CORPORATE NET-ZERO STANDARD V2.0

Target-Setting Methods Documentation (Revision)

Version 1.0

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March 2025

ABOUT SBTi

The Science Based Targets initiative (SBTi) is a corporate climate action organization that enables companies and financial institutions worldwide to play their part in combating the climate crisis.

We develop standards, tools and guidance which allow companies to set greenhouse gas (GHG) emissions reductions targets in line with what is needed to keep global heating below catastrophic levels and reach net-zero by 2050 at latest.

The SBTi is incorporated as a UK charity, with a subsidiary SBTi Services Limited, which hosts our target validation services. Partner organizations who facilitated SBTi's growth and development are CDP, the United Nations Global Compact, the We Mean Business Coalition, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF).

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This Standard is issued by the Science Based Targets initiative (SBTi). Any feedback on SBTi Standards can be submitted to info@sciencebasedtargets.org for consideration of the SBTi.

[1] The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

VERSION HISTORY

Version	Release date	Updates on earlier version
1.0 target-setting methods documentation	March 2025	

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1. INTRODUCTION

This document provides detailed information about the target-setting methods used in the SBTi Corporate Net-Zero Standard Version 2.0, including a detailed explanation of each method and calculation algorithms. The SBTi Corporate Net-Zero Standard indicates which method or methods should be used to set targets for different indicators.This document may be revised independently from the main Corporate Net-Zero Standard.

Target-setting methods are mathematical formulae or algorithms used to calculate interim performance values that serve as the reference for entities to set targets. Target-setting methods are independent of but related to pathways and indicators. A target-setting method is applied to each target indicator to determine the required interim performance value to guide the formulation of science-based, measurable, and time-bound targets aligned with pathways that are consistent with limiting warming to 1.5°C with no or limited overshoot.

Pathways and company input variables enable the determination of the Net-Zero aligned benchmark values. The target-setting method can then be used to generate an interim performance value and subsequent target (Figure 1.1).

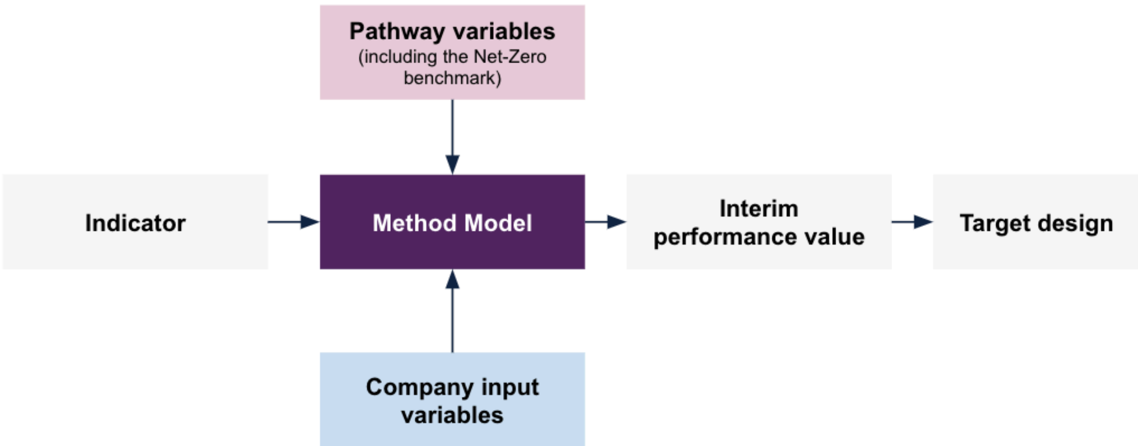

Figure 1.1. Elements of target design

Each indicator listed in Annex E has a corresponding Net-Zero aligned benchmark and a target-setting method to derive interim performance values and subsequent targets. If the baseline performance has not yet reached the Net-Zero benchmark value, the target-setting method must be used to determine the targets required to close this performance gap. Table 1.1 characterizes the method(s) applied to each indicator.

Table 1.1. Target-setting method characterization.

Scope	Indicators	Target-Setting Methods	Target-Setting Method Description
Scope 1	Absolute GHG emissions	Option 1: Budget-Conserving Contraction	The method determines near-term performance levels required to conserve the carbon budget and corrects for overshoot between the scenario reference year, the company base year, and the interim target year.
		Option 2: Linear Contraction	The method determines near-term performance levels required on a linear path from the entity's baseline emissions level to Net-Zero emissions by 2050.
	Carbon dioxide removals	Removal Growth Target	The method determines the volume of removals required at interim milestone years to ensure that by 2050, 100% of a company's residual emissions are matched by a corresponding level of CDR.
Scope 2	Absolute GHG emissions (location- and market-based)	Absolute Contraction	The method determines near-term performance levels required so that baseline emissions are reduced at rates consistent with global 1.5°C low/no overshoot pathways.
	Zero carbon electricity share	Index Alignment Approach	The method determines interim performance values directly from the underlying pathways with targets defined as a path from baseline value to the pathway value in the target year.
Scope 3 (category 1-14)	Absolute emissions	Absolute Contraction	The method determines near-term performance levels required so that baseline emissions are reduced at rates consistent global 1.5°C low/no overshoot pathways.
	Physical intensity	Sectoral Decarbonisation Approach	The method determines near-term performance levels required to converge at the sector average performance value in the Net-Zero year.
	Economic intensity	Economic Intensity Contraction	The method determines near-term performance levels required to ensure that absolute emissions decline at a rate consistent with the 1.5°C low/no overshoot pathways, despite economic growth.
	Alignment	Linear alignment approach	The method determines interim performance values required to reach the Net-Zero aligned benchmark on a linear path from the baseline performance value.

2. METHOD DOCUMENTATION

2.1 Scope 1 methods

Figure 2.1.1 shows the two steps required for establishing a clear ambition to the Net-Zero year. Step 1 specifies how companies can use target-setting methods to define target reduction ambition between base year and target year. Two method options are proposed for scope 1 GHG emissions. Each of the methods enables near-term targets to be established for the scope 1 absolute GHG emissions indicator.

Method 1 documents the Budget-Conserving Contraction approach that determines the emissions level in the target that ensures conservation of the carbon budget of the reference pathway. Method 2 documents a Linear Contraction approach that determines an emissions level in the target year, but does not guarantee conservation of the underlying carbon budget.

Step 2 specifies the mechanisms available to correct for underperformance (or emissions overshoot) that occur between the base year and the target year. In Mechanism 1, any overshoot between the base year and the target year is corrected for by the ambition of the target in the next target cycle. This effectively replicates the design of Method 1. Mechanism 2 involves the purchase of high durability removals in the next target cycle equivalent to the amount of overshoot that occurred between the base year and the target year.

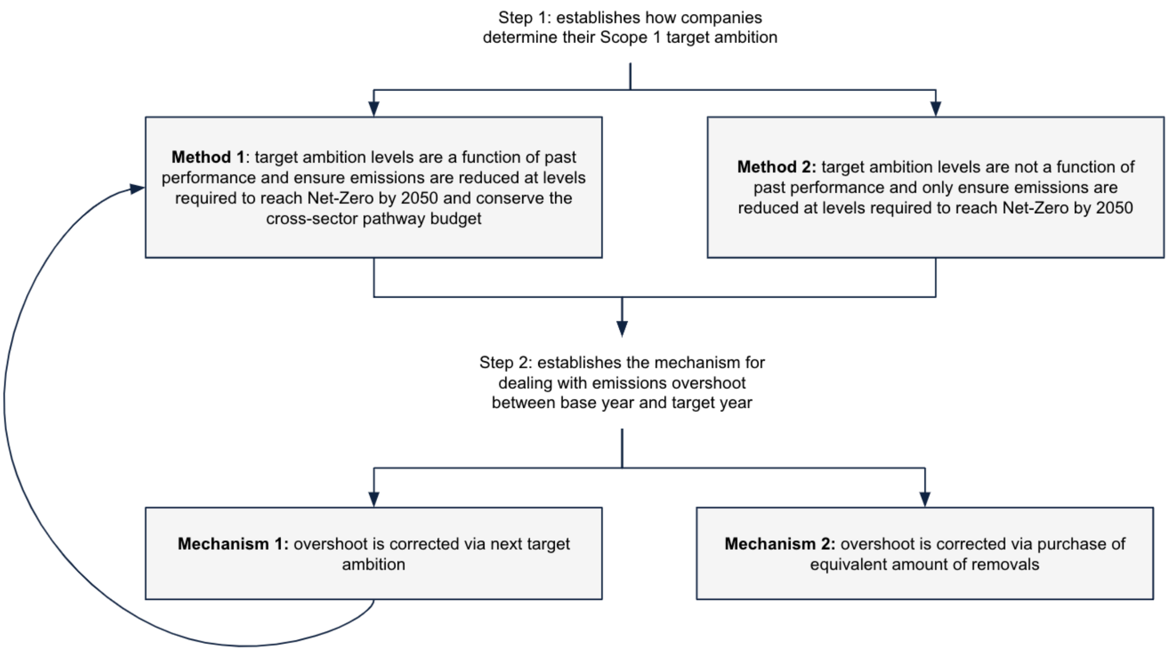

Figure 2.1.1. Proposed Scope 1 target-setting methods and mechanisms for overshoot correction.

Both target-setting methods in Step 1 reflect a key assumption regarding the allocation of residual emissions in the cross-sector pathway. Residual emissions at Net-Zero are allocated to hard-to-abate sectors that have their own sector-specific standards and target-setting methods. All other sectors and activities are allocated zero residual emissions at Net-Zero. Thus, within the Net-Zero framework, the sectors and activities eligible for setting targets using either method proposed in Step 1 reach a state of absolute zero emissions by 2050 or earlier.

Method 1: Budget-Conserving Contraction

Method description

The Budget-Conserving Contraction Approach corrects for budget conservation over the target timeframe to the Net-Zero year. This produces a linear to zero pathway in which the Net-Zero year is a function of emissions overshoot between the reference year and the target year. This approach requires companies to also state the Net-Zero year in their long-term targets and may result in less ambitious near-term targets as overshoot is corrected over a longer time period. Figure 2.1.2 provides an illustrative example of how overshoot between the reference year and the base year is corrected with an adjusted LARR and an adjusted Net-Zero year.

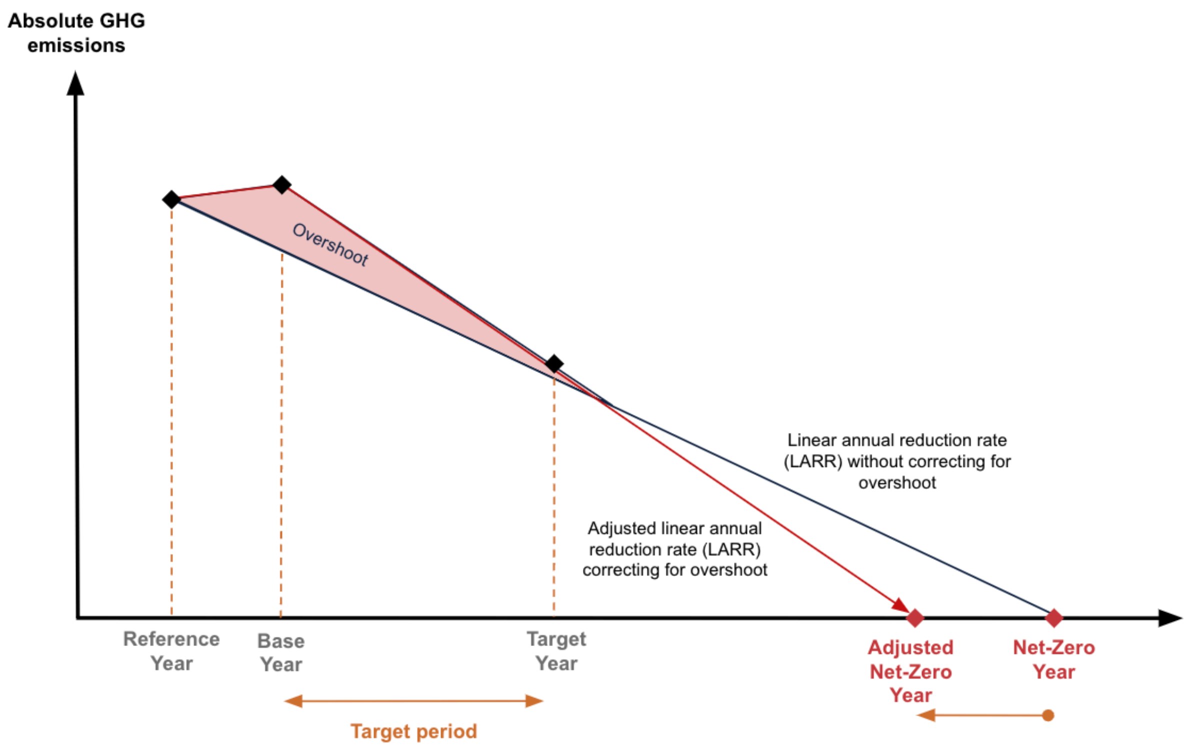

Figure 2.1.2. Budget-Conserving Contraction Approach with an adjusted linear reduction rate that shifts the Net-Zero year to ensure budget conservation.

Method implementation

Step 1: Determine the linear annual reduction rate.

For companies in sectors without residual emissions at the Net-Zero year, a simplified linear annual reduction rate is applied, derived from the target ambition and the difference between the Net-Zero year and the reference year of the underlying scenario, as shown in Equation 1.1.

Equation 1.1. Linear Annual Reduction Rate from the scenario reference year to the Net-Zero year

$$\mathbf{LARR} = \frac{\textbf{Target ambition}}{\mathbf{nzy} - \mathbf{ry}}$$

Where:

LARR	=	Linear annual reduction rate between the reference year and the Net-Zero year (%/year)
Target ambition	=	Absolute emissions reduction target between the reference year and the Net-Zero year (%)
nzy	=	The Net-Zero year
ry	=	The scenario reference year (start year)

Under the Linear-to-Zero approach, target ambition is 100% reduction in absolute emissions.

Step 2: Determine cumulative emissions budget from the reference year to the Net-Zero year.

The cumulative emissions budget between the reference year and the Net-Zero year is derived from the target ambition referenced in Step 1. Equation 1.2 yields the total allowable cumulative emissions for the company from the reference year to the Net-Zero target year.

Equation 1.2. Cumulative budget from the scenario reference year to the Net-Zero year

$$\mathbf{CB_{nzy}} = \sum_{y=ry}^{nzy} \mathbf{CE_{ry}} - \left(\mathbf{CE_{ry}} \times \left(\mathbf{nzy} - \mathbf{ry} \times \mathbf{LARR} \right) \right)$$

Where:

CB_{nzy}	=	Cumulative budget between scenario reference year and Net-Zero year in terms of absolute emissions (t CO_2e)
y	=	Any year *y* in the Net-Zero target timeframe between the reference year and the

		Net-Zero year
ry	=	The scenario reference year (start year)
nzy	=	The Net-Zero year
CE_{ry}	=	Company emissions in the reference year (t CO_2e)
LARR	=	Linear annual reduction rate between the reference year and the Net-Zero year (%/year)

Step 3: Account for historical emissions from the reference year to the base year.

If the company's base year is equal to the scenario reference year, the cumulative budget established in Step 2 may be applied without further adjustment.

In cases where the base year is later than the reference year, the company must disclose its historical emissions, which represent its cumulative emissions between the reference year and the base year. If historical emissions exceed the initial cumulative budget established for the period between the reference year and the base year, the company's cumulative budget and the Net-Zero year are subject to an adjustment.

Equation 1.3. Historical emissions from the scenario reference year to the base year

$$HE = \sum_{y=ry}^{by} CE_y$$

Where:

HE	=	Historical emissions between the scenario reference year and the base year (t CO_2e).
y	=	Any year *y* within the target timeframe
ry	=	The scenario reference year (start year)
by	=	The base year selected by the company
CE_y	=	Company emissions in any year *y* within the target timeframe (t CO_2e)

The company's historical emissions are then compared against the initial cumulative budget for the time period between the reference year and the base year as derived in Step 2. Historical emissions in excess of this initial budget are referred to as historical overshoot.

Equation 1.4. Historical overshoot between the reference year and the base year

$$HO = \sum_{y=ry}^{by} \left(HE_y - CB_y \right)$$

Where:

HO	=	Historical overshoot between the scenario reference year and the base year (t CO_2e)
y	=	Any year *y* within the target timeframe
ry	=	The scenario reference year (start year)
by	=	The base year selected by the company
HE_y	=	The company's historical emissions in any year y within the target timeframe (t CO_2e)
CB_y	=	Cumulative budget emissions in any year y within the target timeframe (t CO_2e)

If historical overshoot is positive, a budget and Net-Zero year recalculation is triggered. If historical overshoot is zero or negative, the initial cumulative budget and Net-Zero year as determined in Step 2 may be applied without further adjustment.

Step 4: Calculate adjusted cumulative budget, Net-Zero year, and linear annual reduction rate.

If positive historical overshoot is found in Step 3, these excess emissions are deducted from the initial cumulative budget in order to ensure budget conservation.

Equation 1.5. Adjusted cumulative budget from the base year to the Net-Zero year

$$CB_{adj} = CB_{nzy} - HE$$

Where:

CB_{adj}	=	Adjusted cumulative budget from the base year to the Net-Zero year, accounting for the company's historical emissions between the scenario reference year and the base year (t CO_2e)
CB_{nzy}	=	Cumulative budget between scenario reference year and Net-Zero year in terms of absolute emissions (t CO_2e)
HE	=	Historical emissions between the scenario reference year and the base year (t CO_2e)

The fixed remaining budget yielded by Equation 1.5 triggers an updated Net-Zero year and linear annual reduction rate, derived from the updated budget and the company's base year emissions.

Equation 1.6. Adjusted Net-Zero year

$$nzy_{adj} = \frac{2 \times CB_{adj}}{CE_{by}} + by$$

Where:

nzy_{adj}	=	Adjusted Net-Zero year
CB_{adj}	=	Adjusted cumulative budget from the base year to the Net-Zero year, accounting for the company's historical emissions between the scenario reference year and the base year (t CO_2e)
CE_{by}	=	Company emissions in the base year (t CO_2e)
by	=	The base year selected by the company

Equation 1.7. Adjusted linear annual reduction rate

$$LARR_{adj} = \frac{\text{Target ambition}}{nzy_{adj} - by}$$

Where:

$LARR_{adj}$	=	Adjusted linear annual reduction rate between the base year and the adjusted Net-Zero year (%/year)
Target ambition	=	Absolute emissions reduction target between the base year and Net-Zero year (%)
nzy_{adj}	=	Adjusted Net-Zero year

by	=	The base year selected by the company

Step 5: Determine the interim target emissions level.

Interim targets are set in the near-term within the target timeframe, between the base year and Net-Zero year.

Case 1: Base year is the same as scenario reference year OR base year is greater than scenario reference year AND historical overshoot is less than or equal to zero.

Equation 1.8. Interim target year emissions level in Case 1

$$CE_y = CE_{by} - \left(CE_{by} \times \left(y - by \right) \times LARR \right)$$

Where:

CE_y	=	Company emissions in any year *y* within the target timeframe (t CO_2e)
CE_{by}	=	Company emissions in the base year selected by the company (t CO_2e)
y	=	Any year *y* within the target timeframe
by	=	The base year selected by the company
LARR	=	Linear annual reduction rate between the reference year and the Net-Zero year (% / year)

Case 2: Base year is greater than the scenario reference year AND historical overshoot is greater than zero.

The interim target year emissions value is determined using Equation 1.9, which utilizes the adjusted LARR.

Equation 1.9. Target year emissions level when base year is different than the scenario reference year

$$CE_y = CE_{by} - \left(CE_{by} \times \left(y - by \right) \times LARR_{adj} \right)$$

Where:

CE_y	=	Company emissions in any year *y* within the target timeframe (t CO_2e)
CE_{by}	=	Company emissions in the base year selected by the company (t CO_2e)
y	=	Any year *y* within the target timeframe
by	=	The base year selected by the company

$LARR_{adj}$ = Adjusted linear annual reduction rate between the base year and the adjusted Net-Zero year (% / year)

Required company input variables
Based on the above equations, the company shall provide input data as follows:

- Base year
- Company emissions in the base year
- Company emissions in the reference year
- Company historical emissions between the reference year and the base year

Mitigation Option 2: Linear Contraction

Method description

The Linear Contraction approach produces a linear absolute emissions reduction pathway between the base year and the Net-Zero year with a target reduction ambition of 100%. This reduction curve is derived from an entity's base year emissions regardless of past cumulative emissions between the reference year and the base year. The method uses a grandfathering allocation principle which implies that the larger a company's emissions in the base year, the larger its share of emissions in a desired target year.

The Linear Contraction approach does not seek to ensure that cumulative emissions between the base year and the target year stay within the required carbon budget of the cross-sector pathway, or to correct any historic emissions overshoot before the base year.

The introduction of a Linear Contraction approach means that any entity can establish targets to reduce emissions to Net-Zero by 2050, regardless of its past or current emissions performance. Figure 2.1.3 presents an illustrative example of how the method works, introducing the reference year (start year of the pathway), the base year, and the target year.

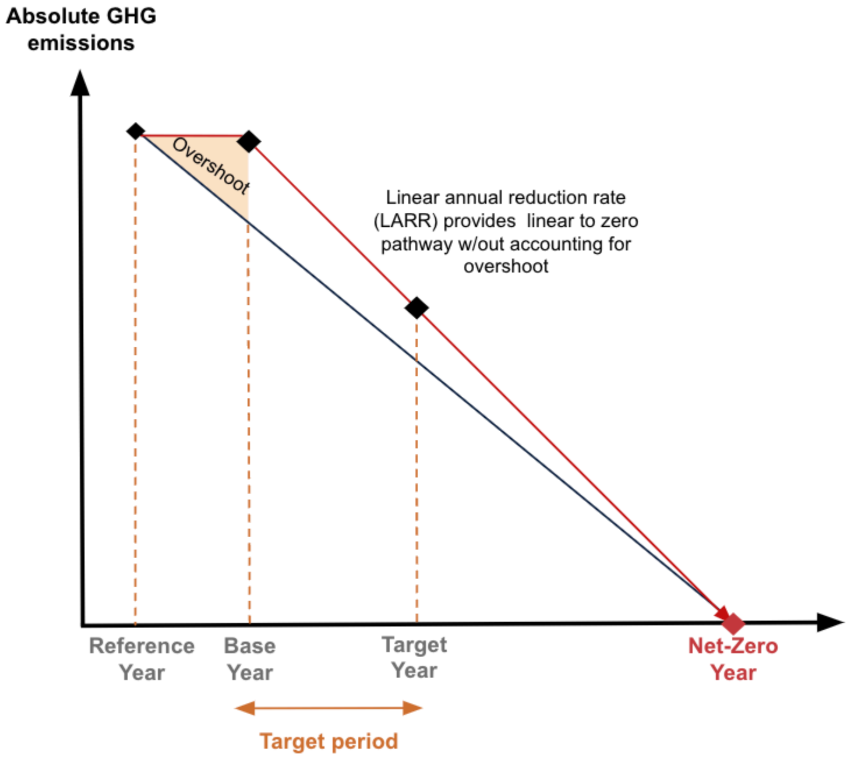

Figure 2.1.3. Linear Contraction approach with Net-Zero target ambition that does not account for past emissions performance.

Method Implementation

Step 1: Determine the linear annual reduction rate.
For companies in sectors without residual emissions at the Net-Zero year, a simplified linear annual reduction rate is applied, derived from the target ambition and the difference between the Net-Zero year and the reference year of the underlying scenario, as shown in Equation 2.1.

Equation 2.1. Linear Annual Reduction Rate from the base year to the Net-Zero year

$$\textbf{LARR} = \frac{\textbf{Target ambition}}{\textbf{nzy} - \textbf{by}}$$

Where:

LARR	=	Linear annual reduction rate between the base year and the Net-Zero year (% / year)

Target ambition	=	Absolute emissions reduction target between the base year and Net-Zero year (%)
nzy	=	Net-Zero year
by	=	The base year selected by the company

Under the Linear-to-Zero approach, target ambition is 100% reduction in absolute emissions.

Step 2: Determine cumulative emissions budget from the base year to the Net-Zero year.

The cumulative emissions budget between the base year and the Net-Zero year is derived from the target ambition referenced in Step 1. Equation 2.2 yields the total allowable cumulative emissions for the company from the base year to the Net-Zero target year.

Equation 2.2. Cumulative budget from the base year to the Net-Zero year

$$CB_{nzy} = \sum_{y=by}^{nzy} CE_{by} - \left(CE_{by} \times \left(nzy - by \times LARR \right) \right)$$

Where:

$\mathbf{CB_{nzy}}$	=	Cumulative budget between the base year and Net-Zero year in terms of absolute emissions (t CO_2e)
y	=	Any year *y* in the Net-Zero target timeframe between reference year and Net-Zero year
by	=	The base year selected by the company
nzy	=	Net-Zero year
$\mathbf{CE_{ry}}$	=	Company emissions in the base year (t CO_2e)
LARR	=	Linear annual reduction rate between the base year and the Net-Zero year (% / year)

Step 3: Determine the interim target emissions level.

Interim targets are set in the near-term within the target timeframe, between the base year and Net-Zero year.

Equation 2.3. Interim target year emissions level

$$CE_{y} = CE_{by} - \left(CE_{by} \times \left(y - by \right) \times LARR \right)$$

Where:

CE_y	=	Company emissions in any year *y* within the target timeframe (t CO_2e)
CE_{by}	=	Company emissions in the base year selected by the company (t CO_2e)
y	=	Any year *y* within the target timeframe
by	=	The base year selected by the company
LARR	=	Linear annual reduction rate between the base year and the Net-Zero year (% / year)

Required company input variables
Based on the above equations, the company shall provide input data as follows:

- Base year
- Company emissions in the base year

Removal Growth Target (RGT) (BETA: For Consultation)

Method description

The Removal Growth Target (RGT) produces a company-level interim removal target expressed as volume of durable removals over a five-year time period. The targets increase over time so that by 2050, 100% of a company's residual emissions are matched by a corresponding level of direct, indirect and/or BVCM removals (see *CNZS*, Indicator-CNZS.17) . Eligible removal solutions are those that meet a minimum durability threshold, as described in the following section.

Application constraints (options)

The RGT method may be implemented under one of two options proposed for testing as part of the CNZS V2.0 consultation process (Figure 2.1.4). Under **Option 1**, companies with residual emissions are required to implement interim removal targets aligned with one of two cases (see *Application rules*). In **Case 1(a)**, the minimum durability of removals is based on the atmospheric lifetime of the respective GHG, ensuring that the persistence of emissions is matched with removals of appropriate durability. By contrast, **Case 1(b)**, proposes a gradual shift from temporary to more durable removals within the 2030-2050 timeframe, in line with the rate of deployment of removal solutions observed in climate scenarios. Under **Option 2**, companies with no residual emissions are not required to set interim removal targets. However, in this case companies could still use a limited amount of removals for justified hard-to-abate emissions, as proposed in **Case 2(a)**.

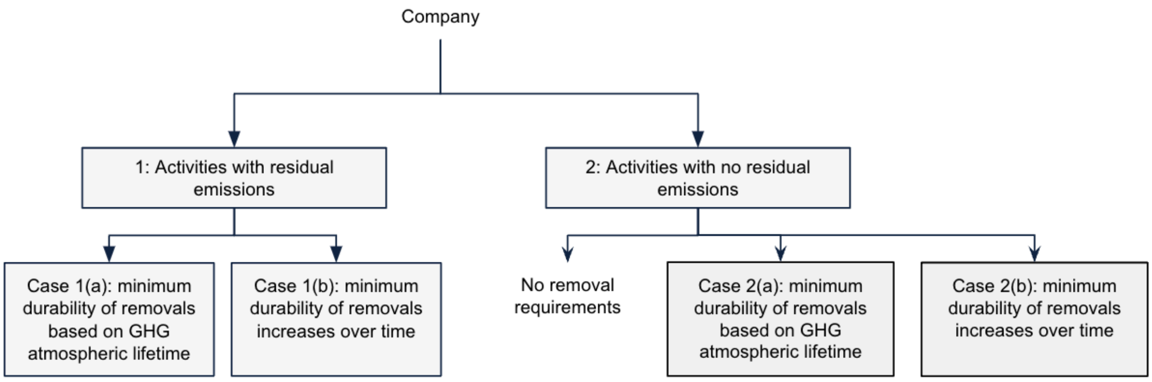

Figure 2.1.4. Overview of the options for RGT method application constraints.

Method implementation

Step 1: Calculate the interim removal factor (IRF).

The GHG emissions in the base and reference years are calculated based on the sectors in which the company is operating. If the company operates in multiple sectors, the base year and reference year emissions values must be calculated for each sector separately. The individual or aggregated GHGs must be calculated for each sector. The IRF is the scaling factor in the milestone years (i.e. 2030, 2035, 2040, 2045, and 2050) required for calculating the interim removal targets until the Net-Zero year. The IRF is differentiated based on the two cases presented in Figure 2.1.4.

Equation 3.1. Calculation of interim removal factor (IRF).

$$IRF_{y=my} = \frac{Z_{y=my}}{Z_{y=nzy}}$$

Where:

$IRF_{y=my}$	=	Interim removal factor at milestone years (%)
$Z_{y=my}$	=	Carbon dioxide removal (CDR) volume (t CO_2 removed) at the milestone year from climate scenarios (taken as the annual CDR growth in the filtered C1 scenario ensemble; See Cross-Sector Pathway, Annex F)
$Z_{y=nzy}$	=	CDR volume (t CO_2 removed) at the Net-Zero year from climate scenarios (taken as the annual CDR growth in the filtered C1 scenario ensemble; See Cross-Sector Pathway, Annex F). The Net-Zero year is 2050.

Note that at the Net-Zero year, the IRF is 1, meaning that 100% of residual emissions is addressed with removals.

Step 2: Calculate the adjusted interim removal factor.

If the target year is not equal to a milestone start year (i.e. 2030, 2035, 2040, 2045, 2050), the IRF should be adjusted to ensure that the removal growth target within that milestone period is met. This adjustment determines the minimum removal target ambition between the base year and the next milestone end year within the target timeframe.

Equation 3.2. Interim removal factor adjustment.

$$IRF_{y \neq my} = IRF_{y=msy} + \left(\frac{by - msy}{mey - msy} \right) \times \left(IRF_{y=mey} - IRF_{y=msy} \right)$$

Where:

$IRF_{y \neq my}$	=	Interim removal factor at non-milestone years (%)
$IRF_{y=msy}$	=	Interim removal factor at the milestone start year (%)
by	=	Company base year
msy	=	Milestone start year
mey	=	Milestone end year
$IRF_{y=mey}$	=	Interim removal at the milestone end year (%)

Step 3: Calculate the removal volume in the target year.

The final step involves calculating the annual volume of removals required at the company level per year using Equation 3.3.

Equation 3.3. Calculation of removal volume in the target year.

$$CZ_y = IRF_y \times CE_{y=nzy}$$

Where:

CZ_y	=	The required annual volume of CDR at the company level in any year *y* within the target timeframe (t CO_2e)
IRF_y	=	The interim removal factor in any year *y* within the target timeframe (%)
$CE_{y=nzy}$	=	The company's total residual GHG emissions (t CO_2e) or specific gases (e.g. t CO_2, t CH_4) at the Net-Zero year

Required company input variables
Based on the above equations, the company shall provide input data as follows:

- Base year
- Reference year CO_2 emissions and other GHG emissions (when available and applicable)
- Target year

Application rules

To illustrate the implementation of the RGT method, we present two scenarios where option 1a and option 1b are applied.

Option 1a: Nuanced approach based on lifetime of GHG in the atmosphere
Under Option 1a, **companies are required to report emissions by individual GHGs** so that the projected residual emissions of each individual GHG are addressed with specific removal types. Table 2.1 summarizes the characteristics of key GHGs and their corresponding CO_2 storage duration requirements. Under this approach, the storage duration is matched with the atmospheric lifetime of the residual GHGs, allowing short-lived GHGs (e.g. methane) to be neutralized using temporary storage and long-lived GHGs (e.g. carbon dioxide) to be neutralized using long-term storage.

Table 2.1. Characteristics of GHGs and required equivalent minimum durability threshold (IPCC, 2023a; Ehhalt et al., 2001). Global warming potential is derived from the AR6 (IPCC, 2023b).

Chemical Species	Formulas	Lifetime (years)	100-year Global Warming Potential	Minimum Durability Threshold (years)
Carbon dioxide	CO_2	1,000	1	1000+
Methane	CH_4	12	29.8/27	12+
Nitrous oxide	N_2O	120	273	120+
Sulfur hexafluoride	SF_6	3,200	24,300	1000+

Table 2.2 presents the IRF, i.e. the share of projected residual emissions addressed by removals in each interim period. Note that these values refer to the case when the company base year is equal to the milestone start year (Equation 3.1).

Table 2.2. Interim removal factor for individual GHGs at the milestone year representing the percentage of residual emissions addressed by removals.

Greenhouse gases (GHG)	Interim removal factor ($IRF_{y=my}$)				
	2030	2035	2040	2045	2050
Fossil CO_2 (1000+)	5%	16%	35%	60%	100%
CH_4	44%	56%	69%	84%	100%
N_2O	44%	56%	69%	84%	100%
Sulfur hexafluoride (SF_6)	5%	16%	35%	60%	100%

*Residual fossil CO_2 can be addressed using removals with a minimum durability of 1000 years.

Based on Equation 3.1, a company's interim removal target can be calculated by applying the IRF to the level of projected residual emissions in 2050. Table 2.5 presents the interim removal targets for an aviation company with base year emissions of 100 t CO_2, considering the IRF values presented in Table 3. Note that the same method should be applied for other residual non-CO_2 gases, using their respective IRFs and removal durability requirements.

Table 2.3. Interim removal targets for an archetype aviation company with base year emissions of 100 t CO_2 in 2020. The residual emissions at Net-Zero year is 34 t CO_2, estimated based on the share of sector-specific residuals (see Cross-Sector Pathway, Annex F). The required interim volume of removals is based on the durability of removals that matches the lifetime of the CO_2 gas (see Table 2.1) and the IRF (see Table 2.2)

Removal targets ($CZ_{y=my}$) (t CO_2/year)	
Minimum durability of removals	Fossil CO_2 (1000+)
2030	1.7
2035	5.4
2040	11.9
2045	20.4
2050	34

Option 1b: Aggregated approach

Under option 1b, **companies are required to report their total aggregated emissions across all GHGs, expressed as CO_2-equivalent,** so that the projected residual GHG emissions are matched by a mix of removal solutions with varying storage durability.

Figure 6 illustrates the volume and scale-up of CDR in IPCC scenarios that limit warming to 1.5C with no or low overshoot. In the scenarios, conventional removal methods play an important early role owing to their cost-competitiveness, contributing significantly to near-term mitigation. In contrast, novel removal methods show a slower initial growth due to technological and cost barriers but ramp up rapidly thereafter. This transition reflects the reliance on durable and scalable removal methods to address difficult or expensive-to-mitigate GHG emissions in the energy and agriculture sectors.

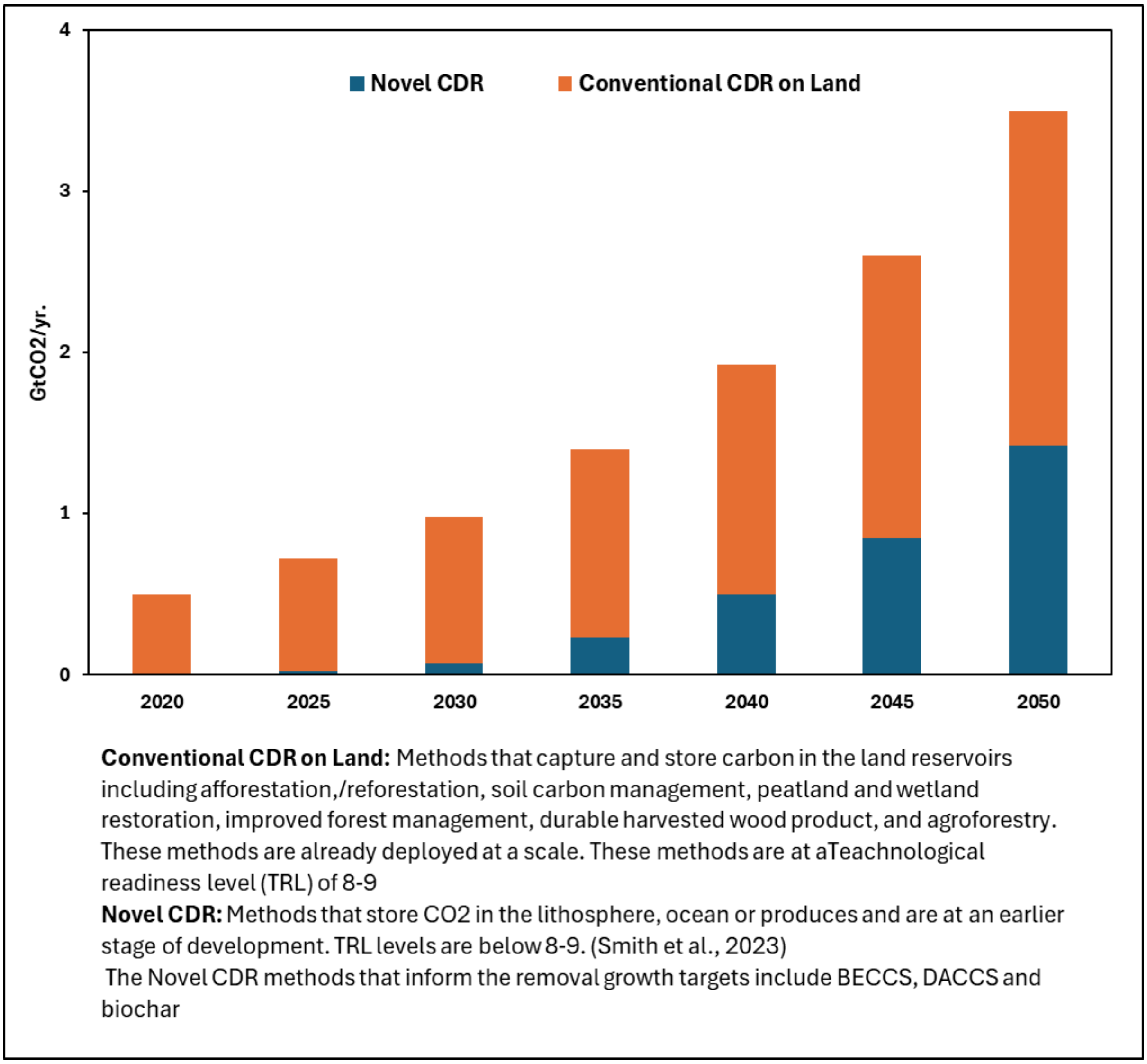

Figure 2.1.5. Overview of the scale of removal methods (median) in the scenarios that limit warming to 1.5°C with limited or no overshoot (filtered scenarios from C1 category) (Byers et al., 2022).

Table 2.4 outlines the IRF, which specifies the proportion of projected residual GHG emissions addressed using a broader range of removal methods during each interim period. These values assume that the company's base year aligns with the milestone start year, as described in Equation 3.1.

Table 2.4. Interim removal factor for total GHG at the milestone year representing the percentage of residual emissions addressed by removals.

	Metrics	2030	2035	2040	2045	2050
Interim removal factor ($IRF_{y=my}$)	Aggregated GHG	28%	40%	55%	74%	100%
Share of removals with different durability	Share of GHG residual emissions addressed by conventional removals (100+)	93%	83%	74%	68%	59%
	Share of GHG residual emissions addressed by Novel removals (1000+)	7%	17%	26%	32%	41%

Table 2.5 illustrates a use case of the IRF in setting removal targets for an aviation company with base year GHG emissions of 100 t CO_2e. In this case, the IRF is applied to determine the removal target for each interim period addressing the company's aggregated residual GHG emissions in alignment with the IRF values in Table 2.4.

Table 2.5. Interim removal targets for an archetype aviation company with a base GHG emission of 100 t CO_2e in 2020. The residual CO_2 emissions at the Net-Zero year is 34 t CO_2, estimated based on the share of sector-specific residuals (see Cross-Sector Pathway, Annex F).

Removal targets ($CZ_{y=my}$) (t CO_2/year)			
	Total removals (Novel+Conventional removals)	Conventional removal methods	Novel removal methods
2030	9.5	8.8	0.7
2035	13.6	11.4	2.3
2040	19	14	5
2045	25	17	8
2050	34	20	14

2.2 Scope 2 Methods

Absolute Contraction Approach (ACA)

Method description

The ACA produces an absolute emissions pathway between the base year and the target year, representing the company's idealized reduction curve. The ACA method determines interim performance values for scope 2 absolute emissions. Companies can then establish targets that ensure their scope 2 absolute emissions are reduced at a rate consistent with 1.5°C low or no overshoot scenarios. A point in time approach, rather than a cumulative approach, is used as scope 2 emissions are not expected to be reduced in a cumulative manner.

The method uses a grandfathering allocation principle which implies that the larger a company's emissions in a historic reference year, the larger its share of emissions in a desired target year.

Method implementation

Step 1: Determine the target year emissions level

The target year emissions value is determined using Equation 4.1, which utilizes the scenario LARR.

Equation 4.1. Calculating target year emissions level

$$CE_y = CE_{by} - \left(CE_{by} \times \left(y - by \right) \times LARR \right)$$

Where:

CE_y	=	Company emissions in any year *y* within the target timeframe (t CO_2e)
CE_{by}	=	Company emissions in the base year selected by the company (t CO_2e)
y	=	Any year *y* within the target timeframe
by	=	The base year selected by the company
LARR	=	Linear annual reduction rate, derived from the underlying pathway (%year)

Step 2: Determine ambition level of the target

The revised target ambition, in absolute percentage terms, is computed by multiplying the LARR by the number of years in the target period.

Equation 4.2. Target ambition in absolute % reduction terms

$$TA_{ty} = (ty - by) \times LARR$$

Where:

TA_{ty}	=	Target ambition, in terms of percent reduction between the base year and the target year (%)
ty	=	The target year
by	=	The base year selected by the company
LARR	=	Linear annual reduction rate, derived from the underlying pathway (%year)

Required company input variables

Based on the above equations, the company shall provide the following input data:

- Base year
- Base year GHG emissions
- Target year

Index Alignment Approach: Zero Carbon Electricity Procurement

Method description

The Index Alignment Approach uses pathways with pre-defined interim benchmark values for eligible target years that each company must achieve. The method applies a sector convergence principle that requires all companies to converge to the sector benchmark value in the desired target year, which is independent of the company's starting point. Figure 2.1.6 presents an overview.

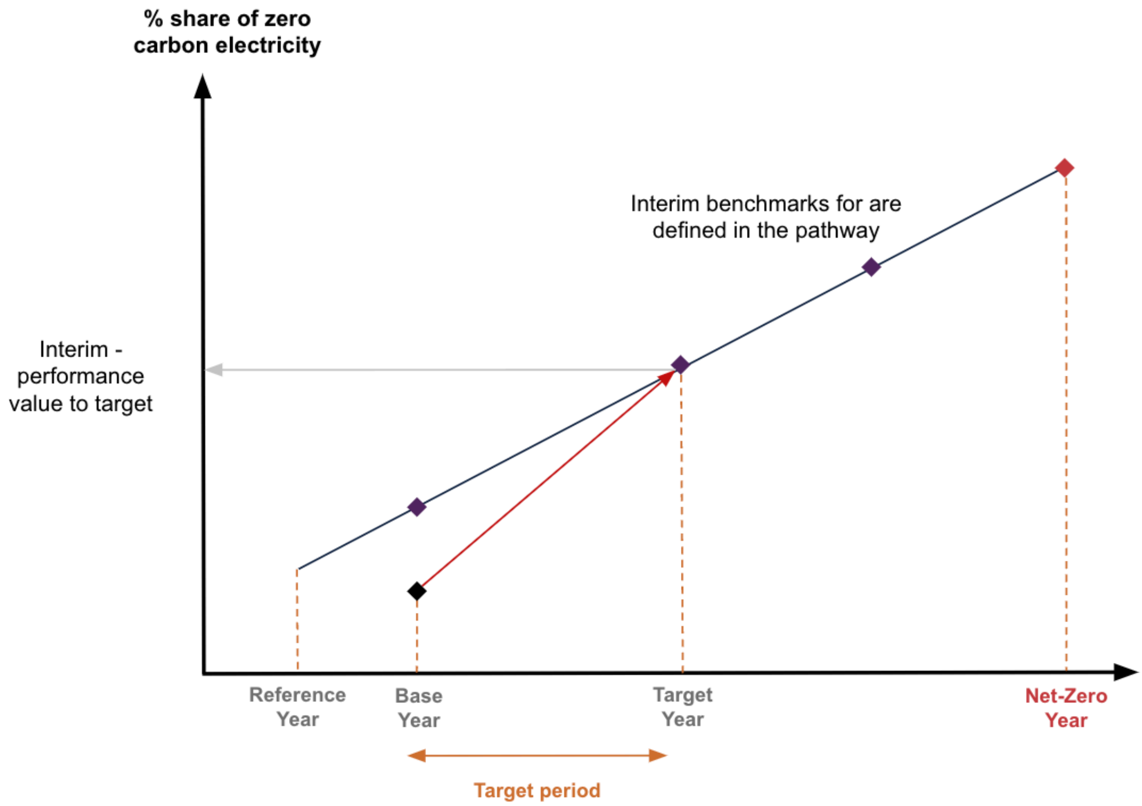

Figure 2.1.6. Index alignment methods for zero carbon electricity targets.

Method implementation

Step 1: Determine the baseline zero carbon electricity level
The share of electricity from zero carbon sources in the base year is determined by using Equation 4.3.

Equation 4.3. Share of electricity from zero carbon sources in the base year

$$ZCE_{by} (\%) = \frac{ZCE_{by}}{E_{by}} \times 100$$

Where:

ZCE_{by} (%)	=	The share of electricity procured from zero carbon sources and sourced according to the eligibility criteria of the indicator in the base year (%)
ZCE_{by}	=	The amount of zero carbon electricity procured by the company in the base year (MWh)

E_{by}	=	The total amount of electricity procured by the company in the base year (MWh)

Step 2: Determine ambition level of the target

The minimum renewable electricity procurement share required in the target year is determined by simply selecting the pathway value. The subsequent change in the procurement is then defined by a linear intercept between the base year renewable electricity procurement share and the required target year share.

Equation 4.4. Change in zero carbon carbon electricity required between base and target year.

$$\Delta ZCE_{procurement} = ZCE_{ty} - ZCE_{by}$$

Where:

$\Delta ZCE_{procurement}$	=	Targeted change in the share of electricity procurement from the base year to the target year (%)
ZCE_{ty}	=	The minimum percentage of electricity that must be procured from zero carbon sources and sourced according to the eligibility criteria of the indicator, which is a function of the target year (%)
ZCE_{by}	=	The percentage of electricity procured from zero carbon sources and sourced according to the eligibility criteria of the indicator in the base year (%)

Required company input variables

Based on the above equations, the company shall provide the following input data:

- Total electricity procured by the company in the base year
- Zero carbon electricity procured by the company in the base year, sourced according to the eligibility criteria of the indicator

2.3 Scope 3 Methods

Absolute Contraction Approach (ACA)

Method description

The ACA produces an absolute emissions pathway between base year and target year representing the company's idealized reduction curve. The ACA method determines interim performance values for scope 3 absolute emissions. Companies can then establish targets that ensure their scope 3 absolute emissions for specific categories or emissions sources are reduced at a rate consistent with 1.5°C low or no overshoot scenarios. A point in time approach, rather than a cumulative approach, is used as scope 3 emissions are not expected to be reduced in a cumulative manner.

The method uses a grandfathering allocation principle which implies that the larger a company's emissions in a historic reference year, the larger its share of emissions in a desired target year.

Method implementation

Step 1: Determine the target year emissions level

The target year emissions value is determined using Equation 5.1, which utilizes the scenario LARR.

Equation 5.1. Target year emissions level

$$CE_y = CE_{by} - \left(CE_{by} \times \left(y - by \right) \times LARR \right)$$

Where:

CE_y	=	Company emissions in any year *y* within the target timeframe (t CO_2e)
CE_{by}	=	Company emissions in the base year selected by the company (t CO_2e)
y	=	Any year *y* within the target timeframe
by	=	The base year selected by the company
LARR	=	Linear annual reduction rate, derived from the underlying pathway (%/year)

Step 2: Determine ambition level of the target

The revised target ambition, in absolute percentage terms, is computed by multiplying the LARR by the number of years in the target period.

Equation 5.2. Target ambition in absolute percentage reduction terms

$$TA_{ty} = (ty - by) \times LARR$$

Where:

TA_{ty}	=	Target ambition, in terms of percent reduction between the base year and the target year (%)
ty	=	The target year
by	=	The base year selected by the company
LARR	=	Linear annual reduction rate, derived from the underlying pathway (%year)

Required company input variables

Based on the above equations, the company shall provide the following input data:

- Base year
- Base year GHG emissions
- Target year

Sectoral Decarbonisation Approach

Method description

The SDA produces an emissions intensity pathway between the base year and the target year representing the company's idealized reduction curve. The SDA is based on a physical intensity convergence approach, with emissions grandfathered from the base year.

The SDA determines interim performance values for scope 3 procurement of emissions-intensive commodities. Companies can then establish targets that ensure that the physical emissions intensity of their procured commodities are reduced at a rate that ensures they converge with the sector average intensity in the Net-Zero year.

The SDA can be applied to scope 3 using the same steps as applied to scope 1+2, as established in the SBTi's SDA guidance (SBTi, 2015).

Method Implementation

Company emissions intensity is calculated using the standard SDA system of equations (Equations 5.3 - 5.6). Company activity projections are produced using a **fixed market share approach.** Company activity market share in the base year is assumed to remain constant, yielding activity growth projection aligned with sector activity growth projection.

The company is not required to follow the idealized reduction curve on a strict annual basis. Such an approach would be overly prescriptive and would not reflect actual trends in corporate emissions reduction.

Step 1: Calculate the initial performance parameter

The initial performance parameter establishes the gap between the current physical emissions intensity of the procured commodity versus the Net-Zero aligned benchmark value

Equation 5.3. Calculating the initial performance parameter.

$$d = CI_{by} - SI_{2050}$$

Where:

d	=	Initial performance parameter in the base year relative to the 2050 sector target (t CO_2e / procurement)
CI_{by}	=	Emissions intensity of product procured in the base year (t CO_2e / procurement)
SI_{2050}	=	Sector emissions intensity for product procured in 2050 (Net-Zero aligned benchmark value in t CO_2e / procurement)

Step 2: Calculate the sector decarbonisation index

The SDA method assumes that the emissions intensity for the commodities in scope will converge in 2050. This convergence is represented by an index wherein the sector decarbonization is equal to 1 in the base year and 0 in 2050. This index is calculated following Equation 5.4.

Equation 5.4. Calculating the sector decarbonisation index.

$$P_y = \frac{SI_y - SI_{2050}}{SI_{by} - SI_{2050}}$$

Where:

P_y	=	Sector decarbonization index in any year *y* within the target timeframe
SI_y	=	Sector emissions intensity for product in any year *y* within the target timeframe (t CO_2e / procurement)
SI_{by}	=	Sector emissions intensity for product in the base year (t CO_2e / procurement)
SI_{2050}	=	Sector emissions intensity for product in 2050 (t CO_2e / output).

Step 3: Calculate the market share parameter

The expected future commodity procurement levels are combined with the sector's expected activity levels from the underlying reference scenario to calculate the company's market share parameter for any given year following Equation 5.5.

Equation 5.5. Calculating the market share parameter.

$$M_y = \frac{\dfrac{CA_{by}}{SA_{by}}}{\dfrac{CA_y}{SA_y}}$$

Where:

M_y	=	Market share parameter in any year *y* within the target timeframe
CA_{by}	=	Company activity in the base year (procurement e.g. tons of steel)
CA_y	=	Company activity in any year *y* within the target timeframe (procurement e.g. tons of steel)
SA_{by}	=	Sector activity in the base year (procurement e.g. tons of steel)
SA_y	=	Sector activity in any year *y* within the target timeframe (procurement e.g. tons of steel)

Step 4: Calculate the target year intensity of procured commodity
Combining the company's initial performance parameter with its market share and the sectoral decarbonization index for year *y* results in an equation that provides the company's intensity target for any year *y* between the base year and the year 2050 (Equation 5.6.)

Equation 5.6. Calculating the target year intensity of the procured product.

$$CI_y = \left(d \times P_y \times M_y \right) + SI_{2050}$$

Where:

CI_y	=	Average emissions intensity of procured product in any year *y* within the target timeframe (t CO_2e/output)

d	=	Initial performance parameter in the base year relative to the 2050 sector target (t CO_2e / procurement)
P_y	=	Sector decarbonisation index in any year *y* within the target timeframe
M_y	=	Market share parameter in any year *y* within the target timeframe
SI_{2050}	=	Sector emissions intensity for product in 2050 (Net-Zero aligned benchmark value in t CO_2e / output)

Required company input variables

Based on the above equations, the company shall provide the following input data:

- Company emissions in the base year
- Company activity in the base year

Economic Intensity Contraction

Method description

The economic intensity contraction method enables companies to reduce economic emissions intensity for upstream procurement spend (t CO_2 / $ procurement spend) and downstream revenue generation (t CO_2 / $ revenue) by an amount that is, at minimum, consistent with limiting warming to 1.5˚C. This target setting method is only eligible for upstream and downstream scope 3 emission sources.

This method calculates emissions intensities based on global models, requiring companies to progressively reduce emissions intensity as they grow economically (reflected by procurement spent or revenue generation), thus ensuring that absolute emissions decline at a rate consistent with the 1.5°C limit, despite growing revenue or procurement spend.

Method implementation

Step 1: Calculate the base year emissions intensity.

The emissions intensity of revenue generation and procurement spend in the base year is determined by using Equation 6.1.

Equation 6.1. Calculate the base year emissions intensity.

$$EI_{by} = \frac{E_{by}}{R_{by}}$$

Where:

EI_{by}	=	Economic emissions intensity in the base year (t CO_2e / $)

E_{by}	=	Absolute emissions in the base year (t CO_2e)
R_{by}	=	Revenue (or procurement spend) in the base year ($)

Step 2: Calculate the target year emissions intensity.

The emissions intensity of revenue generation and procurement spend in the target year is determined by using Equation 6.2.

Equation 6.2. Emissions intensity target

$$EI_y = EI_{by} \times (1 - r)^{y-by}$$

Where:

EI_y	=	Economic emissions intensity in any year *y* within the target timeframe (t CO_2e / $)
EI_{by}	=	Economic emissions intensity in the base year (t CO_2e / $)
r	=	The required annual reduction rate in emissions intensity aligned with a 1.5°C pathway (% / year)
y	=	Any year *y* within the target timeframe
by		The base year selected by the company

Step 3: Calculate the target year absolute emissions.

The total absolute emissions in the target year y is then determined by using equation 6.3.

Equation 6.3. Absolute emissions target

$$CE_y = EI_y \times R_y$$

Where:

CE_y	=	Company absolute emissions in any year *y* within the target timeframe (t CO_2e)
EI_y	=	Economic emissions intensity in any year *y* within the target timeframe (t CO_2e / $)
R_y	=	The projected company revenue (or procurement spend) in any year *y* within the target timeframe ($).

Required company input variables

Based on the above equations, the company shall provide the following input data:

- Base year
- Absolute emissions in the base year
- Revenue (or procurement spend) in the base year
- Projected revenue (or procurement spend) between the base year and the target year

Value Chain Linear Alignment

Method description

The value chain linear alignment method establishes benchmarks for upstream and downstream indicators. The alignment indicators explain the degree to which scope 3 value chain activities (e.g. suppliers, emissions-intensive procured products, and emissions-intensive sold products) are 1) transitioning (for suppliers only) or 2) have already transitioned to a Net-Zero aligned performance level compatible with achieving a Net-Zero economy by 2050. Figure 2.1.7 presents an overview using procurement spend as the indicator.

It should be noted that while a company's procurement and product portfolios may change composition regularly, the scope 3 value chain activities on which the company relies are still required to align to Net-Zero if the goals of the Paris Agreement are to be achieved.

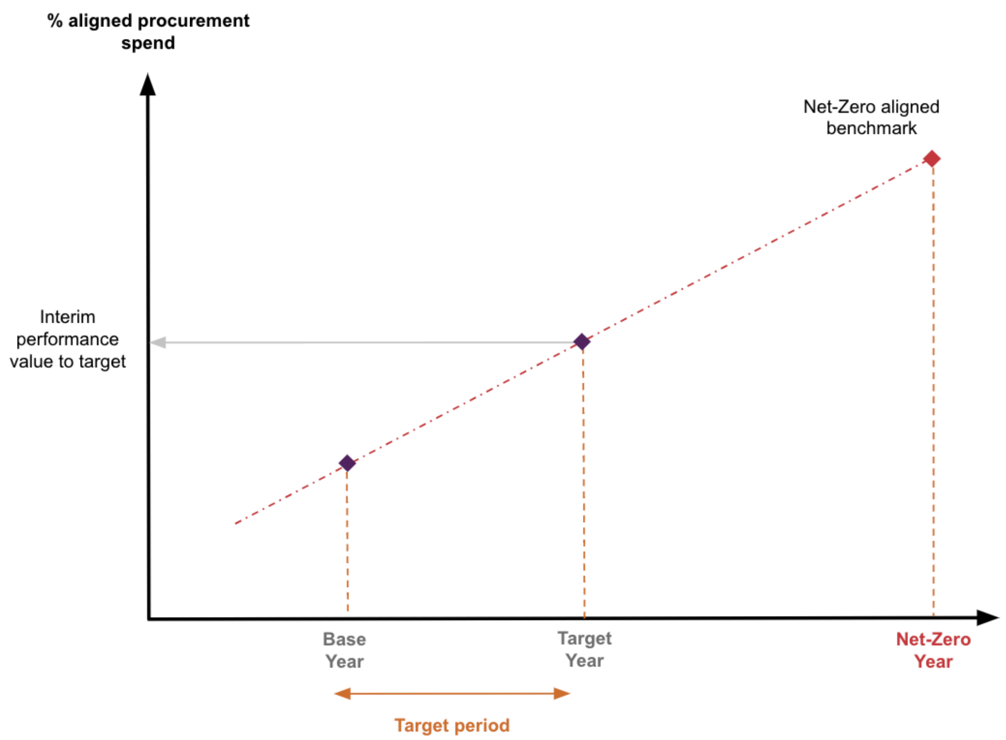

Figure 2.1.7. The value chain linear alignment method for scope 3 value chain alignment indicators

Method implementation

Step 1: Calculate alignment of tier 1 suppliers[2] in engagement targets.
For tier 1 suppliers providing emissions-intensive activities, the target value for supplier alignment is fixed at 100% alignment (transitioning or Net-Zero achieved) by 2030, meaning the company targets this value regardless of its performance in the base year.

The minimum share of total tier 1 suppliers by spend (providing emissions-intensive and non-emissions-intensive activities) that need to be aligned at the interim target year is determined by measuring the base year level of alignment of tier 1 suppliers and applying a linear growth rate consistent with reaching 100% alignment by the company's Net-Zero target year.

Equation 7.2. Calculating base year alignment of tier 1 suppliers

$$SAS_{by} = \frac{PSA_{by}}{TPS_{by}}$$

Where:

SAS_{by}	=	Share of total procurement spend to aligned tier 1 suppliers in the base year (%)
PSA_{by}	=	Procurement spend to aligned tier 1 suppliers in the base year ($)
TPS_{by}	=	Total procurement spend in the base year ($)

Step 2: Determine target ambition for the alignment of tier 1 suppliers.

The target ambition, in absolute percentage terms, is determined using Equation 7.3.

Equation 7.3. Calculating interim targets for alignment of procurement spend on tier 1 suppliers

$$SAS_{ty} = 100\% - (nzy - ty) \times \left(\frac{100\% - SAS_{by}}{nzy - by}\right)$$

[2] Note: in the Corporate Net-Zero Standard v2.0 draft, this method is also proposed as a potential option for addressing emissions from third-party processors (scope 3 category 10) franchisee emissions (scope 3 category 14) where direct mitigation is not possible.

Where:

SAS_{ty}	=	Share of total procurement spend to aligned tier 1 suppliers in the target year (%)
nzy	=	The Net-Zero year
ty	=	The target year
SAS_{by}	=	Share of total procurement spend to aligned tier 1 suppliers in the base year (%)
by		The base year selected by the company

Step 3: Calculate alignment of procurement of emissions-intensive activities.

To establish the alignment of procured emissions-intensive activities, companies shall use Equation 7.4. The alignment percentage is calculated separately for each commodity in terms of mass or volume. The total aggregate alignment of all commodities is not computed. Note that the alignment of emissions-intensive activities depends only on whether or not the activity has reached a level of performance compatible with Net-Zero (i.e. a Net-Zero “end state”), and that there is no current inclusion of activities that are “transitioning” due to the lack of methodologies on activity or commodity level transition.

Equation 7.4. Calculating alignment of procurement of emissions-intensive activities.

$$SAEI_{by} = \frac{AEI_{by}}{TEI_{by}}$$

Where:

$SAEI_{by}$	=	Share of Net-Zero aligned procurement of emissions-intensive activities in the base year (%)
AEI_{by}	=	Procured Net-Zero aligned emissions-intensive activities in the base year (activity unit e.g. mass, volume)
TEI_{by}	=	Total procured emissions-intensive activities in the base year (activity unit e.g. mass, volume)

Step 4: Determine target ambition for the alignment of emissions-intensive activities.

The target ambition, in absolute percentage terms, is determined using Equation 7.5. The minimum share of procured emissions-intensive activities products by tier 1 suppliers or beyond tier 1 by activity unit (e.g. volume or mass) that are required to have transitioned to a level of performance compatible with Net-Zero at the interim target year is determined by measuring the base year level of alignment of emissions-intensive activities and applying a linear growth rate consistent with reaching 100% alignment by the company's Net-Zero target year.

Equation 7.5. Interim targets for alignment of emissions-intensive activities

$$SAEI_{ty} = 100\% - (nzy - ty) \times \left(\frac{100\% - SAEI_{by}}{nzy - by} \right)$$

Where:

$SAEI_{ty}$	=	Share of Net-Zero aligned procurement of emissions-intensive activities in the target year (%)
nzy	=	The Net-Zero year
ty	=	The target year
$SAEI_{by}$	=	Share of Net-Zero aligned procurement of emissions-intensive activities in the base year (%)
by	=	The base year selected by the company

Step 5: Determine the alignment of sold products (revenue).
To establish the share of revenue from Net-Zero aligned products, companies shall use Equation 7.6. The proportion of revenue that is not included in this equation is equivalent to the proportion of revenue derived from emissions-intensive activities.

Equation 7.6. Calculating the alignment of sold products.

$$SAR_{by} = \frac{AR_{by}}{TR_{by}}$$

Where:

SAR_{by}	=	Share of revenue from Net-Zero aligned sold products in the base year (%)
AR_{by}	=	Revenue from Net-Zero aligned sold products and non-emissions-intensive sold products in the base year ($)

TR_{by}	=	Total revenue from sold products in the base year ($)

Step 6: Determine target ambition for the alignment of sold products (revenue).
The minimum share of revenue from products that are required to have transitioned to a level of performance compatible with Net-Zero at the interim target year is determined by measuring the base year level of alignment of revenue and applying a linear growth rate consistent with reaching 100% alignment by the company's Net-Zero target year (Equation 7.7).

Equation 7.7. Interim targets for alignment of sold products.

$$SAR_{ty} = 100\% - (nzy - ty) \times \left(\frac{100\% - SAR_{by}}{nzy - by} \right)$$

Where:

SAR_{ty}	=	Share of revenue from Net-Zero aligned sold products in the target year (%)
nzy	=	The Net-Zero year
ty	=	The target year
SAR_{by}	=	Share of revenue from Net-Zero aligned sold products in the base year (%)
by	=	The base year selected by the company

Required company input variables
Based on the above equations, the company shall provide the following input data:

- Base year
- Procurement spend to aligned tier 1 suppliers in the base year
- Total procurement spend in the base year
- Procured Net-Zero aligned emissions-intensive activities in the base year
- Total procured emissions-intensive activities in the base year
- Revenue from Net-Zero aligned sold products and non-emissions-intensive sold products in the base year
- Total revenue from sold products in the base year
- Target year

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