# CDP–WWF Temperature Scoring Methodology

## A temperature scoring method for targets, companies, and portfolios

September, 2024

**CDP and WWF are partnering to enable climate action for corporates and financial institutions**

## Abstract

This methodology is an open-source method to enable the translation of corporate greenhouse gas (GHG) emissions reduction targets into temperature scores at a scope, company and portfolio level. The methodology allows the generation of temperature scores for individual scope-level targets (e.g., Scope 1, Scope 2, Scope 3). It also provides a protocol to aggregate scope-level scores into a common intuitive metric reflecting the ambition of the company's GHG reduction targets. Finally, the methodology defines a series of weighting options that enable financial institutions and others to aggregate the temperature scores of companies in a portfolio to a portfolio temperature score. This is an update (version 1.5) of the initial publication of the methodology, which was published in 2020. The methodology provides a public, transparent and science-based protocol to assess the ambition of corporates and portfolios based on the ambition of GHG reduction targets. It enables users to assess the ambition of public GHG emissions reduction targets and can help users compare the relative ambition of one company's target with that of another. Likewise, the methodology allows the comparison of different portfolio ambitions and financial institutions to calculate their own portfolio temperature score, which is a key starting point for aligning the portfolio with long-term temperature goals such as 1.5°C.


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# CDP–WWF Temperature Scoring Methodology

## A temperature scoring method for targets, companies, and portfolios

An open-source methodology to translate the ambition of corporate greenhouse gas emission reductions into temperature scores for corporate value-chains and investment portfolios.

**CDP Worldwide and WWF International**

**Version 1.5.**

**September, 2024**

Partnering to enable climate action for corporates and financial institutions

# Key Terminology

**Carbon dioxide removal, or 'CDR':** a process in which carbon dioxide ($CO_2$) is removed from the atmosphere by deliberate anthropogenic activities and durably stored in geological, terrestrial, or ocean reservoirs, or in products.[1]

**Compound Annual Reduction, or 'CAR':** the annualized emission reduction rate over a specific period of time, as implied by climate scenarios and corporate greenhouse gas (GHG) emissions reduction targets.

**Default temperature score:** default °C value applied to companies in the absence of valid climate target data (here 3.4°C, derived from Climate Action Tracker's 'policies & action emissions scenario').

**Warming Function:** a linear regression model used to project the impact of GHG emissions reduction rates on global warming by the end of the century.

**Global climate models, simulations and scenarios:** Climate models are a mathematical description of the Earth's climate system. Global coupled climate models include physical principles of the atmosphere, ocean, land surface and sea ice. The results from running global climate models are referred to as model simulations. The scenarios are primarily derived from integrated assessment models and serve as boundary conditions for global climate models. They describe possible future pathways, covering a wide range of assumptions regarding, e.g., GHG emissions trajectories, socio-economic trends and technological developments. For simplicity, the methodology refers to the model simulations (based on different scenarios) as 'scenarios'.

**Temperature scores, or 'TS':** a forward-looking metric that expresses the GHG emissions reduction targets of a company, portfolio, or fund with the associated annual global mean surface temperature rise.

**Total GHG emissions:** refers to the total of a company's Scope 1, Scope 2 and Scope 3 emissions. Scope 1 refers to direct emissions from sources that are owned or controlled by the company, Scope 2 refers to indirect emissions from purchased energy, and Scope 3 refers to indirect emissions (not included in Scope 2) that occur upstream and downstream of a company's value chain. In the regression models, the GHG considered depends on the variable used for each respective scope (see Chapter 4 for more details).

[1] See IPCC_AR6_WGIII_Factsheet_CDR.pdf for further information.

# Executive Summary

## About the methodology

The CDP–WWF Temperature Scoring Methodology helps financial institutions and large corporates to assess how their Scope 3 emissions contribute to global warming.

It translates corporate greenhouse gas emissions reduction targets into temperature scores. This in turn allows users to engage with companies to set or improve targets, compare ambition levels, measure the alignment of their portfolio or value chain with a 1.5°C warming and set their own Scope 3 targets accordingly.

The methodology summarizes complex information into an intuitive metric for decision-making, aiming to support climate change mitigation and the green transition. Initially published in 2020, the methodology is transparent, open source and made available under a Creative Commons license (CC BY-SA[2]). It is currently implemented in solutions provided to financial institutions by organizations such as Bloomberg, ICE and CDP. Its key audience includes financial institutions, large corporations and data providers, but it can also be used by academia and civil society.

The primary objective of this updated version 1.5 revolves around refreshing the methodology's benchmarks with the latest climate science. It also implements adjustments and improvements to specific aspects to ensure that it remains relevant, fair and effective. Finally, this version adds transparency on methodological choices and implications through additional analysis, enhanced explanations and dedicated sections.

## Current landscape and needs

The Paris Agreement and global commitments aim to limit temperature increases to 1.5°C above pre-industrial levels, highlighting the urgent need for mitigation efforts and the economic transition, as emphasized in the latest IPCC AR6 report (Intergovernmental Panel on Climate Change, 2023).

Regulatory pressure is increasing for the disclosure of emissions, transition plans and reduction targets. This broader regulatory environment also includes prudential risks, banking regulations and due diligence obligations, making forward-looking data essential for compliance and strategic planning. For organizations with significant Scope 3

[2] Creative Commons Attribution-ShareAlike 4.0 International License, https://creativecommons.org/licenses/by-sa/4.0/deed.en

emissions, such as financial institutions or companies with large value chains, this extends to their portfolio or value chain constituents.

However, assessing the ambition of corporate targets can be very challenging. Companies often publish a multitude of targets, covering different scopes, organizational levels and metrics. It can also prove difficult to compare targets across companies. This can lead to greenwashing. Therefore, a practical, transparent methodology is needed to help the financial sector and large corporates navigate the diversity of emissions reduction targets and engage with investees and suppliers effectively.

## The CDP–WWF Temperature Scoring Methodology aims to address those needs

- Using the latest climate science available (IPCC AR6, ca. 1200 vetted scenarios), it builds simplified benchmarks to capture the relationship between GHG emissions trajectories and expected global warming likely to be observed at the end of the century.
- It provides a rule-based approach to harmonize the treatment of Scope 1, 2 and 3 corporate emissions reduction targets over different time horizons (short-, medium- and long-term), and to deal with missing data.
- It summarizes the ambition of those GHG emission reduction targets into temperature scores, following the relationship between emissions and temperature outcomes captured by the benchmarks.
- It reflects the options available to aggregate those insights at the level of a portfolio (or supply chain) of corporate exposures.

## Document structure

- **Chapters 1–3** introduce the fundamentals of temperature scoring, highlighting the advantages of using a warming function vs a single-scenario approach. They also outline the key updates from the previous version and provide an overview of the methodology's three-step protocol:
  - Step 1 – benchmark creation;
  - Step 2 – company-level assessment; and
  - Step 3 – portfolio scoring.
- **Chapter 4** details the creation of benchmarks (**Step 1**) through regression models based on data from the IPCC's AR6. It introduces five mitigation variables relevant for different scopes of emissions and sectors. The resulting regression models are then used to compute temperature scores.
- **Chapter 5** defines what constitutes a valid target (**Step 2a**) under the methodology and how to match these targets with the appropriate regression model. It introduces validity requirements and clarifies the temperature score aggregation method, which

relies on current year GHG data. Companies without valid targets are assigned a default score of 3.4°C, reflecting the pathway expected if companies continue operating under existing governmental policies and adhere to the minimum requirements of current regulation (as derived from Climate Action Tracker's (2023) 'policies & action emissions scenario'). Additionally, Chapter 5 defines the best possible score under the methodology by introducing a 1.5°C temperature floor.

- **Chapter 6** introduces a target criteria waterfall to process and prioritize the variety of targets reported by companies and available through different data providers (**Step 2b**).
- **Chapter 7** defines different methods to aggregate company-level temperature scores at the portfolio level (**Step 3**).
- Finally, **Chapter 8** focuses on the main limitations of the methodology, and how future versions will attempt to address those limitations. Key areas for development include (*inter alia*): accounting for gross targets vs net targets that rely on the use of carbon removals, developing more granular sector-specific granular benchmarks, creating sector-specific default scores and exploring non-linear models to improve accuracy.

# Contents

# 1. Fundamentals

Given the diversity in the climate target scopes, timeframes and metrics used by companies across various sectors, understanding and comparing the adequacy of companies' decarbonization goals can be challenging. Initially published in October 2020, this methodology document was designed to serve as a protocol for assessing and comparing the ambition of companies' GHG emissions reduction targets. The key audience of this methodology are financial institutions (FIs) and large corporates wishing to assess, steer and set targets on their Scope 3 emissions as well as data providers offering implied temperature rise (ITR) metrics. Other users of this methodology include academia and civil society, as well as supervisory authorities and regulators.

## 1.1. Understanding temperature scores

The first version of this method introduced a scoring methodology which translates diverse GHG reduction targets into an intuitive metric expressed as projected warming by 2100. This metric, sometimes referred to as an ITR, can be used to compare the ambition of different companies' decarbonization goals as expressed in their public GHG emissions reduction targets. Henceforth, this output metric will be referred to in this document as a temperature score (TS).

These scores should not be interpreted like Intergovernmental Panel on Climate Change (IPCC) results (i.e., global climate projections), nor does the metric predict a certain temperature outcome. Temperature scores instead allow a relative comparison of climate ambition with respect to the temperature goals of the Paris Agreement. The scores should be interpreted as follows: this company's GHG reduction target implies an annual reduction rate that is consistent with an ambition heading toward *X*°C – under the assumption that all companies behave the same.

Users of TS can use this metric to engage with companies to set targets (or improve existing ones), compare the ambition of corporate GHG emissions targets, measure the alignment of their own Scope 3, and set targets accordingly (e.g., at the portfolio level for FIs or at the supply chain level for large companies).

## 1.2. What a temperature score does not cover

Temperature scores are not intended to serve as a comprehensive metric summarizing a company's climate transition performance or overall 'green credentials'. Temperature scores do not provide insights into a company's operational or financial performance relative to these ambitions, the current trajectory of the company's historical GHG emissions, or the existence of a credible climate transition plan to achieve these goals.

The primary purpose of this methodology's TS is to assess a company's climate target ambition through a broad benchmark of climate scenarios. It is therefore suggested that temperature scores are used as a comparative tool for assessing the climate ambition across multiple companies (e.g., within a supply chain or financial portfolio) or, on an aggregated level, across portfolios and supply chains, and that other complementary metrics are consulted to obtain a complete picture of a company's climate profile. Also, TS should not be used as a predictive tool for estimating a precise degree of global warming.

## 1.3. Warming Function versus single-scenario

To calculate a temperature score, this methodology benchmarks companies' committed GHG reduction ambition against a statistical regression model based on all vetted modeled scenarios of the IPCC's Sixth Assessment Report (AR6) (see Chapter 4). This approach is referred to as the 'Warming Function' and establishes a linear statistical relationship between the rates of GHG emissions reduction and the projected temperature outcomes that these scenarios imply by the end of the century.

The Warming Function differs from a single-scenario approach. A single-scenario approach relies on one single scenario and assumes that the future will unfold as per the selected single scenario's underlying assumptions. Because the Warming Function approach relies on multiple scenarios, it reduces the scenario selection bias inherent to the single-scenario approach. It also provides greater comparability between implementations of the CDP–WWF method from different data providers and users. This is important as comparability between temperature scores using single-scenario approaches relies on the use of the same scenario for TS computation. However, the robustness that the CDP–WWF Warming Function provides is traded against less transparency on the effects of the different assumptions underlying the input models and scenarios of a Warming Function on the temperature scores. Another difference is that the single-scenario approach, by using only one scenario, can more easily allow for more granular, sector-specific analysis compared with this methodology's Warming Function. Further research and development are needed to allow the use of more sector-specific Warming Functions, in addition to the sectors currently covered by their own Warming Functions: steel, aluminum, cement and power generation.

CDP and WWF have considered the different approaches and concluded that the robustness of the Warming Function is preferable, despite its trade-offs, as it provides a more comprehensive, comparable and unbiased view of potential temperature outcomes.

Please refer to Annex 1: Warming Function versus single scenario for further details about the rationale supporting that conclusion.

# 2. Key changes to the previous version

This version 1.5 of the CDP–WWF Temperature Scoring Methodology (formerly known as CDP–WWF Temperature Rating) marks the first update since its initial publication in October 2020 (version 1.0).

The primary objectives of this update revolve around refreshing this methodology's benchmarks with the latest climate science. It also implements adjustments and improvements on specific aspects to ensure that it remains relevant, fair and effective. Finally, this version adds transparency on methodological choices and implications through the presentation of additional analysis, enhanced explanation and dedicated sections.

Key changes introduced in this version include (please refer to the change log in Chapter 9 for more details):

- Update of the input climate model simulations and scenarios of the linear regression models by substituting the IPCC SR15 model simulations and corresponding scenarios with the **IPCC's AR6 set of climate simulations with scenarios**, including adjustments of scenario filtering decisions (see Chapter 4 for more details).
- Revision of the calculation formula for the annual rate of GHG emissions reduction, transitioning from a linear annual reduction to a **compound annual reduction approach** (see Section 4.2 for more details).
- The introduction of a **specific Scope 2 benchmark** relying on energy related variables. Scope 1 and Scope 2 assessments are now carried out at the single-scope level (see Section 4.2.1 for more details).
- The introduction of **short-term benchmarks** (5-year time horizon), alongside mid-term (15 years) and long-term (30 years) benchmarks.
- **Clarification and enhancement of the target selection process** ('waterfall') to prioritize targets when a company reports multiple targets within the same scope category and timeframe (see Section 6.3 for more details).
- Update of the **target timeframe definition** for short, medium and long term (see Chapter 6 for more details).
- Update of the **default score from 3.2 to 3.4°C** for companies without valid targets or insufficient data disclosure, reflecting the latest projection based on real-world action and current policies (see Section 5.3 for more details).
- Clarification on the best possible temperature score for a company, introducing a **1.5°C temperature floor** (see Section 5.4 for more details).

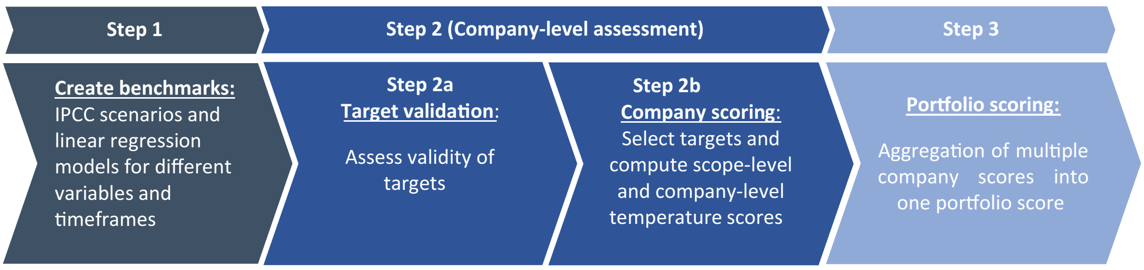
- Addition of a dedicated chapter detailing this methodology's **purpose and intended outcomes** (Chapter 1). Another new chapter focuses on **the methodology's key limitations** and a **roadmap for further updates** planned (Chapter 8). Finally, a presentation of the **rationale for relying on a Warming Function over single-scenario-based benchmarks** was added in Chapter 1 and in Annex 1: Warming Function versus single scenario.

# 3. Introduction and methodological overview

Companies are directly responsible for a significant portion of global GHG emissions (Intergovernmental Panel on Climate Change (Ed.), 2022). Greenhouse gas emissions reduction targets are a partial but relatively crucial forward-looking marker of a company's ambition to mitigate its climate impact. In 2023, close to 5,000 companies covering approximately 10 gigatonnes (GT) of Scope 1 + 2 GHG emissions publicly reported GHG emissions targets through CDP (based on CDP data 2023). However, assessing and comparing the ambition of corporate targets has traditionally been complex as targets can be expressed with different metrics over multiple timeframes and cover various types of emissions scopes.

The aim of a temperature score is to translate GHG emissions targets into a single intuitive metric that is linked to the long-term temperature projections associated with the ambition of the target. In the initial publication of this methodology (version 1.0), a protocol for expressing ('scoring') climate targets in a temperature metric referring to projected warming by 2100 was presented. This updated version builds on the original method and further develops that protocol. The methodology is composed of three steps, represented in Figure 1.

**Figure 1: Steps of the Temperature Scoring Methodology.**




The benchmark creation step (Step 1, Chapter 4) consists of running linear regression models. The outputs of these models are based on a Warming Function, derived from all vetted model-based scenarios in the IPCC's AR6 Scenario Explorer and Database[3] hosted by the International Institute for Applied Systems Analysis (Byers et al., 2022). The linear regression models allow the assessment of end-of-century temperature outcomes expected from short-, medium- and long-term projected changes in absolute GHG emissions or GHG emissions intensity metrics. As such, the regression models are used to relate target ambition (measured in committed rate of GHG emissions reduction) to

[3] Accessible through this link: https://data.ece.iiasa.ac.at/ar6/#/login?redirect=%2Fworkspaces.

warming projections by the end of the century (expressed in centigrade temperature change compared with preindustrial levels).

As companies often have multiple climate targets, covering different emissions scopes and timeframes, and users may receive data from several sources, Step 2a (Chapter 5) defines the process and criteria for validating the various companies' GHG reduction targets. This step can be seen as an eligibility screening of targets allowed as input for temperature score computation. In Step 2b (Chapter 6), scope-level targets are selected using the selection hierarchy ('waterfall'), and scope-level temperature scores are calculated. Finally, these TS are then aggregated into combined company-level scores. The target validation step (Step 2a) defines the minimum quality criteria for determining the acceptability of a GHG emissions reduction target to be scored. The company scoring step (Step 2b) specifies the process required to select target data to be used for scoring and how to aggregate multiple targets to produce company-level scores.

The final step (Step 3, Chapter 7) is used to weight company scores when assessing an aggregation of companies, such as a financial portfolio or a company value chain.

In addition to computing temperature scores for disclosed targets, the methodology also defines an approach to address non-disclosing companies. Default scores are introduced, also to allow TS aggregation for company-, portfolio- or supply chain-level TS (see Section 5.3 on default scores).

# 4. Step 1: Create benchmarks

## 4.1. Underlying data of linear regression models

The linear regression models used in this methodology are based on underlying data from models and scenarios from the IPCC's AR6 (see Section 4.2 for more information about the linear regression models). The data is collected and downloaded from the AR6 Scenarios Database hosted on a Scenario Explorer by the International Institute for Applied Systems Analysis, released in 2022 (Byers et al., 2022).[4]

Most global mitigation scenarios in the database are derived from integrated assessment models. They describe possible future pathways, covering a wide range of assumptions regarding, e.g., GHG emissions trajectories, socio-economic trends and technological developments. The AR6 Scenarios Database contains a large number of model simulations with different scenarios which in turn could be classified into categories based on the projected change in temperature by the end of this century[5] and the respective probability.[6] The IPCC undertook a vetting process for all model simulations and scenarios reporting global data to ensure that key indicators such as GHG emissions and energy are within reasonable ranges[7] (Intergovernmental Panel on Climate Change (Ed.), 2023). In total, approximately 1,200 different model simulations and scenarios related to GHG emissions passed this vetting process (Byers et al., 2022). To allow for higher reliability when generating the linear regression models within this methodology, only model simulations with scenarios that passed the IPCC's vetting process are considered. For simplicity, this paper refers to the model simulations (based on different scenarios) as 'scenarios'.

In this version of the methodology, all scenarios that passed the vetting process from the IPCC are selected to feed into the linear regression models. In the initial publication of

[4] Copyright 2022 IIASA, Publication date: 09/11/2022. Downloaded from this link: [https://data.ece.iiasa.ac.at/ar6/#/data-download](https://data.ece.iiasa.ac.at/ar6/#/data-download).

[5] Integrated assessment models contain simplified climate models also called emulators to, e.g. link emission trajectories to temperature outcomes. Climate models are a mathematical description of the Earth's climate system. Global coupled climate models include physical principles of the atmosphere, ocean, land surface, and sea ice.

[6] Scenarios are classified into the following categories (C): C1, limit warming to 1.5°C (>50%) with no or limited overshoot; C2, return warming to 1.5°C (>50%) after a high overshoot; C3, limit warming to 2°C (>67%); C4, limit warming to 2°C (>50%); C5, limit warming to 2.5°C (>50%); C6, limit warming to 3°C (>50%); C7, limit warming to 4°C (>50%); and C8, exceed warming of 4°C (≥50%).

[7] For more information regarding the IPCC's vetting process, please read Annex III: Scenarios and Modelling Methods.

this methodology (version 1.0), the IPCC's SR15[8] scenarios were first filtered before the linear regression models were generated. This was done based on precautionary preferences, for example concerning the level of plausible carbon dioxide removal (CDR, with above 10 Gt $CO_2$/year by the end of century considered as not plausible).[9,10]

The application of similar filters on the AR6 scenario database was tested for version 1.5. Because of unconclusive evidence regarding the impact of those filters on the ambition levels implied by the regression models**, the overall conclusion was that no exclusionary filters should be performed in version 1.5.** Additional details and discussion points on the results are available in Annex 2 and will be further explored in upcoming research.

## 4.2. Linear regression models

The underlying data described in Section 4.2.1 is processed and modeled into linear regression models in two R scripts: CDP–WWF_ITR_preparation_of_data.R and CDP–WWF_ITR_Regression.R process AR6 data,[11] while the linear regression models are created in CDP–WWF_ITR_Regression.R. The R scripts are open source and are available upon publication of this methodology (https://github.com/WWF-Sweden/ITR-regression).

**Table 1: Linear regression models associated with different time horizons and variables.**

| Emissions \| Kyoto Gases (Mt $CO_2$e/year) | Emissions \| $CO_2$ \| Energy \| Supply (Mt $CO_2$/year) | Emissions \| $CO_2$ \| Energy and Industrial Processes (Mt $CO_2$/year) | Emissions \| Kyoto Gases/GDP \| PPP[a] (Mt $CO_2$e/billion[b] US$ 2010/year) | Emissions \| $CO_2$ \| Energy \| Supply/ Secondary Energy (Mt $CO_2$/EJ[c]/year) |
|---|---|---|---|---|
| Regression on 5-year horizon | Regression on 5-year horizon | Regression on 5-year horizon | Regression on 5-year horizon | Regression on 5-year horizon |
| Regression on 10-year horizon | Regression on 10-year horizon | Regression on 10-year horizon | Regression on 10-year horizon | Regression on 10-year horizon |
| Regression on 30-year horizon | Regression on 30-year horizon | Regression on 30-year horizon | Regression on 30-year horizon | Regression on 30-year horizon |

[a]PPP refers to purchasing power parity (see https://en.wikipedia.org/wiki/Purchasing_power_parity).
[b]Billion refers to the number equivalent to the product of a thousand and a million; 1,000,000,000 or $10^9$.
[c]EJ refers to exajoule (a unit of energy equal to $10^{18}$ joules, or 1,000,000,000,000,000,000 joules.

8 Global Warming of 1.5°C, 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. Accessible through this link: Download Report — Global Warming of 1.5 °C (ipcc.ch).
9 56 unique scenario sets were generated in the initial methodology (version 1.0).
10 For more information about the scenario filtering process of the initial methodology (version 1.0), please see https://www.cdp.net/en/investor/temperature-ratings/CDP–WWF-temperature-ratings-methodology.
11 Two published data files are used: AR6_Scenarios_Database_World_v1.1 containing time series of different variables, and AR6_Scenarios_Database_metadata_indicators_v1.1 containing metadata related to the climate models and scenarios. Copyright 2022 IIASA, Publication date: 09/11/2022. Downloaded from this link: https://data.ece.iiasa.ac.at/ar6/#/data-download.

One linear regression model is created for each of the variables and time horizons in Table 1. This gives a total of 15 linear regression models that this methodology refers to as benchmarks. The regression coefficients are outlined in Table 3 in Section 4.2.2.

### Equation 1: Linear regression formula

$$Temperature_{2100} = \alpha + \beta \times (-1) \times reduction\ rate_{between\ 2020\ and\ 2020+t} + \varepsilon$$

*where:*

$\varepsilon$ is the error term of the regression model;

$Temperature_{2100}$, the projected temperature outcome in 2100, is the dependent variable. It is derived from MAGICC v7.5.3 (Model for Assessment of Greenhouse Gas Induced Climate Change)[12] (Byers et al., 2022) and collected from the AR6 Scenario Database, this variable being suitable for this methodology's aim – to translate GHG emissions reduction targets into a single common and intuitive metric – as it returns a single unambiguous value expressed in projected temperature change in 2100; and

$reduction\ rate_{between\ 2020\ and\ 2020+t}$, the independent variable, is the annualized reduction rate implied by the variable's absolute change between two points in time, starting in 2020. This is expressed as the compound annual reduction rate (CAR) for different time horizons, 5, 10 and 30 years.

### Equation 2: Compound annual reduction rate

$$\mathrm{CAR} = (1 + \%\, change\ in\ emissions)^{1/(end\ year - base\ year)} - 1$$

*where:*

CAR is the compound annual reduction;

*base year*, in the context of scenarios the year of reference, is 2020 and in the context of corporate targets is the year the target was set;

*end year*, in the context of scenarios, is the 5-year interval period after 2020 analyzed and in the context of corporate targets, the year the target should be met; and

*% change in emissions* is the percentage change of emissions between the base year and end year (e.g., if the scenario's GHG emissions pathway shows a reduction in emissions by 50% (−0.5) between the two periods, then the value should be −0.5). Note that when the targeted reduction is 100%, the equation for CAR does not give a meaningful value. Therefore, in the context of corporate targets, the method assigns the temperature floor (see Section 5.4) as the TS (see more on limitations in Section 8.1.2).

[12] Based on the variable AR6 climate diagnostics | Surface Temperature (GSAT) | MAGICCv7.5.3|50.0th Percentile.

In this methodology, the time frames used for benchmarking targets are 5 years (short term), 10 years (medium term) and 30 years (long term). Year 2020 represents the base year. For example, to run a regression model of projected temperature change in 2100 and GHG emissions' evolution in the next 30 years, the GHG emissions CAR from all scenarios' emissions pathways between 2020 and 2050 are first calculated.

For an absolute reduction in emissions between two intervals, the CAR will be negative as per the formula above. To run the regression models the sign of the CAR is flipped (a reduction in emissions will be counted as a positive CAR) so that slopes in the regressions are negative and a reduction in emissions can be more intuitively interpreted as an improvement in temperature outcomes when calculating targets' temperature scores. This transformation has no impact on the outcome of the methodology and similar temperature scores would be observed without it, but it should be noted if applying the regression coefficients provided in this paper.

In the context of corporate targets, the total ambition (i.e., the percentage change in emissions from base year to end year) is normalized to reflect the target's boundary coverage (i.e., the perimeter of GHG emissions actually covered by the target) according to Equation 3:

### Equation 3: Normalized ambition

$$\textit{normalized ambition} = \textit{\% change in emissions} \times \textit{target boundary coverage}$$

Please refer to Section 6.3.2 for more information on boundary coverage and the way it is calculated.

Thus, at the corporate target level, the CAR formula is adjusted according to Equation 4:

### Equation 4: CAR formula for corporate targets

$$\text{CAR} = (1 + \textit{normalized ambition})^{1/(\textit{end year}-\textit{base year})} - 1$$

Note that when the targeted reduction is 100%, the equation for CAR does not give a meaningful value. Therefore, in the context of corporate targets, the method assigns the temperature floor (see Section 5.4) as the TS (see more under limitations in Section 8.1.2)

**From linear annual reduction to compound annual reduction**

The change in the annual reduction rate formula from linear annual reduction (LAR), used in the initial publication of the methodology (version1.0), to compound annual reduction (CAR) has an expected effect on the fit of the linear model as calculated by $R^2$. LAR expresses changes in the independent variable over the period in terms of percentage points (i.e., GHG emissions reduced by two percentage points each year indicates that they are reduced from 100% to 98% to 96% from a given baseline value), as opposed to annualized percentages with CAR (a reduction of 2% from the 2020 baseline value, and a reduction of 2% from the 2021 value the following year, and so on). The LAR is normalized by nature with a significantly smaller variance, which mechanically increases the $R^2$ of the regressions, especially for long-time horizons. The CAR represents a cumulative reduction rate that is more accurately modeled by an exponential function as highlighted in Figure 2 (see Section 4.2.3). Investigating the possibility of using another statistical model will be subject for the next update of this methodology.

The main reason for changing from LAR to CAR is to improve the interpretation of the model results with respect to real economy changes in GHG emissions that are usually expressed in annualized percentage changes as opposed to a reduction in percentage points from a base year. This change also incentivizes earlier action, as the CAR implies a higher absolute reduction in GHG emissions in the short term given the higher baseline.

### 4.2.1. Sector-specific variables and benchmarks

Table 2 outlines which regression models are used to benchmark sector-specific targets in this methodology. Some benchmarks are common across sectors and scopes. These are used to assess corporate GHG targets according to their type (using absolute or intensity metrics), sectors (all sectors, power generation and cement/steel/aluminum), and emissions scope category (Scope 1, 2 and 3). The sector variables used to benchmark absolute targets are directly available from the AR6 Scenario Database. The intensity variables are calculated from AR6 scenarios data for the purpose of this methodology (this calculation is included as part of the CDP_WWF_ITR_Regression.R script mentioned in Section 4.2).

The benchmarks are selected and allocated to a sector based on a combination of criteria: data availability, suitability of the AR6 variable to proxy the specific sector emissions, and the fit of the linear regression model when using this benchmark.

**Table 2: Sector variables and associated linear regression models for each target type and scope category[a].**

| Sector[b] | Target type | Scope 1 benchmarks: AR6 regression model variable | Scope 2 benchmarks: AR6 regression model variable | Scope 3 benchmarks: AR6 regression model variable |
|---|---|---|---|---|
| All sectors (except for the ones listed below) | Absolute | Emissions \| Kyoto Gases | Emissions \| $CO_2$ \| Energy \| Supply | Emissions \| Kyoto Gases |
| | Intensity | Emissions \| Kyoto Gases/GDP \| PPP | Emissions \| $CO_2$ \| Energy \| Supply/ Secondary Energy | Emissions \| Kyoto Gases/GDP \| PPP |
| Power generation | Absolute | Emissions \| $CO_2$ \| Energy \| Supply | The regression model for all sectors applies | The regression model for all sectors applies |
| | Intensity | Emissions \| $CO_2$ \| Energy \| Supply/ Secondary Energy | The regression model for all sectors applies | The regression model for all sectors applies |
| Cement/ steel/ aluminum | Absolute | Emissions \| $CO_2$ \| Energy and Industrial Processes | The regression model for all sectors applies | The regression model for all sectors applies |
| | Intensity | The regression model for all sectors applies | The regression model for all sectors applies | The regression model for all sectors applies |

[a]Some of the variables in the table are expressed in $CO_2$ rather than $CO_2e$ or Kyoto Gases. However, this is the nature of the specific AR6 variable, and $CO_2$ is considered the best proxy for $CO_2e$/Kyoto Gases in this methodology.

[b]In this paper, sectors are defined following the CDP-Activity classification system.

The following updates are introduced in this methodology compared with the initial version (1.0):

- A specific benchmark for Scope 2 targets based on the following variables to proxy indirect emissions from energy consumption: Emissions | $CO_2$ | Energy | Supply and Secondary Energy Output for the intensity targets.[13] This change relies on the assumption that energy consumption's absolute emissions and intensity should follow a similar path to the supply of energy. This benchmark is now also used to assess power generation Scope 1 targets. Previously, one common benchmark was used to assess both Scope 1 and Scope 2 targets for all sectors, and the power generation Scope 1 emissions were assessed according to a different benchmark.[14]

[13] These two variables are related to GHG emissions from fuel combustion and fugitive emissions from fuels: electricity and heat production and distribution, other energy conversion (e.g. refineries, synthetic fuel production, solid fuel processing) including pipeline transportation fugitive emissions from fuels and emissions from transport and storage (Byers et al., 2022).

[14] The variable Emissions | $CO_2$ | Energy and Industrial Processes was used for absolute targets and Emissions | $CO_2$ | Energy | Supply | Electricity/Secondary Energy | Electricity for intensity targets.

- The sector-specific benchmark for primary energy is removed in this methodology since the variable used in the initial version (version 1.0) is considered too generic and alternative suitable variables yielded low linear fits in regression models. Therefore the ‘all sectors’ benchmarks are now used to assess companies’ targets in the fossil fuel sector.

See Annex 2 for a more detailed description of the variables. Future updates of this methodology aim to conduct further research to inform the possible inclusion of additional sector-specific regression models.

### 4.2.2. Regression results

Figure 2 provides an illustration of the linear regression model applied to the variable Emissions | Kyoto Gases on the 30-year horizon.[15] The remaining linear regression results for different time horizons are found in Annex 4: Result of linear regression model.

**Figure 2: Example of the result of the linear regression model for Emissions | Kyoto Gases for a 30-year time horizon.**

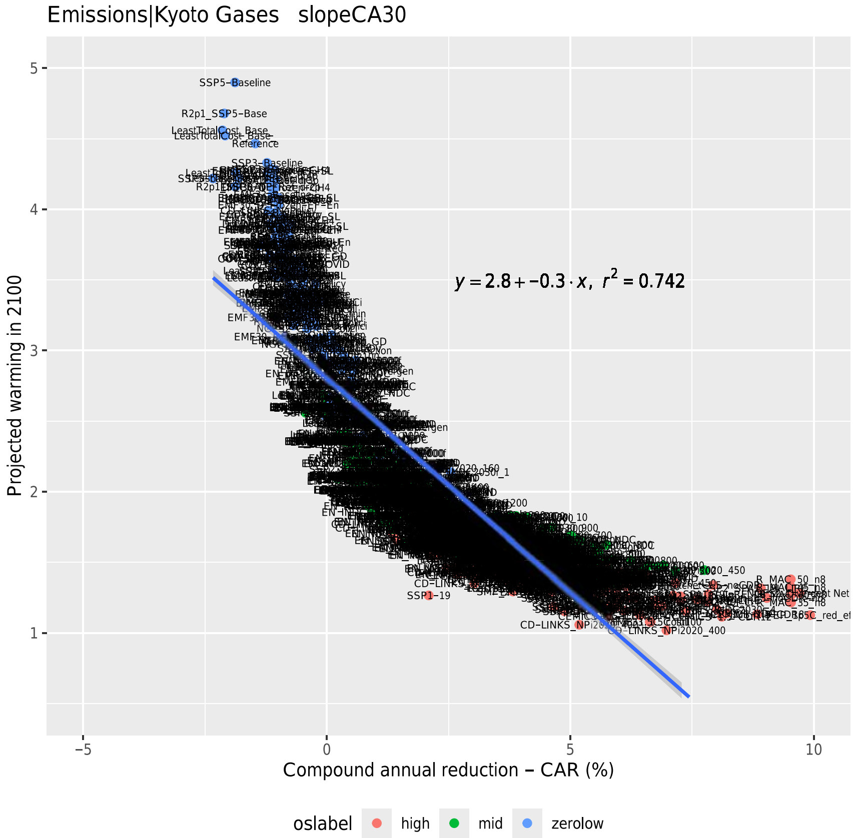



Table 3 summarizes the details of the linear regression models for 5-, 10- and 30-year horizons representing short-, medium- and long-term targets, for each variable used in this methodology. The fit of the regression line, represented by $R^2$, and the intercept

[15] Time horizons used in this methodology: 5-year (short term), 10-year (medium term), and 30-year (long term). Base year is 2020.

increase as the time horizon increases (intercept of 2.4, $R^2$ of 0.40 for 5 years; intercept of 2.8, $R^2$ of 0.74 for 30 years). This is logical since the degree of variability between scenarios decreases over longer horizons and the range of possible annualized reduction rates leading to a given temperature outcome is lower for longer time horizons. In addition, no action (zero year-on-year reduction) will lead to higher temperature outcomes if observed over longer time horizons.

**Table 3: Summary of linear regression results (note that rounding differences may occur).**

| Regression model variable | 5-year horizon | | | | 10-year horizon | | | | 30-year horizon | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample size | Intercept | Slope | $R^2$ | Sample size | Intercept | Slope | $R^2$ | Sample size | Intercept | Slope | $R^2$ |
| Emissions \| Kyoto Gases | 1,115 | 2.40 | −0.21 | 0.40 | 1,115 | 2.46 | −0.24 | 0.46 | 1,112 | 2.81 | −0.30 | 0.74 |
| Emissions \| $CO_2$ \| Energy \| Supply | 1,160 | 2.35 | −0.12 | 0.32 | 1,156 | 2.40 | −0.11 | 0.36 | 851 | 2.85 | −0.15 | 0.63 |
| Emissions \| $CO_2$ \| Energy and Industrial Processes | 1,171 | 2.27 | −0.22 | 0.37 | 1,170 | 2.33 | −0.24 | 0.43 | 1,155 | 2.58 | −0.19 | 0.56 |
| Emissions \| Kyoto Gases/GDP \| PPP | 986 | 3.13 | −0.21 | 0.38 | 986 | 3.21 | −0.23 | 0.44 | 983 | 3.57 | −0.30 | 0.70 |
| Emissions \| $CO_2$ \| Energy \| Supply/ Secondary Energy | 764 | 2.19 | −0.08 | 0.15 | 764 | 2.22 | −0.07 | 0.17 | 575 | 2.61 | −0.11 | 0.41 |

To calculate the temperature score of a company's climate target, the target is first mapped to the most representative benchmark available in the methodology (see Table 2). Depending on the target's time-horizon, the appropriate regression parameters (see Table 3) can be applied according to the following formula:

### Equation 5: Temperature score

$$TS_{target} = \alpha + \beta \times (-1) \times \text{CAR}$$

*where:*

$TS_{target}$ is the temperature score of the target;

$\alpha$ is the intercept of the regression model for a given time horizon and model variable;

$\beta$ is the slope of the regression model for a given time horizon and model variable; and

CAR is the compound annual reduction of the variable over the time horizon implied by the target set by the company.

Using the formula expressed above, if CAR is 0 (i.e., the company's absolute reduction of emissions over the next 10 years is zero, or the boundary coverage of the target is zero) then the projected temperature outcome of the target will amount to the intercept of the linear regression. Under a specific benchmark, the temperature score resulting from a 0% normalized ambition reflects the impact of a company maintaining its emissions unchanged under the considered timeframe. This differs from the implications of a company receiving a default score (3.4°C) in the absence of a valid target (please see Section 5.3), as a default score assignment reflects the assumption of a company's emissions following a business-as-usual (i.e., upward) trajectory. This distinction is consistent with the temperature scores assigned to companies with a 0% CAR, as all of the intercepts displayed in Table 3 (except one) are less than 3.4.

Furthermore, if a target's normalized ambition is −100% (i.e., in the case of a target with an ambition to bring the entirety of a company's emissions to zero within a given timeframe), the equation for CAR does not give a meaningful value. Therefore, in the context of corporate targets, the method assigns the temperature floor (see Section 5.4) as the TS (see more under limitations in Section 8.1.2).

The next section provides further details on the validation and assessment of targets (Step 2).

# 5. Step 2a: Target validation

## 5.1. Assigning a temperature score to disclosed targets

The methodology assumes that there is a linear relationship between the change in common climate target metrics (e.g., absolute or intensity GHG emissions) for a specific timeframe and the projected global warming in 2100. This assumption is applied for corporate targets, for the target horizons set out in Section 4.2. Limitations to this assumption of linearity are covered in Section 8.1.1.

The first step in assigning temperature scores to disclosed corporate GHG targets is to assess which types of targets could be adequately matched to a scenario variable, and consequently, which associated linear regression model should be applied. Disclosed corporate GHG targets refer to absolute GHG reduction targets and/or GHG intensity reduction targets. Table 2 in Section 4.2.1 shows the sector variables and the associated linear regression model applicable in this methodology. Table 4 showcases examples of climate target wording applicable for the respective variables.

**Table 4: Target class, wording and scenario variables.**

| Target class | Example of target wording | AR6 benchmark variable |
|---|---|---|
| Absolute GHG reduction targets | Company X commits to reduce absolute Scope 1 GHG emissions by 60% by 2030 from a 2022 base year.<br>Company X commits to reduce absolute Scope 2 GHG emissions by 60% by 2030 from a 2022 base year.<br>Company X commits to reduce absolute Scope 3 emissions GHG by 50% by 2030 from a 2022 base year. | • Emissions \| Kyoto Gases<br>• Emissions \| $CO_2$ \| Energy \| Supply<br>• Emissions \| $CO_2$ \| Energy and Industrial Processes |
| GHG economic intensity target | Company X commits to reduce Scope 1 GHG emissions by 60% per unit of added value by 2030 from a 2022 base year.<br>Company X commits to reduce Scope 2 GHG emissions by 60% per unit of added value by 2030 from a 2022 base year.<br>Company X commits to reduce Scope 3 GHG emissions by 50% per unit of added value by 2030 from a 2022 base year. | • Emissions \| Kyoto gases/ GDP \| PPP<br>• Emissions \| $CO_2$ \| Energy \| Supply/Secondary Energy |

The second step is to convert the corporate target into a corresponding annual reduction rate to match the format of the independent variable of the regression models. These annualized reduction rates are calculated using the formula for CAR (see Equation 2 in Section 4.2). As per Equation 5, the CAR of a target is used in the linear equation specified by the model's parameters to convert the target's ambition into a temperature score. For example, an absolute GHG reduction target of 30% between the base year 2020 and the target year 2035, mapped to the scenario variable Emissions | Kyoto Gases, would result in a compound annual reduction rate of 2.3%. Applying the Emissions | Kyoto Gases linear equation for the long-term timeframe (corresponding to the 2035 target year), this target's ambition would translate to a 2.1°C temperature score (calculated as 2.81 − 0.30 × 2.3).

## 5.2. Target validation

All targets are subjected to a validation procedure to ensure their usefulness in generating company-level temperature scores. The method also attempts to split targets covering multiple scopes into single-scope targets. The target validation process checks that each target is accompanied by the data required to calculate temperature scores in later steps.

The following criteria need to be met for a target to be valid:

1. the scope coverage of the target must be any single scope or combination of Scopes 1, 2, or 3;
2. target type must be absolute or intensity with valid metric;
3. target progress must be <100% on the date the relevant target was first published;
4. base year < target year;
5. target year ≥ current year;
6. base year GHG data must be available for the emissions scope of the target, i.e., Scope 1 GHG data for a Scope 1 target, etc.
7. boundary coverage of the target is required for the emissions scope(s) of the target, for instance, 60% of the Scope 1 emissions. If this number is missing, the value will be set to zero; and
8. target reduction ambition must not be negative.

Targets that do not meet the criteria are removed from further calculation.

A further validation consideration is made on the basis of the vintage of a company's target publication – specifically on how the restatement of parts of a company's targets (and the timing and transparency of such restatements) might impact the validity of certain Scope 3 targets. Please refer to 6.3.1 for more details on that distinction.

Temperature scores are calculated on the most disaggregated level of targets that the provided data allows. A Scope 1 + 2 + 3 target is split into one Scope 1 + 2 target and one Scope 3 target, and a Scope 1 + 2 target (including those split from a Scope 1 + 2 + 3 target) will be split into one Scope 1 target and one Scope 2 target. Targets for the three scopes will then be scored separately and a combined score will later be calculated in the target aggregation procedure, see Section 6.5. It should be noted, however, that **temperature scores are aggregated using the company's current GHG emissions**.

If current GHG data is missing, the Scope 1 + 2 (or Scope 1 + 2 + 3) TS is calculated by using the higher of the Scope 1 TS and Scope 2 TS (or the higher of Scope 1 TS, Scope 2 TS and Scope 3 TS, as the case may be). Please refer to Section 6.5 for more details.

When splitting a valid Scope 1 + 2 target, the Scope 1 target is assigned the Scope 1 boundary coverage from the original target and the Scope 2 target is assigned the Scope 2 boundary coverage from the original target (unless the combined scope target provides for differentiated boundary coverage at the scope level, in which case these are used). Both targets are assigned the reduction ambition of the original target.

The procedure for splitting targets thus means that a target covering Scopes 1 + 2 + 3 ideally results in three targets for the individual scopes, where each target consists of its respective boundary coverage and the reduction ambition from the original target. However, even if current GHG data is missing, a Scope 1 + 2 + 3 target will be split into a Scope 1 + 2 target and a Scope 3 target for separate scoring. For the Scope 1 + 2 target the boundary coverage is calculated as follows:

**Equation 6: Boundary coverage**

$$Scope\,1+2\;bc = \frac{S1_{bc} \times S1_{base\ year\ ghg} + S2_{bc} \times S2_{base\ year\ ghg}}{S1_{base\ year\ ghg} + S2_{base\ year\ ghg}}$$

*where*:

$bc =$ boundary coverage.

The reduction ambition is copied from the original Scope 1 + 2 + 3 target. The resulting Scope 3 target keeps the Scope 3 boundary coverage and the target reduction ambition from the original target. Note that if reduction ambition is missing or has a value of zero, the TS will be calculated as the intercept of the applicable regression function.

Finally, the boundary coverage is used to adjust each target's reduction ambition according to the procedure described in Section 6.3.2.

If a combined scope target cannot be split, single-scope benchmarks cannot be used for each scope component (e.g. 'Emissions | Kyoto Gases' for Scope 1; 'Emissions | $CO_2$ | Energy | Supply' for Scope 2). In such cases, the benchmark applicable to the target's Scope 1 is also used for the Scope 2 and Scope 3 components.

## 5.3. Default temperature score for companies without valid targets

### 5.3.1. Purpose of a default temperature score

The purpose of assigning a default temperature score is to provide a means for scoring a full portfolio or value chain although some portfolio constituents lack publicly disclosed targets or fail to meet specific criteria for target coverage or quality.

In instances where companies do not have valid targets, it is assumed that they are following a business-as-usual trajectory, as they have not publicly articulated their GHG emissions reduction strategies through GHG targets. Therefore, default scores represent the anticipated business-as-usual GHG emissions trajectory. In essence, the default score reflects the pathway expected to be followed if companies continue operating under existing governmental policies, and thus adhering to the minimum requirements of current regulation.

## 5.3.2. Default score approaches

Business-as-usual trajectories can be defined at a company, sector and/or economy-wide level. This version 1.5 of the methodology still focuses on uniform default scores at an economy-wide level but will aim to provide more sectoral granularity in version 2.0 (see Section 8.2). While economy-wide default scores assume that the company's temperature score is aligned with that of the global economy, sector-specific approaches define business as usual pathways at a sector level and assume that the company's trajectory is consistent with that of the sector.

### 5.3.2.1. Economy-wide default scores

An economy-wide default score applies the score uniformly to all companies, regardless of sector or current performance.

The first version of this methodology relied on the December 2019 end-of-century warming projections from the Climate Action Tracker ('CAT') to establish a 3.2°C economy-wide default score. At the time, this value corresponded to the upper bound of the range of median temperatures expected from the continuation of current policies being implemented by governments (i.e., real-world action based on current policies).

Using the same source (updated in December 2023, see Figure 3) and the same 'policies & action' projections, a range of warming between 2.2 and 3.4°C is expected by the end of the century, with a median projection of 2.7°C (50% probability).

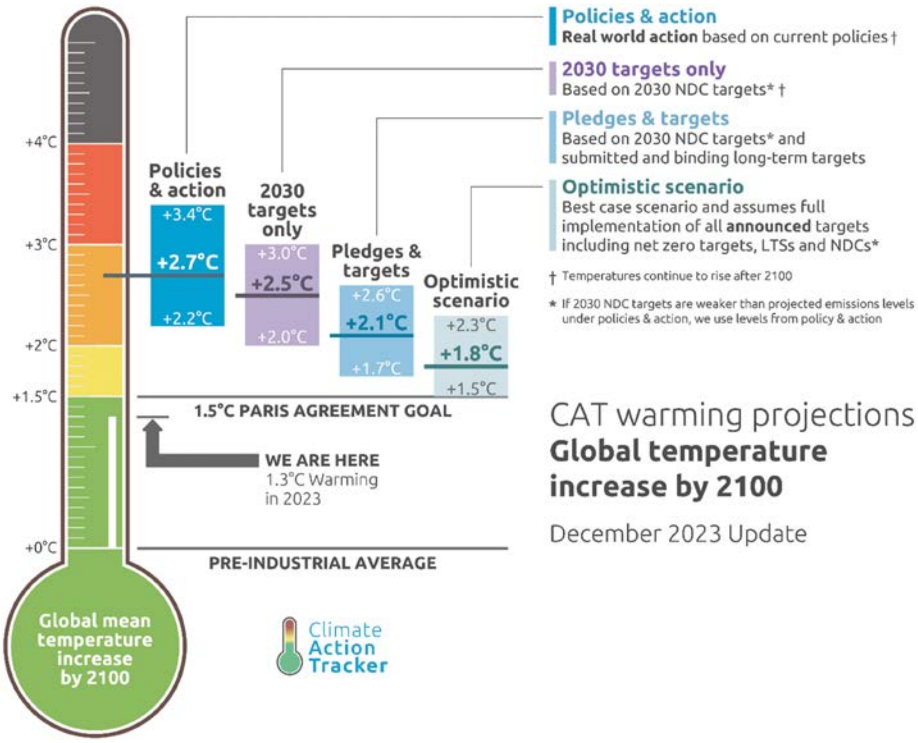
This aligns with the conclusions of the 2023 UNEP Emissions Gap Report (United Nations Environment Programme, 2023), which finds that a continuation of the level of mitigation effort under current governmental policies would result in a warming of 2.7°C at the end of the century (range 1.8–3.5°C, with a 50% probability). When presenting temperature estimates with a 66% probability, CAT's median projections of 3.0°C also align with the UNEP Emissions Gap Report's warming estimates (Table 5).

This updated version of the methodology uses a 3.4°C value (i.e., the upper bound of the range of temperature outcomes from CAT's 'policies & action' projections) to derive temperature scores for companies with no valid forward-looking targets. This implies that these companies are expected to decarbonize along a 3.4°C pathway, consistent with global policies implemented to ensure the reduction of GHG emissions at this rate.

While it could be argued that the ambition of current policies has improved somewhat over recent years (as reflected in the UNEP Emissions Gap Report 2023's projections, for instance), their impact at the company level remains uncertain. Bearing in mind the

**Figure 3: Summary and breakdown of 2100 warming projections based on a range of future scenarios.**




**Global Mean Temperature above pre-industrial levels in 2100**

| Temperature in °C | | Lower bound | Median | Upper bound |
|---|---|---|---|---|
| Policies and action | Combined | **+2.2** | **+2.7** | **+3.4** |
| | High | +2.3 | +2.9 | +3.6 |
| | Low | +2.0 | +2.5 | +3.1 |
| 2030 Targets only | | **+2.0** | **+2.5** | **+3.0** |
| **Pledges and Targets** | High | **+1.7** | **+2.1** | **+2.6** |
| | Low | +1.5 | +1.8 | +2.3 |
| Optimistic scenario (net-zero pledges) | | **+1.5** | **+1.8** | **+2.3** |

(Source: Climate Action Tracker, December 2023)

**Table 5: End-of-century warming projections based on a range of future scenarios (UNEP Emissions Gap Report, 2023).**

| Peak warming throughout the twenty-first century (°C) | | | |
|---|---|---|---|
| **Scenario** | **50% chance** | **66% chance** | **90% chance** |
| Current policies continuing | 2.7°C (range: 1.8–3.5) | **3.0°C** (range: 1.9–3.8) | 3.5°C (range: 2.3–4.5) |
| Unconditional NDCs continuing | 2.6°C (range: 1.8–3.4) | **2.9°C** (range: 2.0–3.7) | 3.4°C (range: 2.3–4.4) |
| Conditional NDCs continuing | 2.3°C (range: 1.7–3.3) | **2.5°C** (range: 1.9–3.6) | 3.0°C (range: 2.2–4.2) |
| Unconditional NDCs and net-zero pledges using strict criteria | 2.5°C (range: 1.8–3.2) | **2.7°C** (range: 1.9–3.5) | 3.2°C (range: 2.3–4.1) |
| Conditional NDCs and all net-zero pledges (most optimistic case) | 1.8°C (range: 1.6–2.3) | **2.0°C** (range: 1.8–2.5) | 2.4°C (range: 2.0–3.0) |

purpose and objectives of the default temperature score outlined in Section 5.3.1, the shift from 3.2 to 3.4°C in this version aims primarily at reinforcing the continued need for a conservative approach when considering companies without valid targets.

Chapter 8 outlines the plan for future methodological development, where the aim is to provide more granular and sector-specific default scores for companies with no valid GHG emission reduction targets.

## 5.4. Temperature floor

The best score applicable to a company's climate ambition under this methodology is 1.5°C (i.e., in the case where a calculated score results in a temperature that is lower than 1.5°C, the applied score shall be 1.5°C).

The reasoning behind flooring all temperature scores to 1.5°C is grounded in the prevailing scientific consensus[16] which, at the time of drafting this version of the methodology, remains that 1.5°C represents the lower bound of feasible outcomes within the most optimistic climate scenarios. In addition, this aligns with the conclusions of the Climate Action Tracker's latest publication (see Figure 3), which is also used to determine this methodology's default score (Climate Action Tracker, December 2023). The 1.5°C-aligned companies can still be differentiated by comparing their CAR.

[16] Intergovernmental Panel on Climate Change (2021) – AR6 Synthesis Report: Climate Change 2023.

# 6. Step 2b: Company scoring

Companies set targets across different timeframes, emissions scopes and units. Target data is also often collected from several sources and a target database may include multiple targets for the same company, scope and timeframe. This section describes how the method selects and prioritizes which relevant valid targets to be scored.

## 6.1. Target timeframe

The timeframe sorting first defines the range of target timeframes as applied in this methodology. Targets are scored depending on which year the target ends in relation to the current year. The target timeframes are divided into the following three buckets:

- **Short-term** – targets ending in up to 5 years from the current year, e.g., –2029 (current year 2024);
- **Mid-term** – targets ending 5–10 years from the current year, e.g., 2030–2034 (current year 2024);
- **Long-term** – targets ending in more than 10 years from the current year, e.g., 2035–2050 (current year 2024).

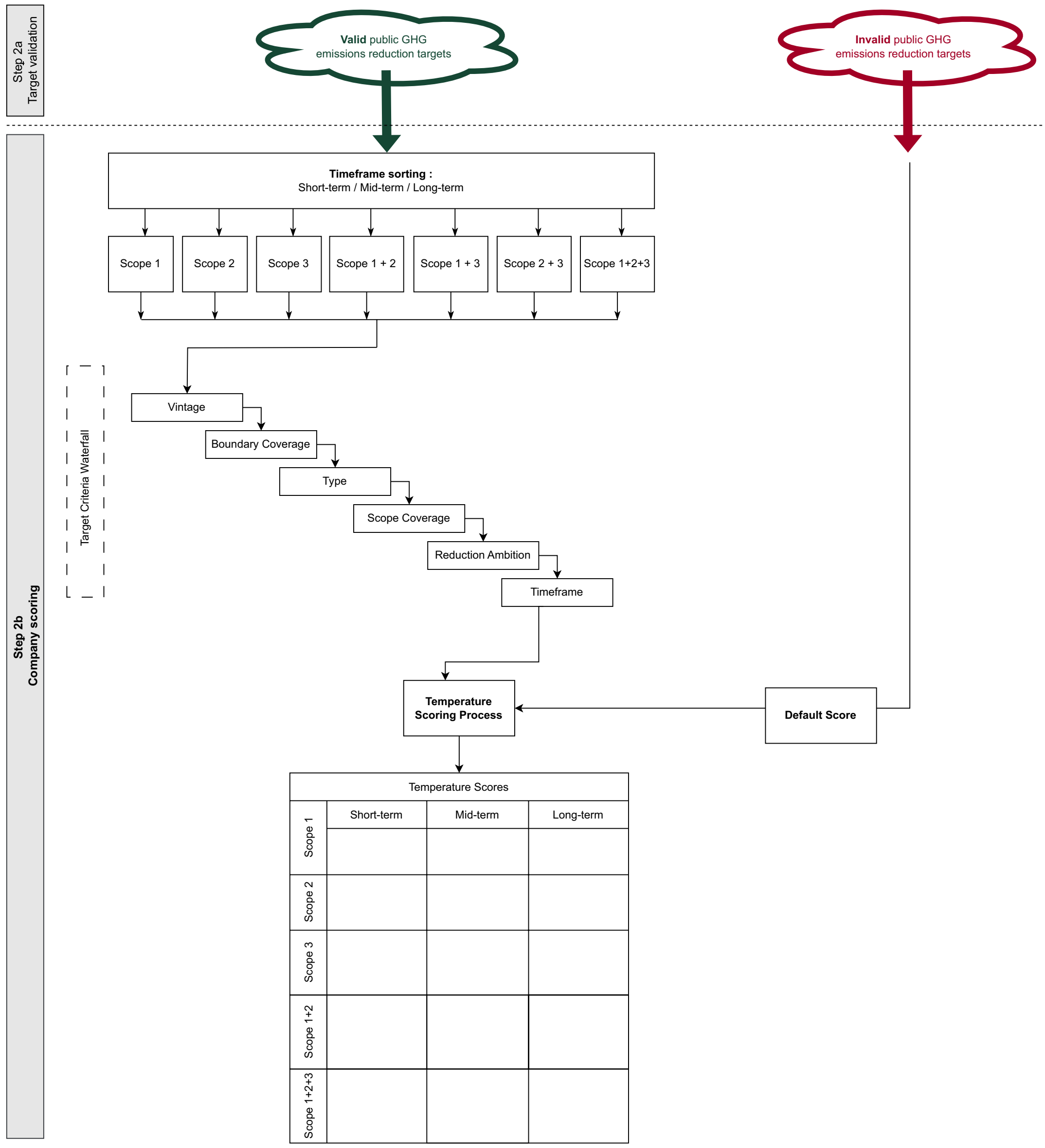
Targets can then be scored across these three different timeframes, providing insights into the short-, medium- and long-term ambition of companies' GHG emissions reduction targets.

The target timeframe also defines for how long a target is used for scoring in a target timeframe bucket, i.e., when a mid-term target becomes a short-term target and for how long a target is considered as valid for scoring by this methodology. For instance, targets with end dates during the calendar year 2024 would be valid throughout 2024 and would become invalid on January 1, 2025. A mid-term target with an end date during calendar year 2030 would become a short-term target on January 1, 2026, as mid-term targets are defined as targets with 5–10 years left to run. There are exceptions to this rule as set out in Section 6.3.

Figure 4 displays a summary of the company protocol steps, including the waterfall, leading to the output of a matrix of temperature scores for each timeframe and scope combination.

The outcome of the process described below is an array of 15 different company-level temperature scores covering three timeframes, single scopes and scope combinations, the granularity of which reflects the way this method's benchmarks are created. Scores are combined at the Scope 1 + 2 and Scope 1 + 2 + 3 levels, providing insights into a

**Figure 4: Step 2b – generating temperature scores at a company level, based on valid publicly disclosed targets or a default approach for companies with no valid targets.**




company's ambition on direct and total emissions, respectively. As the mid-term timeframe remains the time horizon during which critical climate action needs to be carried out (Science Based Targets initiative, 2024), users of this methodology should consider mid-term Scope 1 + 2 + 3 temperature scores as the most relevant indicator to focus on.

## 6.2. Target quality criteria

Targets are classified in terms of seven key criteria, presented in Table 6. Key requirements for valid targets across these seven key criteria are further detailed in the different paragraphs of this section. A description of how these criteria are prioritized in the selection process is provided in Section 6.3.

**Table 6: Target quality criteria.**

| Criteria | Description |
| --- | --- |
| Target vintage | Defines the age of the target, based on the date the target was last publicly communicated. |
| Boundary coverage | Within a given GHG emissions scope, companies define how much of that scope will be included in the boundary of the target, e.g., 50% of Scope 1 or 95% of combined Scope 1 + 2 is covered by the target. |
| Target type | Defines whether the target ambition is based on an absolute or intensity GHG emissions reduction. |
| Target scope coverage | Defines the GHG emissions scope(s) covered by the target. Targets can be set across individual or combined GHG emission scopes, as defined in the GHG Protocol (World Business Council for Sustainable Development & World Resources Institute, 2015), e.g., Scope 1, Scope 2, Scope 3, Scope 1 + 2, Scope 1 + 2 + 3, etc. |
| Reduction ambition | Defines the GHG emissions reduction ambition over the target duration, e.g., absolute emission reduction of 30% by 2030. |
| Target timeframe | Classifies targets according to the duration between the current year and the target end date. Targets can cover different timeframes. |

## 6.3. Target criteria waterfall

As mentioned in the introduction to this section and displayed in Figure 4, a company's targets are sorted by scope coverage and according to three timeframes. Some target quality criteria may be conflicting. Therefore, the method has established a waterfall for these criteria, to determine which criteria should take precedence and be used for scoring.

**Table 7: Target waterfall criteria.**

| Rank | Criteria | Priority |
| --- | --- | --- |
| **1** | Vintage | More recently published targets |
| **2** | Boundary coverage | Highest coverage |
| **3** | Type | (1) Absolute<br>(2) Intensity<br>(3) Other |
| **4** | Scope coverage | Prefer single-scope S1, S2 and S3 targets before combined scope targets that cannot be broken down into single-scope components |
| **5** | Reduction ambition | Higher reduction ambition preferred (as defined by CAR) |
| **6** | Timeframe | Longer-term targets are preferred within each timeframe bucket (i.e., short-, medium-, long-term). If there are several targets with same target year the more recent base year is preferred |

For instance, companies may be reporting multiple targets within the same scope and timeframe, e.g., two mid-term targets covering Scope 1 + 2, referencing different parts of their operation. Further, users of this method may use different databases to collect target and emissions data which may be updated with different frequencies, resulting in a combined user database with multiple targets that may be conflicting. The waterfall approach in Table 7 is used to select a single target for each timeframe and a scope category for scoring.

### 6.3.1. Target vintage

**A company's latest statement of emission reduction ambition is preferred to older communicated targets.** Thus, a target to reduce GHG emissions by 30% by 2030 that was communicated last month will take priority and be scored, instead of a target of 40% GHG emissions reduction by 2032 communicated last year, *ceteris paribus*. If the latest statement date is not available, the method uses the target start year.

At times, companies communicate and restate parts of their targets for different scopes at different times, e.g. company A has set a combined Scope 1 and 2 target and a separate Scope 3 target in 2021. In 2023, the company updates its Scope 1 and 2 targets only and does not specify whether the Scope 3 target from 2021 is still active. In this case, the method assumes that the Scope 3 target is no longer active. If the company does not publish any other Scope 3 target, the company will be given a default score for Scope 3 in this case. This distinction only applies to Scope 3 targets. If company A instead updates its Scope 3 target in 2023, the Scope 1 and 2 targets are still considered valid targets, until the end of the target.

The reason for this distinction is that Scope 1 and 2 targets are often considered to be core to companies' climate targets, but some companies consider Scope 3 targets to be more peripheral and harder to account for. Scope 1 and 2 are the emissions that most entities have a clearer understanding of and accounting on, as they are often required for tracking and filing by regulatory entities and corporate mandate. Without diminishing their importance, the more peripheral nature of Scope 3 targets rather reflects the complexity and challenges associated with tracking and managing these emissions across several categories. Therefore, it is not reasonable to assume that a Scope 3 target is still active, if it has not been restated alongside restated or updated Scope 1 and 2 targets.

### 6.3.2. Boundary coverage

**Targets with the highest boundary coverage are preferred as they reflect a company's ambition to address a larger share of its overall emissions, thereby enabling a more comprehensive, representative assessment.**

How much of companies' emissions are covered in the GHG emissions reduction target, i.e., the boundary coverage, often differs between companies and targets. Therefore, the ambition of the target is normalized with the boundary coverage of the target. The boundary coverage of a target can be expressed in percentage terms (e.g., 80% of the company's Scope 1 emissions in the base year) or in emissions terms (e.g., 800,000 tonnes of Scope 1 emissions out of a total 1,000,000 tons of Scope 1 emissions in the base year, i.e., 80%).

For combined GHG emissions scope targets, e.g., targets covering more than one scope, the boundary coverage of the target is defined as the weighted average of the boundary coverage of each of the scopes included in the target, using base year GHG as weights.

For all targets with less than 100% boundary coverage, the ambition of the target is adjusted by the boundary coverage percentage. For instance, consider an absolute target of 30% reduction in Scope 1 and 2 GHG emissions, but that this target only covers 20% of the company's Scope 1 and 2 emissions. The ambition would then be adjusted to 6% (30% × 20% = 6%).

Without the quantified boundary coverage data, the method assumes 0% boundary coverage. Given that the adjustment to ambition is done based on the level of boundary coverage, as explained above, any ambition stated without boundary coverage data will be reduced to 0%. The temperature score will then become the intercept of the regression. Please refer to section 4.2 for more details.

When looking for the highest boundary coverage of a company's Scope 1 and Scope 2 targets for a given timeframe, the method proceeds as follows:

a. **Check for the highest available boundary coverage for Scope 1 + 2:**
    - For combined scope targets, the Scope 1 + 2 boundary coverage must be that of the target itself. Mixing and matching with other target components, whether combined- or single-scope, is not allowed.
    - For single-scope targets, ensure that there is at least one single-scope target available for both Scope 1 and Scope 2 (mixing and matching single-scope targets with components of combined-scope targets is not allowed either). Then, determine the single-scope combination that results in the highest boundary coverage.

b. **Comparison and selection:**
    - If a combined scope (Scope 1 + 2) target and two single-scope targets result in the same aggregated Scope 1 + 2 boundary coverage (e.g., 100%), proceed to the next step in the waterfall, i.e. 'target types'.
    - If the boundary coverages differ and the combined scope target has a higher coverage, or if only one single-scope target is available, the single-scope target(s) will be dismissed at this step, and only the combined scope target will proceed further down the waterfall.

### 6.3.3. Target types

Only GHG emission reduction targets are currently acceptable for scoring, i.e., absolute and intensity GHG targets. Other targets, such as procurement, renewable electricity targets, or engagement are currently not scored (see exception in Section 6.3.3.1). Long-term ambitious or aspirational targets that are not quantitative (e.g., climate neutral/net-zero in 2050) are not scored currently as these types of targets are difficult to objectively translate to a rate of change.

The GHG emission reduction target types can broadly be divided into absolute and intensity targets. All types of absolute targets based on GHG emissions and intensity targets based on GHG reductions per unit of X are valid for scoring in the method, such as:

- physical intensity targets – based on GHG emissions per unit of production, e.g. $CO_2$e/kWh for power generation;
- economic intensity targets – based on GEVA (GHG emissions per unit of value added) or revenue; and
- intensity targets where the conversion to absolute GHG emissions is disclosed.

**Absolute targets are preferred over intensity targets. When an intensity target is converted to an absolute one, the resulting absolute target is preferred over a non-converted intensity target but ranks below a 'native' absolute target.**

#### 6.3.3.1. Target type exception

There is an exception to this target type rule for Scope 3 targets set using the CDP–WWF Temperature Scoring Methodology (whether in accordance with its original version 1.0 or this current version 1.5).

The need for this exception stems from the fact that the CDP–WWF methodology is ultimately an engagement method: financial institutions (and corporates in other sectors) can use it to assess the temperature score of their portfolio (or value chain) based on its constituents' current ambition, and then extrapolate from that current assessment to derive a temperature trajectory for their Scope 3 emissions to achieve more ambitious climate goals in the mid to long term. This typically results in CDP–WWF targets being formulated around three components:

- one temperature corresponding to the base year assessment (that starting point, e.g. 3.0°C in 2023, corresponds to the current level of ambition reflected by the portfolio constituents' targets);
- one ambitious long-term end goal (e.g. 1.5°C in 2040); and
- one intermediate mid-term target that is determined through linear interpolation between these two dates (i.e. 2.4°C in that example – see Equation 7).

Because it is the underlying constituent of a portfolio (or value chain) that needs to reduce its emissions and adapt its ambition accordingly, the method must allow sufficient implementation time to enable constituents to carry out the necessary emissions reduction actions.

A common mid-term target setting period is 10 years, as used by the Science Based Targets initiative (SBTi) in its target setting framework (Science Based Targets initiative, 2024). This 10-year window aims to provide enough time to achieve ambitious goals, without delaying action. Accordingly, to allow for all constituents in a portfolio (or value chain) to complete their emissions reduction action before 2050, these constituents' targets must have been set and communicated before that, i.e., by 2040 at the latest, to allow for a 10-year implementation period. Thus, for a financial institution (or other corporate) to be able to reach 1.5°C by 2050, all of the constituents in the portfolio (or value chain) must have set their 1.5°C-aligned targets no later than 2040.

Therefore, Scope 3 targets set with the CDP–WWF method are scored by linear extrapolation of the targeted TS reduction ambition until 2040, using Equation 7:

### Equation 7: Scoring of targets using CDP–WWF Temperature Rating Methodology v 1.0 and CDP–WWF Temperature Scoring Methodology v 1.5

$$TS = TS_{\textit{base year}} - (2040 - \textit{base year}) \times \frac{TS_{\textit{base year}} - TS_{\textit{target year}}}{\textit{target year} - \textit{base year}}$$

For instance, consider financial institution A with a target to reduce its portfolio's TS to 2.5°C by 2030 from a 2025 base year TS of 3.0°C. Assuming a linear reduction of that portfolio's TS between the base year and the target year, the method extrapolates that trajectory to 2040 to define the level of ambition for 2050 that financial institution A is committed to, and that its portfolio constituents must align with. In this example, this would equate to a TS of 1.5°C by 2040 [3.0 − (2040 − 2025) × ((3.0 − 2.5)/(2030 − 2025)) = 1.5]. Thus, financial institution A's Scope 3 target set using this method would then get a TS of 1.5°C. To better understand the practical implications of this target type exception, assume that FI A's Scope 1 + 2 + 3 TS is also 1.5°C, and consider FI B whose portfolio is entirely composed of FI A stock. Applying this target type exception, FI B's Scope 3 TS would then be 1.5°C. In another example, consider FI C with a target to reduce its portfolio TS to 2.5°C by 2029 from a 3.0°C base in 2022. This would equate to a TS of 1.71°C [3.0 − (2040 – 2022) × ((3.0 − 2.5)/(2029 – 2022))], when scored as a constituent in another FI's portfolio.

Please note however that this target type exception would only apply in the absence of absolute or intensity targets to reduce GHG emissions in the relevant Scope 3 categories (i.e. category 15 'Investments' for a financial institution, and mostly category 1 'Purchased goods and services' for a corporate engaging with its supply chain): in the waterfall, absolute and intensity targets still take precedence over the CDP–WWF-method-based targets (which remain engagement targets that inherently provide a less direct assessment of a company's true ambition in emissions terms).

### 6.3.4. Scope coverage

**Single-scope targets are preferred over combined-scope targets, as they offer a differentiated expression of a company's ambition for each scope and are therefore considered more relevant.** Similarly, two-scope targets take precedence over three-scope ones.

Single-scope targets covering only Scope 1, 2, or 3 emissions are assessed and scored separately. Targets covering several scopes (combined scope targets) are first disaggregated to compute single score targets, as described in Section 5.2, and later aggregated into a company level temperature score. If data allows (see Annex 6: Summary of required data for applying the Temperature Scoring Methodology), single-scope and combined-scope targets are also scored as combined- and single-scopes respectively.

For the avoidance of doubt, the target type hierarchy (see Section 6.3.3) also applies when aggregating single-scope targets at this stage: an absolute combined-Scope 1 + 2 target will take precedence over the possible aggregation of, for example, an absolute single-Scope 1 target with an intensity (or intensity-to-absolute) single-Scope 2 target.

### 6.3.5. Reduction ambition

**More ambitious targets are preferred, as measured by CAR.** Thus, a target A to reduce GHG emissions by 50% by 2030, from a 2020 base year, with a CAR of 6.7% [(1 − 50/100) ^ (1/(2030 – 2020)) − 1] will be preferred to a target B with a GHG emissions reduction of 60% by 2034 from a 2020 base year, giving a CAR of 6.4%. Therefore, target A will be used for TS calculation, *ceteris paribus*. In cases where reduction ambition is missing or is equal to zero, the value will be set to zero, which implies that the resulting temperature score will be equal to the intercept of the applicable regression model.

### 6.3.6. Target year

**Within each timeframe bucket, targets with a later target year are preferred as these are more forward-looking**. If the target years are the same, the more recent base year is preferred.

#### 6.3.6.1. Target timeframe exception

Under the Financial Sector Science-Based Targets Guidance (Science Based Targets initiative, 2022), engagement targets are set for a maximum of five years. This currently includes targets set with this CDP–WWF Temperature Rating method. This would mean that targets set using this method would be treated as short-term targets in the CDP–WWF Temperature Scoring Methodology, which in many FI portfolios would make it impossible to use this method for setting targets under the SBTi framework (Science Based Targets initiative, 2022).

Therefore, when financial institutions have assets in their portfolios that have set targets with this method it prohibits, e.g., an FI from setting a meaningful medium target themselves, as the portfolio constituents don't have valid mid-term targets, according to the target validation laid out in Chapter 5.

However, as this method relies on other companies setting or improving their targets, as explained in Section 6.3.3.1, the engagement targets will naturally take some time to deliver GHG emissions reduction. Therefore, an engagement target of up to five years could then be seen as a similar timeframe to a medium-term non-engagement target.

Therefore, the CDP–WWF Temperature Scoring Methodology adds five years to all targets based on SBTi engagement methods to enable this method to treat them as medium-term targets and therefore allow companies with assets and activities with engagement targets in their portfolios to set relevant medium-term targets.

Currently, the CDP–WWF Temperature Scoring Methodology only makes this exception for this engagement method.

## 6.4. Multiple Scope 3 targets

Some companies publish multiple targets for Scope 3 GHG emissions. This can take the shape of an overall ('headline') Scope 3 target alongside separate targets for certain Scope 3 categories, e.g., where the company has significant GHG emissions or the company wants to set a specific target for a specific category.

There are also cases where there are multiple targets for a single Scope 3 category. This is more common for Scope 3 category 15, 'Investments'. Targets by financial institutions validated by the SBTi often use this approach, sometimes without a headline Scope 3 target that includes all Scope 3 targets. Often boundary coverage for the individual categories is not published, nor are current or baseline GHG emissions for the categories. Scope 3 category 15 targets are also often engagement targets, instead of being based on GHG emissions. This creates several issues for the company scoring.

- It becomes difficult to use the target criteria waterfall (see Section 6.3) to select a target for scoring, as there are several targets of the same vintage for the same scope and even for the same category.
- As boundary coverage and GHG data is often not available it becomes difficult to weight multiple Scope 3 targets to one headline Scope 3 target.
- Engagement targets are often stated as aligning portfolio coverage or the temperature score of a part of a portfolio to a certain coverage or temperature score targets. This is very different compared with the GHG emissions reduction targets mostly used for Scope 1 and 2 targets (expressed in absolute or intensity terms).

Therefore, when companies set multiple targets for Scope 3, the method treats these targets differently, based on the following principles:

1. Any target should be assessed with the current Temperature Scoring Methodology, as if it was a single-Scope 3 target.
2. If a headline Scope 3 target is available, this will take priority and be scored as a single-Scope 3 target, provided it can be scored under the current method.
3. If a headline target is not available or it cannot be scored and multiple Scope 3 targets are available, these targets will be scored and aggregated to a single companywide Scope 3 target.
4. The selection of Scope 3 targets to be scored follows the target criteria waterfall (see Section 6.3), but allows for several targets in Scope 3 and in each Scope 3 category. This is common in Scope 3 category 15 targets for investments, where parts of an investment portfolio may be addressed with different targets. In these cases the waterfall should be applied to the individual asset class and activity targets, within the Scope 3 category, before aggregation. All Scope 3 targets must be of the same vintage to be scored as separate Scope 3 targets. Older Scope 3 targets will be excluded from Scope 3 scoring, when aggregating several Scope 3 TS to a headline TS.
5. This means that for instance for a target set with the sectoral decarbonization approach (Science Based Targets initiative, 2022), the target will be assessed based on the reduction ambition of the target and mapped to the scenarios that the Temperature Scoring Methodology uses for the particular industry, as laid out in Table 4 in Section 5.1.
6. Engagement type targets such as portfolio coverage and supplier engagement cannot be scored unless these targets can be converted to GHG emissions reduction ambition. If no such conversion is possible, these targets will be given default scores.
7. Temperature score targets using the CDP–WWF temperature score method will be scored as described in Section 6.3.3.1.

### 6.4.1. Aggregation of multiple Scope 3 temperature scores

As GHG emissions data for the individual Scope 3 targets is often not available, the method often cannot apply the same approach as described in Section 6.5, where the share of GHG emissions is used as weights to aggregate several temperature scores. Therefore, the method also allows for an equal weight average to aggregate multiple Scope 3 targets.

However, to apply equal weights to the aggregated Scope 3 TS calculation, the below decision tree should be considered first:

1. Is there a headline Scope 3 target and headline Scope 3 GHG available? If yes, then use this target for Scope 3 TS calculations.

2. Is there GHG emissions data available for all 15 Scope 3 categories, so that the weight of the Scope 3 categories covered by different targets might be determined in relation to the overall Scope 3 GHG emissions? If yes, then determine normalized ambition and TS at the category level and use GHG emissions as weights to calculate the Scope 3 TS.
3. Is there a target available for all 15 Scope 3 categories? If yes, then calculate the Scope 3 TS based on equal weights of all Scope 3 categories.
4. If any Scope 3 category lacks an emissions reduction target and none of the above cases in the checklist apply, then apply a default score for all categories without a target and then calculate the aggregated Scope 3 TS using equal weights for all Scope 3 categories.

This means that if a company does not have a headline Scope 3 target and GHG data is available for all 15 categories, the method weights multiple Scope 3 targets using Equation 8:

**Equation 8: Aggregation of multiple S3 TS when GHG is available**

$$S3\,\mathrm{TS} = \frac{(S3\,\mathrm{TS}_1)\times(S3\,\mathrm{GHG}_1)+(S3\,\mathrm{TS}_2)\times(S3\,\mathrm{GHG}_2)+\cdots+(S3\,\mathrm{TS}_{15})\times(S3\,\mathrm{GHG}_{15})}{S3\,\mathrm{GHG}}$$

and

$$\mathrm{GHG} = \sum_{i}^{15} GHG_i$$

**Equation 9: Aggregation of multiple S3 TS when GHG is not available**

$$S3\,\mathrm{TS} = \frac{S3\,\mathrm{TS}_1 + S3\,\mathrm{TS}_2 + \cdots + S3\,\mathrm{TS}_{15}}{15}$$

## 6.5. Temperature score aggregation

The method accepts targets that cover either a single scope or the combinations of Scopes 1 + 2, Scopes 1 + 3, Scopes 2 + 3 and Scopes 1 + 2 + 3. Temperature scores are calculated for each validated target. The temperature scores are then aggregated using the company’s current GHG data into a combined score for each scope and scope combination and time frame.

To combine single-scope TS into a combined-scope TS, the single-scope TS are aggregated by the scope's weighting in the company's GHG profile, for instance:

### Equation 10: Temperature score aggregation

$$S123\ \mathrm{TS} = \frac{(S1\ \mathrm{TS}) \times (S1\ \mathrm{GHG}) + (S2\ \mathrm{TS}) \times (S2\ \mathrm{GHG}) + (S3\ \mathrm{TS}) \times (S3\ \mathrm{GHG})}{S1\ \mathrm{GHG} + S2\ \mathrm{GHG} + S3\ \mathrm{GHG}}$$

*where*:

*S* is the scope;

*S*123 is scopes 1, 2 and 3;

TS is the temperature score; and

GHG is the greenhouse gas emissions in the current year.

The combined TS, e.g., Scope 1 and 2, can also be further aggregated into a full combined Scope 1, 2 and 3 TS, as in this example:

$$S123\,\mathrm{TS} = \frac{(S12\,\mathrm{TS}) \times (S12\,\mathrm{GHG}) + (S3\,\mathrm{TS}) \times (S3\,\mathrm{GHG})}{S1\,\mathrm{GHG} + S2\,\mathrm{GHG} + S3\,\mathrm{GHG}}$$

*where*:

*S*12 is Scopes 1 and 2.

There may be cases where a company's targets produce valid TS for single scopes, but where current GHG data is missing for the aggregation step. In such cases the method selects the maximum of the temperature scores in the aggregation.

$$S12\,TS = max(S1\,TS,\ S2\,TS)$$

or

$$S123\,TS = max(S12\,TS,\ S3\,TS).$$

As the actual average *S*12 TS must be somewhere between *S*1 TS and *S*2 TS, reverting to the maximum TS is a conservative, mathematically reasonable solution. It also avoids assigning a default S12 TS in the absence of current GHG emissions data by giving recognition to the fact that valid targets have been set.

## 6.6. Using temperature scores

Depending on the option chosen for timeframe coverage, up to 15 temperature scores can be calculated per company based on target timeframe and scope coverage.

The mid-term timeframe is considered the key timeframe as it currently represents the main period for corporate ambition and aligns with the SBTi's target setting criteria of 5–10 years from the reporting year. The short- and long-term scores can be used to better understand if companies have more immediate and longer-term goals in place.

See Annex 5: Calculation examples, which illustrates how these scores are calculated.

# 7. Step 3: Portfolio scoring

The final step of the Temperature Scoring Methodology describes the portfolio scoring step, including the different weighting options for aggregating the temperature scores of companies at an index or portfolio level.

Portfolio scores are calculated by aggregating the TS of the same timeframe. Several weighting options are provided, which may be used in different applications.

## 7.1. Weighting objectives and principles

Before developing weighting approaches, a set of objectives were first developed to help evaluate proposed weighting options (Table 8).

**Table 8: Default weighting method objectives.**

| Objective | Description |
|---|---|
| Enable Net-zero/Paris alignment | The method should emphasize climate impact and support investors in accurately assessing the °C temperature score of an index or a portfolio and in aligning their investments with a 1.5°C pathway. |
| Support better disclosure of GHG emissions by corporations | The method should foster more and higher quality disclosure of GHG emissions along the entire value chain (Scope 1 + 2 + 3) by global corporations. |
| Support standardization of methods | The method should be aligned with existing portfolio GHG accounting methods. |

In addition to meeting these objectives, the default weighting method should best adhere to a set of weighting principles, presented in Table 9.

**Table 9: Default weighting principles.**

| Principle | Description |
|---|---|
| Comparability | Results should be comparable across different asset classes, where applicable, and investment products. |
| Applicability | Investors should be able to perform the aggregation at a reasonable cost with public/accessible data. |
| Reliability | The weighting method should produce results which are reliable and verifiable. |
| Clarity | The weighting method should be understandable and practical to implement. |
| Timeliness | The weighting method should produce results that are timely and current. |
| Completeness | The weighting method should allow for complete portfolio assessments. |

## 7.2. Weighting options

Seven potential options for aggregating individual company temperature scores at the index/portfolio are currently included in the method. These include:

- Option 1 – weighted average temperature score (WATS);
- Option 2 – total emissions[17] weighted temperature score (TETS);
- Option 3 – market-owned[18] emissions weighted temperature score (MOTS);
- Option 4 – enterprise-owned[19] emissions weighted temperature score (EOTS);
- Option 5 – enterprise value (EV) + cash emissions weighted temperature score (ECOTS);
- Option 6 – total assets emissions weighted temperature score (AOTS); and
- Option 7 – revenue-owned emissions weighted temperature score (ROTS).

Table 10 provides a description and formula for calculating the portfolio temperature scores using each of these options.

The denominators in the formulas presented in Table 10 are defined as follows:

- **TETS –** portfolio GHG emissions are the sum of the portfolio company GHG emissions.
- **MOTS –** portfolio market value owned GHG emissions is the sum of portfolio company-owned GHG emissions weighted on the market cap of investee companies.
- **EOTS –** total enterprise-owned GHG emissions is the sum of portfolio company-owned GHG emissions weighted on the enterprise value of investee companies.
- **ECOTS –** total EV + cash owned GHG emissions is the sum of portfolio company-owned GHG emissions weighted on the enterprise value + cash of investee companies.
- **AOTS –** total assets owned GHG emissions is the sum of portfolio company-owned GHG emissions weighted on the total assets of investee companies.
- **ROTS –** revenue owned GHG emissions is the sum of portfolio company-owned GHG emissions weighted on the share of revenue of investee companies.

[17] The total of a company's scope 1, 2, and 3 reported and modeled GHG emissions of the latest reporting period.

[18] Based on a company's market capitalisation, i.e., the total euro market value of a company's outstanding shares of stock. Commonly referred to as 'market cap', it is calculated by multiplying the total number of a company's outstanding shares by the current market price of one share.

[19] Based on the enterprise value (EV). The EV is a measure of a company's total value and includes in its calculation the market capitalisation of a company but also short-term and long-term debt.

**Table 10: Details of portfolio aggregation methods.**

| Weighting option | Method | Temperature score formula (where TS = company temperature score) |
|---|---|---|
| Weighted average temperature score (WATS) | Temperature scores are allocated based on portfolio weights | $\sum_{i}^{n} (\text{Portfolio weight}_i \times TS_i)$ |
| Total emissions weighted temperature score (TETS) | Temperature scores are allocated based on historical emission weights using total company GHG emissions | $\sum_{i}^{n} \left( \frac{\text{Company emissions}_i}{\text{Portfolio emissions}} \times TS_i \right)$ |
| Market-owned emissions weighted temperature score (MOTS) | Temperature scores are allocated based on an equity ownership approach | $\sum_{i}^{n} \left( \left( \frac{\frac{\text{Investment value}_i}{\text{Company market cap}} \times \text{Company emissions}_i}{\text{Portfolio market value owned emissions}} \right) \times TS_i \right)$ |
| Enterprise-owned emissions weighted temperature score (EOTS) | Temperature scores are allocated based on an enterprise ownership approach | $\sum_{i}^{n} \left( \left( \frac{\frac{\text{Investment value}_i}{\text{Company enterprise value}} \times \text{Company emissions}_i}{\text{Total enterprise owned emissions}} \right) \times TS_i \right)$ |
| Enterprise value + cash emissions weighted temperature score (ECOTS) | Temperature scores are allocated based on an enterprise value (EV) plus cash and equivalents ownership approach | $\sum_{i}^{n} \left( \left( \frac{\frac{\text{Investment value}_i}{\text{Company EV} + \text{cash}} \times \text{Company emissions}_i}{\text{Total EV} + \text{Cash owned emissions}} \right) \times TS_i \right)$ |
| Total assets emissions weighted temperature score (AOTS) | Temperature scores are allocated based on a total assets ownership approach | $\sum_{i}^{n} \left( \left( \frac{\frac{\text{Investment value}_i}{\text{Company total assets}} \times \text{Company emissions}_i}{\text{Total assets owned emissions}} \right) \times TS_i \right)$ |
| Revenue-owned emissions weighted temperature score (ROTS) | Temperature scores are allocated based on the share of revenue | $\sum_{i}^{n} \left( \left( \frac{\frac{\text{Investment value}_i}{\text{Company revenue}} \times \text{Company emissions}_i}{\text{Total revenue owned emissions}} \right) \times TS_i \right)$ |

## 7.3. Weighting method assessment

The analysis presented in this section is the result of assessments developed for version 1.0 of this methodology (CDP–WWF Temperature Rating Method). In-depth revision of weighting options was not part of the update to version 1.5. Future versions may consider providing more guidance on weighting options and related analysis. Therefore, this section is unchanged from version 1.0.

In Table 11, each proposed weighting method is compared against the objectives outlined in Section 7.1 (Table 8).

**Table 11: Assessment of options against weighting objectives.**

| Objective | WATS | TETS | MOTS | EOTS | ECOTS | AOTS | ROTS | Comment |
|---|---|---|---|---|---|---|---|---|
| Enable Net-zero/Paris alignment | ✓ | ✓✓✓ | ✓✓ | ✓✓✓ | ✓✓✓ | ✓✓✓ | ✓✓✓ | Exposure to high impact companies is best reflected under TETS; exposure under the ownership methods could be masked by high market cap/EV/ revenue, etc., of these companies |
| Support better disclosure of GHG emissions by corporations | ✓ | ✓✓✓ | ✓✓✓ | ✓✓✓ | ✓✓✓ | ✓✓✓ | ✓✓✓ | WATS does not take current GHG emissions into account; therefore the incentive for companies to report is lower |
| Support standardization of methods | ✓✓✓ | ✓ | ✓✓✓ | ✓✓ | ✓✓✓ | ✓✓ | ✓✓ | WATS aligned to TCFD's[a] main recommended WACI method for measuring the carbon intensity of a portfolio. MOTS aligned to TCFD's approach for carbon footprinting. ECOTS aligned to PCAF[b] method for carbon footprinting of listed equities and corporate debt |

[a] TCFD (Task Force on Climate-related Financial Disclosures, 2017): Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures

[b] PCAF (Partnership for Carbon Accounting Financials, 2019): Accounting GHG emissions and taking action: harmonised approach for the financial sector in the Netherlands

Table 12 provides an assessment of each option against the principles outlined above.

**Table 12: Assessment of options against weighting principles.**

| Objective | WATS | TETS | MOTS | EOTS | ECOTS | AOTS | ROTS | Comment |
|---|---|---|---|---|---|---|---|---|
| Comparability | ✓✓✓ | ✓✓✓ | ✓ | ✓✓ | ✓✓ | ✓✓✓ | ✓✓✓ | MOTS cannot be applied to corporate bonds. EOTS and ECOTS are not always meaningful as, e.g. EV is not widely used for banks |
| Applicability | ✓✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | TETS requires GHG data; the ownership methods require GHG and additional corporate financial data. Specific corporate financial data may be difficult to obtain for non-listed companies |
| Reliability | ✓✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | All options besides WATS are based on self-reported and modeled GHG data |
| Clarity | ✓✓✓ | ✓✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | Ownership-based methods reduce transparency/results are somewhat less intuitive |
| Timeliness | ✓✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓ | All options besides WATs are dependent on timely GHG data |
| Completeness | ✓✓✓ | ✓✓ | ✓ | ✓ | ✓ | ✓ | ✓ | TETS is dependent on GHG data for all portfolio companies; the ownership approaches (MOTS, EOTS and ECOTS) require additional corporate financial data |

The AOTS and ROTS methods best support the stated objectives whereas WATS is the least supportive method. In contrast, WATS is better aligned to the principles compared with the ownership approaches. Yet some of the related disadvantages of EOTS/ECOTS/AOTS/ROTS would be less significant with better corporate reporting of GHG emission inventories.

## 7.4. Additional notes on the portfolio scoring

**Double counting:** Potential double counting of GHG emissions and their respective targets when weighting and aggregating temperature scores should not impact the validity of this metric. A TS is reflective of the climate target ambition of a company and/or a portfolio. This methodology provides temperature scores at the most disaggregated, single-scope level over different target timeframes, allowing flexibility for users to consider all scopes of a given company or portfolio as relevant. Yet the company-level score is representative of a company's total ambition, across all scopes.

# 8. Limitations and outlook

While temperature scores computed according to this methodology provide a robust assessment of a company's GHG emissions reduction ambition, they also come with inherent limitations. The following section will elaborate on this methodology's main limitations.

## 8.1. Methodology limitations

### 8.1.1. Linear regression model

The use of a linear regression model to evaluate the relationship between annual reduction rates of GHG emissions and projected temperature outcomes is a simplification choice that has inherent limitations.

First, the AR6 scenarios that form the basis of the linear regression models are different in their respective underlying assumptions, and the averaged relationship between emission reductions and temperature outcomes provided is meant be used as a proxy for application by the real economy rather than for scientific purposes. This general limitation will be true for any approach that uses several scenarios to evaluate GHG targets, the reason being that benchmarks must be based on either a single scenario or some form of statistical measure derived from multiple scenarios.

Second, a linear regression model is applied to AR6 scenarios' variables that, as illustrated in Figure 5, do not follow a linear pathway and the cumulative budget is the most important factor in determining temperature outcomes. To capture part of that curvature, the regression models are applied to various time horizons. For short-term horizons, however, the model fit is lower because a wider range of annual reduction rates could lead to similar end-of-century temperature outcomes.

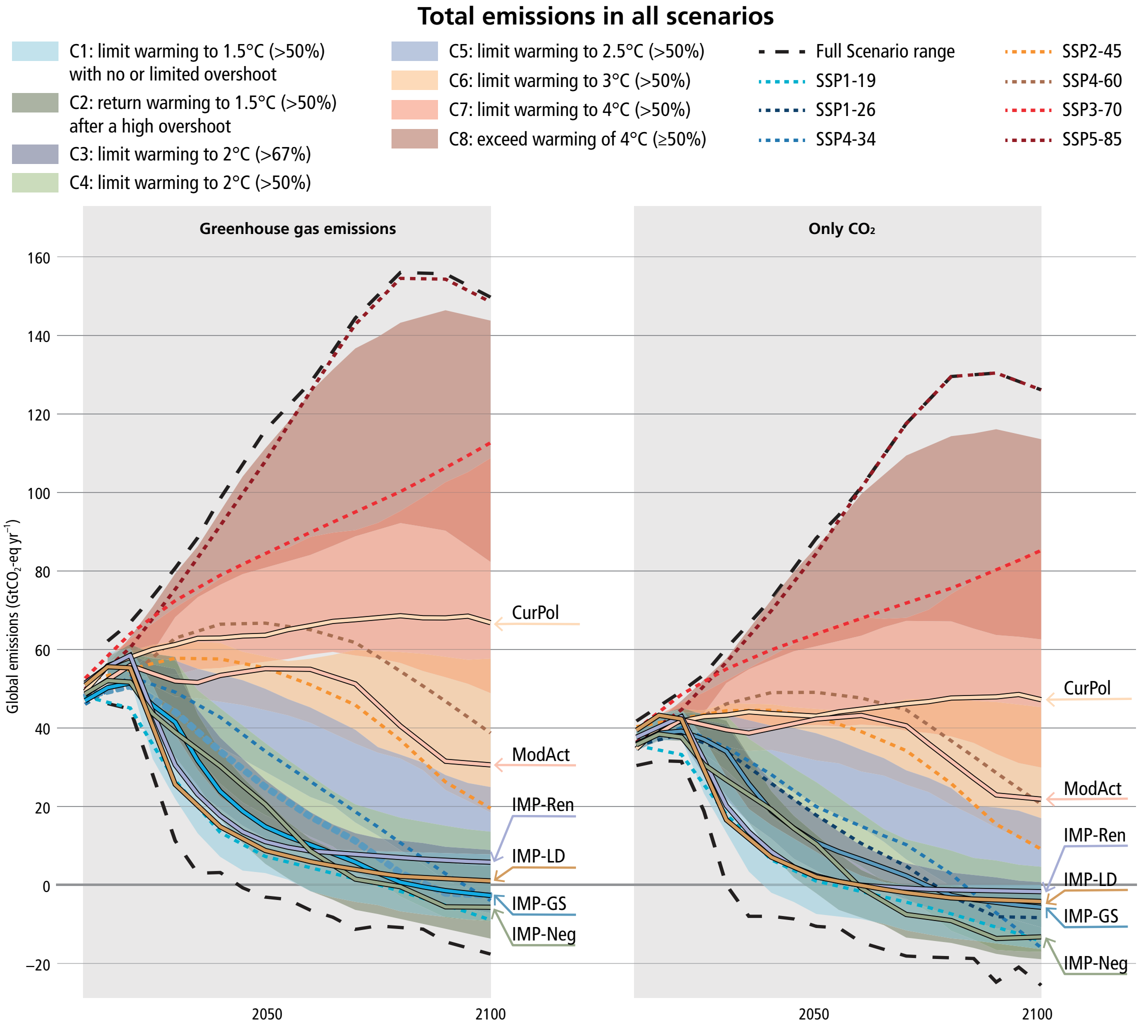
Finally, other models, e.g., an exponential decay model, might provide a better fit to the CAR, as observed in Figure 2. The trade-off is additional complexity in the application of the methodology and coefficients that can be less intuitive to interpret (see Box 1: from LAR to CAR in Section 4.2).

### 8.1.2. Formula to compute annual reduction rates

The calculation of annual reduction rates is a central part of this methodology. However, it has inherent limitations.

There are different definitions of annual rate of change, and this choice has implications on the model. Both LAR and CAR present their own advantages and disadvantages.

**Figure 5: Example of GHG and $CO_2$ emissions pathways for a subset of scenarios, for illustrative purposes only.**




(Source: Figure 3.10 IPCC AR6 Chapter 3)

The LAR has a lower variance compared with the CAR, especially for long time horizons, which improves the fit of the linear model. As an example, 99% over 30 years and 90% over 30 years have respective LARs of 3.3 and 3.0%. For similar percentage changes, the respective CARs are −14.2 and −7.4%. Additionally, the LAR can handle targets of −100%, which is not feasible with the CAR.

On the other hand, the linearity implied by the LAR is in contradiction with the scientific understanding that early action (reducing emissions in the next few years) is crucial to achieve 1.5°C with limited overshoot. A constant annual reduction in absolute tonnes of GHG emissions suggests that the efforts should be spread equally over the years. In relative terms, for the LAR, the reductions in early years would represent a much smaller share of current year emissions than at the end of the target period. On the other hand, the CAR implies a constant share of reductions out of the current year's emissions, but a larger initial reduction in absolute terms in the early years of the target period. While the LAR and the CAR should both lead to the same GHG emission level at the end of the target period, the impact on cumulated carbon budget can be significantly different. It is worth noting that neither of these two applications can accurately capture the carbon budget associated with the different scenarios.

Alternative solutions to address the challenges of assessing 100% and near 100% reduction targets with the CAR need to be explored. It is worth noting, however, that this specific case will occur only when companies plan to reduce 100% of emissions with a 100% boundary coverage. While the model currently does not treat gross and net targets separately, the plausibility of a case where companies can achieve zero gross emissions should be further discussed. A simple impact assessment of this limitation was performed by looking at the number of scenarios with net-zero or negative emissions in 2050, and for which CAR cannot be calculated. In the AR6 database of scenarios, there are 1,115 scenarios with Kyoto gases data available. Out of those 1,115 scenarios, three scenarios imply that net GHG emissions (Kyoto gases variable) reach zero tonnes or less in 2050.

### 8.1.3. Sector granularity

Currently, most companies' target ambition is assessed against a cross-sectoral benchmark (except for power generation and minor exceptions for cement/steel/aluminum companies, see Section 4.2.1). Likewise, the applied default score of 3.4°C to companies with no or no valid target data is applied consistently, without differentiating by a company's sector affiliation.

Developing Warming Functions for individual sectors requires a minimum number of scenarios with available sectoral emission trajectories. Initial tests conducted with the AR6 scenarios database suggested that further research was required to create additional sectoral benchmarks with acceptable confidence levels. Another possibility would be to apply normative scenarios for sector-specific targets (e.g., International Energy Agency).

The choice of applying a uniform default score is an interim solution to enable the generation of portfolio-level temperature scores by also weighting companies that do not have valid, forward-looking targets. However, it can be argued that companies with an already low-emission profile are unfairly scored with a 3.4°C TS, even in the absence of any climate target. This potential flaw could be addressed with a sector-specific default temperature score for each sector. While reasonable from a climate performance and contribution perspective, the temperature score – as introduced by this methodology – aims to score a company's climate target ambition and set incentives accordingly. Moreover, new types of target metrics are being introduced by relevant climate frameworks to equip those low-carbon companies with more suitable target metrics (e.g., 'maintenance targets'). Finally, this methodology scores climate targets across all emission scopes (Scopes 1–3). This means that the emission performance or contribution of all emission scopes of a company must inform a potential sector-specific default score. Future solutions will need to balance adequacy with target incentivization.

### 8.1.4. Climate target metric(s)

This methodology allows scoring absolute and intensity GHG emission reduction targets. Other metrics used for climate target setting, such as procurement, engagement, renewable electricity targets, etc. as well as long-term qualitative commitments, cannot be scored currently – partly owing to a lack of suitable variables in AR6 scenarios. Temperature scores might therefore not capture a company's whole climate ambition. Yet one could argue that any climate target set using other metrics should materialize in absolute and/or intensity GHG emission reduction.

Relying only on GHG emission reduction targets might come with further limitations: the assessment of one metric type, GHG emission reductions, does not necessarily provide the full picture of a company's alignment with long-term or structural changes needed to meet the temperature goals of the Paris Agreement. For example, two approaches to reducing power-related GHG emissions by 30% in 10 years (e.g., 2020–2030) may correspond to very different outlooks for the subsequent 10 years (e.g., 2030–2040) based on the lifespan of assets, etc., which are not captured by GHG emissions targets. This uncertainty can be reduced by assessing the temperature alignment of all short-, mid- and long-term GHG emission reduction targets for a company in cases where they have been disclosed and considering further metrics informing a company's actions taken to transition.

### 8.1.5. Forward- versus backward-looking assessment

Providing companies with a temperature score based on the ambition of stated targets implicitly assumes that the targets will be met. If the targets are not met, companies may be given unfairly low temperature scores. The converse is also true: if companies exceed GHG reduction targets, their scores are biased high.

Moreover, the methodology only scores companies based on their forward-looking ambition as indicated by GHG targets without considering prior actions the company has taken to reduce GHG emissions. This might penalize companies that have already reduced GHG emissions considerably and whose cost of emissions reductions will probably increase as low-cost/high-return options are already exhausted. Besides 'early movers', companies that, by nature of their business model, are already operating at low emissions might similarly be disadvantaged.

A main obstacle for adjusting ambition benchmarks to actual and past GHG emissions performance is data gaps on past emissions. However, with the future integration of sectoral benchmarks into this methodology to provide a fairer assessment based on sectoral abilities, the arguably unfair equal distribution of the GHG reduction burden among all players is expected to be somewhat cushioned and balanced out. Nevertheless, FIs are well advised to consider further complementary climate metrics of companies (e.g., metrics tracking past and current emissions and climate performance).

### 8.1.6. Carbon credits and carbon offsets

Currently, temperature scores based on this methodology do not capture whether and to what extent carbon credits and offsets are built into a company's climate target. This means companies that have a higher ambition in numeric terms but rely on carbon credit and/or offsets to achieve this higher GHG reduction commitment might be unfairly rewarded with a better temperature score compared with companies with lower numeric GHG reduction ambition, although building on their own mitigation efforts along the value chain only. One main constraint to solve this issue is the lack of data around carbon credit and offset usage by companies. With the expected increase in transparency of climate-related disclosure by companies worldwide, this could be an area of development for the methodology.

### 8.1.7. Assurance of GHG and GHG reduction target data

GHG emission data considered for computing TS according to this methodology is not required to have some level of assurance. This means reported GHG emission data is taken at face value. There is evidence that non-assured carbon accounting underestimates actual emissions and that assurance has an influence on a company reducing future emissions (Berg et al., 2024[20]). Future research might explore how to account and potentially adjust for assurance in this context.

## 8.2. Outlook: Next steps and future research

This version represents an updated version of the CDP–WWF Temperature Rating methodology (version 1.0, released in October 2020; CDP Worldwide & WWF International, 2020). This methodology will continue to evolve over time to include the latest climate science in addition to further improvements to address current methodological limitations.

The next update of the methodology will consider further research and development on several priority issues, and will seek to:

- Account for the usage of carbon credits in company climate targets and the use of gross emission trajectories from the scenario base.
- Develop sector-specific Warming Functions for more adequate benchmarking.
- Develop sector-specific default scores, including for solutions contributing to climate change mitigation (e.g., renewable energy producers, clean transport solutions, energy storage, etc.).
- Improve the adequacy and possibility of developing non-linear models, which might give a better fit.

[20] Accessible through this link: http://dx.doi.org/10.2139/ssrn.4734240.

Other topics were identified for further development but with lower priority. The research will aim to:

- Expand the assessment scope to include backward-looking indicators (in terms of past emission performance tracking and/or progress against targets).
- Produce further guidance on portfolio aggregation approaches for different applications (e.g., scoring an equity portfolio versus an index).
- Increase the assessment scope of climate target metrics (e.g., renewable energy consumption targets), including exploring a potential default treatment of SBTi targets.

# 9. Version control

Table 13: Document version history.

| Version name | Description | Date published |
|---|---|---|
| Consultation method | Draft method published to coincide with the method consultation period which ran from April 30 to May 22, 2020 | April 30, 2020 |
| Beta method | Beta version to be used for testing | June 30, 2020 |
| Version 1.0 | Updated methodology incorporating feedback from beta testing process | October 1, 2020 |
| Version 1.5 consultation | Updated methodology. See Table 14: Change log | May, 2024 |
| Version 1.5 | Updated methodology incorporating feedback from public consultation | July, 2024 |

## 9.1. Change log

The main changes from version 1.0 to version 1.5 are summarized in Table 14: Change log.

Table 14: Change log.

| Section | Version 1.5 | Version 1.0 |
|---|---|---|
| 1.2. | Method purpose and limitations | n/a |
| 4.2. | Changed from LAR (linear annual reduction) to CAR (compound annual reduction) | LAR formula (1.3.) |
| 5. | AR6: Update model simulations with scenarios to latest IPCC Sixth Assessment report | SR15: Based on IPCC Special Report 1.5°C |
| 5.2. | Emissions reduction ambition of zero or less gets a TS equal to intercept | n/a |
| 5.2., 5.3.2. | All climate model simulations with scenarios that passed IPCC's vetting process are considered sufficient criteria for selecting the scenarios for the linear regression models | SR15 model simulations with scenarios were filtered before the linear regression models were generated, based on a set of normative precautionary preferences concerning overshoot and the level of CDR |
| 5.3. | Default score 3.4°C to reflect CAT (Climate Action Tracker) projection December 2023 | Default score 3.2°C to reflect CAT projections December 2019 |

(*Continued*)

Table 14: Change log. (*Continued*)

| Section | Version 1.5 | Version 1.0 |
|---|---|---|
| 5.3.1. | Update sector variables/benchmarks and associated regression models and clarification of sector benchmarks. The sector variables were selected and allocated to a sector based on a combination of data availability, how well the AR6 variable was suitable to the specific sector and the fit of the linear regression model. Sector variables/ benchmarks available: Power Generation (absolute and intensity), Cement/Steel/Alumnum (absolute) | Limited sector variables/ benchmarks based on SR15 data |
| 5.3.1. | Introducing a linear regression model for Scope 2 targets (for all sectors). The two variables applied for absolute and intensity targets: Emissions \| $CO_2$ \| Energy \| Supply and Emissions \| $CO_2$ \| Energy \| Supply/Secondary energy | n/a |
| 5.4. | Introduction of a temperature score floor at 1.5°C | n/a |
| 6.1. | Introducing target vintage and reduction ambition criteria for target selection for scoring | Target quality criteria (2.1.) |
| 6.1.2. | All targets are now calculated on a pro-rata basis, based on boundary coverage and CAR is adjusted accordingly | Target boundary of 67% and 95% respectively were treated as full targets. LAR was adjusted if boundary coverage was below these thresholds |
| 6.1.6. | • Short term for targets with target year (TY) < 5 years<br>• Mid-term for targets with 5 ≤ TY < 10 years<br>• Long term for targets with TY ≥ 10 years | Broader mid-term definition including targets with target years in 5–15 years |
| 6.1.6. | Targets are now valid during the calendar year when the target expires | Targets were not valid in end year |
| 6.2. | New target criteria waterfall with target vintage as first consideration | Target vintage was not considered for target selection. Boundary coverage was a more important criterion |
| 6.3. | Introducing explicit target criteria waterfall to prioritize target selection | Less detailed target filtering |
| 6.3. | Introducing aggregation for single scope targets for all scopes | Less flexible target aggregation based on combined Scope 1 and 2 targets and separate Scope 3 targets |
| 8.2. | Method roadmap | n/a |
| 12.1. | Warming Function versus Single-Scenario | n/a |
| 12.5. | Data requirements | n/a |

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# 11. Annex

## Annex 1: Warming Function versus single scenario

When it comes to temperature alignment assessments, there are two related approaches to benchmark construction: the Warming Function approach and the Single-Scenario approach.

The **Warming Function approach** (upon which this methodology relies) involves choosing a set of suitable climate scenarios based on the company's sector and target scope(s). A function of the scenario set is constructed using a regression, which is then used as a benchmark for assessing company alignment. The Warming Function relies on the Contraction Approach (or Rate of Change approach), whereby all companies are expected to decarbonize at the same pace (within a sector – this methodology provides four sector-specific benchmarks – or the wider economy) along a linear path. The company's annual rate of GHG emissions reduction (as implied by its targets) is then compared with the Warming Function's benchmark.

This approach reduces the risk of scenario selection bias in the benchmark construction (essentially by taking a diversification approach to scenario selection, akin to portfolio management). The Warming Function approach also makes it easier to compare temperature scores from different sources, as scenario selection has less impact on the resulting temperature score. This way, the Warming Function approach helps harmonize the market and provides the necessary conditions for standardized temperature scores. This could help reduce some of the criticism that Environmental, Social and Governance (ESG) metrics have received recently and drive acceptance in the marketplace for ESG metrics in general and temperature scores in particular.

However, the Warming Function approach has drawbacks. It requires a higher number of varied climate scenarios and tends to be less case specific, which can lead to less accurate results. For example, assessing a cement company and a wind power company based on the same benchmark would yield an unfair result owing to the different emission reduction levels required by these sectors. In addition, the Warming Function approach has been criticized for its lack of transparency. It has been perceived as a 'black box', as the implications of and dependencies of the ITR results on the different underlying scenario assumptions are difficult to understand.

In the **single-scenario approach**, a single scenario is chosen as a benchmark, which can be adapted to a specific company and target. This allows for a granular assessment of the target alignment to the chosen scenario. However, it also opens the possibility for bias, as the scenario can be chosen to benefit the company and the targets assessed. It also involves an inherent overreliance on the assumptions of one scenario, which is all the more problematic if a scenario is chosen relying on assumptions which ultimately might not be plausible.

The single-scenario method can rely on:

- the **contraction/rate of change approach** (as does the Warming Function);
- the **convergence approach**, whereby the physical GHG emissions intensities of companies within a sector are expected to converge toward the same sectoral value over time; and
- the **fair share budget approach**, which combines a rate of change with a carbon budget approach. To compute a temperature score, the company's rate of change and its cumulative GHG emissions are compared with their assigned budget, often calculated through its market share.

While the scenarios chosen for a single-scenario analysis are generally more detailed in terms of sector granularity, regions and units available for analysis, they can imply a false sense of security for users, and lead to misinterpretation owing to the significant variations in available mitigation pathways. In other words, even though the motivation for selecting certain assumptions might seem robust, the alignment result would be highly dependent on those assumptions to materialize. It is also worth mentioning that scenarios chosen for a single-scenario analysis can also be used in a scenario sample applied in a Warming Function.

Recent research conducted at KTH, the Royal Institute of Technology, Stockholm, Sweden (Liljedahl & Rondahl, 2022), concluded that the influence of scenario selection on the company-level outcome was very high, with some temperature scores varying by 0.95°C depending on the scenario used (which represents up to 50% of the range of temperature scores expected from the CDP–WWF Temperature Score method, i.e. from the temperature floor of 1.5°C to the 3.4°C default score.

According to Liljedahl and Rondahl (2022), because scenarios present only a certain trajectory based on a set of assumptions and not a range of outcomes with associated probabilities, a scenario cannot replace a thorough analysis of different outcomes.

The research by Liljedahl and Rondahl (2022) concludes that Warming Functions enable less bias in the choice of scenarios, but also finds that under such methodologies, companies within different sectors are often assessed against the same cross-sectoral benchmark. Ultimately, Liljedahl and Rondahl recommend introducing more sectoral granularity in Warming Function methodologies. The CDP–WWF Temperature Scoring Methodology currently includes sector Warming Functions for power generation, steel, aluminum and cement. For version 2.0 CDP and WWF intend to introduce more sector Warming Functions, as described in Section 8.1.3.

# Annex 2: Scenario selection

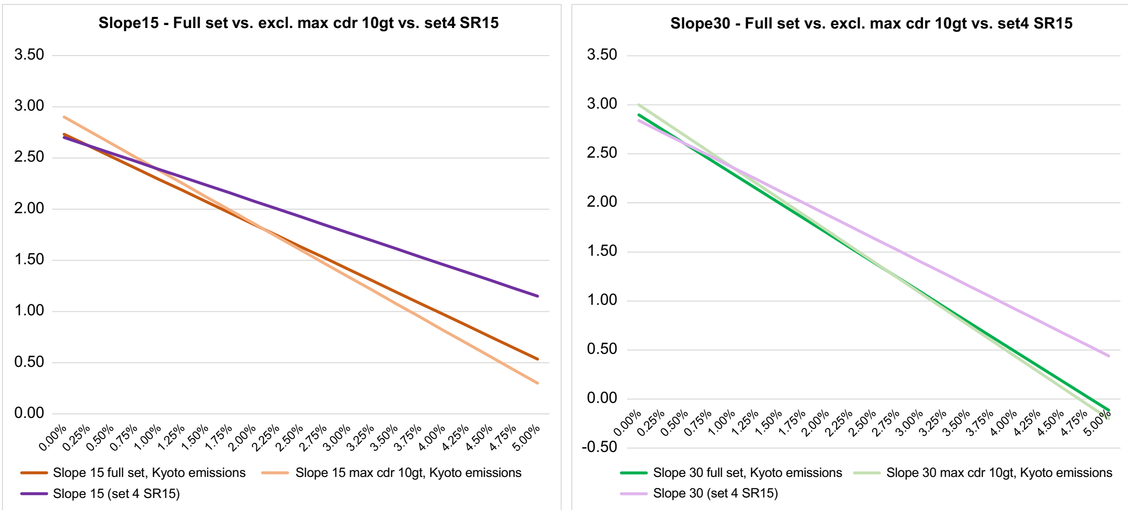
## Scenario selection

In the initial publication of this methodology (version 1.0), the IPCC's SR15[21] scenarios were first filtered before the linear regression models were generated. This was done based on precautionary preferences, for example concerning the level of plausible carbon dioxide removal (with a CDR above 10 Gt $CO_2$/year considered not plausible).[22,23]

Baseline scenarios, i.e., scenarios where no deliberate mitigation action was taken, were also removed from the initial SR15 dataset. Besides these normative, precautionary preferences, the best model fit over medium- and long-term horizons[24] was the basis for selecting and applying scenario set 4 in the version 1.0 methodology. This scenario set applied a CDR limit to maximum 10 Gt $CO_2$/year as well as excluding baseline scenarios.

While intuitively, excluding scenarios based on high CDR (defined as >10 Gt $CO_2$/year) is expected to increase the GHG emission reduction ambition[25] implied by the regression models, results from the tests when applying a similar filter to the AR6 dataset did not support that hypothesis. Additionally, it was found that the ambition level implied by the models had been reduced when shifting from SR15 to AR6 (with the linear reduction rate required to be 1.5°C aligned).

**Figure 6: Comparison of linear fits between two AR6 filtering options and SR15 with previous filters, on 15 and 30 years for Kyoto Gases (with LAR as the independent variable) – max CDR.**




[21] Global Warming of 1.5°C, 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. Accessible through this link: [Download Report — Global Warming of 1.5 °C (ipcc.ch)](https://www.ipcc.ch).

[22] 56 unique scenario sets were generated in the initial methodology (version 1.0).

[23] For more information about the scenario filtering process of the initial methodology (version 1.0), please see https://www.cdp.net/en/investor/temperature-ratings/CDP–WWF-temperature-ratings-methodology.

[24] Represented by $R^2$.

[25] The ambition is defined here as the GHG emission annual reduction rate required to reach 1.5°C warming in 2100 based on the regression coefficients. The lower the estimated rate, the lower the ambition.

After investigation, the potential reasons identified are the following: first, and most significantly, the main variable used in the regression models is **Kyoto gases which is net of carbon removals (CDR)**. Removing scenarios with high CDR levels would be particularly important if assessing gross emission reduction targets against gross emission trajectories but does not have any meaningful impact for the methodology in its current state (versions 1 and 1.5).

Second, the underlying dataset of AR6 is fundamentally different compared with that of SR15 (e.g., different report purpose, other and updated climate models and scenarios are used, etc.). Therefore, **similar normative precautionary preferences and filters will not necessarily lead to similar regression outcomes.**

Third, in AR6, the levels of yearly CDR tend to increase in the second half of the century from 2050 onwards. This is also the case for scenarios with ambitious GHG emissions reduction rates that project to limit warming to 1.5°C by the end of the century. The variable used for this filtering in the initial version of the methodology is the maximum value of CDR/year observed throughout the century. As a result, excluding scenarios based on such CDR criteria (i.e., CDR > 10 Gt $CO_2$/year) also means excluding ambitious 1.5°C scenarios that do not rely heavily on CDR over the first half of the century, which is the maximum time horizon covered by the benchmarks. **This translates into an overall decrease of the GHG emission reduction ambition implied by the linear regression models (rather than in an increase).** Following these findings, no CDR filter is applied to the AR6 vetted scenario database.

Further analysis showed that **excluding baseline scenarios from the AR6 dataset has no significant impact on the regression models.** This insight, in combination with the possibility that these baseline scenarios, associated with high temperature outcomes, are potential future trajectories of the world's development, leads to the conclusion that it is necessary to keep baseline scenarios in the dataset used to derive the benchmarks.

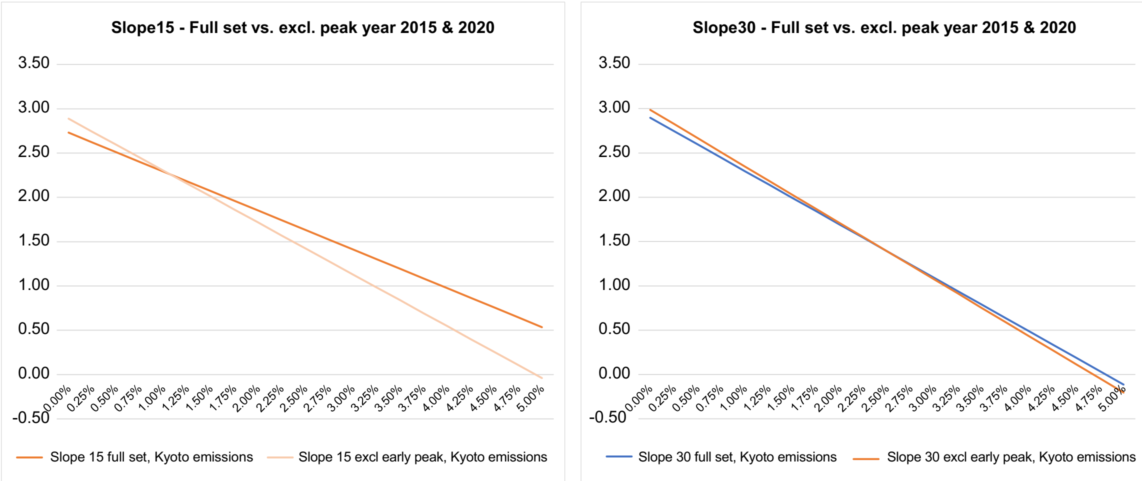
Two additional filters were tested: (1) the exclusion of scenarios with a GHG emission peak year before year 2024; and (2) outlier analysis using statistical analysis of Cook's *D*, leverage and residuals.

The results from filter test (1) illustrated in Figure 7 show that **excluding scenarios with early peak year has significant effects on the regression models on short time horizons.** This impact decreases for longer time horizons.

In the vetted AR6 scenario database, there are only 10 scenarios with a projected median 1.5°C temperature outcome by 2100[26] that assume a peak year of GHG emissions after

[26] Scenarios classified as Category 1: limit warming to 1.5°C (>50%) with no or limited overshoot, and Category 2: return warming to 1.5°C (>50%) after a high overshoot.

**Figure 7: Comparison of linear fits between two AR6 filtering options, on 15 and 30 years for Kyoto Gases (with LAR as the independent variable) – early peak years.**




2020. Removing scenarios based on such a condition leads to steeper regression lines, and on the basis of those results this filter was not applied either.

The outlier analysis (filter test 2) highlighted that the number of scenarios considered as outliers according to the three approaches used (Cook's *D*, leverage and residuals) is limited. The results also showed that **no scenario alone is deemed to influence the linear regression model to a significant extent.** Hence, no scenario is removed from the dataset based on the results from filter test 2.

The overall conclusion from the scenario selection analysis is that **the vetting process from IPCC is considered a sufficient criterion for selecting scenarios for the linear regression models in this version of the methodology.** Scenarios are vetted for consistency with historical statistics and near-term plausibility related to geophysical, technological, economic, institutional and socio-cultural dimensions.

This approach will be reviewed as part of the methodology's further research on appropriate scenario filtering.

# Annex 3: Details of sector variables

**Table 15: Details of sector variables.**

| Name of AR6 variable | Name of AR6 variable in code | Description of variable |
|---|---|---|
| Emissions \| Kyoto Gases | Emissions\|Kyoto Gases | Emissions including the seven GHG gases under the Kyoto Protocol; Carbon dioxide ($CO_2$), Methane ($CH_4$), Nitrous oxide ($N_2O$), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride ($SF_6$), Nitrogen trifluoride ($NF_3$). |
| Emissions \| Kyoto Gases/ GDP \| PPP | INT.emKyoto_gdp | Emissions including the seven GHG gases under the Kyoto Protocol (see above) divided by gross domestic product. |
| Emissions \| $CO_2$ \| Energy \| Supply | Emissions\|$CO_2$\| Energy\|Supply | $CO_2$ emissions from fuel combustion and fugitive emissions from fuels: electricity and heat production and distribution, other energy conversion (e.g., refineries, synthetic fuel production, solid fuel processing, incl. pipeline transportation, fugitive emissions from fuels and emissions from carbon dioxide transport and storage (Byers et al. 2022). |
| Emissions\| $CO_2$ \| Energy \| Supply/ Secondary energy | INT.em$CO_2$energysupply_ SE | $CO_2$ emissions from fuel combustion and fugitive emissions from fuels: electricity and heat production and distribution, other energy conversion (e.g., refineries, synthetic fuel production, solid fuel processing incl. pipeline transportation, fugitive emissions from fuels and emissions from carbon dioxide transport and storage divided by the total secondary energy – (the sum of all secondary energy carrier production)) (Byers et al., 2022). |
| Emissions \| $CO_2$ \| Energy and Industrial Processes | Emissions\|$CO_2$\| Energy and Industrial Processes | $CO_2$ emissions from energy use on supply and demand side and from industrial processes (Byers et al., 2022). |

# Annex 4: Result of linear regression model

The figures below show the result of the linear regression model for the variable Emissions | Kyoto Gases (applied as a default variable for all sectors for Scope 1 and Scope 3 targets) for the 5- to 30-year time horizon (with a 5-year interval). The time frames that are used in this methodology are 5 years (for short-term targets), 10 years (for medium-term targets) and 30 years (for long-term targets). To demonstrate the pattern of the linear regression model across time, all time frames are shown in Figures 8–10.

**Figure 8: Result of the linear regression model for Emissions | Kyoto Gases for a 5-year time frame.**

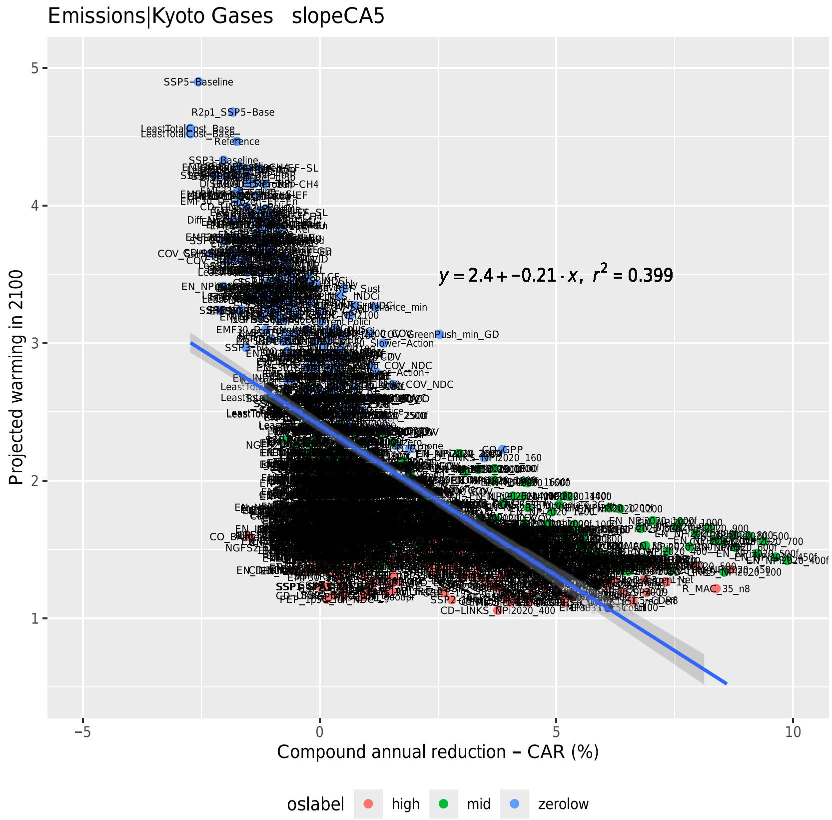


**Figure 9: Result of the linear regression model for Emissions | Kyoto Gases for a 10-year time frame.**

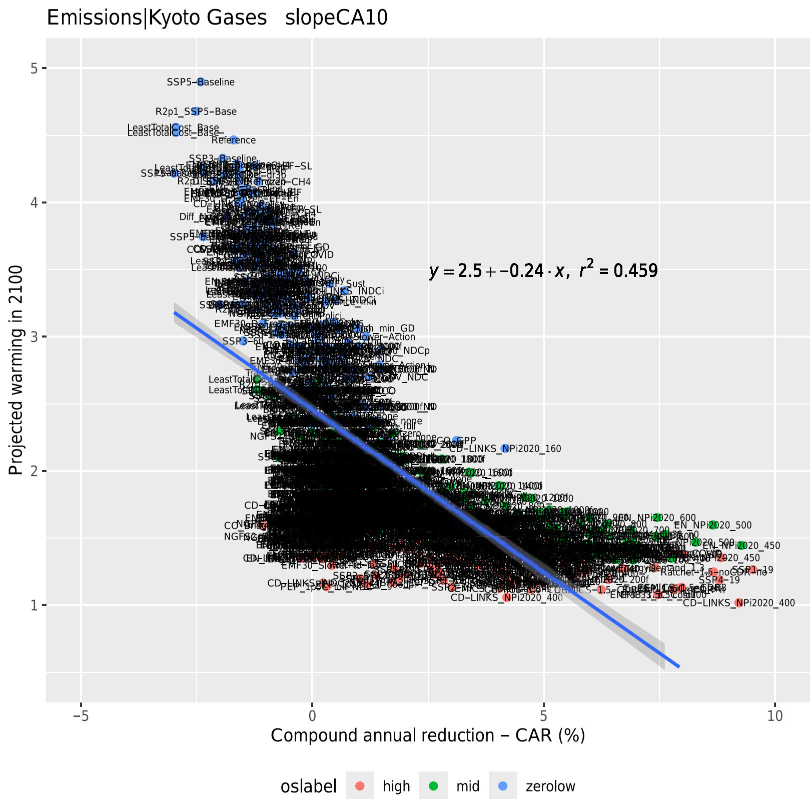
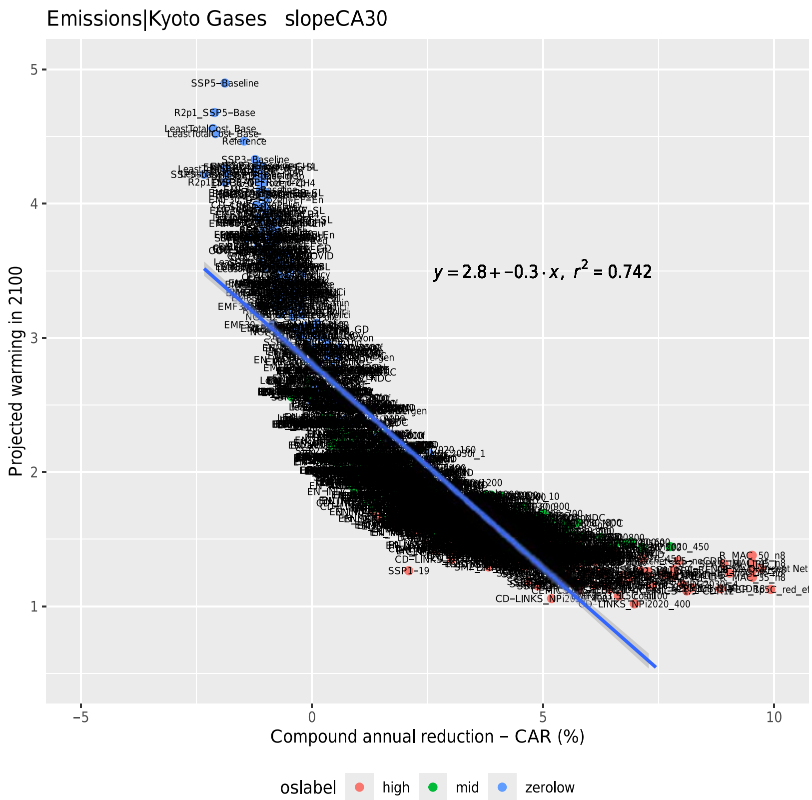



**Figure 10: Result of the linear regression model for Emissions | Kyoto Gases for a 30-year time frame.**



# Annex 5: Calculation examples

### Table 16: Company Alpha (combined Scope 1 + 2 target).

| Label | Variable | Company Alpha | Calculation details |
|---|---|---|---|
| | **Company activity** | Retail | |
| | **Target scope(s)** | Scope 1; Scope 2 | |
| | **Target type** | Absolute | |
| A | **Base year** | 2019 | |
| B | **Base year total emissions (Scope 1, tCO2e)** | 5,000,000 | |
| C | **Base year total emissions (Scope 2, tCO2e)** | 2,500,000 | |
| D | **Base year value covered (Scope 1, tCO2e)** | 3,000,000 | |
| E | **Base year value covered (Scope 2, tCO2e)** | 2,000,000 | |
| F | **Current year total emissions (Scope 1, tCO2e)** | 4,500,000 | |
| G | **Current year total emissions (Scope 2, tCO2e)** | 2,250,000 | |
| H | **Target year** | 2033 | |
| | **Target timeframe** | Mid-term (10-year horizon) | |
| I | **Targeted reduction from base year (%)** | -50.0% | |
| | | | |
| | | | |
| J | **Boundary coverage (Scope 1)** | 60.0% | =D/B |
| K | **Boundary coverage (Scope 2)** | 80.0% | =E/C |
| L | **Boundary coverage (Scope 1+2)** | 66.7% | =(D+E)/(B+C) |
| | | | |
| M | **Normalized reduction ambition (Scope 1)** | -30.0% | =J*I |
| N | **Normalized reduction ambition (Scope 2)** | -40.0% | =K*I |
| O | **Normalized reduction ambition (Scope 1+2)** | -33.3% | =L*I |
| | | | |
| P | **Normalized CAR S1** | -2.5% | =(1+M)^(1/(H-A))-1 |
| Q | **Normalized CAR S2** | -3.6% | =(1+N)^(1/(H-A))-1 |
| R | **Normalized CAR S12** | -2.9% | =(1+O)^(1/(H-A))-1 |
| | | | |
| | **Scope 1 benchmark** | Emissions \| Kyoto Gases | |
| S | **Scope 1 TS (°C)** | 1.86 | =2,46-0,24*(-P)*100 |
| | **Scope 2 benchmark** | Emissions \| CO2 \| Energy \| Supply | |
| T | **Scope 2 TS (°C)** | 2.01 | =2,40-0,11*(-Q)*100 |
| | **Scope 1 + Scope 2 TS** | 1.91 | =(S*F+T*G)/(F+G) |

## Table 17: Company Beta (Scope 1 intensity target + no Scope 2 target).

| Label | Variable | Company Beta | | Calculation details |
|---|---|---|---|---|
| | **Company activity** | Power generation | | |
| | **Target scope(s)** | Scope 1 | No Scope 2 target disclosed | |
| | **Target type** | Intensity | N/A | |
| A | **Base year** | 2020 | N/A | |
| B | **Base year total emissions (Scope 1, tCO2e)** | 20,000,000 | | |
| C | **Base year total emissions (Scope 2, tCO2e)** | 2,500,000 | | |
| D | **Base year value covered (Scope 1, tCO2e)** | 18,000,000 | N/A | |
| E | **Base year value covered (Scope 2, tCO2e)** | N/A | N/A | |
| F | **Current year total emissions (Scope 1, tCO2e)** | 19,500,000 | | |
| G | **Current year total emissions (Scope 2, tCO2e)** | 3,000,000 | | |
| H | **Target year** | 2026 | N/A | |
| | **Target timeframe** | Short-term (5-year horizon) | N/A | |
| I | **Targeted reduction from base year (%)** | -25.0% | N/A | |
| | | | | |
| | | | | |
| J | **Boundary coverage (Scope 1)** | 90.0% | N/A | =D/B |
| K | **Boundary coverage (Scope 2)** | N/A | N/A | =E/C |
| L | **Boundary coverage (Scope 1 + Scope 2)** | N/A | N/A | =(D+E)/(B+C) |
| | | | | |
| M | **Normalized reduction ambition (Scope 1)** | -22.5% | N/A | =J*I |
| N | **Normalized reduction ambition (Scope 2)** | N/A | N/A | =K*I |
| O | **Normalized reduction ambition (Scope 1+2)** | N/A | N/A | =L*I |
| | | | | |
| P | **Normalized CAR S1** | -4.2% | N/A | =(1+M)^(1/(H-A))-1 |
| Q | **Normalized CAR S2** | N/A | N/A | =(1+N)^(1/(H-A))-1 |
| R | **Normalized CAR S12** | N/A | N/A | =(1+O)^(1/(H-A))-1 |
| | | | | |
| | **Scope 1 benchmark** | Emissions\| CO2 \| Energy \| Supply / Secondary energy | N/A | |
| S | **Scope 1 TS (°C)** | 1.78 | N/A | =2,11-0,08*(-P)*100 |
| | **Scope 2 benchmark** | N/A | Default score | |
| T | **Scope 2 TS (°C)** | N/A | 3.40 | |
| | **Scope 1 + Scope 2 TS** | 1.99 | | =(S*F+T*G)/(F+G) |

## Table 18: Company Gamma (single Scope 1 + single Scope 2 target).

| Label | Variable | Company Gamma | | Calculation details |
|---|---|---|---|---|
| | **Company activity** | Cement | | |
| | **Target scope(s)** | Scope 1 | Scope 2 | |
| | **Target type** | Absolute | Absolute | |
| A | **Base year** | 2022 | 2021 | |
| B | **Base year total emissions (Scope 1, tCO2e)** | 9,000,000 | | |
| C | **Base year total emissions (Scope 2, tCO2e)** | 1,000,000 | | |
| D | **Base year value covered (Scope 1, tCO2e)** | 5,000,000 | N/A | |
| E | **Base year value covered (Scope 2, tCO2e)** | N/A | 1,000,000 | |
| F | **Current year total emissions (Scope 1, tCO2e)** | 8,000,000 | | |
| G | **Current year total emissions (Scope 2, tCO2e)** | 700,000 | | |
| H | **Target year** | 2040 | 2035 | |
| | **Target timeframe** | Long-term (30-year horizon) | Long-term (30-year horizon) | |
| I | **Targeted reduction from base year (%)** | -35.0% | -75.0% | |
| | | | | |
| | | | | |
| J | **Boundary coverage (Scope 1)** | 55.6% | N/A | =D/B |
| K | **Boundary coverage (Scope 2)** | N/A | 100.0% | =E/C |
| L | **Boundary coverage (Scope 1 + Scope 2)** | 60.0% | | =(D+E)/(B+C) |
| | | | | |
| M | **Normalized reduction ambition (Scope 1)** | -19.4% | | =J*I |
| N | **Normalized reduction ambition (Scope 2)** | | -75.0% | =K*I |
| O | **Normalized reduction ambition (Scope 1+2)** | -27.8% | | =(M*B+N*C)/(B+C) |
| | | | | |
| P | **Normalized CAR S1** | -1.2% | | =(1+M)^(1/(H-A))-1 |
| Q | **Normalized CAR S2** | | -9.4% | =(1+N)^(1/(H-A))-1 |
| R | **Normalized CAR S12** | -1.8% | | =(1+O)^(1/(H-A))-1 |
| | | | | |
| | **Scope 1 benchmark** | Emissions \| CO2 \| Energy and Industrial Processes | | |
| S | **Scope 1 TS (°C)** | 2.35 | | =2,58-0,19*(-P)*100 |
| | **Scope 2 benchmark** | | Emissions \| CO2 \| Energy \| Supply | |
| T | **Scope 2 TS (°C)** | | 1.50 (*) | =2,85-0,15*(-Q)*100 |
| | **Scope 1 + Scope 2 TS** | 2.28 | | =(S*F+T*G)/(F+G) |

*(*) 1.44°C before application of temperature floor*

### Table 19: Company Delta (Scope 3 target).

| Label | Variable | Company Delta | Calculation details |
|---|---|---|---|
| | **Company activity** | Auto manufacturer | |
| | **Target scope(s)** | Scope 3 | |
| | **Target Scope 3 categories covered** | Cat. 1 Purchased goods and services<br>Cat. 11 Use of sold products | |
| | | | |
| | **Target type** | Absolute | |
| A | **Base year** | 2019 | |
| B | **Base year total emissions (total Scope 3, tCO2e)** | 10,000,000 | |
| C | **Base year total emissions (Scope 3, cat. 1 & 11 only, tCO2e)** | 8,000,000 | |
| D | **Base year value covered (Scope 3, cat. 1 & 11 only, tCO2e)** | 5,000,000 | |
| E | **Current year total emissions (total Scope 3, tCO2e)** | 9,250,000 | |
| F | **Current year total emissions (Scope 3, cat. 1 & 11 only, tCO2e)** | 7,000,000 | |
| G | **Target year** | 2033 | |
| H | **Target timeframe** | Mid-term (10-year horizon) | |
| I | **Targeted reduction from base year (%)** | -35.0% | |
| | | | |
| | | | |
| J | **Boundary coverage (Scope 3, cat. 1 & 11 only, tCO2e)** | 62.5% | =D/C |
| K | **Boundary coverage (total Scope 3, tCO2e)** | 50.0% | =J*C/B |
| | | | |
| L | **Normalized reduction ambition (Scope 3, cat. 1 & 11 only, tCO2e)** | -21.9% | =J*I |
| M | **Normalized reduction ambition (total Scope 3, tCO2e)** | -17.5% | =K*I |
| | | | |
| N | **Normalized CAR (Scope 3, cat. 1 & 11 only, tCO2e)** | -1.7% | =(1+L)^(1/(G-A))-1 |
| O | **Normalized CAR (total Scope 3, tCO2e)** | -1.4% | =(1+M)^(1/(G-A))-1 |
| | | | |
| P | **Scope 3 benchmark** | Emissions \| Kyoto Gases | |
| Q | **Scope 3 TS (°C)** | 2.13 | =2,46-0,24*(-O)*100 |

# Annex 6: Summary of required data for applying the Temperature Scoring Methodology

The following tables present a legend of the data required to apply the Temperature Scoring Methodology for a portfolio using data tools.

**Table 20: Data legend for portfolio data.**

| Data field | Optional/Required | Format | Explanation |
|---|---|---|---|
| **company_name** | Optional | Text | Name of the company in your portfolio. |
| **company_id** | Required | Text | Identifier for the company in your portfolio, used to map target and fundamental data to the company. |
| **company_isin** | Optional | Text | ISIN and/or LEI are used to map companies to the SBTi database. |
| **company_lei** | Optional | Text | ISIN and/or LEI are used to map companies to the SBTi database. |
| **investment_value** | Required | Number | The monetary value invested in the company. Used for aggregation. |
| **engagement_target** | Optional | TRUE or FALSE | Used for engagement analysis. |

**Table 21: Data legend for target data.**

| Data field | Optional/Required | Format | Explanation |
|---|---|---|---|
| **company_name** | Optional | Text | Name of the company in your portfolio. |
| **company_id** | Required | Text | Identifier for the company in your portfolio, used to map target and fundamental data to the company. |
| **target_type** | Required | Absolute, Intensity, T_score or other | Type of target. Can be absolute or intensity based GHG emission reduction target. From v 1.5 can also be a temperature score (eg for and FI). |
| **intensity_metric** | Required for intensity targets | Text | The metric the intensity based GHG emission reduction target is based on. |
| **base_year_ts** | Required for T_score targets | Number in decimals | For targets set using the CDP/WWF temperature scoring approach. |
| **end_year_ts** | Required for T_score targets | Number in decimals | For targets set using the CDP/WWF temperature scoring approach |
| **scope** | Required | S1, S2, S1 + S2, S1 + S2 + S3, S3 | The scope(s) covered by the target. |

(*Continued*)

Table 21: Data legend for target data. (*Continued*)

| Data field | Optional/Required | Format | Explanation |
|---|---|---|---|
| **s3_category** | Required for S3 targets | Integer between 1 and 15 | The scope 3 category of the target. Omitted for headline S3 targets. |
| **coverage_s1** | Required for S1 targets | Number in decimals, between 0 and 1 | The part of emissions covered in scope 1 for the target. |
| **coverage_s2** | Required for S2 targets | Number in decimals, between 0 and 1 | The part of emissions covered in scope 2 for the target. |
| **coverage_s3** | Required for S3 targets | Number in decimals, between 0 and 1 | The part of emissions covered in scope 3 for the target. |
| **reduction_ambition** | Required | Number in decimals, between 0 and 1 | The emission reduction that is set as ambition in the target. |
| **base_year** | Required | Year (4-digit integer) | Base year of the target. Defines time frame together with end year. |
| **end_year** | Required | Year (4-digit integer) | End year of the target. Defines time frame together with base year. |
| **start_year** | Optional | Year (4-digit integer) | Year the target was announced. |
| **statement_date** | Required | Number in decimals, between 0 and 1 | The date the target was confirmed or updated. If not specified, the start year will be assumed. |
| **base_year_ghg_s1** | Required | $tCO_2e$ | Total reported GHG emissions for scope 1 for the company at the base year of the target. |
| **base_year_ghg_s2** | Required | $tCO_2e$ | Total reported GHG emissions for scope 2 for the company at the base year of the target. |
| **base_year_ghg_s3** | Required | $tCO_2e$ | Total reported GHG emissions for scope 3 for the company at the base year of the target. |
| **achieved_reduction** | Optional | Number in decimals, between 0 and 1 | Part of the reduction ambition of the target that is already achieved by the company. |
| **target_ids** | Optional | Text | Identifier of individual targets. |

**Table 22: Data legend for fundamental company data.**

| Data field | Optional/Required | Format | Explanation |
|---|---|---|---|
| **company_name** | Optional | Text | Name of the company in your portfolio. |
| **company_id** | Required | Text | Identifier for the company in your portfolio, used to map target and fundamental data to the company. |
| **Isic** | Required | Text | Sector classification code for the company based on the International Standard Industrial. Used to map targets to the correct regression model. Should include at least the first two levels: Section and Division. |
| **country** | Optional | Text | Country where the company has its headquarter. Used for analysis purposes only. |
| **region** | Optional | Text | Region where the company has its headquarter. Used for analysis purposes only. Can be continental or more granular. |
| **industry_level_1** | Optional | Text | Level 1 through 4 of the industry classification of the company. Used for analysis purposes only. Can be based on any industry classification system. |
| **industry_level_2** | Optional | Text | Level 1 through 4 of the industry classification of the company. Used for analysis purposes only. Can be based on any industry classification system. |
| **industry_level_3** | Optional | Text | Level 1 through 4 of the industry classification of the company. Used for analysis purposes only. Can be based on any industry classification system. |
| **industry_level_4** | Optional | Text | Level 1 through 4 of the industry classification of the company. Used for analysis purposes only. Can be based on any industry classification system. |
| **sector** | Optional | Text | Sector of the company. Used for analysis purposes only. Can be based on any classification system. |
| **ghg_s1** | Required* | $tCO_2e$<br>$tCO_2e$ | Total GHG emissions for scope 1 for the company. Used for aggregation of temperature scores on company level. |

(*Continued*)

**Table 22: Data legend for fundamental company data. (*Continued*)**

| Data field | Optional/Required | Format | Explanation |
|---|---|---|---|
| **ghg_s2** | Required* | $tCO_2e$ | Total GHG emissions for scope 2 for the company. Used for aggregation of temperature scores on company level. |
| **ghg_s3** | Required* | $tCO_2e$ | Total GHG emissions for scope 3 for the company. Used for aggregation of temperature scores on company level. |
| **company_revenue** | Required** | Number | In single currency (can be any currency you choose). Revenue of the company in the most recent year. |
| **company_market_cap** | Required** | Number | Market capitalization of the company in single currency. |
| **company_enterprise_value** | Required** | Number | Enterprise value of the company in single currency. |
| **company_total_assets** | Required** | Number | Total assets of the company in single currency. |
| **company_cash_equivalents** | Required** | Number | Cash equivalents of the company in single currency. |
| **ghg_s3_i** | Optional | $tCO_2e$ | GHG emissions for Scope 3 category i, where i is a number from1 to 15, eg. ghg_s3_1. Used in conjunction with targets for individual Scope 3 categories. |

Notes:

*GHG data needed for aggregation of Scope 1 + 2 temperature scores as of version 1.5 of methodology.

**Required if needed for the selected portfolio aggregation method.

# Annex 7: Tables, figures and equations

## Tables



## Figures

## Equations

## About WWF

WWF is an independent conservation organization, with over 30 million followers and a global network active in nearly 100 countries. Our mission is to stop the degradation of the planet's natural environment and to build a future in which people live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable and promoting the reduction of pollution and wasteful consumption. Find out more at panda.org.

## About CDP

CDP is a global non-profit that runs the world's environmental disclosure system for companies, cities, states and regions. Founded in 2000 and working with more than 740 financial institutions with over US$136 trillion in assets, CDP pioneered using capital markets and corporate procurement to motivate companies to disclose their environmental impacts and to reduce greenhouse gas emissions, safeguard water resources and protect forests. Over 24,000 organizations around the world disclosed data through CDP in 2023, with more than 23,000 companies – including listed companies worth two-thirds of global market capitalization – and over 1,100 cities, states and regions. Fully TCFD aligned, CDP holds the largest environmental database in the world and CDP scores are widely used to drive investment and procurement decisions toward a zero-carbon, sustainable and resilient economy. CDP is a founding member of the Science Based Targets initiative, We Mean Business Coalition, The Investor Agenda and the Net Zero Asset Managers initiative.

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