

# SHIFT SCIENCE-BASED TARGET CURRICULUM

Over 300 companies have set greenhouse gas emissions targets that are in line with climate science. A transition to a low carbon economy is critical to future proof against the impacts of climate change.

## UNDERSTAND WHAT A SCIENCE-BASED TARGET IS AND WHY IT IS IMPORTANT

In the past decade hundreds of companies have set greenhouse gas (GHG) emissions reduction targets. Many of these targets were set using internal guide posts, are incremental, or back-calculated from reductions there were considered “achievable”. However, in order to ensure that GHG reductions are adequately ambitious to limit the worst impacts of climate change, emission reduction targets need to be based in science.

A GHG emissions reduction target is considered “science-based” if it aligns with the level of decarbonization required to keep global temperatures from rising above 2°C (compared to preindustrial temperatures). See the [Fifth Assessment Report of the Intergovernmental Panel on Climate Change \(IPCC\)](#).

The [Science Based Targets initiative](#) is partnership between [CDP](#), [WRI](#), [WWF](#) and the [UN Global Compact](#) and is also one of the [We Mean Business](#) coalition commitments. The Initiative showcases companies that set SBTs, provides technical resources and guidance, and assesses and approves companies’ targets. While it is technically possible to set an SBT without joining the SBT initiative, following the initiative process enables you to get your target validated by leading climate scientists and NGOs.

Here we lay out the process for setting a science-based target for sustainability professionals with a working knowledge of basic GHG accounting. While we focus primarily on the development of the target itself, to be included as part of the Initiative’s process and announcements, the following steps are necessary (taken from <http://sciencebasedtargets.org/step-by-step-guide/>):

- Step 1: Submit the commitment letter
  - [Commitment Letter](#)
  - [Commitment Letter for Financial Institutions](#)
- Step 2: Develop a target (see below)
- Step 3: Submit your target for validation
  - [Target Submission Form](#)

- [Target Submission Form guidance](#)
- Step 4: Announce the target

*Why companies should set SBTs (and who should be setting them)?*

Companies are increasing their ambition and setting science-based (non-arbitrary) targets for four primary reasons according to the most recent draft of the [Science-Based Target Setting Manual](#) (July 2017, Chapter 2). Setting a SBT:

- Builds business resilience and increases competitiveness
- Drives innovation and transforms business practices
- Builds credibility and reputation
- Influences and prepares for shifts in public policy

As of September 2017, [over 300 companies from many sectors have committed](#) to setting SBTs; examples of these companies include NIKE, Mars, and Adobe. See [here for the breakdown of these companies](#) by sector and region.

“At Cummins, we are focused on helping the world meet energy and environmental challenges by providing clean, fuel efficient and dependable power for our customers with the least environmental impact possible,” said **Brian Mormino, Executive Director of Worldwide Environmental Strategy and Compliance at Cummins**. “Using the science-based target approach will help us set our next greenhouse gas reduction goal in line with what is needed to respond to a changing climate.”

“Operating sustainably has been important to Adobe since our inception,” said **Vince Digneo, Sustainability Strategist, Adobe**. “We support the transition to a low-carbon economy, and we’re proud to join the Science Based Targets initiative to set and act on emissions targets for each of our sites, allowing us to grow our business while using less to do it.”

Taken from: <http://sciencebasedtargets.org/2017/09/18/more-than-300-to-set-science-based-targets/>

See Dell’s SBT setting process case study here: [http://sciencebasedtargets.org/wp-content/uploads/2016/06/Case-study\\_Dell\\_6-6-16.pdf](http://sciencebasedtargets.org/wp-content/uploads/2016/06/Case-study_Dell_6-6-16.pdf) and CocaCola’s here <https://shift.tools/resources/757>

## GET INTERNAL BUY-IN

Goal setting and public disclosure of GHG targets can be difficult for companies that are new to the process. While the sustainability professionals may be very familiar with GHG accounting and the science behind setting an SBT, colleagues and executive across the company will not have that same level of understanding. Therefore, it is important to gain internal buy-in early and often throughout the target setting process.

Chapter 5 of the SBT Setting Manual provides several helpful techniques to assist with securing internal buy in and support including:

- Partner closely with business units across the company. For the more challenging conversations, some reflection and preparation may be necessary, e.g., using the [Breaking Through Gridlock](#) approach.
- Make a good [business case](#), financially focused if possible
- Demonstrate or assist with determining feasibility of meeting the target

## UNDERSTAND THE SBT METHOD BASICS

An SBT method consists of three primary components:

- The **carbon budget** – the amount of carbon dioxide (and its equivalents) that can be emitted into the atmosphere without exceeding a global warming temperature threshold (commonly cited as 2 degrees Celsius).
- The **emissions scenario** – how the carbon budget is distributed over time. [IPCC](#) and the [International Energy Agency](#) (IEA) have developed several scenarios, some of which are disaggregated by industry sector and/or region.
- The **allocation approach** – addresses how the carbon budget for a given emissions scenario is divvied up among companies in the same grouping (e.g., region, sector). The two allocation approaches are **convergence** and **contraction**.
  - Convergence approaches only apply to emissions scenarios that are sector specific **and** have physical intensity metrics (e.g., kg GHG/units of products produced).
  - Contraction applies to the reduction of absolute emissions or economic emissions intensity without having to converge upon a common emissions value. Contraction can be used with sector-specific, non-sector-specific, or global emissions scenarios.

See [chapter 3 and Annex 1 of the SBT Setting Manual](#) for more information on the components, scenarios, and allocation approaches.

## GATHER THE DATA

For a method to “work”, companies must provide certain inputs that result in the method’s output.

Company inputs typically include:

- Base year (the first year of emissions tracking for the target)
- Emissions in the base year, by [scope](#)

### GHG Protocol Scope Definitions

**Scope 1: Direct GHG emissions** from sources that are owned or controlled by the reporting company

**Scope 2: Indirect GHG emissions** associated with the generation of imported/purchased electricity, heat, or steam

**Scope 3: Other indirect GHG emissions** of a reporting company that occur from sources owned or controlled by another company in their value chain

- Activities in the base year (# of employees, etc.) – especially for intensity targets (see below for more info on intensity vs absolute targets)
- Target year (companies may set an interim and a long term target year)

See [Annex 2 of the SBT Setting Manual](#) for more information on the inputs needed for each method.

The output of a method is the target itself, which can be expressed in absolute terms (30% reduction in emissions, or -20 M tonnes CO<sub>2</sub>e) or as an intensity metric, reducing emission relative to a physical or financial business activity (10 tonnes CO<sub>2</sub>e per \$ revenue).

In general, absolute targets are considered to be more robust and ambitious, because the net emissions a company produces will decrease regardless of company growth financially or by product output. [Table 3-1 of the SBT Setting Manual](#) lays out the key advantages and disadvantages of setting an absolute or an intensity target. It's important to keep in mind that many companies may choose to set both types of targets concurrently to assist with internal management and performance tracking.

## SELECT AN SBT METHOD

The July 2017 draft of the SBT Setting Manual includes six recognized methods. As emission scenarios continue to evolve, and sector specific data are refined, it is expected that new methods will develop. Additionally, disaggregation of emissions scenarios by country and region is not yet available, though this too is expected to evolve.

The table below, taken from [Chapter 3 of the SBT Setting Manual](#), summarizes the key attributes of each of the six methods. For full descriptions of the methods, including scenarios, ease of use and type of target, see [Annex 2 of the SBT Setting Manual](#).

| Method   | Primary Resource                      | Allocation Approach                | Sectors                       | Type of Target Output           |
|--|---------------------------------------|------------------------------------|-------------------------------|---------------------------------|
| Absolute Emissions Contraction                                     | <a href="#">Review of SBT Methods</a> | Contraction of absolute emissions  | Depends on emissions scenario | Absolute                        |
| Corporate Finance Approach to Climate-stabilizing Targets (C-FACT) | <a href="#">C-FACT White Paper</a>    | Contraction of emissions intensity | Depends on emissions scenario | Absolute and economic intensity |
| Climate Stabilizing Intensity Targets (CSI)                        | <a href="#">CSI White Paper</a>       | Contraction of emissions intensity | Depends on emissions scenario | Economic intensity              |
| Context-based Carbon Metric (CSO)                                  | <a href="#">CSO Website</a>           | Contraction of emissions intensity | Depends on emissions scenario | Economic intensity              |
| Greenhouse Gas Emissions per Value Added (GEVA)                    | <a href="#">GEVA White Paper</a>      | Contraction of emissions intensity | Depends on emissions scenario | Economic intensity              |

| Method                                  | Primary Resource                | Allocation Approach                | Sectors  | Type of Target Output |
|---|---------------------------------|------------------------------------|--|-----------------------|
| Sectoral Decarbonization Approach (SDA) | <a href="#">SDA White Paper</a> | Convergence of emissions intensity | Various  | Physical intensity    |
|   |                                 | Contraction of absolute emissions  | 1 sector covering miscellaneous manufacturing industries | Absolute              |

The SBT Initiative provides general guidance to assist companies in choosing a method, though in some cases more than one method may be suitable. Guidance includes:

- Use a sector-based method (SDA) or Absolute Contraction
- Use an economic contraction method to set an economic intensity target (tonnes CO2e/ \$M revenue) but ONLY if it leads to absolute reduction in emissions
- If using a method with an intensity target, companies should ALSO express the target in absolute terms
- If a company uses different methods for scope 1 and 2 vs scope 3 (or for various scope 3 categories) the external target should be aggregated for external reporting purposes – the same applies for companies that operate in multiple sectors
- Use the method and pathway that results in the **most ambitious target**

Companies may first assess the availability and practicality of data inputs for various methods to narrow down feasible options. For example, if a company is not in a sector identified in the SDA, this may not be the best choice of method. In some cases, the suggested base year and target years may also not be practical for a company – the CSO method requires a 2005 base year and many companies may not have carbon footprint data reaching that far back.

Lastly, a company should evaluate several methods before settling on a final target. Ultimately, a company should employ the method (or methods if differentiating by scope or sector) that drive ambitious emission reductions across all three scopes and the company’s operations.

## SET THE TARGET

After choosing a method, or while determining if a particular method is the right one for your company, several steps must be employed to produce the emissions reduction target. The steps and criteria directly below apply across all three scopes – many of which are based in the processes described in the [GHG Protocol Corporate Accounting and Reporting Standard](#) (WRI/WBCSD) and summarized in [Chapter 4 of the SBT Setting Manual](#). Additionally, more detailed guidance is provided for Scope 1 and 2 target setting as well as specific considerations for Scope 3 targets.

## Basic Steps

- Choose a base year – recommended to be the most recent year for which data are available
- Choose a target year – should be a minimum of 5 years and maximum of 15 from the target announcement
- Set Scope 1, 2, and 3 concurrently and align boundaries of the target with the GHG inventory
- Do not use offsets as part of achieving the SBT

## Scope 1 and 2 Guidance

Setting an SBT for Scope 1 and 2 emissions in large part follows the same process outlined in the GHG Protocol. A company must set target boundaries:

- Scopes – an SBT must cover a company’s complete scope 1 and 2 emissions even if one scope is significantly less or seems insignificant in comparison
- GHGs - all seven GHGs must be included though some of these may be 0 or de minimus
- Geographies – the SBT boundary should mirror that of the GHG inventory

### 7 GHGs:

- carbon dioxide
- methane
- nitrous oxide
- perfluorocarbons
- hydrofluorocarbons
- sulphur hexafluoride
- nitrogen trifluoride

In keeping with the GHG Protocol, companies should disclose whether specific operations and/or sources have been excluded.

Recently, WRI and WBCSD updated the scope 2 guidance to address location versus market-based approaches to accounting – see [GHG Protocol Scope 2 Guidance](#) for additional detail. With regards to setting SBTs, a company should only use one of the accounting approaches for base year and tracking emissions. If a company uses the market-based approach (which includes company specific electricity products such as power purchase agreements) then all contractual instruments should be in conformance with the Scope 2 Quality Criteria ([Chapter 7 of the Scope 2 Guidance](#)).

## Scope 3 Guidance

SBT Initiative guidance states that a company must set a scope 3 target if its emissions comprise more than 40% of its total scope 1, 2 and 3 emissions. To determine the percentage of scope 3 emissions, a company must screen for all relevant scope 3 categories. The details of the screening and foot-printing process are laid out in the [GHG Protocol Corporate Value Chain \(Scope 3\) Standard](#).

The scope 3 target must include the top three categories or cover a least 2/3 of the total scope 3 emissions in order to satisfy the [SBTi Criteria](#). While the scope 3 target does not have to be science-based (i.e., employ one of the SBT methods), this approach is encouraged. Regardless, the target must be deemed sufficiently “ambitious” to be accepted as part of the company’s overall target.

A company may also choose to set one or multiple targets to address differences in scope 3 categories. Table 4-2 in the SBT Setting Manual lists the advantages of single versus separate targets for scope 3 categories along with several examples:

**Single:**

- “Reduce absolute value chain emissions 20% by 2025, from 2013 levels, Kellogg Company”

**Separate:**

- “Reduce the energy intensity of product portfolio 80% by 2020, from 2011 levels, Dell”

In addition to not requiring the scope 3 target be science-based, this target may also be communicated in non-emission terms, as long as the emissions reduction can be quantified and demonstrated (e.g., setting a goal for percentage of suppliers to set their own emissions reduction targets). However, SBTs can be set for scope 3 emissions and the SBTi encourages companies to use Absolute Emissions Contraction or the SDA if feasible.

[Chapter 4 of the SBT Setting Manual](#) provides many examples of both emissions on non-emissions targets. An emissions-based scope 3 target should include the time period and percent reduction the company will achieve, e.g., company Z reduces its scope 3 emissions by 22% from 2015 to 2015. A non-emissions-based scope 3 target may seek only to influence suppliers, e.g., by 2020 70% of suppliers (by spend) will set their own scope 1 and 2 reduction targets.

## COMMUNICATE THE TARGET

In the introduction, we referenced the process for validating your target through SBTi. Following these steps and arriving at an approved target prepares a company to publicly announce its target. However, public announcement is not required and some companies may wish to keep their targets internal.

If a company does publicly announce, Chapter 6 of the SBT Setting Manual provides guidance on how and what to disclose, including:

- Define the audience so that the language and technical details are appropriate for that audience – a company may present the same target in multiple formats depending on venue (twitter vs white paper)
- Evaluate where to disclose the target, options include [CDP’s Climate Questionnaire](#), [We Mean Business](#) website, corporate website, etc.
- Follow reporting principles noted in the [GHG Protocol Corporate Standard \(Chapter 9\)](#) including relevance, completeness, consistency, transparency and accuracy
- Describe the target using these principles and also report progress toward the target; qualitative and contextual information can be useful here.

## IMPLEMENT THE TARGET

After your target is set and has been socialized within your company, various actions must take place in order to achieve the target. Generally as part of the target-setting process, companies will explore emissions reduction strategies best suited for the company’s industry (transportation companies may focus on fuel efficiency while a

consumer goods company may look to product innovation). Some measures will focus on reductions in the short term (e.g., lighting retrofits), while others may be medium term (e.g., renewable energy investment) or longer term (e.g., shifts in production technology). Broad categories of emissions reduction measures are listed below followed by resources that provide additional information and implementation guidance.

#### Reduction Measures:

- Energy efficiency
  - Buildings
  - Transportation
  - Industrial
- Low-carbon / renewable energy
- Biological carbon sequestration
- Scope 3 reduction (e.g. supplier standards, business travel, waste diversion)

#### Helpful resources:

- [US EPA ENERGY STAR Guidelines for Energy Management](#)
- [Climate Friendly Buildings and Offices: A Practical Guide](#)
- [Corporate Renewable Energy Buyers' Principles Resources](#)
- [Center for Corporate Climate Leadership Supply Chain Guidance](#)

Note that companies need to make sure systems are in place to appropriately track progress against the target. As mentioned above, reporting on your company's progress is an important part of science-based target setting.

### *Conclusion*

Over 300 companies have set GHG emission reduction targets that are science based i.e., aligned with the level of decarbonization required to keep global temperatures from rising above 2°C (compared to preindustrial temperatures). The SBTi, a collaboration of leading NGOs, has created a process and guidance for companies to establish, validate, and communicate their targets. Several methodologies can be used to set targets for scope 1, 2, and 3 emissions.

While there is a strong business case to setting an SBT, creating such ambitious targets can be challenging. Therefore, as you embark on your SBT journey, it is critical that you take steps to gain internal buy-in of executives and colleagues throughout the process.