 The German Environmental Agency (UBA) estimates climate change costs at €195 per ton CO<sub>2</sub> for the year 2020.

24 DGCN (2018)

25 CDP (2017)



electricity from renewable sources. Reduction of electricity consumption nevertheless continues as part of the company's improvement and cost management measures.

In practice, a CO<sub>2</sub> incentive impacts only a fraction of CapEx projects as many are driven by regulatory needs independent of CO<sub>2</sub> emissions. On these types of projects, even an internal CO<sub>2</sub> price of EUR 100 per ton will have little impact.

When fixing the internal price at EUR 100 per ton, Bayer took into consideration cost abatement curves for emission reduction, costs for high-quality energy attribute certificates for renewable gas, and taxation trends. The price and the framework of the incentive scheme will be reviewed after two years to ensure effectiveness and revalidate market assumptions. This shadow pricing approach improves the net present value (NPV) of climate-friendly projects and gives them a higher priority.

For business travel, Bayer focuses on reducing the number of trips. The target is to reduce business travel by 50% compared to 2019. Since 2020 Bayer additionally compensates flight emissions through carbon offsetting projects. The compensation follows a carbon fee approach.

### **Integrating the Boardroom: Linking SBTs and Executive Compensation at Bayer**

Executive compensation and incentive programs are useful tools to encourage leadership to act on climate change. As carbon footprints are becoming part of the most relevant corporate KPIs, an increasing number of companies is starting to integrate this element into their management incentives. In fact, roughly half of Europe's largest corporations have tied executive compensation to aspects of climate change. One in four has financially incentivized meeting climate targets.<sup>26</sup> Far from being a mere public affairs exercise, the link between boardroom pay and climate action is a signal to investors, policymakers, customers, and society as a whole that companies are serious about the transition to a low-carbon economy.



As part of its commitment to the Sustainable Development Goals (SDGs) of the

United Nations as well as the Paris Climate Accord, Bayer has integrated sustainability targets into managerial compensation schemes, including for the management board.

The company's sustainability targets are broken down to yearly targets to measure progress toward the long-term goals and detect over- or underperformance at an early stage. The targets are included in short-term (one year) and long-term (four years) incentive plans for management. Performance is tracked at least annually.

Long-term incentives have the greatest impact on compensation: For Bayer, they amount to up to 40% of total pay. Of these, the group's climate and access targets account for 20% (half climate, half access). Bayer's climate commitments are based on SBTs. The company aims to become climate neutral in its own operations (scope 1 and 2) and considerably reduce its scope 3 emissions by 2030 compared to a 2019 baseline. Performance regarding Bayer's climate and access goals is assessed according to the same logic as financial targets. Overperformance is rewarded and underperformance penalized in a range from 0% to 200%.

At Bayer, setting quantitative sustainability targets and embedding them in management compensation schemes was a pivotal point to align management commitment and action on the targets and related measures. Also, it sent a strong credibility signal to external stakeholders and employees: "We're taking sustainability seriously and hold ourselves accountable to deliver against our ambitious targets."

### **Taking the Employees on the Decarbonization Journey: SAP's Sustainability Dashboard**

Companies are currently realizing that corporate climate targets cannot be attained without harnessing the potential of their workforce. Employees working in product design, procurement, or marketing can all make relevant contributions to emission reductions. At the same time, and as evidenced by

recent surveys, employees demand more climate action from their employers.<sup>27</sup> If companies are perceived as climate leaders, they benefit from higher employee satisfaction and retention as well as a higher attractiveness for young talents, particularly millennials. Millennials, who will soon outnumber the baby boomer generation on the labor market, see climate change as their number one concern. The challenge confronting companies is to link employees' values and their support for sustainability with corporate operations. There are several strategies on how to engage employees in a company's decarbonization journey. Creating sustainability knowledge and competence as well as increasing the visibility of key environmental performance metrics within an organization are just two powerful ways to include the workforce.<sup>28</sup>



*SAP has recognized the importance of employees as ESG stakeholders and gives them access and transparency regarding the*

*company's non-financial performance.*

*SAP's Sustainability Dashboard was developed so that employees can explore the non-financial performance of SAP across different organizations and geographies. The solution enables them to drill down to how their individual team contributed to the company's overall non-financial performance. The dashboard provides benchmarks and delivers data around indicators like gender diversity, carbon emissions, and employee survey results.*

#### **4. It Pays Off to be a Climate Leader: The Benefits of SBTs for Companies**

Developing SBTs requires significant internal investment. According to econsense member companies engaged with the SBTi, the process from commitment to target validation usually takes a year and possibly up to two years depending on the complexity of the company's emissions profile and its interaction with the initiative. The target validation process comes with a price tag of roughly USD 5,000 for large corporations or USD 1,000 for small and medium-sized enterprises (SMEs).<sup>29</sup> As the SBTi process is highly iterative and requires multiple consultations with the initiative, it ties up resources and usually requires the support of an external consulting firm. But the effort pays off: As this chapter illustrates, a company with SBTs is better positioned vis-à-vis external stakeholders such as investors, customers, and policymakers and can seize the benefits of strategic and operational improvements.

##### **● Strengthen investor confidence and credibility**

In his 2021 CEO letter, BlackRock's CEO Larry Fink confirmed that the reallocation of capital is accelerating as capital markets are transitioning toward a net-zero economy. Despite the global pandemic, investment in sustainable assets doubled from 2019 to 2020.<sup>30</sup> There is mounting evidence – which investors increasingly pay attention to – that companies which perform better on environmental, social, and governance (ESG) aspects also outperform their peers in the stock market. Thus, investors have come to see a lack of ESG management as a serious business risk. Against this background, investors appreciate SBTs as an externally validated standard for climate action. However, they also look beyond and demand a holistic integration of these targets into the business strategy, appropriate decarbonization programs, and governance instruments in order to ensure a positive impact on the climate.

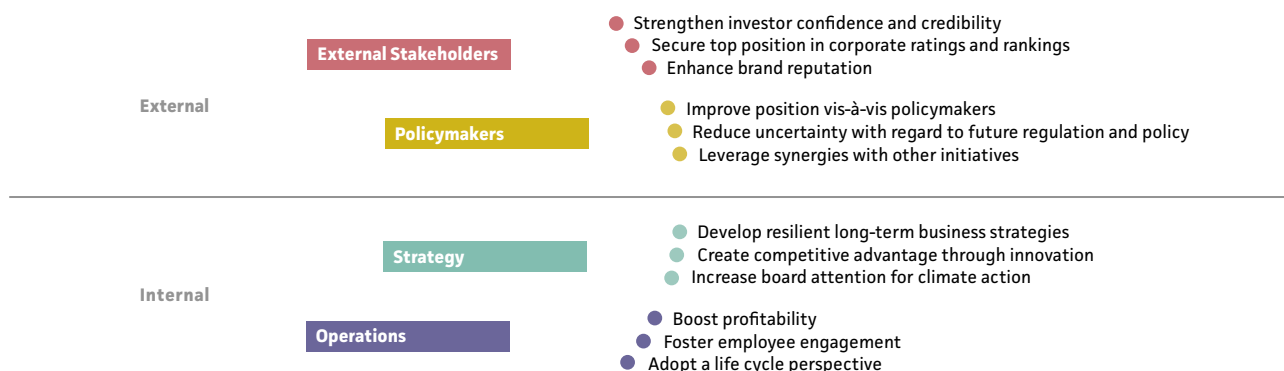
27 Unily (2020)

28 Polman & Bhattacharya (2016)

29 SBTi (2020d)

30 Black Rock (2021)

**Figure 5: The Benefits of SBTs for Companies**



● **Secure top position in corporate ratings and rankings**

Corporate climate action as part of a broader ESG management has come to rank highly on the checklists of global rating agencies. In international rating standards, SBTs are progressively gaining recognition. CDP, for example, which is also a founding member of the SBTi, has incorporated questions on science-based target setting and the level of progress in its “Climate Change Questionnaire.”<sup>31</sup> Companies with SBTs thus have a higher chance of appearing on CDP’s annual A-List. Likewise, companies with SBTs can secure better positions in global sustainability rankings. The 2021 Global 100 index issued by Corporate Knights ranking the 100 most sustainable corporations features 60 companies which have signed on to the SBTi.<sup>32</sup>

● **Improve brand reputation**

As consumers become ever more aware of the impact their choices have on the environment, it is important for companies to strengthen their brand’s sustainability reputation. In fact, four out of five global companies confirmed that SBTs boosted their brand reputation.<sup>33</sup> However, and as the experience of econsense member companies shows, business customers react very differently

from end consumers. End consumers are often more focused on the emotional aspects of climate protection. Claims that are easy to understand and communicate like “carbon neutrality” may play well even in cases where they are actually less ambitious than SBTs. In contrast, business customers usually make a more nuanced assessment of how a company’s SBTs might help their own (decarbonization) strategy.

● **Improve position vis-à-vis policymakers (“climate lobbying”)**

Following the adoption of the Paris agreement, corporate lobbying that directly opposes more ambitious climate protection has seen a stark decline.<sup>34</sup> In fact, new corporate alliances are beginning to rally behind the goals of the European Green Deal and the Paris agreement and advocate more stringent climate policies on the national and international level. One such example is the CEO Alliance – a coalition of business leaders from twelve different sectors, including energy, automotive, and technology, which was formed in 2020.<sup>35</sup> Against this backdrop, SBTs not only underpin individual decarbonization roadmaps, but also provide companies with a better bargaining position when advocating for regulatory changes such as the extension of carbon pricing schemes or the promotion of renewable energies.

31 CDP (2021)  
 32 Corporate Knights (2021)  
 33 Galvin (2018)  
 34 InfluenceMap (2021)  
 35 Volkswagen (2020)

### ● **Reduce uncertainty with regard to future regulation and policy**

As outlined in the introduction of this paper, more and more countries are pledging to become carbon-neutral (or climate-neutral) by the middle of the century. Yet, the nationally determined contributions (NDCs) of the signatory countries of the Paris agreement do not suffice to meet the agreement's goals. Instead, they are projected to lead to a rise of the global temperature level by 3°C.<sup>36</sup> Clearly, if the world community is serious about reaching net zero by the middle of the century, it will need to step up its ambition level during this decade. More rapid change needs to be supported by a smart combination of regulation and policies. Hence, companies can expect to see more regulation on emission-intensive activities soon. In this context, SBTs are a powerful way to future-proof business models and to signal to policymakers that business activities have (already) been aligned with the Paris accord.

### ● **Leverage synergies with other initiatives**

Setting SBTs allows a company to gain a much deeper understanding of its climate impact based on its own emissions, their interdependencies, and abatement potentials. Also, SBTs can kickstart an internal discussion on the prioritization of business activities, the adoption of new governance mechanisms, and the involvement of different departments in curbing emissions. Both the knowledge gained, and the internal collaboration will prove helpful when companies deal with new regulatory requirements for ESG topics. The latter are, inter alia, imposed by the TCFD or the European sustainable finance taxonomy. While SBTi and TCFD cover different perspectives (company's impact on climate vs. impact of climate change on the company), they share a common starting point: the most up-to-date climate science as laid down in the Paris agreement. Hence, many of the insights gathered through the SBTi process can be leveraged when responding to new regulatory requirements and climate-related initiatives.

### ● **Develop resilient long-term business strategies**

Meeting ambitious climate targets is not possible without a "Paris-aligned" corporate strategy. SBTs can trigger a reassessment of the company's vision, business model, and investment activities. Instead of going after the low-hanging fruits, e.g., cost savings or efficiency increases, the SBTi process forces companies to explore what it will take to transform toward a low-carbon economy. While this can entail discontinuing certain emission-intensive business activities, it will enhance the company's long-term resilience and viability and decrease the risk of owning stranded assets.

### ● **Create competitive advantage through innovation**

To meet ambitious SBTs, companies cannot rely on incremental improvements. Instead, technological step-changes, for example in the way steel and cement are produced or buildings are designed, are needed. SBTs encourage employees across different departments to identify and realize emission reduction potentials during a product's or service's life cycle. This includes, but is not limited to, the procurement of low-carbon input, a product design incorporating sustainability and circularity principles, and tracing a company's products and services beyond the corporate gates. Business innovation in the value chain to tackle scope 3 emissions will increase in importance as internal decarbonization potentials will soon be exhausted. Eventually, the development of new business models based on low-carbon technologies and processes, products, and services will give companies a competitive edge over their peers.

### ● **Increase board attention for climate action**

SBTs are usually developed in close cooperation with the management board or leadership team. Before committing to the initiative, many corporate leaders engage in a benchmarking exercise with

competitors in the same industry or location. Also, they need to sign off the final targets as well as the decarbonization measures necessary to meet them. Thus, the SBTi process raises awareness among the top decisionmakers in a company, even if climate action has previously not been a top priority. It sensitizes leaders to the urgency and scope of the transformation required from every company as well as the necessary changes to the business model. This is especially relevant in light of the fact that the vast majority of corporate leaders worldwide lack understanding of climate science. A recent study found that just 6% of the 1,188 board members at Fortune 100 companies have “relevant credentials” in environmental protection, and only 0.02% of directors have expertise in climate-related issues.<sup>37</sup>

### ● **Boost profitability**

Contrary to common belief, decarbonizing one’s business does not come with an exorbitant price tag when compared to a business-as-usual scenario. SBTs improve the ratio between revenues and costs. On the one hand, SBTs can unlock new revenue streams by encouraging new business models. On the other hand, companies with SBTs generate savings through process optimization and by reducing their dependency on fossil fuel-derived raw materials which will become scarcer and more expensive in the future. Roughly a third of company executives with SBTs report bottom line savings following the adoption of climate commitments.<sup>38</sup>

### ● **Foster employee engagement**

From an employee perspective, SBTs can easily look like they are imposed from the top down. With proper communication, however, they can provide employees with strategic guidance because climate targets can help create a common vision for the future. Also, climate commitments encourage the workforce to contribute to creating a viable future for their employer. SBTs build on the ingenuity of employees in all departments, from product design to procurement to operations management. If a

company succeeds in engaging its workforce in its decarbonization journey, climate targets can unlock creative and collaborative potential across the entire organization. Different departments which may not have had much contact before will start to work together to exchange data or design decarbonization measures and assess their impact.

### ● **Adopt a life cycle perspective**

In the process of developing SBTs, most companies realize that focusing on the company’s own operations will not suffice to meet the required emission reduction rates. The SBTi incentivizes companies to look at emissions in a holistic way – including those released along the value chain. In doing so, companies develop a feel for how complex and (internationally) intertwined their own emissions profile can be and how little data they possess. This opens up possibilities for business transformation and collaborations with competitors, customers, and suppliers along the entire value chain.

37 Whelan (2021)

38 Galvin (2018)

## 5. SBTs as a Win-Win for Companies and Climate? A Critical Assessment

Science-based target setting can be highly beneficial for companies. Yet, the big picture reveals some limitations with regard to the climate impact, inclusiveness, and level of ambition of SBTs.

The most important criticism concerns the link between corporate climate targets and the achievement of global emission reductions: A large number of companies must participate in the scheme to make the equation add up.<sup>39</sup> Currently, however, the initiative only covers a minority of private sector emissions. Companies from developing countries as well as high emission companies are still largely underrepresented, as the SBTi's 2020 progress report shows. Within the Organization for Economic Co-operation and Development (OECD), 16 out of 37 member countries have reached a critical mass (defined as 20%) of companies setting SBTs. In the non-OECD sample, only two countries (India and Singapore) are approaching the threshold value of 20%. Similarly, the uptake in high emission sectors like construction, steel, and automobile manufacturing is still relatively low. Also, key players within major hard-to-decarbonize sectors have not yet committed to the initiative. Nevertheless, the initiative has made significant overall progress toward mainstreaming science-based target setting and delivering on emission reductions at scale. From 2015 to 2019, a sample of 338 companies committed to the SBTi delivered GHG emission reductions of roughly 300 million tons<sup>40</sup>, equivalent to the annual footprint of Spain in 2018. Looking ahead, the SBTi should focus on keeping up its momentum and extending the list of participating companies, particularly in hard-to-abate sectors.

The second limitation of the SBTi concerns the fact that not all sectors find it equally easy to adopt its methodology. While the initiative consistently adds new sector guidelines and invites companies in those sectors to contribute to their development, not everybody is convinced. This is especially true for companies which produce highly heterogenous products

(e.g., in the chemical sector) or belong to sectors for which technologically feasible 1.5°C pathways have not yet been developed (e.g., aviation). Corporate leaders, especially in the German context, tend to be risk-averse when it comes to publicly committing to goals which may not be achievable without a technological quantum leap and much closer collaboration within the industry. In such hard-to-decarbonize sectors, the SBTi could consider setting up a platform for companies to cooperate more closely until it becomes feasible for them to join the initiative.

Third, SBTs are partly criticized for not being ambitious enough. One reason is that they are based on temperature limit probabilities which originate from the IPCC Special Report on 1.5°C. The well-below 2°C scenario, for example, assigns a 66% probability to actually keeping the global temperature rise below 2°C. The scenario for 1.5°C works with an even lower chance of only 50%.<sup>41</sup> This means that even if every company in the world adopted the SBTi approach, there would still only be a 50% or 66% chance of limiting global warming to 1.5°C or well-below 2°C, respectively.

Another reason is that the SBTi methodology rests upon the assumption that all economic actors contribute their "fair share" to curbing emissions. One can question the way in which a company's fair share is determined. Currently, the remaining global emission budget is evenly broken down to the private sector without giving consideration to the historical responsibility that some countries or companies bear for global warming or their technological capabilities.<sup>42</sup> Further, critics argue that companies cannot claim to be climate leaders if they only do their fair share. Instead, they are calling for regenerative business which does not end with the achievement of corporate climate targets, but gives back more to the ecosystem than the company has previously extracted or destroyed.<sup>43</sup> The development of science-based net-zero targets, which is currently driven by the SBTi (see Info Box on page 6), is a good starting point for a discussion on true climate leadership by the private sector.

39 Trexler & Schendler (2015)

40 SBTi (2021)

41 SBTi (2020a)

42 Watson (2018)

43 Watt (2018)



## 6. Conclusion and Outlook: Is Science-Based Target Setting Here to Stay?

### **The focus of climate action is shifting to the value chain and adapting business models**

SBTs are at the heart of state-of-the-art corporate climate strategies, but they are just the beginning. Many companies flagging ambitious emission goals now enter the critical phase of having to follow through with appropriate decarbonization programs and measures. In this context, the focus of corporate climate action shifts from the company to the entire value chain which is where most corporate emissions occur. Through collaboration with customers, suppliers, and peers as well as through better data management, companies can unlock the untapped decarbonization potential along their value chains.

While SBTs measure the impact any given company has on global warming, business leaders are increasingly required to also look at the other side of the equation: global warming's impact on their company. It is critical to understand that pursuing climate targets which are aligned with a 1.5°C pathway is not the same as having a business model which is suited to a world that will be at least 1.5°C warmer on average. Hence, companies should aim for a coherent climate strategy which effectively minimizes their carbon footprint, helps them anticipate the business risks of climate change, and leverages the opportunities climate change holds, e.g., for business model innovation.

### **Science-based target setting may move beyond the governance of GHG emissions**

For corporate climate targets, science-based target setting is on track to becoming the gold standard. In fact, from a corporate perspective, combating climate change is often seen as the major environmental challenge that companies need to address. Now, however, companies' impact on their broader environment is coming under increasing scrutiny,

especially in the run-up to the UN Biodiversity Conference COP15 and the UN Climate Change Conference COP26. In this situation, the concept of planetary boundaries, which defines nine processes (one of which is climate change) that regulate the stability and resilience of the Earth system<sup>44</sup>, can provide guidance for companies wishing to extend their environmental action. In addition, several "beyond climate" initiatives are currently being developed, including the Science-Based Targets for Nature framework<sup>45</sup> and the Task Force on Nature-Related Financial Disclosure (TNFD).<sup>46</sup> It hence seems plausible to assume that science-based target setting will continue to gain traction in the private sector.

44 Rockström et. al (2009)

45 SBTN (2020)

46 TNFD (2020)

## Bibliography

**Black Rock (2021):**

**Larry Fink's 2021 letter to CEOs.**

Available here: <https://bit.ly/30TMowb>

**Carbon Disclosure Project (CDP) (2021):**

**CDP Climate Change 2021 Questionnaire.**

Available here: <https://bit.ly/3txgSjY>

**Carbon Disclosure Project (CDP) (2019):**

**Half of Europe's largest firms now link executive pay to climate change.**

Available here: <https://bit.ly/2NwBXvu>

**Carbon Disclosure Project (CDP) (2017):**

**Putting a price on carbon: Integrating climate risk into business planning.**

Available here: <https://bit.ly/2P23zcc>

**Center for Climate and Energy Solutions (C2ES)**

**(2017): The business of pricing carbon: how companies are pricing carbon to mitigate risks and prepare for a low-carbon future.**

Available here: <https://bit.ly/3cHieBP>

**Climate Action Tracker (2020):**

**Warming Projections Global Update December 2020.**

Available here: <https://bit.ly/3tvz3q6>

**Corporate Knights (2021): 2021 Global 100 ranking.**

Available here: <https://bit.ly/3lssf9P>

**Galvin, D. (2018): Six business benefits of setting science-based targets.**

Available here: <https://bit.ly/38TDaUX>

**Global Compact Network Germany (DGCN)**

**(2018): Internal carbon pricing in companies.**

Available here: <https://bit.ly/3eRsexpr>

**Greenhouse Gas Protocol (2015):**

**A Corporate Accounting and Reporting Standard (Revised Edition).**

Available here: <https://bit.ly/3lvNpnM>

**Harvard Business Review (2019):**

**The Best-Performing CEOs in the World, 2019.**

Available here: <https://bit.ly/3rYrnw5>

**InfluenceMap (2021): Corporate Lobbying: How Companies Really Impact Progress on Climate.**

Available here: <https://bit.ly/38TcQue>

**International Panel on Climate Change (IPCC)**

**(2018): Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.**

Available here: <https://bit.ly/3qS3gOs>

**Polman, P. & Bhattacharya, CB (2016): Engaging Employees to Create a Sustainable Business.**

Available here: <https://bit.ly/3f3Xyqk>

**Rockström, J., et al. (2009): Planetary boundaries: exploring the safe operating space for humanity.**

Available here: <https://bit.ly/2P5WhEs>

**Rogelj, J., et al. (2021): Net-zero emissions targets are vague: three ways to fix.**

Available here: <https://go.nature.com/3cTgcyw>

**Science-based Target initiative (SBTi) (2021): Science based targets initiative annual progress report, 2020.**

Available here: <https://bit.ly/3qW76Go>

**Science Based Targets initiative (SBTi) (2020a): Foundations of Science-based Target Setting.**

Available here: <https://bit.ly/3eSgOHq>

**Science Based Targets initiative (SBTi) (2020b): SBTi Criteria and Recommendations.**

Available here: <https://bit.ly/30U2Cp3>

**Science Based Targets initiative (SBTi) (2020c): Science-Based Target Setting Manual.**

Available here: <https://bit.ly/38Ub0ct>

**Science Based Targets initiative (SBTi) (2020d): SBTi Call to Action Guidelines.**

Available here: <https://bit.ly/3eY6hKV>

**Science Based Targets initiative (SBTi) (2020e): Foundations for Science-based Net-Zero Target Setting in the Corporate Sector.**

Available here: <https://bit.ly/3eSpfSQ>

**Science Based Targets Network (SBTN) (2020): Science-based Targets for Nature: Initial Guidance for Business.**

Available here: <https://bit.ly/30VCwCc>

**Taskforce on Nature-related Financial Disclosures (TNFD) (2020).**

Available here: <https://bit.ly/3tysiUt>

**Trexler, M., Schendler, A. (2015): Science-Based Carbon Targets for the Corporate World: The Ultimate Sustainability Commitment, or a Costly Distraction?**

Available here: <https://bit.ly/3lvNUya>

**Unily (2020): Future of the sustainable workplace in the age of COVID-19 and climate change.**

Available here: <https://bit.ly/3tK5x00>

**United Nations Environment Programme (UNEP) (2020): Emissions Gap Report.**

Available here: <https://bit.ly/3vNnlUq>

**Volkswagen (2020): European CEO Alliance emphasizes cross-industry collaboration to fight climate change.**

Available here: <https://bit.ly/2P9gIAs>

**Watson, E. (2018): Science-based targets or net zero?**

Available here: <https://bit.ly/38UDSKT>

**Watt, I. (2018): The limits of science-based targets.**

Available here: <https://bit.ly/2P26G42>

**Whelan, T. (2021): U.S. Corporate Boards Suffer from Inadequate Expertise in Financially Material ESG Matters.**

Available here: <https://bit.ly/3lt30cD>