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DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

SBTi CORPORATE NET-ZERO STANDARD VERSION 2.0: METHODS, METRICS AND PATHWAYS (MMPs)

Version for public commenting

June 2026

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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VERSION HISTORY

Version	Change/update description	Release date	Effective dates
1.0	Public version for public commenting	June 2026	June 2026 - August 2026

PURPOSE OF THIS DOCUMENT

This document supports the public comment process on the Methods, Metrics and Pathways (MMPs) that underpin implementation of the SBTi Corporate Net-Zero Standard (CNZS) V2.0.

It describes the role of MMPs within the CNZS V2.0 architecture and outlines the methods and pathways applicable across emissions scopes, activities, and target types.

The document also summarizes the MMP specification sheets included in the public comment period and provides information on the associated process, supporting materials, and opportunities for stakeholder feedback.

ROLE OF METHODS AND PATHWAYS WITHIN THE SBTI STANDARD ARCHITECTURE

Within the SBTi Standard architecture, pathways and methods perform distinct but complementary functions. Pathways define trajectories consistent with achieving a specified climate objective, while methods define the calculation approaches used to translate those trajectories into company-level targets, benchmarks, or progress assessments.

Pathways type

Pathways in the SBTi framework are classified according to the type of metric (or indicator) used to inform target-setting and track progress over time. These metrics may relate to absolute emissions, emissions intensity, activities and technologies aligned with the transition, or the evolution of physical assets. In all cases, SBTi pathways are intended to be science-based and derived from robust scenarios and mitigation pathways consistent with reaching net-zero emissions by 2050, or earlier, in line with the limits set out in the Paris Agreement. The following pathway types are defined within the SBTi framework:

1. **Absolute emissions pathway:** A trajectory describing the expected evolution of absolute greenhouse gas emissions over time for an entity, sector, or system to achieve a specified climate objective.
2. **Emissions-intensity pathway:** A trajectory describing how greenhouse gas emissions per unit of activity or output (e.g., per tonne of product or per unit of energy) must decline over time to achieve a specified climate objective.
3. **Alignment pathways:** Trajectories describing the expected evolution of net-zero-aligned activities, commodities, technologies, products, or practices consistent with achieving a specified climate goal (e.g., net-zero global emissions by 2050).
4. **Asset transition pathways:** A trajectory describing the evolution of an asset base over time, including the deployment of new assets and the abatement, retrofit,

retirement, or replacement of existing assets, consistent with achieving an underlying climate objective.

Methods type

Methods define the calculation approaches used to translate pathway values into company-level targets, benchmarks, or progress assessments. Methods within the SBTi framework are classified according to the type of indicator or allocation principle used to derive company-level targets and track progress over time. These indicators may relate to absolute emissions reductions, asset transformations, carbon budgets, or alignment with specific technologies or activities. The following method types are defined within the framework:

1. **Linear Contraction (LC):** Generates targets to reduce absolute emissions linearly from the target base year until the net-zero year.
2. **Sector Decarbonization Approach (SDA):** Generates targets to reduce the emission intensity of an activity consistent with sector-specific decarbonization pathways.
3. **Asset Decarbonization Plan (ADP):** Generates asset transition targets to reduce scope 1 emissions based on a company's physical inventory of emitting assets. Targets are derived from an asset decarbonization plan that is consistent with either of the following approaches:
 - a. Science-based carbon budget: Targets consistent with a company-level carbon budget derived from relevant SBTi sector- or activity-specific pathways.
 - b. Science-based milestones: Targets consistent with a plan to retire or decommission assets by the earliest of the asset's technical lifetime, the company net-zero year, or an applicable SBTi science-based milestone.
4. **Alignment:** Generates targets defined based on the share of activities, technologies, or commodities that are aligned with science-based transition pathways. Alignment targets track the proportion of aligned activities over time, rather than emissions directly. Two types of alignment methods are available.
 - a. Linear alignment: generates a linear trajectory from target base year value to the net-zero aligned benchmark value. Interim target values are defined on this linear trajectory.
 - b. Index alignment: generates a linear trajectory from target base year value to the interim benchmark value in the target year. Interim target values are the interim benchmark values themselves.

Within the CNZS V2.0 framework, MMP specifications provide the technical and methodological detail necessary to operationalize target-setting approaches across scopes

and activities. These specifications support implementation of the Standard and may also underpin future sector-specific standards.

Box 1. Asset Decarbonization Plan

Methods such as Linear Contraction and the Sectoral Decarbonization Approach (SDA) represent emissions reductions following continuous linear trajectories. In practice, emissions from capital-intensive assets often decline in stepwise patterns, as assets are retired, replaced, or retrofitted in discrete cycles rather than through continuous change. CNZS requires companies for the first time to set separate targets on scope 1 emissions. To address this, the SBTi has introduced the asset decarbonization plan (ADP) method, enabling scope 1 emission trajectories that better reflect how capital-intensive industries actually decarbonize.

This method provides greater flexibility in the pace of decarbonization while ensuring that companies remain within a science-based long-term budget (*Science based carbon budget approach*) or that companies retire or decommission assets within a specific timeframe (*Science based milestones approach*).

The ADP sets out a schedule to fully abate, retire, or decommission GHG-emitting assets consistent with achieving net-zero emissions by 2050 or earlier, in line with reference science-based pathways.

APPLICATION OF METHODS AND PATHWAYS ACROSS SCOPES UNDER CNZS V2.0

Within the CNZS V2.0 framework, methods and pathways are applied in combination across different scopes, activities, and target types. The applicable combinations depend on the underlying metric, the type of activity being addressed, and the corresponding target-setting approach.

Table A1 presents a summary of the Scope 1, 2, and 3 target-setting options set out in the Standard. The 'Intended activities coverage' column indicates which activities are covered by each target setting option, subject to the availability of a suitable pathway..

Table A.1: Summary of target setting options within each GHG scope and applicable Method and Pathway type. A list of eligible pathways for each target setting option is detailed in Tables A.2 - A.4

Scope	Target-setting Option	Group Options (only for scope 3)	Target Metric	Method	Pathway	
					Pathway type	Intended activities covered
Scope 1	Absolute emissions reduction	N/A	Absolute emissions (tCO ₂ e)	Linear Contraction	Absolute emissions pathway	General services, operation and manufacturing activities
	Emission intensity reduction	N/A	Emissions intensity (tCO ₂ e/output)	Sectoral Decarbonization Approach	Emissions-intensity pathway	All heavy industry production activities
	Asset transition	N/A	Absolute emissions (tCO ₂ e)	Asset Decarbonization Plan	Asset transition pathways and Absolute emissions pathway	All production and operation activities
Scope 2	Low-carbon electricity (LCE) alignment	N/A	% LCE purchased	Linear Alignment	Alignment pathway	Electricity purchasing
	Absolute emissions reduction	N/A	Absolute emissions - Electricity Location (tCO ₂ e)	Linear Contraction	Absolute emissions pathway	Purchasing of electricity, heat, steam, or cooling
Scope 3	Overarching scope 3 emissions reduction target	N/A	Absolute emissions (tCO ₂ e)	Linear Contraction	Absolute emissions pathway	All purchasing and sales activities
	Overarching supplier and/or customer alignment target	N/A	% aligned entities	Index Alignment	Alignment pathway	All purchasing and sales activities
	Category- or activity-specific targets	Emissions reduction	Absolute emissions (tCO ₂ e)	SDA	Absolute emissions pathway	Group A: Upstream activities for which sector-specific or commodity pathways exist
			Emissions intensity (tCO ₂ e/unit)	SDA	Emissions-intensity pathway	
		Volume alignment	% aligned commodities	Index Alignment	Alignment pathway	
		Supplier alignment	% aligned entities	Index Alignment	Alignment pathway	
Emissions reduction	Absolute emissions (tCO ₂ e)	Linear Contraction	Absolute emissions pathway	Group B: Upstream emissions not covered by targets		

Scope	Target-setting Option	Group Options <i>(only for scope 3)</i>	Target Metric	Method	Pathway	
					Pathway type	Intended activities covered
		Supplier alignment	% aligned entities	Index Alignment	Alignment pathway	using group A options
		Emissions reduction	Absolute emissions (CO ₂ e)	Linear Contraction	Absolute emissions pathway	Group C: Downstream activities
			Absolute emissions (CO ₂ e)	SDA	Absolute emissions pathway	
			Emissions intensity (tCO ₂ e/unit)	SDA	Emissions-intensity pathway	
		Product use alignment	% aligned products	Index Alignment	Alignment pathway	
		Product end-of-life (EoL) alignment	% aligned products	Index Alignment	Alignment pathway	
		Customer alignment	% aligned entities	Index Alignment	Alignment pathway	

Scope 1 Target Options

Target types are dependent on the company's owned and operated activities that generate scope 1 emissions.

*Table A.2: Target setting methods and pathways to address scope 1 emissions. *Indicates pathways already in use within existing SBTi Standard and Guidances*

Component (or Activity)	Target-setting options	Method	Pathway <i>Available at CNZS V2 launch</i>
General operation, manufacturing and services activities	Emission reduction targets: Targets to reduce aggregate Scope 1 emissions	Linear contraction	None: the method assumes 100% abatement by the net zero year
Emissions Intensive activities	Emission intensity reduction targets: Targets to reduce aggregate Scope 1 emissions intensity	SDA	Emission intensity pathways <ul style="list-style-type: none"> - <i>Steel production pathway*</i> - <i>Cement production pathway*</i> - <i>Primary chemicals production pathways*</i> - <i>Building operation pathway*</i> - <i>Shipping operation pathway*</i> - <i>Aviation operation pathway*</i>
All Activities <i>(Including Emission Intensive Activities)</i>	Asset transition target(s): targets to phase out carbon-emitting assets	ADP - milestone approach	Asset transition pathways <ul style="list-style-type: none"> - <i>Power generation asset transition pathway</i>
		ADP - budget approach	Absolute emissions pathways <ul style="list-style-type: none"> - <i>Steel production pathway*</i> - <i>Cement production pathway*</i> - <i>Primary chemicals production pathways*</i> - <i>Building operation pathways*</i> - <i>Shipping operation pathway*</i> - <i>Aviation operation pathway*</i>

Scope 2 Target Options

Target types depend on both the type of energy procured (e.g., electricity only, or also heat, steam, and cooling) and whether the company sets separate or aggregated Scope 2 targets.

*Table A.3: Target setting methods and pathways to address scope 2 emissions. *Indicates pathways already in use within existing SBTi Standard and Guidances*

Component (or Activity)	Target Type	Method	Pathway
Electricity procurement	Emission reduction targets: Targets to reduce Scope 2 emissions from the purchase of electricity	Linear contraction	Absolute emissions pathway - <i>Scope 2 Electricity emission pathway</i>
	Low-carbon electricity alignment targets: Targets to increase the percentage of low-carbon electricity used, contracted or matched	Linear Alignment	Alignment pathway - <i>Scope 2 Low-carbon electricity pathway</i>
Heat, steam, or cooling procurement	Emission reduction targets: Targets to reduce Scope 2 emissions from heating, cooling, or steam.	Linear contraction	None: the method assumes 100% abatement by the net zero year, which is 2050 at the latest.
Electricity AND heat, steam, or cooling procurement	Emission reduction targets: Targets to reduce aggregate Scope 2 emissions from, purchased electricity, heating, cooling or steam.	Linear contraction	Absolute emissions pathway - <i>Scope 2 Electricity emission pathway</i>

Scope 3 Target Options

Target types are dependent on whether the company wants to address all value chain activities in one overarching target, or whether more category and activity specific targets are preferred (see table A.4).

*Table A.4: Target setting methods and pathways to address scope 3 emissions. *Indicates pathways already in use within existing SBTi Standard and Guidances*

Component (or Activity)	Target Type	Method	Pathway
All activities	Emissions reduction targets: Targets to reduce aggregate Scope 3 upstream and downstream emissions	Linear contraction	Absolute emissions pathway - <i>Cross-sector pathway</i>
	Supplier and/or customer alignment targets: Targets to increase alignment of upstream suppliers and downstream customers/partners.	Index Alignment	Alignment pathway - <i>Supplier and/or customer alignment pathway</i>
Purchasing of emissions-intensive goods and services (Group A)	Emissions reduction targets (Intensity)	SDA	Emission intensity pathways - <i>Steel sourcing pathway*</i> - <i>Cement sourcing pathway*</i> - <i>Chemicals sourcing pathway*</i>
	Emissions reduction targets (Absolute)	SDA	
	Volume alignment targets	Index Alignment	Alignment pathway - <i>Generic purchasing pathway</i>
	Supplier Alignment targets	Index Alignment	Alignment pathway - <i>Supplier and/or customer alignment pathway</i>
Purchasing of all non-emissions-intensive goods and services (Group B)	Emissions reduction targets	Linear contraction	Absolute emissions pathway - <i>Cross-sector pathway</i>
	Supplier Alignment targets	Index Alignment	Alignment pathway - <i>Generic purchasing pathway</i>
Sale of all goods and services (Group C)	Emissions reduction targets (Intensity)	SDA	Absolute emissions pathway - <i>Cross-sector pathway</i>
	Emissions reduction targets (Absolute)	SDA	
	Emissions reduction targets (Absolute)	Linear contraction	
	Product use alignment targets	Index Alignment	Alignment pathway - <i>Generic Products Pathway</i>
	Product end-of-life alignment targets	Index Alignment	Alignment pathway - <i>Generic Products Pathway</i>
	Customer alignment targets	Index Alignment	Alignment pathway - <i>Supplier and/or customer alignment pathway</i>

PUBLIC COMMENT PROCESS FOR METHODS, METRICS AND PATHWAYS (MMPS)

The SBTi is conducting a public comment process on the full set of MMPS supporting the implementation of the CNZS V2.0. The primary goals are:

- To assess the usability, structure, and completeness of the MMP specifications and supporting materials; and
- To evaluate whether the MMPS are sufficiently clear, practical, and capable of supporting consistent implementation across sectors and geographies.

Stakeholders participating in the public comment will be invited to:

- review the supporting materials, including the individual MMP specification sheets;
- test the application of methods and pathways through the tool; and
- provide feedback through the survey, including both general feedback on the overall MMPS framework and targeted feedback on individual methods and pathways.

Feedback collected through the public comment process will inform the continued refinement of the MMPS framework and associated implementation resources (i.e., target setting tool, MMPS documentation and interactive dashboard).

APPENDIX: MMPS SPECIFICATIONS

Table A.5 lists the methods and pathways released for public comment. The full specification sheets for individual pathways and methods can be found below.

Table A.5: Overview of MMP specification sheets included in the public comment process

Spec type	Name
Method	Linear Contraction
Method	Index Alignment
Method	Sector Decarbonization Approach (SDA)
Method	Linear Alignment
Method	Asset Decarbonization Plan (ADP)
Pathway	Scope 2 Low-carbon electricity pathway
Pathway	Scope 2 electricity emission pathway
Pathway	Cross-sector pathway
Pathway	Supplier and/or customer alignment pathway
Pathway	Generic purchasing pathway
Pathway	Generic products pathway
Pathway	Power generation asset transition pathway



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SBTi METHOD SPECIFICATION

Linear Contraction

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1. SCOPE AND APPLICABILITY

Linear Contraction can be applied to multiple GHG emission scopes and multiple SBTi pathways.

Scope 1	✓	Address GHG emissions from owned/operated assets
Scope 2	✓	Address GHG emissions from electricity, heat, steam, or cooling purchasing
Scope 3	✓	Address GHG emissions from all S3 emissions (across categories) or a specific category

The Linear Contraction method can use one or several absolute emission pathways to construct a linear pathway to zero emissions or the applicable net-zero residual level by the net-zero year.

2. DEFINITIONS

The following key technical terms are used to understand the calculation logic, inputs, and progress assessment associated with the method.

- **Target base year:** the most recent full calendar or financial year with a complete GHG inventory.
- **Target year:** the desired near-term target year selected by the company.
- **Net-zero year:** the company net-zero target year or 2050, whichever is earlier.
- **Reference pathway:** the science-based pathway used to determine the level of performance for a given sector or activity at the target and net zero years.
- **Residual emissions:** a subset of gross emissions that are expected to remain unabated at the net-zero target year, after all feasible abatement measures have been implemented in line with the reference pathway.
- **Linear annual reductions:** the percentage annual change in emissions required over the target period from target base year to the target year.

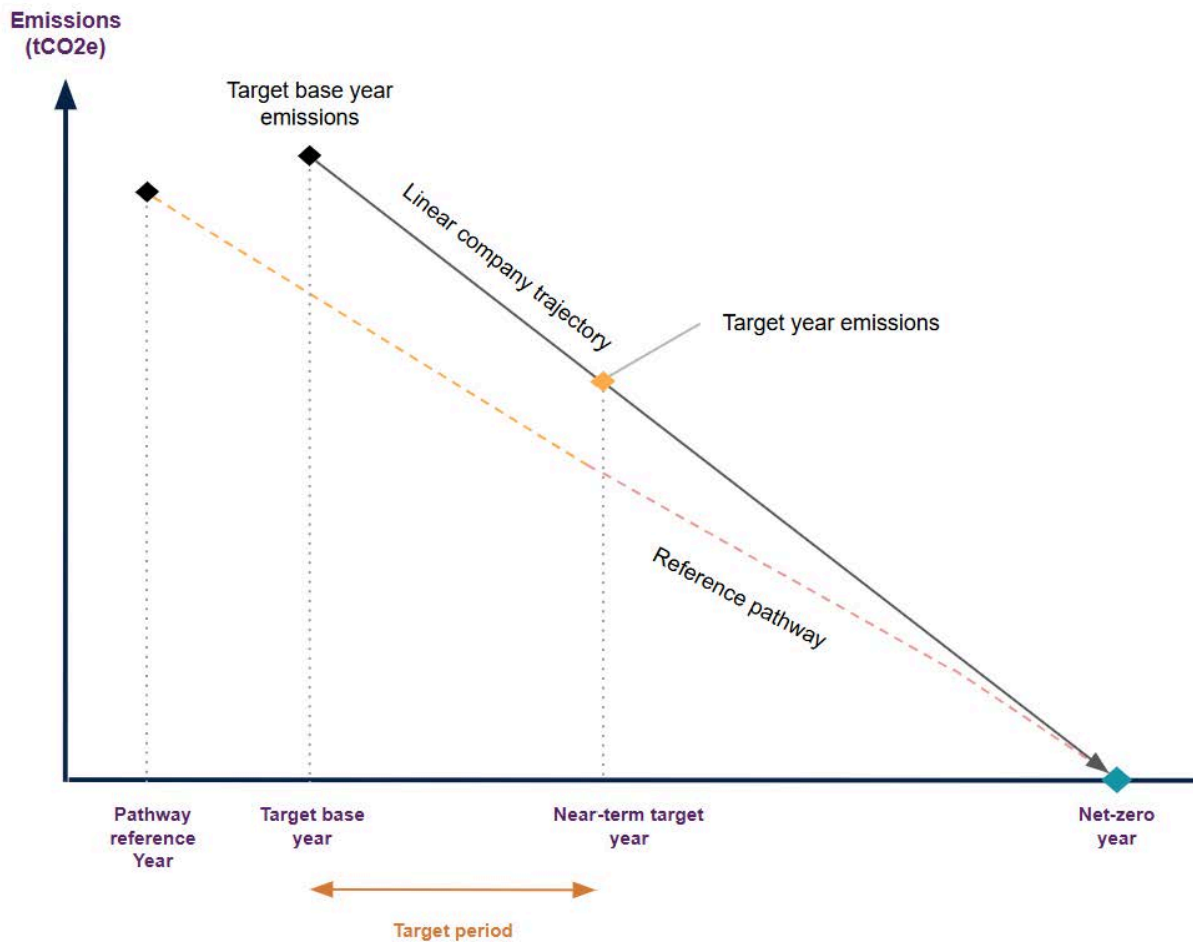
3. METHOD OVERVIEW

The Linear Contraction approach calculates a linear reduction rate based on the difference between a company's target base year emissions and its net-zero residual value (zero or the value from the applicable pathway), divided across the time remaining until either the company's or the reference pathway's net-zero year, whichever comes first.

The pathway is derived from a company's target base year emissions regardless of past cumulative emissions between the pathway reference year and the target base year.

For companies with activities pertaining to multiple reference pathways, the target ambition is calculated at the activity level, however the method produces one overarching target at the company level, not several activity-level sub-targets.

Figure 1. Illustration of Linear Contraction method



4. INPUT VARIABLES

Company inputs:

- Emissions in the target base year split by activities mapped to reference pathways
- Target base year
- Near-term target year
- Net-zero year (2050 for companies that have not set a net-zero target)

Inputs from applicable reference pathways:

- Level of residual emissions at net-zero year
- Net-zero year

Note: the method assume that activities that do not have a pathway which indicates a level of residual emissions, are assumed to be fully abated by 2050

5. TARGET CALCULATION PROCESS

Step 1: Determine the annual emission reductions per activity: The Linear Contraction method creates a straight-line trajectory from the target base year's emissions to the net-zero emissions value. Annual emission reductions per activity are calculated by dividing the difference between the target base year's emissions and the net-zero allowable emissions by the number of years remaining until the net-zero year. From this, the Linear Annual Reduction (LAR) rate per activity is derived by dividing the annual emission reductions by the target base year's emissions. See Equation 1 in the Annex.

Step 2: Calculate the near-term target year emissions per activity: Target year emissions per activity are calculated by subtracting total projected reductions (annual emission reductions multiplied by number of years in the target cycle) from the target base year's emissions per activity. See Equation 2 in the Annex.

Step 3: Calculate the near-term target ambition as a rate of reduction from the target base year's emissions: Where a company has activities mapped to more than one reference pathway, emissions values in the near-term target year are aggregated across all activities to determine overall target year emission levels. The rate of reduction required across all activities is then calculated by subtracting the target year emissions from the target base year emissions and dividing this by the target base year emissions. See Equation 3 in the Annex.

6. PROGRESS ASSESSMENT

Progress against emissions targets set using the Linear Contraction method is assessed by comparing the company's performance value in the target year with the target value. Company's performance in the years between the target base year and target year does not impact target achievement.

If target achievement is equal to or over 100% a company has achieved their target.

$$\text{Target Progress (\%)} = \frac{AE_{ty}}{E_{ty}} \times 100\%$$

Where:

AE_{ty} = Company actual emissions in the target year

E_{ty} = Company targeted emissions in the target year

ANNEX 1: METHOD EQUATIONS

Equation 1.

$$\text{Annual reductions} = \frac{E_{mry,a} - E_{nzy,a}}{nzy_a - mry} \times 100\%$$

Where:

Annual reductions = Annual emission reductions between the target base year and the net-zero year per activity *a*

nzy = Net-zero year (either from the reference pathway for activity *a* or the company net-zero year, whichever is earliest)

mry = target base year (most recent year)

$E_{nzy,a}$ = Emissions per activity in the net-zero year

$E_{mry,a}$ = Emissions per activity in the target base year

Equation 2.

$$E_{ty,a} = E_{mry,a} - \left(\text{Annual reductions}_a \times (ty - mry) \right)$$

Where:

$E_{ty,a}$ = Emissions in the near-term target year

$E_{mry,a}$ = Emissions in the target base year

Annual reductions_a = Annual emission reductions between the target base year and the net-zero year per activity

Equation 3.

$$\text{Target Ambition (\%)} = \frac{\sum_a E_{ty,a} - \sum_a E_{mry,a}}{\sum_a E_{mry,a}} \times 100\%$$

Where:

Target ambition (%) = Rate of reduction required across all activities

$\sum_a E_{ty,a}$ = Aggregated emissions across all activities in the near-term target year

$\sum_a E_{mry,a}$ = Aggregated emissions across all activities in the target base year

ANNEX 2: ILLUSTRATIVE EXAMPLE

Linear Contraction application for scope 1 emissions for ABC Co.

ABC Co. inputs:

- **Target base year:** 2025
- **Target year:** 2030
- **Net-zero target year:** 2050 for cement production and 2040 for machinery manufacturing
- **Emissions in the target base year split by activities mapped to reference pathways:**

Company activities (mapped to SBTi reference pathway)	Emissions in target base year
Cement production	80 tCO ₂ e
Machinery manufacturing	20 tCO ₂ e

Inputs from reference pathways:

NB: These values are illustrative only, and should not be considered as up to date pathways values

Company activities (mapped to SBTi reference pathway)	Net-zero year emissions value	Net-zero year
Cement production activities	5 tCO ₂ e	2050
Machinery manufacturing activities	0 tCO ₂ e	2040

Near-term target calculation steps:

Step 1: Determine the annual emission reductions per activity

Company activities (mapped to SBTi reference pathway)	Difference in target base year emissions and net-zero year emissions	No. years between target base year and net-zero year	Annual emission reductions	Linear annual reduction rate
Cement production activities	75 tCO ₂ e	25	3 tCO ₂ e	4%
Machinery manufacturing activities	20 tCO ₂ e	15	1.3 tCO ₂ e	6.5%

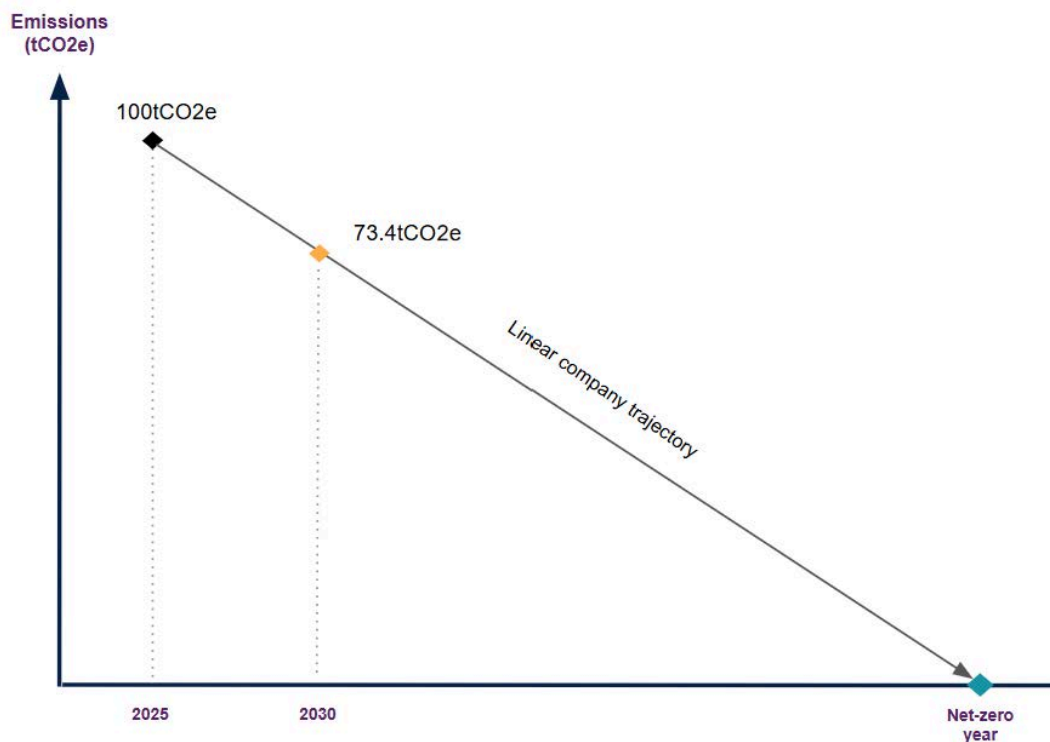
Step 2: Calculate the near-term target year emissions per activity

Company activities (mapped to SBTi reference pathway)	Total emission reductions in the near-term target year (2030)	Emissions in near-term target year (2030)
Cement production activities	15 tCO ₂ e	60 tCO ₂ e
Machinery manufacturing activities	6.7 tCO ₂ e	13.4 tCO ₂ e

Step 3: Calculate the near-term target ambition

Company activities	Near-term emissions target (2030)	Near-term target rate of reduction
All activities	73.4 tCO ₂ e	26.6%

Figure 2. Linear Contraction company trajectory





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SBTi METHOD SPECIFICATION




Index Alignment

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1. SCOPE AND APPLICABILITY

The Index Alignment (also referred to as alignment method) defines the level of net-zero alignment of value-chain activities or entities over time, consistent with achieving net-zero value-chain emissions by 2050.

Scope 1		
Scope 2		
Scope 3		Address GHG emissions from all S3 emissions (across categories) or a specific category

The Index Alignment method can use one or several alignment pathways to define required performance levels for the near-term target year and the net-zero year.

2. DEFINITIONS

The following key technical terms are used to understand the calculation logic, inputs, and progress assessment associated with the method.

- **Target year:** the desired near-term target year selected by the company.
- **Net-zero year:** the company net-zero target year or 2050, whichever is earlier.
- **Reference pathway:** the science-based pathway used to determine the level of performance for a given sector or activity at the target and net zero years
- **Benchmarks:** the performance value taken from the reference pathway for a specific year.

3. METHOD OVERVIEW

The Index Alignment approach defines a minimum required level of net-zero alignment at the target year, based on a reference pathway and the applicable performance metric, irrespective of the performance in the target base year. Where a company's performance in the base year is already at or above this benchmark, the approach implies maintaining at least this level through to the target year. Where it is below the benchmark, the approach indicates the need for improvement to reach this level by the target year.

Alignment methods and pathways are built on the basis that, at the net-zero year, all activities in the value-chain of the company are operating at a level of emissions and performance that is compatible with a net-zero economy.

4. INPUT VARIABLES

Company inputs: Data provided by the company applying the method including:

- Performance value in the target base year
- Target base year
- Target year

Inputs from reference pathways:

- Performance value in the target year

5. TARGET CALCULATION PROCESS

Step 1: Find the minimum performance value in the target year from the relevant SBTi alignment pathway. This is the minimum target ambition.

6. PROGRESS ASSESSMENT

Progress against alignment targets set using the Index Alignment method is assessed by comparing the company's performance value in the target year with the target value. Company's performance in the years between the base year and target year does not impact target achievement.

If target achievement is equal to or over 100% a company has achieved their target.

$$\text{Target progress (\%)} = \frac{P_{ty}}{TP_{ty}} \times 100\%$$

Where:

P_{ty} = Company performance in the target year

TP_{ty} = Company targeted performance in the target year

ANNEX 1: ILLUSTRATIVE EXAMPLE

Index Alignment application in the case of scope 3 supplier alignment targets for example company ABC Co.

ABC Co. inputs:

- **Performance value in the target base year:** 15% of suppliers classified as 'aligned'
- **Target base year:** 2025
- **Target year:** 2030

Inputs from reference pathway:

- **Performance value in company target year:** 70% of suppliers classified as 'aligned' in 2030.

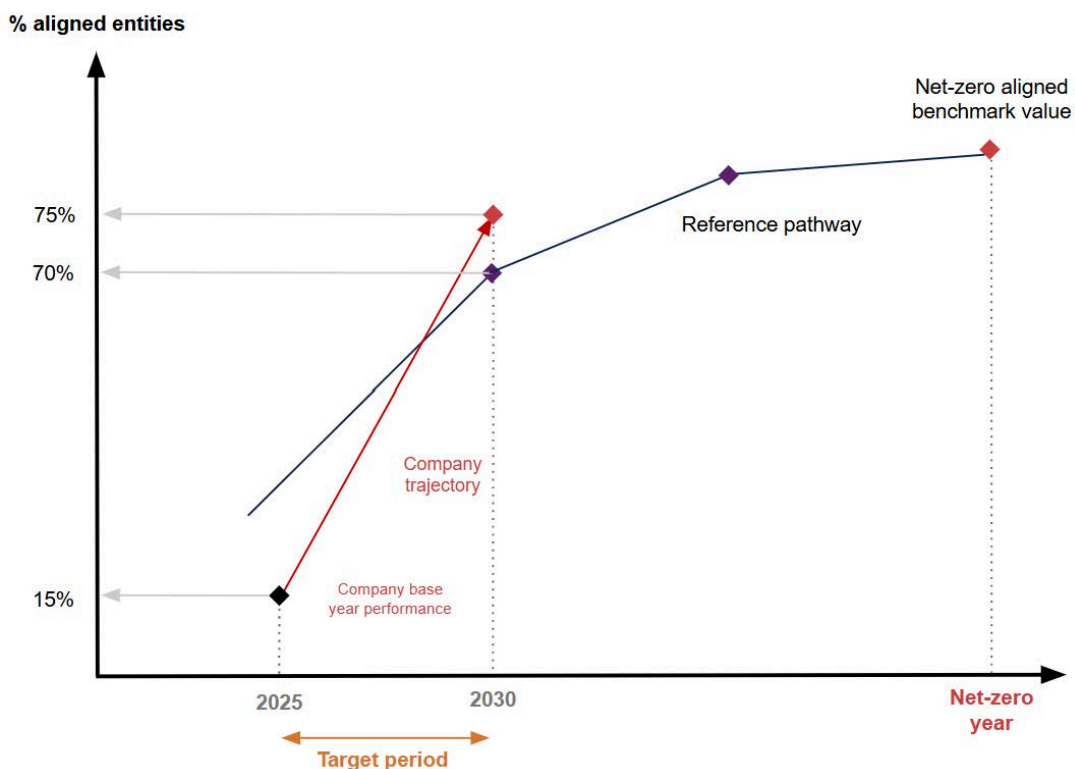
Step 1: Find the minimum performance value in the target year from the relevant SBTi alignment pathway.

The minimum target value in 2030 from the reference pathway is 70% of suppliers classified as 'aligned' in 2030.

ABC co. must therefore set a target to reach at least 70% of their suppliers classified as 'aligned' in 2030.

Actual target value: ABC Co. sets a target to go beyond the minimum ambition and have 75% of suppliers classified as 'aligned' in 2030.

Figure 1. Index Alignment company trajectory





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SBTi METHOD SPECIFICATION

Sectoral Decarbonization Approach

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1. SCOPE AND APPLICABILITY

The SDA can be applied to multiple GHG emission scopes and multiple SBTi pathways that must be used in conjunction with the method.

Scope 1	✓	Address GHG emissions from owned/operated assets
Scope 2	✓	Address GHG emissions from purchased electricity, heat steam and cooling
Scope 3	✓	Address GHG emissions from purchased commodities

The SDA method can use one or several intensity pathways to construct a convergence trajectory to the net-zero aligned benchmark by the net-zero year. The SDA method can generate targets that can also be expressed in absolute emission terms.

2. DEFINITIONS

The following key technical terms are used to understand the calculation logic, inputs, and progress assessment associated with the method.

- **Emissions intensity:** GHG emissions per unit of activity.
- **Base year:** The specific year, selected by the company, against which the company's emissions / emissions intensity are tracked over time.
- **Target year:** The desired near-term target year selected by the company.
- **Net-zero year:** The company net-zero target year or 2050, whichever is earlier.
- **Reference pathway:** The science-based pathway used to determine the level of performance for a given sector or activity at the target and net-zero years.
- **Benchmarks:** The performance value taken from the reference pathway for a specific year.
- **Low intensity threshold:** A linear intensity reduction trajectory derived from sector pathway values that is applied in a method adjustment (Annex 2) for companies in the power sector with very low base year scope 1 emissions intensity from power generation.

3. METHOD OVERVIEW

The SDA produces a convergence trajectory, illustrated in Figure 1, that is based on the gap between:

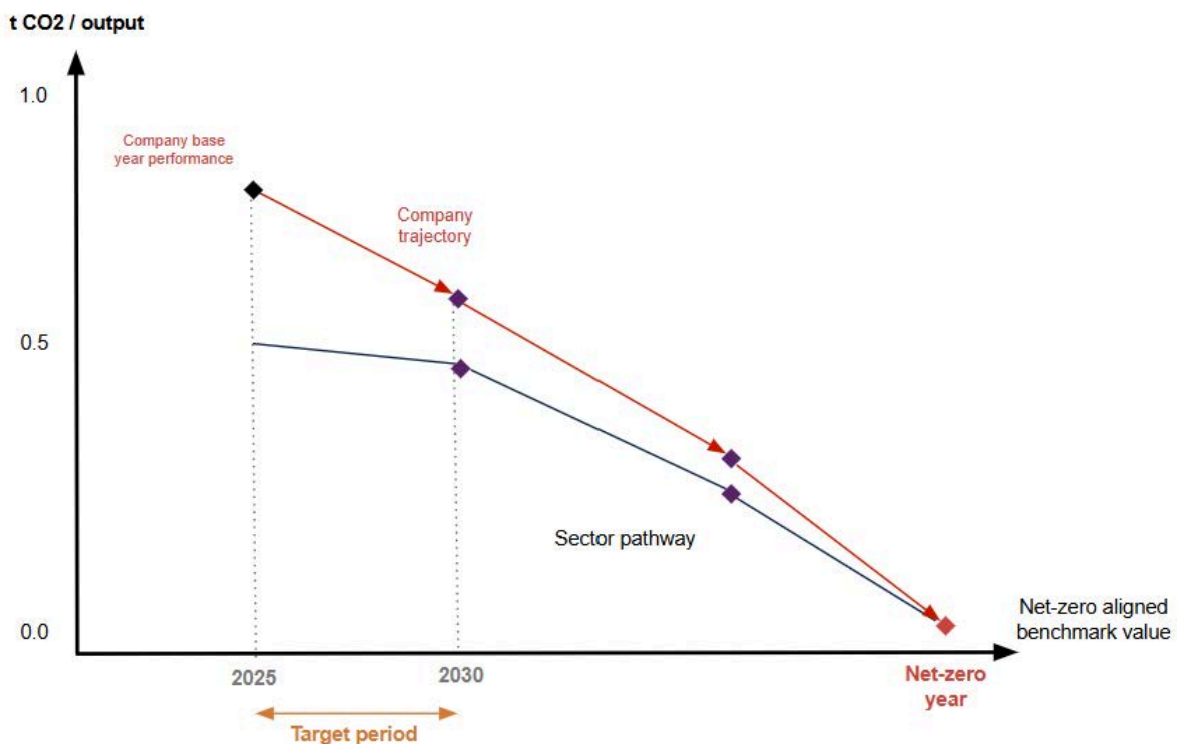
1. the company's current emissions intensity, and
2. the sector pathway's net-zero benchmark value (black line).

This convergence trajectory is derived from the company's base year performance, its projected future activity, and the reference pathway values, including emissions intensity in the net-zero year and activity projections. The near-term target value is a point-in-time value on the convergence trajectory toward the sector net-zero benchmark.

The method is used for:

- Direct emissions (scope 1):** for this use case, the method allocates a sector-level carbon budget to individual companies, assuming that the aggregated emissions and activity across all companies within the sector correspond to the total emissions and activity of the sector as a whole. The method generates a company level emissions intensity trajectory, dependent on initial emissions intensity and activity projections, that converges to the sector reference pathway by the net-zero year. The intensity trajectory may also be expressed in absolute emission terms by using the company base year activity and its projected activity in the target year
- Indirect emissions (scope 2 and 3):** for this use case, the method generates a company level intensity trajectory that is independent of activity growth projections. It requires the emissions intensity of purchased energy, industrial, and FLAG commodities to decarbonise on a path that converges to the sector reference pathway by the net-zero year. This emissions intensity trajectory may also be expressed in absolute emissions terms by using the company base year activity values.

Figure 1. Sector pathway and company emissions intensity trajectory.



4. INPUT VARIABLES

- **Company inputs:** Data provided by the company applying the method including:
 - Base year
 - Base year emissions intensity
 - Target year
 - Company's activity projection in the target year (for scope 1 use case)
- **Inputs from reference pathways:**
 - Sector benchmark values in reference year, net-zero year, and interim years
 - Sector activity projections in reference year, net-zero year, and interim years

5. TARGET CALCULATION PROCESS

The method is applied in four steps:

1. **Determine the initial performance gap:** this parameter represents the gap between the performance of the company in the base year and sector reference pathway performance in the net-zero year (see Equation 1 in Annex 1).
2. **Determine the sector decarbonization index:** this parameter represents the performance of the sector in any year y relative to the change in sector performance from the base year to the net-zero year (see Equation 2 in Annex 1).
3. **Determine the market share parameter (for scope 1 use case):** this parameter represents the share of the company's projected future output relative to the sector's projected output in the target year (see Equation 3 in Annex 1). An upper limit of 1.0 is placed on the market share parameter. This ensures that growth projections lower than the sector average growth do not result in less ambitious targets.
4. **Calculate target year minimum intensity performance:** The company's minimum intensity performance in the target year is calculated by multiplying together the initial performance parameter, the sector decarbonization index and the market share parameter, and adding the resulting value to the sector performance in the net-zero year (see Equation 4 in Annex 1).
5. **Calculate the minimum absolute performance:** In cases where the company trajectory is defined in terms of absolute emissions, rather than emissions intensity, the target year minimum intensity performance value calculated in step 4 is multiplied by the projected activity in the target year to determine minimum absolute emissions performance.

6. PROGRESS ASSESSMENT

Progress against emissions targets set using the SDA method is assessed by comparing the company's performance value in the target year with the target value. Company's performance in the years between the base year and target year does not impact target achievement.

If target achievement is equal to or over 100% a company has achieved their target.

$$\text{Target progress (\%)} = \frac{TP_{ty}}{P_{ty}} \times 100\%$$

Where:

TP_{ty} = Company targeted performance in the target year

P_{ty} = Company performance in the target year

ANNEX 1: METHOD EQUATIONS

Four equations derived from Krabbe et al. (2015)¹ are used to calculate emissions intensity reduction targets using the SDA.

Equation 1. Initial performance gap: The emissions intensity of the company in the base year relative to sector reference pathway emissions intensity in the net-zero year.

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

Where:

- d = Initial company performance in the base year relative to the sector net-zero benchmark (t CO₂ / t activity)
- CI_{by} = Company emissions intensity in the base year (t CO₂ / t activity)
- SI_{nzy} = Sector emissions intensity in the net-zero year (t CO₂ / t activity)

Equation 2. Sector decarbonization index: The emissions intensity of the sector reference pathway in any year *y*, expressed as a point in the transition of the sector reference pathway emissions intensity from the base year to the net-zero year.

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

Where:

- P_y = Decarbonization index of the sector in year *y* (unitless)
- SI_y = Sector emissions intensity in year *y* (t CO₂ / t activity)

¹ Krabbe, O., Linthorst, G., Blok, K., Crijns-Graus, W., van Vuuren, D. P., Höhne, N., Faria, P., Aden, N., & Pineda, A. C. (2015). Aligning corporate greenhouse-gas emissions targets with climate goals. *Nature Climate Change*, 5(12), 1057–1060. <https://doi.org/10.1038/nclimate2770>

SI_{by} = Sector emissions intensity in the base year (t CO₂ / t activity)

SI_{nzy} = Sector emissions intensity in the net-zero year (t CO₂ / t activity)

Equation 3. Market share parameter: The company's projected future activity levels and the sector's projected activity levels from the sector pathway are used to calculate the company's market share parameter in any year y . Note that this is the inverse of the change in market share, resulting in a decreasing parameter when the company's market share is increasing.

$$m_y = \frac{CA_{by} / SA_{by}}{CA_y / SA_y}$$

Where:

m_y = Market share parameter in year y (unitless)

CA_{by} = Company activity in the base year (units of output)

SA_{by} = Sector activity in the base year (units of output)

CA_y = Company activity in year y (units of output)

SA_y = Sector activity in year y (units of output)

Equation 4. Minimum intensity performance: The company's target emissions intensity in any year y is calculated using the outputs of the above three equations and the sector emissions intensity in the net-zero year.

$$CI_y = \left(d \times P_y \times m_y \right) + SI_{nzy}$$

Where:

CI_y = Company emissions intensity target in year y (t CO₂ / units of output)

d = Initial company performance in the base year relative to the sector net-zero benchmark (t CO₂ / units of output)

- P_y = Decarbonization index of the sector in year y (unitless)
- m_y = Market share parameter in year y (unitless)
- SI_{nzy} = Sector emissions intensity in the net-zero year (t CO₂ / units of output)

Equation 5: Minimum absolute performance: In cases where the company trajectory is defined in terms of absolute emissions, the company's minimum absolute performance in any year y is calculated by multiplying the minimum intensity performance value by the projected activity in that year.

$$CE_y = CI_y \times CA_y$$

Where:

- CE_y = Company absolute emissions in year y (t CO₂)
- CI_y = Company emissions intensity in year y (t CO₂ / t activity)
- CA_y = Company activity in year y (t activity)

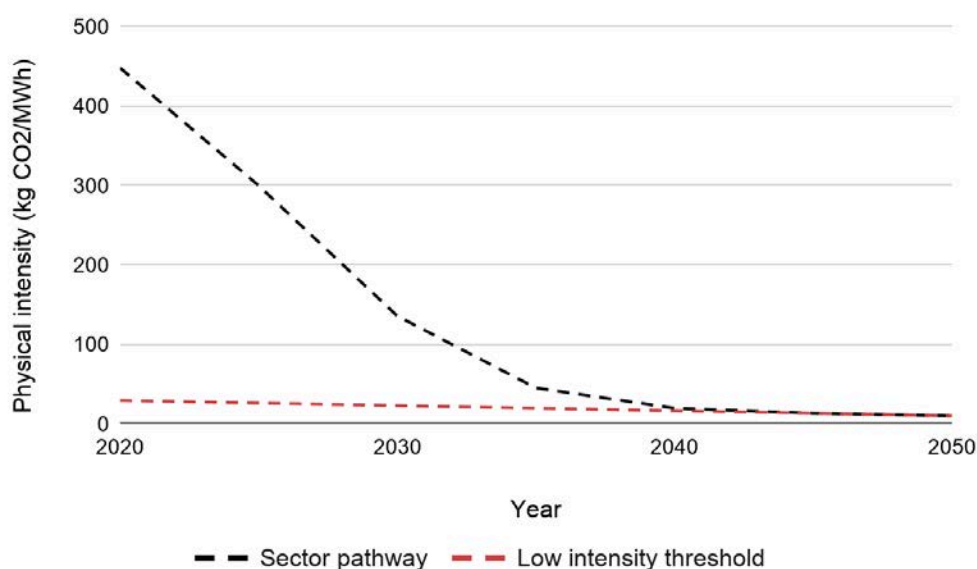
ANNEX 2: METHOD ADJUSTMENTS

Power sector

An SDA method adjustment using linear convergence is provided as an option for companies in the power sector with substantially lower power generation intensity than the sector average. The ambitious reductions called for by near-term targets are at times challenging or infeasible for companies with low intensity generation activities. This may be due to factors beyond the companies' control, e.g., regulatory requirements for security of supply that may imply a certain minimum level of baseline power generation from fossil fuels.

To provide an alternative solution, the adjustment first establishes an ambitious threshold for low intensity power generation that is derived from the updated SBTi power sector pathway. A simple backcasting methodology uses the power sector pathway curve from 2045-2050 to create a low intensity threshold between 2020 and 2050. The company's target reduction curve, calculated using the SDA, is compared against this threshold. If the target reduction curve falls below the threshold within the target timeframe, an adjusted target curve is modeled following a linear convergence trajectory to the net-zero benchmark value in 2050 once the threshold is crossed. Companies that satisfy these conditions may choose to set targets using this linear convergence adjustment.

Figure 2. Power sector pathway and the low intensity threshold. Note that this figure is for illustrative purposes only and does not reflect the actual values of the power sector pathway.



The calculation steps to derive the power generation low intensity threshold are as follows:

Equation 1. Power sector intensity pathway slope: The slope of the sector pathway intensity curve between 2045 and 2050 is calculated.

$$m = \frac{SI_{2050} - SI_{2045}}{2050 - 2045}$$

Where:

- m** = The slope of the sector pathway intensity curve between 2045 and 2050 (g CO₂ / kWh per year)
- SI₂₀₅₀** = Power sector pathway intensity in 2050 (g CO₂ / kWh)
- SI₂₀₄₅** = Power sector pathway intensity in 2045 (g CO₂ / kWh)

Equation 2. Low intensity threshold: A linear trajectory is derived using the sector pathway slope between 2045 and 2050.

$$LIT_y = (m \times y) + SI_{2045} - (m \times 2045)$$

Where:

- LIT_y** = Low intensity threshold in any year y (g CO₂ / kWh)
- m** = The slope of the sector pathway intensity curve between 2045 and 2050 (g CO₂ / kWh per year)
- y** = Any year within the sector pathway timeframe
- SI₂₀₄₅** = Power sector pathway intensity in 2045 (g CO₂ / kWh)

The calculation steps to model an SDA target with the linear convergence adjustment are as follows:

- 1. Calculate target using the SDA and evaluate against the low intensity threshold**
A target is modeled using the standard SDA system of equations. If, during the target timeframe, the SDA target reduction curve crosses the low intensity threshold, the adjustment is triggered.
- 2. Calculate linear convergence target**
An adjusted target is modeled, applicable to the timeframe between the year the SDA target curve crosses the low intensity threshold and the target year.

Equation 1. Linear convergence target: The updated target on the linear convergence trajectory is calculated using the initial SDA target calculation and the sector intensity in the net-zero year.

$$\text{SDA LC}_y = \text{SDA}_{y-1} - \frac{\left(\text{SDA}_{y-1} - \text{SI}_{nzy} \right)}{\left(nzy - y - 1 \right)}$$

Where:

SDA LC_y = SDA linear convergence adjustment target in year y (kg CO₂ / MWh)

SDA_{y-1} = SDA target in year y - 1 (kg CO₂ / MWh)

SI_{nzy} = Sector emissions intensity in the net-zero year (kg CO₂ / MWh)

nzy = The net-zero year of the sector pathway

y = Any year y in the target timeframe where the company intensity value is below the lower intensity threshold

ANNEX 3: ILLUSTRATIVE EXAMPLE

The SDA is applied to generate scope 1 emission reduction targets for cement production from ABC Co.

ABC Co. inputs:

- **Base year emissions:** 7,000 t CO₂
- **Base year activity:** 10,000 t cement
- **Base year:** 2025
- **Target year:** 2030
- **Target year activity projection:** 10,046 t cement
- **Net-zero target year:** 2050

Inputs from reference pathways:

- **Net-zero benchmark:** 0.033 tCO₂ / t cement by 2050
- **Sector activity projections:** 4.24 x 10⁹ t cement (2025) and 4.26 x 10⁹ t cement (2030)

Near-term target calculation steps:

- 1. Determine the initial performance gap:**
Determined by computing the difference between the emissions intensity of the company in the base year (7,000 t CO₂ / 10,000 t cement = 0.7 t CO₂ / t cement) and the sector reference pathway emissions intensity in the net-zero year (0.033 t CO₂ / tonne cement). This yields an initial performance gap of 0.667 t CO₂ / t cement.
- 2. Determine the sector decarbonization index:**
Determined by first computing the difference between sector reference pathway performance in any year *y* and sector reference pathway performance in the net-zero year. This is then divided by the difference between sector reference pathway performance in the base year and sector reference pathway performance in the net-zero year. This results in a decreasing linear sequence, beginning at 1 in the base year and ending at 0 in the net-zero year. At the target year of 2030, the sector decarbonization index is equal to 0.813.
- 3. Determine the market share parameter:**
Determined by computing the inverse of company market share. First, company activity in the base year is divided by sector reference pathway activity in the base year (10,000 t cement / 4.24 x 10⁹ t cement). Second, company activity in the target year is divided by sector reference pathway activity in the target year (10,046 / 4.26 x 10⁹ t cement). Finally, the first term is divided by the second term, producing a target year market share parameter of 1.00. At this value, the company's percentage growth projection is equal to that of the sector.
- 4. Calculate target year minimum performance:**
Determined by calculating the product of the above three terms (0.667 x 0.813 x 1.00) and adding the sector reference pathway emissions intensity at the net-zero

year (0.033). This yields a target year minimum performance value of 0.613 t CO₂ / t cement.

The company's emissions intensity trajectory is calculated using the equations provided above. This produces a 2030 target of 0.613 t CO₂ / t cement, requiring an emissions intensity reduction of 12.5%.



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SBTi METHOD SPECIFICATION




Linear Alignment

Version 0.1 - *Draft for Public Comment*

June 2026

1. SCOPE AND APPLICABILITY

Linear Alignment can be applied to scope 2 GHG emissions from the purchase of electricity.

Scope 1		
Scope 2		Address GHG emissions from all S2 emissions from electricity purchasing
Scope 3		

The Linear Alignment method can use emissions or alignment pathways to derive the net-zero aligned benchmark.

2. DEFINITIONS

The following key technical terms are used to understand the calculation logic, inputs, and progress assessment associated with the method.

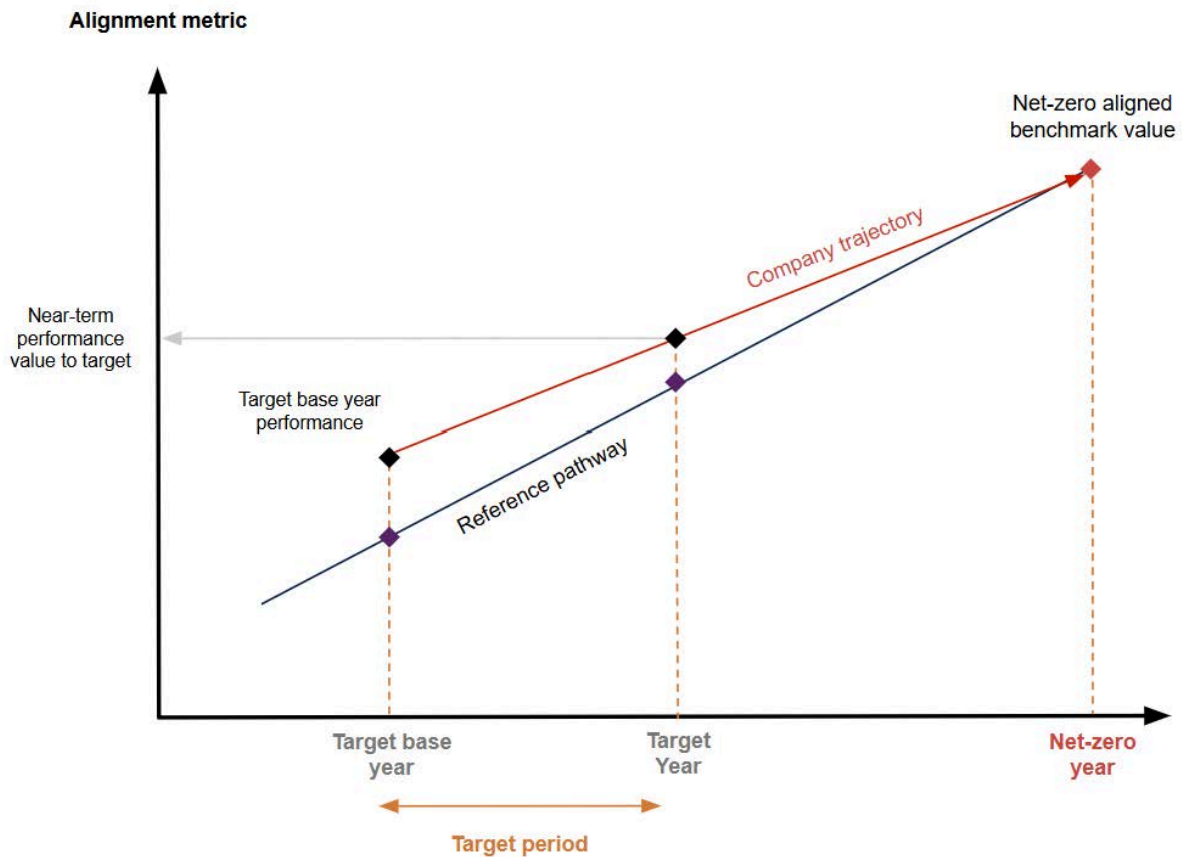
- **Target base year:** the most recent full calendar or financial year with a complete GHG inventory
- **Target year:** the desired near-term target year selected by the company
- **Net-zero year:** The net-zero target year or the reference pathway net-zero year, whichever is earlier.
- **Reference pathway:** the science-based pathway used to determine the level of residual emissions allocated to a given sector or activity
- **Net-zero benchmark:** the performance value required in the net-zero year
- **Linear annual rate:** the percentage annual change in the underlying metric required over the target period from target base year to the target year.

3. METHOD OVERVIEW

The Linear Alignment Approach produces a linear trajectory between the target base year and the selected net-zero year, based on two parameters:

1. The difference between the company's performance in the target base year and the net-zero benchmark and;
2. The remaining time between the target base year and the net-zero year.

The pathway is derived from a company's target base year performance regardless of past performance. The method applies a convergence principle that requires all companies to converge on a linear path to the long-term net-zero benchmark value. Near-term target values are then defined on this linear path for each interim target year.



4. INPUT VARIABLES

Company inputs: Data provided by the company applying the method including:

- Performance in the target base year
- Target base year
- Target year
- Net-zero target year

Inputs from reference pathways:

- Net-zero benchmark value
- Pathway net-zero year

5. TARGET CALCULATION PROCESS

The method is applied in two steps:

1. **Determine the linear annual rate:** linear alignment creates a linear trajectory from the target base year performance value to net-zero aligned benchmark value. The slope of this trajectory is called the linear annual rate (LAR) and is calculated using Equation 1, specified in the Annex.

2. **Calculate the near-term target ambition:** the minimum ambition required between the target base year and the target year is calculated using Equation 2, specified in the Annex.

6. PROGRESS ASSESSMENT

Progress against targets set using the Linear Alignment method is assessed by comparing the company's performance value in the target year with the target value. The company's performance in the years between the target base year and target year does not impact target achievement.

If target achievement is equal to or over 100% a company has achieved their target.

$$\text{Target progress (\%)} = \frac{P_{ty}}{TP_{ty}} \times 100\%$$

Where:

P_{ty} = Company performance in the target year

TP_{ty} = Company targeted performance in the target year

ANNEX 1: METHOD EQUATIONS

Equation 1.

Determine the linear reduction rate: linear alignment assumes a linear trajectory from the target base year performance value to net-zero performance value.

$$\text{LAR} = \frac{\text{P}_{nzy} - \text{P}_{mry}}{nzy - mry} \times 100\%$$

Where:

LAR = linear annual rate between the target base year and the net-zero year

P_{nzy} = Net-zero aligned performance required in the net-zero year

P_{mry} = Performance in the target base year

nzy = Net-zero year

mry = target base year

Equation 2.

$$\text{P}_{ty} = \text{P}_{mry} + \left(\text{LAR} \times \left(ty - mry \right) \right)$$

Where:

P_{ty} = Performance in the target year

LAR = linear annual rate between the target base year and the net-zero year

P_{mry} = Performance in the target base year

ty = target year

mry = base year

ANNEX 2: ILLUSTRATIVE EXAMPLE

Linear Alignment application for scope 2 emissions for ABC Co purchasing electricity

ABC Co. inputs:

- **Performance in the target base year:** 20% low-carbon electricity purchased
- **Target base year:** 2025
- **Target year:** 2030
- **Net-zero year:** 2040

SBTi inputs from reference pathways:

- **Inputs from reference pathways:** 100% low-carbon electricity purchased by 2040

Near-term target calculation steps:

1. **Determine the linear annual rate:** Determined by comparing the difference between the target base year performance value and the net-zero aligned benchmark value, which is 80% change over a 15 year period, resulting in 5.33% annual change.
2. **Calculate the near-term target:** The LAR value is then used to calculate the minimum allowable share of purchased low-carbon electricity in the target year (2030), a 5 year target timeframe. A 5.33% increase per year for 5 years results in a total increase of 26.67%. Added to the target base year value of 20%, this produces a near-term target of a minimum of 46.67% purchasing share of low-carbon electricity by 2030 (Equation 2).



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SBTi METHOD SPECIFICATION

Asset Decarbonization Plan

Version 0.1 - *Draft for Public Comment*

June 2026

1. SCOPE AND APPLICABILITY

Scope 1	✔	Scope 1 GHG emissions from owned/operated assets
Scope 2	✘	N/A
Scope 3	✘	N/A

The asset decarbonization plan (ADP) sets out a schedule to fully abate, retire, or decommission GHG-emitting assets consistent with achieving net-zero emissions by 2050 or earlier, in line with reference science-based pathways. The ADP uses asset transition pathways, sector-specific emissions intensity pathways, and/or absolute emissions pathways.

2. DEFINITIONS

The following key technical terms are used to understand the calculation logic, inputs, and progress assessment associated with the method.

- **Target base year:** The most recent full calendar or financial year with a complete GHG inventory.
- **Target year:** The near-term target year selected by the company.
- **Net-zero year:** The company net-zero target year or 2050, whichever is earlier.
- **Reference pathway:** The science-based pathway used to determine performance values or benchmarks for a given sector or activity at the target and net zero years.
- **Asset:** A tangible physical unit, equipment, or infrastructure under the company's ownership or operational control that performs a defined function within operations and can be associated with energy or material flows that generate scope 1 greenhouse gas emissions.
- **Asset category:** A grouping of assets with shared functional characteristics and emission profiles that share the same reference pathway, assumptions, and performance metrics. An asset's reference pathway is determined by its technology type and/or operational role.
- **Scheduled decommissioning year:** Year by which an asset is expected to be retired or decommissioned according to the technical lifetime used for financial reporting.
- **Asset cluster:** A group of assets with the same asset category and scheduled decommissioning year. NB: Asset clusters are only relevant when using the ADP Milestones approach
- **Milestone:** A transition point derived from science-based asset transition pathways. There are two different types of milestones:
 - **Phase out milestone:** indicates the date by which emissions from assets are expected to be fully abated, either through decommissioning, replacement with low-carbon alternatives, or retrofit to achieve abatement.

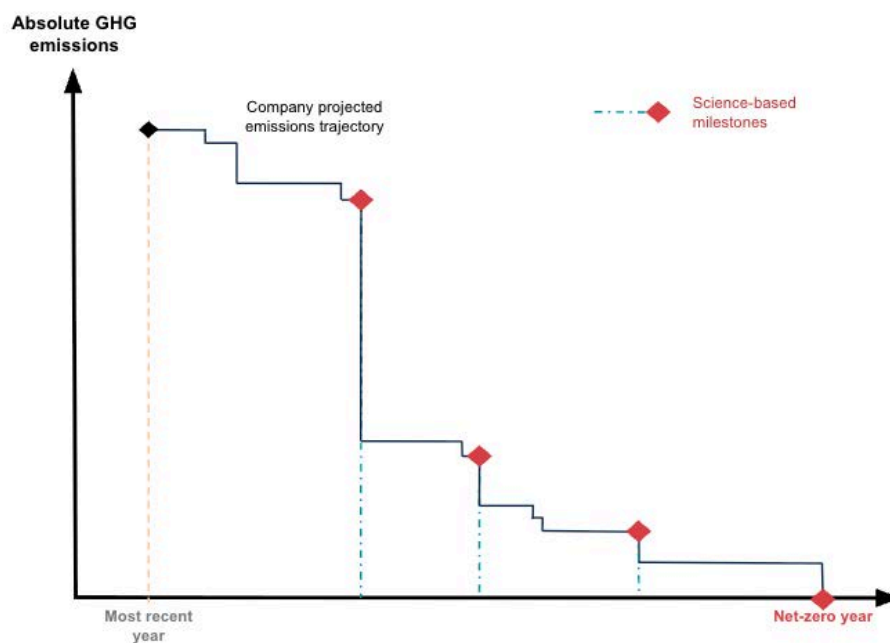
- **Current assets operation milestone:** indicates the date by which a specified level of emission reduction, through either energy efficiency improvements or fuel switching, is achieved in a specified asset category.
- **No new investment milestone²:** indicates the date after which no new investments in unabated assets are permitted.

3. METHOD OVERVIEW

The asset decarbonization plan (ADP) sets out a schedule to fully abate, retire, or decommission GHG-emitting assets consistent with achieving net-zero emissions by 2050 or earlier, in line with reference science-based pathways. The ADP produces a schedule for asset decarbonization following a non-linear emissions reduction trajectory.

There are two distinct approaches associated with this method which can be used individually or together:

Figure 1. Illustration of the ADP science-based milestone approach

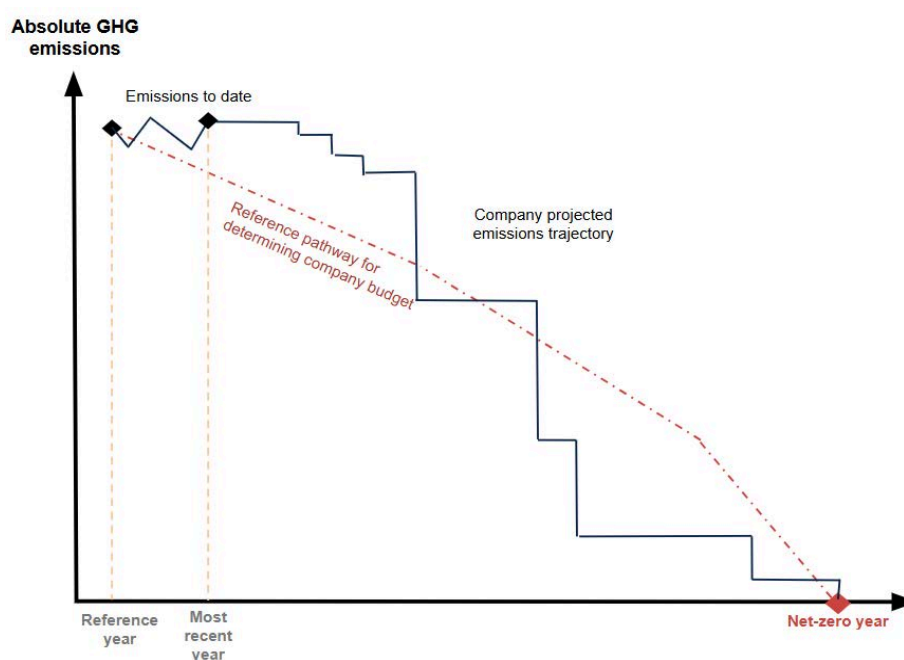


- **The science-based milestone approach (Fig 1)** specifies the timeline for abating existing GHG-emitting assets and phasing-out investment in new GHG-emitting assets, based on a science-based reference pathway. The transition timeline for each asset or asset group covered is determined as the earliest of the remaining technical lifetime of the asset, the science-based transition milestone derived from the reference pathway, or the company's net-zero year. Targets on emissions from assets for which asset-level data is not available cannot be set using the

² Where low-carbon alternatives are not yet technically or commercially available (e.g. below a Technology Readiness Level 7), companies should deploy best available technology (BAT) conditional on a commitment to retire such assets no later than the net-zero target year

science-based milestones approach and therefore must be set using the Carbon Budget approach.

Figure 2. Illustration of the ADP carbon budget approach



- **The carbon budget approach (Fig 2)** requires companies to define an asset transition timeline consistent with a carbon budget defined by SBTi, derived from science-based reference pathway(s).

4. INPUT VARIABLES

The method requires different types of input data to correctly apply the method.

- **Company inputs:**
 - Inventory of assets in the target base year
 - Emissions per asset in the target base year
 - Company near-term target year
 - Company net-zero year
 - Scheduled decommissioning year (for all asset categories being covered by ADP Milestones Approach)
- **Inputs from applicable reference pathways:**
 - **Science-based milestones approach:** Milestone values and years per relevant asset categories. All milestone dates and values are documented in the transition pathways spec sheets.
 - **Carbon Budget approach:** Emissions trajectory applicable to the asset type or asset category.

5. TARGET CALCULATION PROCESS

Step 1. Baseline asset inventory: Identify all GHG-emitting assets and quantify emissions per asset in the target base year.

Step 2. Classify assets by reference pathway: Assign each asset to an asset category (e.g., heat [space, process], refrigeration, vehicles [vans, heavy duty vehicles], power generation assets, cement production assets, etc.) based on its function and applicable reference pathway. Cluster assets within each asset category by their remaining asset lifetime (i.e., each cluster is a group of assets within an asset category that have the same remaining lifetime/ decommissioning window).

Step 3: Generate the asset transition timeline(s): Define the transition timeline (e.g., abatement, retirement or decommissioning) for each asset or asset cluster within an asset category, using one of the following approaches:

A. Science-based milestone approach

A1.1: Determine the transition timeline for asset clusters using an SBTi tool. For assets covered by the science-based milestone approach, the transition timeline is the earliest of:

- A. the remaining technical lifetime of the asset;
- B. the science-based transition milestone derived from the reference pathway; or
- C. the company's net-zero year.

B. Carbon Budget approach

B1.1: Determine the carbon budget for each asset category which represents the allowable cumulative emissions from the target base year to the net zero year, based on a company-level emissions trajectory derived from a reference pathway and a target-setting method (e.g., SDA, linear contraction). See Equations 1 and 2.

B1.2: Establish the transition timeline for each asset category such that the cumulative emissions from the continued operation of all assets within the asset category remain within the allocated carbon budget for that category. See Equations 3 and 4.

Step 4: Aggregation and target derivation: Companies shall aggregate emissions annually from all assets based on the defined transition timelines and derive the resulting emissions trajectory. This shall form the basis for near-term Scope 1 targets for the emission sources covered by the asset decarbonization plan. See Equations 5 and 6.

See Annex 2 for method equations, and Annex 3 for worked through examples of these steps.

6. PROGRESS ASSESSMENT

Progress against scope 1 targets set using the Asset Decarbonization Plan method are assessed by comparing emissions in the target year to the target base year emissions, relative to the original target ambition.

$$\text{Target progress(\%)} = \frac{E_{by} - E_{ty}}{E_{by} \times \text{Target Ambition (\%)}} \times 100\%$$

Where:

E_{by} = Emissions of all assets in base year (t CO₂e).

E_{ty} = Emissions of all assets in target year (t CO₂e).

ANNEX 1: ILLUSTRATIVE CLASSIFICATION OF ASSETS

The following pathways are expected to be available at launch of the CNZS V2.0 or soon after:

- SBTI_P1: Power sector - asset transition pathway;
- SBTI_P2: Power sector - emissions-intensity pathway;
- SBTI_P3: Cement production - emissions intensity/absolute pathway;
- SBTI_P4: Steel production - emissions intensity/absolute pathway
- SBTI_P5: Chemicals production - emissions intensity/absolute pathway
- SBTI_P6: Automotive - emission intensity/absolute pathway
- SBTI_P7: Aviation - emission intensity/absolute pathway
- SBTI_P8: Maritime - emission intensity/absolute pathway
- SBTI_P9: Buildings - emission intensity/absolute pathway
- SBTI_P10: Other heavy industries - emission intensity/absolute pathway
- SBTI_P11: Light industries - emission intensity/absolute pathway
- SBTI_P12: Cross sector [stationary equipment, refrigeration and cooling, fleet and vehicles] - asset transition pathway

Asset category	Example asset types	Typical lifetime	ADP approach	Method + Pathway(s)
Stationary Equipment - emissions-intensive	<i>Power plants, blast furnaces, basic oxygen furnace, electric arc furnace, rotary kilns, small modular reactors, crackers, Haber-Bosch reactors, aluminium smelters, coke ovens, glass furnaces</i>	30–50 years	Science-based milestones Carbon budget	Science-based milestones: SBTI_P1 Carbon budget: SDA + (SBTI_P2, SBTI_P3, SBTI_P5) Linear contraction + (SBTI_P10)
Stationary Equipment - cross-sector	<i>Boilers, combined heat and power units, backup generators, industrial dryers & ovens, compressor stations, process heaters, incinerators</i>	15–25 years	Science-based milestones Carbon budget	Science-based milestones: SBTI_P12 Carbon budget: Linear contraction + (SBTI_P11)
Refrigeration & Cooling	<i>Industrial refrigeration plants, process chillers, display cases, cold rooms, heating, ventilation and air conditioning (HVAC) chillers, split/variable refrigerant flow air conditioning units</i>	10–25 years	Science-based milestones Carbon budget	Science-based milestones: SBTI_P12 Carbon budget: Linear contraction + (SBTI_P11)

Asset category	Example asset types	Typical lifetime	ADP approach	Method + Pathway(s)
Fleet & Vehicles	<i>Heavy trucks, light vehicles, forklifts, rail locomotives, vessels, aircraft, drilling rigs, haul trucks, ground servicing equipment</i>	8–30 years	Science-based milestones Carbon budget	Science-based milestones: SBTI_P12 Carbon budget: Linear contraction + (SBTI_P11)
Agricultural Assets	<i>Livestock operations, cropland, anaerobic digesters, managed forestry</i>	Ongoing	Carbon budget	Linear contraction + (SBTI_P11)
Waste & Water	<i>Effluent treatment plants, on-site incinerators, flares, ventilation systems</i>	20–30 years	Carbon budget	Linear contraction + (SBTI_P11)

Note: Lifetimes are indicative ranges.

ANNEX 2: METHOD EQUATIONS

Equation 1.

Calculate the sector carbon budget for each asset category covered.

$$B_A = \sum_{y = mry}^{nzy} E_{y,A}$$

Where:

B_A	=	Total sector budget of asset category A (t CO ₂ e)
$E_{y,A}$	=	Asset category A annual emissions (t CO ₂ e)
nzy	=	Asset category A net-zero year
mry	=	Target base year

Equation 2.

Calculate the company's share of the sector asset category carbon budget for each asset category covered:

$$b_A = CE_{mry,A} \times \frac{B_A}{E_{mry,A}}$$

Where:

b_A	=	Company budget of asset category A (t CO ₂ e)
$CE_{mry,A}$	=	Company emissions in the target base year from asset category A activities (t CO ₂ e)
B_A	=	Budget of asset category A (t CO ₂ e)
$E_{mry,A}$	=	Sector emissions in the target base year from asset category A (t CO ₂ e)

Equation 3.

Determine the total projected emissions for each asset until its scheduled decommission date, determined by the asset-level Asset Decarbonization Plan:

$$PE = \sum_{s=A}^Z PE_s$$

Where:

PE = Projected emissions of all assets until scheduled decommission date

PE_s = Projected emissions of asset category S

A = Asset category A

Z = Asset category Z

Equation 4.

Ensure the aggregated projected emissions from all assets until the net-zero year is consistent with conserving the company's allocated carbon budget.

$$PE \leq b$$

Where:

PE = Projected emissions of all assets

b = Company budget for all asset categories

Equation 5.

Where more than one approach is used, aggregate the projected emissions trajectories to create 1 company-wide emissions trajectory and from this derive the projected emissions in the target year.

$$PE_y = MPE_y + CBPE_y$$

Where:

PE_y = Projected emissions in year y (t CO₂e)

MPE_y = Projected emissions in year y (t CO₂e) from Milestones emissions trajectory

$CBPE_y$ = Projected emissions in year y (t CO₂e) from Carbon Budget emissions trajectory

Equation 6.

Calculate the near-term target ambition by subtracting the projected emissions in the target year from the base year emissions.

$$\text{Target Ambition (\%)} = \frac{E_{mry} - PE_{ty}}{E_{mry}} \times 100\%$$

Where:

E_{mry} = Emissions of all assets in the base year (t CO₂e).

PE_{ty} = Projected emissions of all assets in the target year (t CO₂e).

ANNEX 3: ILLUSTRATIVE EXAMPLES

The Annex provides three illustrative examples demonstrating how the ADP method is applied in practice across different company types, using both the Milestone and Carbon Budget approaches.

Transition pathways for the ADP Milestone approach are intended to be developed for the Power, Steel, other heavy industry sectors, and cross sectoral assets (i.e., stationary equipment, refrigeration and cooling, fleet and vehicles) to support implementation.

Example 1: Last-Mile Distribution Company with Power Generating Activities

A last-mile distribution company with power generating activities has 1,500,050 tCO₂e of scope 1 GHG emissions in its target base year (2025), split across two asset categories. The company sets a near-term target year of 2030 and a net-zero year of 2050.

Step 1: Baseline Asset Inventory

The company identifies all GHG-emitting assets and quantifies emissions per asset in the target base year:

Asset	Emissions in Target Base Year (tCO ₂ e)	Scheduled Decommissioning Date
Coal fired generator 1	100,000	2028
Coal fired generator 2	150,000	2028
Coal fired generator 3	200,000	2028
Coal fired generator 4	50,000	2037
Gas fired generator 5	500,000	2043
Gas fired generator 6	500,000	2043
Heavy duty vehicle 1	20	2031
Heavy duty vehicle 2	20	2033
Heavy duty vehicle 3	10	2040
All other assets for which asset-level data is not available	250	N/A

Step 2: Classify Assets by Reference Pathway

The company assigns each asset to an asset category and reference pathway based on its function. For each asset category an eligible ADP approach is selected:

Asset Category	Reference Pathway	ADP Approach
Coal-fired generators	Power generation	Milestones

Heavy duty vehicles	Transport	Carbon Budget
Assets for which asset-level data is not available	Cross-sector	Carbon Budget

Step 3: Generate the Asset Transition Timeline(s)

A. Science-Based Milestone Approach – Generators (1,500,000 tCO₂e)

A1.1: The company clusters its generators by remaining technical lifetime and maps them to the relevant SBTi power generation transition pathway, which includes the following (exemplary) milestones:

- **Coal-fired generators:**
 - No new investment milestone: 2025 (no new unabated coal assets)
 - Phase-out milestone: 2035 (all coal assets must be retired or replaced with decarbonized alternatives)
- **Gas-fired generators:**
 - No new investment milestone: 2025 (no new unabated gas assets)
 - Phase-out milestone: 2040 (all gas assets must be retired or replaced with decarbonized alternatives)

The company holds three asset clusters for its seven generators:

Asset Cluster	Scheduled Decommissioning Date	Annual Emissions (2025 BY)
Cluster 1 (Coal-fired generators 1, 2, 3)	2028	450,000 tCO ₂ e
Cluster 2 (Coal-fired generator 4)	2037	50,000 tCO ₂ e
Cluster 3 (Gas-fired generators 5, 6)	2043	1,000,000 tCO ₂ e

The transition timeline for each cluster is determined as the earliest of: (i) the remaining technical lifetime of the asset, (ii) the science-based transition milestone, or (iii) the company's net-zero year of 2050.

Asset Cluster	Scheduled Decommissioning Date	ADP Decommissioning Year (in line with phase-out milestones)	Determining Factor
Cluster 1 (Coal-fired generators 1, 2, 3)	2028	2028	Technical lifetime (before milestone)
Cluster 2 (Coal-fired generator 4)	2037	2035	Phase-out milestone (before technical lifetime)
Cluster 3 (Gas-fired generators 5, 6)	2043	2040	Phase-out milestone (before technical lifetime)

By the company's near-term target year of 2030, Cluster 1 is required to phase out in line with the original scheduled decommissioning date (i.e., 2028), as this falls before the ADP phase-out milestone of 2035. These assets must not be replaced with coal-fired generators, as the 'no new investment' milestone year is 2025.

Cluster 2 and Cluster 3 are required to be fully abated, retired, or decommissioned earlier than their original scheduled decommissioning years, in line with the phase-out milestone years of 2035 and 2040 respectively.

Near-term ambition: Cluster 1 retires in 2028 (0 tCO₂e by 2030), while Clusters 2 and 3 remain operational:

1,500,000 – 450,000 = 1,050,000 tCO₂e from generators in 2030

B. Carbon Budget Approach – Heavy Duty Vehicles (50 tCO₂e) and Remaining Assets (250 tCO₂e)

B1.1: The company uses the Carbon Budget approach for its emissions from heavy duty vehicles and all other assets for which asset-level data is not available.

For emissions from heavy duty vehicles: Using the Transport reference pathway, the company determines the sector carbon budget for Heavy Duty Vehicles from the target base year until the net-zero year and allocates a share to the company based on its target base year emissions.

In this case, the (exemplary) sector budget for Heavy Duty Vehicles is 500,000 tCO₂e over this period. The company's Heavy Duty Vehicle emissions in the target base year of 2025 represent 0.01% of total sector emissions of 500,000 tCO₂e, yielding a company-level budget for heavy duty vehicles until the net-zero year of:

0.01% × 500,000 = 5,000 tCO₂e

For all remaining emissions for which asset-level data is not available: Using the cross-sector reference pathway, the company determines the carbon budget using the linear contraction method. In this case, the (exemplary) budget for all remaining emissions for which asset-level data is not available is 3,125 tCO₂e from the target base year of 2025 to net-zero in 2050.

B1.2: The company determines the transition timeline for all asset categories covered by the Carbon Budget approach. Based on these transition timelines, the company calculates the total projected emissions for each asset until its scheduled decommission date, ensuring the aggregated projected emissions from all assets covered by this approach until the net-zero year is consistent with conserving the allocated carbon budgets.

Step 4: Aggregation and Target Derivation

The company aggregates projected emissions from all asset clusters and categories in the near-term target year of 2030:

Asset Category	Approach	Projected Emissions in 2030
Coal-fired generators	Science-Based Milestone	1,050,000 tCO ₂ e
Heavy duty vehicles	Carbon Budget	40 tCO ₂ e (exemplary)
Remaining assets (no asset-level data)	Carbon Budget	Included in total below (exemplary)
Total		1,050,040 tCO₂e

Note: The 2030 value for Carbon Budget categories (40 tCO₂e) is wholly exemplary and could be any value, as long as the overall emission trajectory until the net-zero year is consistent with maintaining the company carbon budget.

The company's near-term target is therefore a 30% absolute reduction in scope 1 emissions by 2030 from a 2025 base year, driven by the scheduled decommissioning of coal generator Cluster 1 and a gradual phase-down of heavy duty vehicle emissions in line with the allocated carbon budget.

Base Year Emissions (2025)	Target Year Projected Emissions (2030)	Target Ambition
1,500,050 tCO ₂ e	1,050,040 tCO ₂ e	~30% absolute reduction

Example 2: Integrated Steel Producer

A large integrated steel producer has 8,200,000 tCO₂e of scope 1 GHG emissions in its target base year (2025), split across three asset categories. The company sets a near-term target year of 2030 and a net-zero year of 2050.

Step 1: Baseline Asset Inventory

The company identifies all GHG-emitting assets and quantifies emissions per asset in the target base year:

Asset	Emissions in Target Base Year (tCO ₂ e)	Scheduled Decommissioning Date	Asset Category
Blast furnace – BF1	2,500,000	2033	Primary steelmaking

Blast furnace – BF2	2,000,000	2038	Primary steelmaking
Blast furnace – BF3	1,500,000	2045	Primary steelmaking
Basic oxygen furnace – BOF1	800,000	2034	Primary steelmaking
Coke oven – CO1	600,000	2033	Primary steelmaking
Coke oven – CO2	600,000	2038	Primary steelmaking
On-site heavy duty vehicles (fleet)	150,000	Various (2028–2040)	Transport
All other assets for which asset-level data is not available	50,000	N/A	Cross-sector

Step 2: Classify Assets by Reference Pathway

The company assigns each asset to an asset category and reference pathway based on its function. For each asset category an eligible ADP approach is selected:

Asset Category	Reference Pathway	ADP Approach
Iron & steel – Blast furnace	Primary steelmaking	Milestones
On-site transport	Transport	Carbon Budget
Assets for which asset-level data is not available	Cross-sector	Carbon Budget

Step 3: Generate the Asset Transition Timeline(s)

A. Science-Based Milestone Approach – Blast Furnace (8,000,000 tCO₂e)

A1.1: The company clusters its blast furnace route assets by remaining technical lifetime and maps them to the relevant SBTi iron & steel transition pathway, which includes the following (exemplary) milestones:

- **Blast furnaces and associated coke ovens:**
 - No new investment milestone: 2025 (no new unabated blast furnace)
 - Phase-out milestone: 2040 (all unabated assets associated with primary steelmaking must be retired, retrofitted with CCS or transitioned to low-carbon steelmaking alternatives, such as direct reduced iron with green hydrogen or electric arc furnace)
- **Basic oxygen furnaces:**
 - No new investment milestone: 2025
 - Phase-out milestone: 2040 (in line with blast furnace phase-out)

The company holds three asset clusters for its blast furnace route assets:

Asset Cluster	Assets Included	Scheduled Decommissioning Date	Annual Emissions (2025 BY)
Cluster 1 – Short-life BF route	BF1, CO1, BOF1	2033–2034	3,800,000 tCO ₂ e
Cluster 2 – Mid-life BF route	BF2, CO2	2038	2,600,000 tCO ₂ e
Cluster 3 – Long-life BF route	BF3	2045	1,500,000 tCO ₂ e
Total			7,900,000 tCO₂e

The transition timeline for each cluster is determined as the earliest of: (i) the remaining technical lifetime of the asset, (ii) the science-based transition milestone, or (iii) the company's net-zero year of 2050.

Asset Cluster	Scheduled Decommissioning Date	ADP Decommissioning Year (Phase-Out Milestone)	Determining Factor
Cluster 1 – Short-life BF route	2033–2034	2033	Technical lifetime (before milestone)
Cluster 2 – Mid-life BF route	2038	2038	Technical lifetime (before milestone)
Cluster 3 – Long-life BF route	2045	2040	Phase-out milestone (before technical lifetime)

By the near-term target year of 2030, none of the clusters have yet reached their ADP decommissioning year. All three clusters therefore remain operational, and their 2030 emissions remain equal to their 2025 base year levels under the Milestone approach (assuming no operational changes or interim abatement). The full emission reduction from the blast furnace route is realised in a stepwise manner as clusters reach their ADP decommissioning dates (2033, 2038, and 2040 respectively).

Near-term ambition: All three clusters remain operational through 2030:

Total blast furnace route emissions in 2030 = 7,900,000 tCO₂e

B. Carbon Budget approach – On-site Heavy Duty Vehicles (150,000 tCO₂e) and Remaining Assets (50,000 tCO₂e)

B1.1: The company uses the Carbon Budget approach for its on-site heavy duty vehicle fleet and all other assets for which asset-level data is unavailable.

For on-site heavy duty vehicle emissions: Using the Transport reference pathway, the company determines the sector carbon budget for Heavy Duty Vehicles from the target base year until the net-zero year and allocates a share to the company based on its target base year emissions.

In this case, the (exemplary) sector budget for Heavy Duty Vehicles is 900,000,000 tCO₂e over this period. The company's on-site vehicle emissions in 2025 represent 0.017% of total sector emissions, yielding a company-level budget for the fleet until the net-zero year of:

$$0.017\% \times 900,000,000 = 150,000 \text{ tCO}_2\text{e}$$

For all remaining emissions for which asset-level data is not available: Using the cross-sector reference pathway, the company determines the carbon budget using the linear contraction method. In this case, the (exemplary) budget for remaining emissions is 625,000 tCO₂e from 2025 to net-zero in 2050.

B1.2: The company determines the transition timeline for all asset categories covered by the Carbon Budget approach, ensuring that aggregated projected emissions from all assets until the net-zero year are consistent with conserving the allocated budgets.

Step 4: Aggregation and Target Derivation

The company aggregates projected emissions from all asset clusters and categories in the near-term target year of 2030:

Asset Category	Approach	Projected Emissions in 2030
Primary steelmaking	Science-Based Milestone	7,900,000 tCO ₂ e
On-site heavy duty vehicles	Carbon Budget	120,000 tCO ₂ e (exemplary)
Remaining assets (no asset-level data)	Carbon Budget	44,000 tCO ₂ e (exemplary)
Total		8,064,000 tCO₂e

Note: The 2030 values for the Carbon Budget asset categories are wholly exemplary and could be any value, as long as the overall emission trajectory until the net-zero year is consistent with maintaining the respective company carbon budgets.

The company's near-term target is therefore approximately 1.7% absolute reduction in scope 1 emissions by 2030 from a 2025 base year. The relatively modest near-term reduction

reflects that no major blast furnace clusters are decommissioned before 2030; the more significant absolute reductions occur in later years as clusters reach their ADP transition dates.

Base Year Emissions (2025)	Target Year Projected Emissions (2030)	Target Ambition
8,200,000 tCO ₂ e	8,064,000 tCO ₂ e	~1.7% absolute reduction

Example 3: Hotel chain

A hotel chain has 320,000 tCO₂e of scope 1 GHG emissions in its target base year (2025), primarily from on-site combustion for heating. The company sets a near-term target year of 2030 and a net-zero year of 2050.

Step 1: Baseline Asset Inventory

The company identifies all GHG-emitting assets and quantifies emissions per asset in the target base year:

Asset	Emissions in Target Base Year (tCO ₂ e)	Scheduled Retrofit / Decommissioning Date	Asset Category
Tower – OT1 (gas boilers)	80,000	2028	Buildings
Tower – OT2 (gas boilers)	70,000	2032	Buildings
Retail park – RP1 (gas heating)	50,000	2035	Buildings
Retail park – RP2 (gas heating)	50,000	2040	Buildings
Mixed-use development – MU1	40,000	2045	Buildings
Mixed-use development – MU2	20,000	2048	Buildings
On-site diesel standby generators (portfolio-wide)	8,000	Various (2027–2040)	Power generation
All other assets for which asset-level data is not available	2,000	N/A	Cross-sector

Step 2: Classify Assets by Reference Pathway

The company assigns each asset to an asset category and reference pathway based on its function. For each asset category an eligible ADP approach is selected:

Asset Category	Reference Pathway	ADP Approach
Buildings – Commercial	Buildings	Milestones
On-site generation (standby diesels)	Power generation	Carbon Budget
Assets for which asset-level data is not available	Cross-sector	Carbon Budget

Step 3: Generate the Asset Transition Timeline(s)

A. Science-Based Milestone Approach – Commercial Buildings (310,000 tCO₂e)

A1.1: The company clusters its buildings by remaining technical lifetime and maps them to the relevant SBTi commercial buildings transition pathway, which includes the following (exemplary) milestones:

- **Space and water heating systems:**
 - No new investment milestone: 2030 (no new unabated fossil fuel heating systems installed)
 - Phase out milestone: 2045 (all commercial buildings must have fossil fuel heating retired or replaced with low-carbon alternatives, such as heat pumps or district heating)

The company holds three asset clusters for its commercial buildings:

Asset Cluster	Assets Included	Scheduled Retrofit / Replacement Date	Annual Emissions (2025 BY)
Cluster 1	OT1, OT2	2028–2032	150,000 tCO ₂ e
Cluster 2	RP1, RP2	2035–2040	100,000 tCO ₂ e
Cluster 3	MU1, MU2	2045–2048	60,000 tCO ₂ e
Total			310,000 tCO₂e

The transition timeline for each cluster is determined as the earliest of: (i) the scheduled retrofit or decommissioning date, (ii) the science-based transition milestone, or (iii) the company's net-zero year of 2050.

Asset Cluster	Scheduled Retrofit / Replacement Date	ADP Transition Year (Retrofit Milestone)	Determining Factor
Cluster 1	2028–2032	2028 (OT1) / 2032 (OT2)	Technical lifetime (before milestone)

Cluster 2	2035–2040	2045 (RP1 & RP2)	Technical lifetime (before milestone)
Cluster 3	2045–2048	2045 (MU1 & MU2)	Net-zero ops milestone (before MU2 lifetime)

By the company's near-term target year of 2030, OT1 has already been retrofitted in 2028 (0 tCO₂e post-retrofit), reducing the portfolio's annual building emissions by 80,000 tCO₂e. OT2 remains operational until 2032. Clusters 2 and 3 remain fully operational in 2030.

Near-term ambition: OT1 retires in 2028 (0 tCO₂e by 2030); OT2, Clusters 2 and 3 remain operational:

310,000 – 80,000 = 230,000 tCO₂e from commercial buildings in 2030

B. Carbon Budget approach – Power Generators (8,000 tCO₂e) and Remaining Assets (2,000 tCO₂e)

B1.1: The company uses the Carbon Budget approach for its portfolio-wide standby diesel generators and all other assets for which asset-level data is unavailable.

For standby diesel generator emissions: Using the Power Generation reference pathway, the company determines the sector carbon budget from the target base year until the net-zero year and allocates a share based on its target base year emissions.

In this case, the (exemplary) sector budget for unabated power generation is 40,000,000 tCO₂e over this period. The company's standby generator emissions in 2025 represent 0.02% of total sector emissions, yielding a company-level budget until the net-zero year of:

0.02% × 40,000,000 = 8,000 tCO₂e

For all remaining emissions for which asset-level data is not available: Using the cross-sector reference pathway, the company determines the carbon budget using the linear contraction method. In this case, the (exemplary) budget for remaining emissions is 25,000 tCO₂e from 2025 to net-zero in 2050.

B1.2: The company determines the transition timeline for all asset categories covered by the Carbon Budget approach, ensuring that aggregated projected emissions from all assets until the net-zero year are consistent with conserving the allocated budgets.

Step 4: Aggregation and Target Derivation

The company aggregates projected emissions from all asset clusters and categories in the near-term target year of 2030:

Asset Category	Approach	Projected Emissions in 2030
Commercial buildings	Science-Based Milestone	230,000 tCO ₂ e
Standby diesel generators	Carbon Budget	6,400 tCO ₂ e (exemplary)
Remaining assets (no asset-level data)	Carbon Budget	1,600 tCO ₂ e (exemplary)
Total		238,000 tCO₂e

Note: The 2030 values for the Carbon Budget asset categories are wholly exemplary and could be any value, as long as the overall emission trajectory until the net-zero year is consistent with maintaining the company carbon budget.

The company's near-term target is therefore a 25.6% absolute reduction in scope 1 emissions by 2030 from a 2025 base year, primarily driven by the scheduled retrofit of office tower OT1 in 2028, with an additional contribution from the phase-down of standby diesel generator usage in line with the allocated carbon budget.

Base Year Emissions (2025)	Target Year Projected Emissions (2030)	Target Ambition
320,000 tCO ₂ e	238,000 tCO ₂ e	~25.6% absolute reduction



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SBTi PATHWAY SPECIFICATION

Scope 2 Low-carbon electricity pathway

Version 0.1 - *Draft Public Comment*

June 2026

1. PATHWAY DESCRIPTION

The low-carbon electricity generation pathway describes the evolution of low-carbon electricity generation and sourcing consistent with achieving global net-zero CO₂ emissions by 2050 or earlier.

1.1 Pathway type

The low-carbon electricity pathway is an alignment pathway.

2. APPLICABILITY

This pathway is applicable to companies whose activities involve the purchase of electricity for their own consumption.

2.1 Geographical applicability

The pathway has global applicability. The pathway provides differentiated values for Advanced Economies and Emerging Markets, and Developing Economies (or the rest of the world) (see [Section 4](#) for country classification).

2.2 Method applicability

The pathway shall be used in conjunction with the **Linear Alignment method**.

3. METRIC DEFINITION

This pathway is expressed in terms of share of low-carbon electricity, calculated on a volume basis relative to total sourced electricity within the organisational boundary.

For the purposes of this pathway, low-carbon electricity is defined as electricity with direct CO₂ emissions intensity of 0.048 kg CO₂/kWh or less, until 2035. This threshold reflects the emissions intensity of natural gas combined cycle generation equipped with carbon capture and storage (CCS) operating at a 90% CO₂ capture rate.

From 2035 onwards, the threshold is tightened to 0.024 kg CO₂/kWh, reflecting an increase in capture rates to approximately 95%, consistent with anticipated technological improvements.

4. PATHWAY VALUES

The pathway is expressed as a time-bound trajectory for the share of low-carbon electricity, calculated as the ratio of low-carbon generation to total electricity generation. The interim benchmarks in Table 1a and 1b are based on the IEA World Energy Outlook NZE (IEA WEO NZE 2024) trajectory (see section 6).

Table 1a: Regional gross low-carbon power generation pathway for advanced economies

Metric	2025	2030	2035	2040
Share of low-carbon electricity (%)	75%	80%	99%	100%

Applicable geography: Advanced Economies. These countries are Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States, Bulgaria, Croatia, Cyprus, Malta, Romania.

Table 1b: Regional low-carbon power generation pathway for Emerging Markets and Developing Economies

Metric	2025	2030	2035	2040	2045
Share of low-carbon electricity (%)	50%	65%	87%	97%	100%

Applicable geography: Emerging markets and Developing Economies. These countries include all other countries not included in the Advanced Economies regional grouping.

5. PATHWAY SCOPE

This pathway covers electricity generated by assets whose primary function is the generation of electricity or combined heat and power (CHP).

6. SCENARIO SOURCE

The low-carbon electricity pathway is informed by an assessment of scenarios from the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) and the IEA WEO NZE 2024 scenario. Scenarios were evaluated against defined thresholds across the following criteria (SBTi, 2025).

- Primary energy from bioenergy does not exceed the sustainability limit of 100 EJ in any year, consistent with the IPCC thresholds for medium sustainability risks (Frank et al., 2021).
- Bioenergy with carbon capture and storage (BECCS) deployment does not exceed 3 GtCO₂ per year in any year between 2020 and 2050 to reflect risks to land use, biodiversity, and livelihoods (Warszawski et al., 2021).
- Carbon dioxide removal from afforestation is limited to 3.6 GtCO₂ per year in 2050, consistent with estimates of sustainable sequestration potential (Fuss et al., 2018).

- Novel carbon dioxide removal (CDR) technologies do not exceed observed deployment levels of 2.3 MtCO₂ in 2020 to reflect current feasibility constraints.
- Carbon capture and storage (CCS) deployment over 2010-2050 does not exceed the feasible limit of 214 GtCO₂, reflecting biophysical, infrastructural, and market constraints (van de Ven et al., 2023). The constraint is applied to scenario data from 2020-2050, reflecting near-zero historical CCS deployment across all scenarios.
- Primary energy from fossil fuels follows a sustained decline beyond 2050 (Spangenberg et al., 2021).
- Cumulative emissions from Agriculture, Forestry, and Land-use (AFOLU) over 2020-2050 remain within 99 GtCO₂, consistent with the SBTi FLAG pathway (SBTi, 2022).

In addition, scenario selection is constrained to reflect more recent trends in global electricity decarbonization. This results in retaining only the IEA WEO NZE 2024 scenario to define the trajectory for the share of low-carbon electricity generation. The pathway applies regional differentiation based on the IEA WEO NZE 2024 classification of advanced economies, emerging markets and developing economies. Table 2 summarizes the key characteristics of the IEA WEO NZE 2024 scenario.

Table 2: Characteristics of scenarios to derive the low-carbon power generation pathway

Model	Version	Modelling approach	Scenario	Global Carbon budget (2020-2050)	Timeframe	Climate category	Sector Coverage	Ref.
IEA Global Energy and Climate (GEC) model	2024	Hybrid	World Energy Outlook	~ 500 GtCO ₂	2020 - 2050	1.5°C with low or no overshoot	Energy and Industry	IEA WEO, 2024

7. KEY ASSUMPTIONS

This section describes the pace of regionally differentiated power sector transformation across Advanced Economies, and Emerging Markets and Developing Economies. In Advanced Economies, moderate demand growth allows the transition to be driven primarily by displacing unabated fossil generation with renewables, supported by nuclear power generation and bioenergy. In Emerging Markets and Developing Economies, rising demand from economic growth and expanding electricity access drives a larger expansion of total system output, met with immense renewable growth. While some fossil generation capacity remains on the grid in both geographies, these assets have very low running rates by 2050, limiting their use to grid stability and peak management purposes. Tables 4a and 4b provide an overview of the key assumptions across the most relevant transition indicators over the near term (2020-2030) and the long term (2030-2050).

Table 3a: Regional assumptions characterizing sector decarbonization in Advanced Economies.

Assumption category	2020-2030	2030-2050
Total electricity output	Increases by ~35%	Increases by ~175%
Total installed generation capacity	Increases by ~60%	Increases by ~85%
Renewable capacity ³	Increases by ~155%	Increases by ~115%
Nuclear capacity	Increases by ~10%	Increases by ~50%
Unabated FF generation capacity	Decreases by ~15%	Decreases by ~65%
Bioenergy capacity	Increases by ~60%	Increases by ~70%

Table 3b: Regional assumptions characterizing sector decarbonization in Emerging Markets and Developing Economies.

Assumption category	2020-2030	2030-2050
Total electricity output	Increases by ~60%	Increases by ~115%
Total installed generation capacity	Increases by ~170%	Increases by ~170%
Renewable capacity ¹	Increases by ~415%	Increases by ~225%
Nuclear capacity	Increases by ~70%	Increases by ~125%
Unabated FF generation capacity	Decreases by ~20%	Decreases by ~80%
Bioenergy capacity	Increases by ~120%	Increases by ~245%

³ Includes geothermal, hydropower, solar, and wind

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SBTi PATHWAY SPECIFICATION

Scope 2 electricity emission pathway

Version 0.1 - *Draft for Public Comment*

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1. PATHWAY DESCRIPTION

The purchased electricity emission pathway describes the evolution in absolute emissions associated with the purchase of electricity consistent with achieving global net-zero CO₂ emissions by 2050 or earlier.

1.1 Pathway type

The pathway is an absolute emission pathway.

2. APPLICABILITY

The pathway is applicable to companies that purchase electricity, heat, steam, or cooling for their own consumption.

2.1 Geographical applicability

The pathway has global applicability. The pathway provides absolute emission values differentiated between Advanced Economies and Emerging and Developing Economies (see [Section 4](#) for country classification).

2.2 Method applicability

The pathway shall be used in conjunction with the **Linear Contraction (LC) method**.

3. METRIC DEFINITION

The pathway is expressed as a **gross** emissions trajectory, measured in tonnes of CO₂ of electricity generation.

4. PATHWAY VALUES

The pathway is expressed as a time-bound trajectory for reduction in gross CO₂ emissions of electricity purchased. **The pathway implies a 99% reduction in absolute emissions by 2040 for advanced economies and a 98% reduction by 2045 for emerging economies, both relative to 2020 levels. The net-zero benchmark is taken as 2040 for advanced economies, and 2045 for emerging markets and developing economies**

Table A1. Regional power generation emissions for Advanced Economies.

Metric	2020	2025	2030	2035	2040
Gross emissions (MtCO ₂)	3953	2165.2	1252.3	50.9	26.7 net-zero benchmark

* The 2020 value represents historical data from Ember, 2025, as the World Energy Outlook does not provide historical benchmark values for this period.

Applicable geography: Advanced Economies. These countries are Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States, Bulgaria, Croatia, Cyprus, Malta, Romania.

Table A2. Regional power generation emissions for Emerging Markets and Developing Economies.

Metric	2020	2025	2030	2035	2040	2045
Gross emissions (MtCO ₂)	9197	8249.9	7553.7	3166.4	661.0	159.0 net-zero benchmark

* The 2020 value represents historical data from Ember, 2025, as the World Energy Outlook does not provide historical benchmark values for this period.

Applicable geography: Emerging Markets and Developing Economies. These countries include all other countries not included in the Advanced Economies regional grouping.

5. PATHWAY SCOPE

This pathway covers emissions from assets whose primary function is the generation of electricity or combined heat and power (CHP).

6. SCENARIO SOURCE

The purchased electricity pathway is informed by an assessment of scenarios from the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) and the IEA NZE WEO scenario. Scenarios were evaluated against defined thresholds across the following criteria (SBTi, 2025):

- Primary energy from bioenergy does not exceed the sustainability limit of 100 EJ in any year, consistent with the IPCC thresholds for medium sustainability risks (Frank et al., 2021).
- Bioenergy with carbon capture and storage (BECCS) deployment does not exceed 3 GtCO₂ per year in any year between 2020 and 2050 to reflect risks to land use, biodiversity, and livelihoods (Warszawski et al., 2021)
- Carbon dioxide removal from afforestation is limited to 3.6 GtCO₂ per year in 2050, consistent with estimates of sustainable sequestration potential (Fuss et al., 2018)
- Novel carbon dioxide removal (CDR) technologies do not exceed observed deployment levels of 2.3 MtCO₂ in 2020 to reflect current feasibility constraints.
- Carbon capture and storage (CCS) deployment over 2010-2050 does not exceed the feasible limit of 214 GtCO₂, reflecting biophysical, infrastructural, and market constraints (van de Ven et al., 2023). The constraint is applied to scenario data from 2020-2050, reflecting near-zero historical CCS deployment across all scenarios.

- Primary energy from fossil fuels follows a sustained decline beyond 2050 (Spangenberg et al., 2021).
- Cumulative emissions from Agriculture, Forestry and Land-use (AFOLU) over 2020-2050 remain within 99 GtCO₂, consistent with the SBTi FLAG pathway (SBTi, 2022).

In addition, scenario selection is constrained to ensure consistency with near-complete structural transformation of global electricity generation. This results in retaining only the International Energy Agency (IEA) World Energy Outlook 2024 Net Zero Emissions by 2050 Scenario (WEO 2024) to define the trajectory for the share of low-carbon electricity generation. The pathway applies regional differentiation based on the IEA WEO classification of advanced economies, emerging markets, and developing economies. Table 1 summarizes the key characteristics of the IEA WEO scenario.

Table 1: Characteristics of scenarios to derive the purchased electricity emission pathway

Model	Version	Modelling approach	Scenario	Global Carbon budget (2020-2050)	Timeframe	Climate category	Sector Coverage	Ref.
IEA Global Energy and Climate (GEC) model	2024	Hybrid	World Energy Outlook	~ 500 GtCO ₂	2020 - 2050	1.5°C with low or no overshoot	Energy and Industry	WEO, 2024

7. KEY ASSUMPTIONS

This section describes the pace and characteristics of regionally differentiated power sector transformation. In Advanced Economies, electricity demand growth is met primarily through the expansion of renewable generation capacity, alongside more moderate growth in nuclear and bioenergy, while unabated fossil fuel generation capacity declines progressively over time. In Emerging Market and Developing Economies, stronger growth in electricity demand driven by economic development, industrialization, and expanding electricity access requires a substantially larger expansion of total generation and system capacity, supported predominantly by rapid renewable energy deployment.

Across both geographies, the pathway assumes a significant decline in unabated fossil fuel generation capacity alongside a rapid increase in low-carbon generation sources. While some fossil generation assets remain in the system by 2050, their utilization rates are assumed to be very low, limiting their role primarily to system flexibility, reserve capacity, and peak demand management. Tables 2a and 2b summarize the quantitative changes across key transition indicators over the periods 2020–2030 and 2030–2050.

Table 2a: Regional assumptions characterizing sector decarbonization in advanced economies.

Assumption category	2020-2030	2030-2050
Total electricity output	Increases by ~35%	Increases by ~75%
Total installed generation capacity	Increases by ~60%	Increases by ~85%
Renewable capacity ⁴	Increases by ~155%	Increases by ~115%
Nuclear capacity	Increases by ~10%	Increases by ~50%
Unabated FF generation capacity	Decreases by ~15%	Decreases by ~65%
Bioenergy capacity	Increases by ~60%	Increases by ~70%

Table 2b: Regional assumptions characterizing sector decarbonization in Emerging Markets and Developing Economies.

Assumption category	2020-2030	2030-2050
Total electricity output	Increases by ~60%	Increases by ~115%
Total installed generation capacity	Increases by ~170%	Increases by ~170%
Renewable capacity ¹	Increases by ~415%	Increases by ~225%
Nuclear capacity	Increases by ~70%	Increases by ~125%
Unabated FF generation capacity	Decreases by ~20%	Decreases by ~80%
Bioenergy capacity	Increases by ~120%	Increases by ~245%

⁴ Includes geothermal, hydropower, solar, and wind

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SBTi PATHWAY SPECIFICATION

Cross-Sector pathway

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1. PATHWAY DESCRIPTION

The cross-sector emissions pathway describes the evolution of greenhouse gas (GHG) emissions associated with energy and industrial processes across the global economy, consistent with achieving net-zero emissions by 2050.

1.1 Pathway type

The cross-sector pathway is an absolute **gross** emissions pathway.

2. APPLICABILITY

This pathway is applicable to companies setting an overarching absolute gross GHG emissions reduction target across multiple scope 3 value chain categories. The pathway applies to specific downstream emission sources or activities for which no sector-specific pathway exists.

2.1 Geographical applicability

The pathway has global applicability. The pathway provides absolute emission values differentiated between Advanced Economies and Emerging and Developing Economies (see [Annex 1](#) for country classification).

2.2 Method applicability

The pathway shall be used in conjunction with the **linear contraction (LC) method**.

3. METRIC DEFINITION

This pathway is expressed in terms of absolute GHG emissions (tCO₂e).

4. PATHWAY VALUES

The pathway is expressed as a time-bound trajectory for emissions associated with energy and industrial activities across the economy. Pathway values (presented in the Annex for illustrative purposes) are based on median estimates across the eligible scenarios. The pathway implies an 89% reduction in absolute GHG emissions by 2050 relative to 2020 levels in advanced economies and an 81% reduction in emerging market and developing economies. At the global level, GHG emissions decline by 83% over the same period.

5. PATHWAY SCOPE

The cross-sector pathway covers all Kyoto GHG emissions, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases (F-gases), associated with energy and industrial processes across all economic activities at the global level. Emissions from forestry, agriculture, and land use (FLAG) are not within the scope of this pathway. FLAG exclusion is due to inconsistent methodologies in Integrated Assessment Models (IAMs) for land emissions and removals. Importantly, the cross-sector pathway embeds land-sector mitigation assumptions by excluding scenarios with land-based mitigation levels that exceed

those represented in the FLAG pathway (SBTi, 2026). This avoids reliance on disproportionate land-sector mitigation outside the FLAG framework, ensuring consistency between the cross-sector and FLAG pathways within the overall mitigation envelope.

6. SCENARIO SOURCE

The cross-sector pathway has been derived from an ensemble of scenarios that satisfy defined thresholds across the following criteria:

- Primary energy from bioenergy does not exceed the sustainability limit of 100 EJ in any year, consistent with the IPCC thresholds for medium sustainability risks (Frank et al., 2021).
- Bioenergy with carbon capture and storage (BECCS) deployment does not exceed 3 GtCO₂ per year in any year between 2020 and 2050 to reflect risks to land use, biodiversity, and livelihoods (Warszawski et al., 2021).
- Carbon dioxide removal from afforestation is limited to 3.6 GtCO₂ per year in 2050, consistent with estimates of sustainable sequestration potential (Fuss et al., 2018).
- Novel carbon dioxide removal (CDR) technologies do not exceed observed deployment levels of 2.3 MtCO₂ in 2020 to reflect current feasibility constraints.
- Carbon capture and storage (CCS) deployment over 2010-2050 does not exceed feasible limits of 214 GtCO₂, reflecting biophysical, infrastructural, and market constraints (van de Ven et al., 2023). The constraint is applied to scenario data from 2020-2050, reflecting near-zero historical CCS deployment across all scenarios.
- Primary energy from fossil fuels follows a sustained decline beyond 2050 (Spangenberg et al., 2021).
- Cumulative emissions from Agriculture, Forestry and Land-use (AFOLU) over 2020-2050 remain within 99 GtCO₂, consistent with the SBTi FLAG pathway (SBTi, 2022).

The criteria were applied to a set of 97 low- or no-overshoot (C1) scenarios from the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) and the International Energy Agency Net Zero World Energy Outlook Scenario (IEA WEO 2024, SBTi 2025). After applying the criteria, eight scenarios remained, including seven IPCC C1 scenarios and the IEA WEO 2024 Net Zero Emissions Scenario. The IEA WEO scenario does not provide sub-global regional data and is therefore excluded from the regional pathway derivation.

Regional emissions data are extracted at the level of the five macro-regions (R5) defined in the IPCC AR6 scenario database (Byers et al. 2022). The R5 regions are subsequently aggregated into two groups: Advanced Economies and Emerging Markets and Developing Economies. Advanced economies comprise the Organisation for Economic Co-operation and Development (OECD) countries and European Union region (R5OECD90+EU). Emerging markets and developing economies comprise Asia (R5ASIA), the Middle East and Africa (R5MAF), Latin America (R5LAM), and Reforming Economies (R5REF). The full list of countries in each region is provided in Annex 1.

Table 1 summarizes the key characteristics of the scenarios used to derive the regional cross-sector pathways.

Table 1. Characteristics of scenarios used to derive the regional cross-sector pathways

Model	version	Modelling approach	Scenario	Carbon budget (from 2020-2050)	Time frame	Climate category	Sector coverage	Ref
REMIND	2.1	Top-down	LeastTotalCost_LT C_brkLR15_S SP1_P50	~ 500 GtCO ₂	2020-2050	1.5°C with low or no overshoot	Economy-wide	Schultes et al. (2021)
	2.1-4.2		EN_NPi2020_600f_COV					Bertram et al. (2021)
	2.1-4.2		SusDev_SDP-PkBudg1000					Soergel et al. (2021)
	2.1-4.3		DeepElec_SS P2_HighRE_Budg900					Luderer et al. (2022)
CROADS	5.005		Ratchet-1.5-noCDR					Holz et al. (2018)
			Ratchet-1.5-noCDR-noOS					
MESSAGEix-GLOBIOM	1.0		LowEnergyDemand_1.3_IPCC					Grubler et al. (2018)

7. KEY ASSUMPTIONS

The cross-sector pathway assumes a structural transformation of the global energy system characterized by a substantial decline in fossil fuel dependence, rapid expansion of renewable energy, increased electrification of end-use sectors, and progressive decarbonization of electricity generation. Together, these trends underpin the decline in economy-wide greenhouse gas emissions represented by the pathway.

Across the eligible scenarios, the share of fossil fuels in primary energy declines significantly over time, while renewable energy becomes an increasingly dominant component of the energy system. The pathway also assumes a strong increase in the share of electricity in final energy demand, reflecting widespread electrification across transport, buildings, and industry. This trend is accompanied by a sharp decline in the fossil fuel share of electricity generation and continued improvements in energy efficiency.

Regional differences reflect varying transition starting points and development trajectories. Advanced economies generally exhibit faster reductions in fossil fuel dependence and more rapid decarbonization of electricity generation, while emerging markets and developing economies show stronger growth in electrification. Tables 2–4 summarize the quantitative changes across these transition indicators over the periods 2020–2030 and 2030–2050.

Each value represents the mean relative change across scenarios reporting data for the relevant metric and region.

Table 2. Advanced economies' assumptions underpinning the cross-sector pathway

Assumptions	2020-2030	2030-2050
Fossil fuel share in primary energy	Decreases by 26%	Decreases by 68%
Renewable energy share in primary energy	Increases by 153%	Increases by 120%
Electricity share of final energy	Increases by 31%	Increases by 96%
Fossil fuel share of electricity generation	Decreases by 73%	Decreases by 88%

Table 3. Emerging markets' and developing economies' assumptions underpinning the cross-sector pathway

Assumptions	2020-2030	2030-2050
Fossil fuel share in primary energy	Decreases by 22%	Decreases by 56%
Renewable energy share in primary energy	Increases by 105%	Increases by 102%
Electricity share of final energy	Increases by 53%	Increases by 93%
Fossil fuel share of electricity generation	Decreases by 56%	Decreases by 86%

Table 4. Global assumptions underpinning the cross-sector pathway

Assumptions	2020-2030	2030-2050
Fossil fuel share in primary energy	Decreases by 23%	Decreases by 58%
Renewable energy share in primary energy	Increases by 118%	Increases by 106%
Electricity share of final energy	Increases by 43%	Increases by 93%
Fossil fuel share of electricity generation	Decreases 60%	Decreases 86%

ANNEX 1

Table A1. Regional gross GHG emission pathway for advanced economies.

Metric	2020	2025	2030	2035	2040	2045	2050
Gross absolute GHG emissions from energy and industries (MtCO ₂ e)	12137.7	8941.8	5710	4015.9	2682.3	1938.8	1305

Applicable geography: Advanced economies include the OECD countries and European Union region. The countries include Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, North Macedonia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, Canada, United States of America, Australia, Fiji, French Polynesia, Guam, Japan, New Caledonia, New Zealand, Samoa, Solomon Islands, and Vanuatu.

Table A2. Regional gross GHG emission pathway for emerging markets and developing economies.

Metric	2020	2025	2030	2035	2040	2045	2050
Gross absolute GHG emissions from energy and industries (MtCO ₂ e)	30356.5	24218	19202.5	13982.2	9967.8	7750.6	5880.5

Applicable geography: Emerging markets and developing economies include all other countries not in advanced economies.

Table A3. Global gross GHG emission pathway.

Metric	2020	2025	2030	2035	2040	2045	2050
Gross absolute GHG emissions from energy and industries (MtCO ₂ e)	42494.2	33159.8	24912.5	17998.1	12650.1	9689.4	7185.5

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SBTi PATHWAY SPECIFICATION

Supplier and/or customer alignment pathway

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1. PATHWAY DESCRIPTION

The net-zero supplier and/or customer alignment pathway provides a framework for assessing how the net-zero alignment of value chain entities (e.g., customers or suppliers) evolves over time.

1.1 Pathway type

The net-zero supplier and/or customer alignment pathway is an alignment pathway.

2. APPLICABILITY

The pathway is applicable to companies connected to other entities in their value chains via commercial relationships (e.g., with suppliers, customers, franchisees, etc).

More specific pathways, definitions, or methodological criteria may be developed for particular sectors, or entity types (e.g., SMEs). Where such sector- or entity-specific specifications exist, target setting companies shall apply those specifications in place of the generic provisions set out in this pathway.

2.1 Geographical applicability

The pathway has global applicability. The pathway provides share of exposure differentiated between Advanced Economies and Emerging and Developing Economies.

2.2 Method applicability

This pathway shall be applied in conjunction with the **Index Alignment method**.

3. METRIC DEFINITION

The pathway is expressed as the share (%) of total exposure to entities in a given year that meets the in-transition or net-zero aligned criteria. Exposure can be measured on a financial basis (e.g., spend, revenue) or an emissions basis.

For the purposes of this pathway specification, the following definitions apply:

1. **In-transition entities:** Entities that meet at least one of the following criteria:
 - a. Have near-term targets covering scope 1, 2 and material scope 3 GHG emissions (scope 1+2 only for Category B companies), consistent with reaching net-zero GHG emissions by 2050 in accordance with recognized science-based standards (see Annex 1 for illustrative examples).
 - b. Generate more than 90% of revenue from activities classified as transitional or transition-enabling under recognised sustainable finance taxonomies (see Annex 1 for illustrative examples).

The “In transition” category is first focused on entities establishing a clear net-zero aligned ambition. Over time, entities must demonstrate measurable progress in accordance with recognized science-based standards to keep their “in transition” classification

2. **Net-zero-aligned entities:** Entities that meet at least one of the following criteria:
 - a. Operate at zero or near-zero emissions across their operations and value chain (Scope 1, 2, and 3), with only residual emissions remaining.
 - b. Generate more than 90% of revenue from activities classified as net-zero aligned under recognised sustainable finance taxonomies.

4. PATHWAY VALUES

The pathway is expressed as the minimum share of exposure to in-transition or net-zero aligned entities for each five-year milestone between 2030 and 2050. Linear interpolation is used to define the minimum values between these milestone years.

The pathway has been developed by the SBTi, based on observed trends (see Section 7) in corporate target-setting and transition planning. It reflects a plausible, evidence-based trajectory grounded in empirical data on the rate of adoption of these practices, which are used to inform the calibration of the pathway.

The pathway itself is defined from 2030 onwards, reflecting a continuation and acceleration of recent trends in target-setting over the remainder of the decade. From this point, the pathway approximates the later stages of an S-curve dynamic. Adoption continues to increase, but at a progressively slower rate, as it approaches saturation over time.

Table 1a. Share of total exposure to in-transition or net-zero aligned entities for advanced economies

Metric	2030	2035	2040	2045	2050
share (%) of total exposure	≥70%	≥85%	≥90%	≥95%	≥95%

Applicable geography: Advanced Economies. This category includes the region of OECD90 and EU (and EU candidate) countries.

Table 1b. Share of total exposure to in-transition or net-zero aligned entities for emerging market and developing economies

Metric	2030	2035	2040	2045	2050
share (%) of total exposure	≥50%	≥72%	≥86%	≥93%	≥95%

Applicable geography: Emerging Market and Developing Economies. This category includes all other countries not in the advanced economies

5. PATHWAY SCOPE

This pathway applies to the complete operations and value chains of value-chain connected entities (suppliers, customers, portfolio companies, etc.).

6. SCENARIO SOURCE

The pathway is not derived from a specific climate scenario, but is constructed based on current status of entity alignment and assumptions about the expected growth in transitioning and net-zero aligned entities over time, consistent with achieving net-zero global emissions by 2050.

7. KEY ASSUMPTIONS

To estimate future adoption of corporate net-zero emissions targets, a logistic diffusion model is applied. These models are widely used in innovation diffusion, technology adoption, and policy uptake forecasting. The models show that adoption rates historically follow an S-curve; where early adopters are followed by rapid mainstream uptake, with growth slowing as the population approaches saturation.

The pathway model is calibrated using observed MSCI Transition Finance Tracker data (MSCI, 2026) showing that 32% of global listed companies had declared net-zero targets by Q1 2026, with 19% of global listed companies having validated SBTs.

Logistic Diffusion Model

The logistic diffusion model is used to generate a pathway taking into account the historic growth rate of target adoption and an ideal end, or saturation, point.

$$\frac{dS}{dt} = r \times s \times \left(1 - \frac{s}{K} \right)$$

Where:

- S = adoption share
- r = intrinsic diffusion coefficient
- K = market saturation level

The solution is represented as follows:

$$S(t) = \frac{K}{1 + \left(A \times e^{r.t} \right)}$$

With

$$A = \frac{K - S_0}{S_0}$$

Advanced Economies pathway

Annual absolute adoption growth globally has increased from roughly 3–4 percentage points/year to 4 to 5 points/year, while adoption has moved from early adopters toward the early majority. This is consistent with classical diffusion theory showing that growth rate increases near the midpoint of adoption.

The model assumes:

- 1) a saturation ceiling (K parameter) of 0.95: 95% of companies adopt targets and progress towards achieving them
- 2) 2020–2026 historic adoption rates continue (S_0), meaning continued acceleration driven by regulatory and investor pressure.

A logistic diffusion model calibrated only to observed historical adoption rates indicates that a range of 65–70% net-zero target adoption by 2030 is a plausible near-term outcome, making it a credible strategic ambition for entity alignment targets. 70% is selected as the pathway value for 2030.

Table 2. Logistic function model results, Advanced Economies

Year	Model output
2026	32%
2027	39%
2028	48%
2029	58%
2030	67%
2035	88%
2040	93%
2040	95%
2050	95%

Emerging Markets and Developing Economies pathway

For illustrative purposes, a separate adoption pathway is modelled for companies headquartered in emerging markets and developing economies, using the same logistic diffusion framework, but calibrated to reflect:

- lower current adoption rates,
- weaker near-term regulatory drivers,
- lower investor pressure,
- more limited access to transition finance and technical capacity,
- slower diffusion of corporate climate governance practices.

The result is a slower initial uptake curve relative to developed markets, while still converging towards widespread adoption by mid-century as international disclosure requirements, supply-chain pressures, and capital market expectations become increasingly global.

The model assumes:

1. a saturation ceiling (K parameter) of 0.95: 95% of companies adopt targets and progress towards achieving them
2. lower starting adoption rates, estimated at 15-20% (S_0) by 2026.

A logistic diffusion model calibrated only to observed historical adoption rates indicates that ~50% net-zero target adoption by 2030 is a plausible near-term outcome, making it a credible strategic ambition for supplier / customer alignment targets in Emerging Markets and Developing Economies.

Table 2. Logistic function model results, Emerging Markets and Developing Economies

Year	Model output
2026	18%
2027	23%
2028	30%
2029	39%
2030	50%
2035	72%
2040	86%
2045	93%
2050	95%

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ANNEX 1 : ILLUSTRATIVE BENCHMARKS

Illustrative benchmarks for entities include:

	In-transition	Net-zero aligned sources
Entities	<ul style="list-style-type: none">Validated SBTi targetsOther entity alignment standards or ratings, e.g., implied temperature rise ratingsActivities consistent with EU climate taxonomy	<ul style="list-style-type: none">Verified GHG inventory covering all relevant emission scopes, which shows that the entity or activity is at zero or near-zero emissions (residual levels)Activities consistent with EU climate taxonomy



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SBTi PATHWAY SPECIFICATION

Generic purchasing pathway

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1. PATHWAY DESCRIPTION

The generic purchasing pathway provides a framework to inform science-based target-setting related to the sourcing of commodities and services consistent with achieving net-zero emissions by 2050 or earlier.

1.1 Pathway type

The generic purchasing pathway is an alignment pathway.

2. APPLICABILITY

This pathway is applicable to companies whose activities involve the sourcing of industrial, energy, and land based commodities as well as transport activities.

This pathway is designed as a generic pathway applicable to a wide variety of commodities and services. More specific pathways, definitions, or methodological criteria may be developed for individual commodities or services. Where such commodity- or service-specific specifications exist, companies shall apply those specifications in place of the generic provisions set out in this pathway.

2.1 Geographical applicability

The pathway has global applicability.

2.2 Method applicability

This pathway shall be applied in conjunction with the **Index Alignment method**.

3. METRIC DEFINITION

This pathway specifies the share (%) of commodities or services sourced in a given year that meet the lower-carbon or net-zero-aligned criteria. The share is calculated on a volume basis relative to total volume sourced within the organisational boundary. For the purposes of this pathway specification, the following definitions apply.

1. **Lower-carbon sources:** Commodities or services that meet at least one of the following criteria:
 - a. The commodity or service volume has cradle-to-gate / well-to-wheel emissions intensity consistent with a recognised science-based low-carbon threshold **at the time of sourcing** (see Annex for illustrative thresholds);
 - b. The commodity or service is produced or delivered through activities classified as transitional activities under recognised taxonomies;
 - c. The commodity is sourced from secondary (e.g., recycled) sources that demonstrably reduce lifecycle GHG emissions compared to primary production.

In addition to the criteria above, to be considered lower-carbon, all land-based commodities must be produced or delivered without land-use change associated with deforestation or the conversion of natural ecosystems.

2. **Net-zero sources (near-zero emissions):** Sources of commodities or activities that meet at least one of the following criteria:
 - a. The commodity or service has cradle-to-gate/WTW emissions intensity at or below the residual emissions level derived from a recognised net-zero pathway for the relevant sector or activity (see Annex 1 for illustrative thresholds).
 - b. The commodity is sourced from secondary (e.g., recycled) sources that use low-carbon energy, and achieves zero or near-zero lifecycle GHG emissions.
 - c. The activity or commodity uses non-fossil energy carriers and feedstocks as energy and feedstock inputs, achieving zero or near-zero lifecycle GHG emissions.
 - d. The commodity or service is produced or delivered using technologies and/or production methods (including processes, fuels, and feedstocks) that are consistent with recognised net-zero pathways or taxonomies for the relevant sector at or beyond the point of net-zero emissions.
 - e. For land-based commodities, the commodity is produced or delivered without land-use change involving deforestation or the conversion of natural ecosystems, and at or below the residual emissions level consistent with a recognised net-zero pathway for the relevant sector.

Box 1. Interim benchmarks and future developments

The criteria presented here represent high-level definitions of lower-carbon and net-zero aligned commodities and services. To operationalise these definitions, SBTi will develop a recognition framework, including quantitative and qualitative benchmarks and a set of criteria to enable consistent and comparable assessment by companies. This framework may draw on standards, taxonomies, pathways, and methodologies developed by SBTi and third parties, in accordance with defined criteria.

An interim set of illustrative benchmarks is provided in the Annex. These benchmarks can be used by companies, on an interim basis, to assess alignment with the criteria. They are subject to change as a result of further development, expert consultation and formal approval.

Final benchmarks will reflect the outcomes of this process and will constitute the definitive basis for assessing alignment under this framework. Benchmarks and underlying methodologies may evolve over time in line with updated criteria and recognised approaches.

Included commodities and activities

- Raw material supply, including extraction, processing and preparation of primary raw materials used in commodity production

- Energy supply and transformation associated with commodity production, including the production and conversion of energy carriers used in industrial processes
- Production of primary industrial commodities (e.g., crude steel, cement, primary chemicals and primary aluminium)
- Intermediate products generated within the production process that are integral to the production of the commodity (e.g., clinker in cement production or alumina in aluminium production)
- Secondary production routes that produce the same primary commodities using recycled inputs (e.g., scrap-based steel production or secondary aluminium production)

Excluded commodities and activities

- Downstream manufacturing and fabrication processes using the produced commodities
- Downstream activities related to the distribution, use and end-of-life treatment of products containing these commodities
- Upstream production of finished or semi-finished manufactured goods derived from the commodities

Included transport services

- Use of light duty vehicles
- Use of heavy duty vehicles
- Rail
- Maritime shipping
- Aviation

4. PATHWAY VALUES

The pathway is expressed in terms of the minimum share of lower-carbon or net-zero aligned sourcing per year for each 5 year milestone between 2030 and 2050. A linear interpolation is used to define minimum values between the milestone years.

The pathway has been developed by the SBTi and it reflects expected penetration of lower-carbon and net-zero aligned sources over time:

- **Growth rates of lower-carbon commodities and transport services** are set to reflect the relatively broad and evolving definition of low-carbon sources, resulting in a high initial share of sourcing meeting these thresholds and a progressive increase over time, driven by companies adopting ambitious sourcing policies. These shares may be refined as definitions of lower-carbon are further specified on a commodity-by-commodity basis. The benchmarks for lower-carbon share represent the minimum procurement share required over time.
- **Growth rates of net-zero commodities and transport services** are expressed as ranges to reflect uncertainty in the pace of deployment and market availability across sectors. The upper bound reflects uptake levels indicated by climate scenarios (see Section 6). Where sector-specific benchmarks were available for a given milestone year, the most stringent values across sectors were selected.

Lower-carbon sources automatically include net-zero aligned sources.

Table 1. Share of lower-carbon and net-zero aligned sources

Metric	2030	2035	2040	2045	2050
Share (%) of lower-carbon sources	≥70%	≥85%	≥95%	≥95%	≥95%
Share (%) of net-zero sources	0-10%	10-25%	25-55%	55-80%	95%

5. PATHWAY SCOPE

This pathway applies to a cradle-to-gate boundary for commodity production, covering activities from resource extraction through to the production of the primary industrial commodity.

The pathway does not address unit processes that occur downstream of commodity production, such as product manufacturing, fabrication, distribution or end use. Each industrial commodity has a specific cradle-to-gate boundary that defines the unit processes included in the net-zero aligned emissions performance benchmark.

This pathway also applies to a well-to-wheel boundary for transportation services, covering both the upstream production of fuels, as well as their combustion during operation.

6. SCENARIO SOURCE

The pathway is not a direct representation of any single climate scenario. Rather, it is constructed based on current deployment levels of lower-carbon and net-zero aligned commodity and transport services, and assumptions about their expected growth over time.

Climate scenarios are used only to inform the upper bound of net-zero aligned sourcing. Uptake levels from the International Energy Agency Net Zero by 2050 scenario are used to define high-ambition deployment levels. Industrial commodities used to construct the pathway include steel, cement, aluminium, and chemicals. Transport services used to construct the pathway include road, shipping and aviation.

The IEA Net Zero by 2050 scenario is selected as a reference due to its sector-level granularity on technology deployment and energy carrier mix, and its alignment with global sustainability and feasibility constraints, including:

- Primary energy from bioenergy does not exceed the sustainability limit of 100 EJ in any year, consistent with the IPCC thresholds for medium sustainability risks (Frank et al., 2021).

- Bioenergy with carbon capture and storage (BECCS) deployment does not exceed 3 GtCO₂ per year in any year between 2020 and 2050 to reflect risks to land use, biodiversity, and livelihoods (Warszawski et al., 2021).
- Carbon dioxide removal from afforestation is limited to 3.6 GtCO₂ per year in 2050, consistent with estimates of sustainable sequestration potential (Fuss et al., 2018).
- Novel carbon dioxide removal (CDR) technologies do not exceed observed deployment levels of 2.3 MtCO₂ in 2020 to reflect current feasibility constraints.
- Carbon capture and storage (CCS) deployment over 2010-2050 does not exceed the feasible limit of 214 GtCO₂, reflecting biophysical, infrastructural, and market constraints (van de Ven et al., 2023).
- Primary energy from fossil fuels follows a sustained decline beyond 2050 (Spangenberg et al., 2021).
- Cumulative emissions from Agriculture, Forestry and Land-use (AFOLU) over 2020-2050 remain within 99 GtCO₂, consistent with the SBTi FLAG pathway (SBTi, 2022).

Table 2. Characteristics of scenario used to derive the pathway benchmarks

Model	Version	Modelling approach	Scenario	Global Carbon budget (from 2020 onwards)	Time-frame	Climate category	Sector Coverage	Ref.
IEA Global Energy and Climate (GEC) model	2023	Top-down	Net-zero emissions by 2050 (NZE)	~ 500 GtCO ₂	2020-2050	1.5°C with low or no overshoot	Energy and Industry	IEA NZE, 2023, IEA, Achieving Net Zero Heavy Industry Sectors in G7 Members

7. KEY ASSUMPTIONS

This pathway reflects rapid decarbonization across energy-intensive industrial sectors, including steel, cement, chemicals and aluminium, consistent with reaching global net-zero emissions by 2050. Global demand for these materials continues to grow to mid-century, supported by population growth, infrastructure development and the expansion of low-carbon technologies, while improvements in material efficiency, product design and circular economy practices moderate the growth in primary production, as established in the IEA NZE scenario (IEA 2023).

- **In the steel sector**, production progressively shifts away from unabated coal-based blast furnaces–basic oxygen furnace routes towards CCUS equipped production, scrap-based electric arc furnace production powered by low-carbon electricity, and hydrogen-based direct reduced iron.

- **In cement production**, reductions in the clinker-to-cement ratio, alongside fuel switching and large-scale deployment of carbon capture technologies, address both energy-related and process emissions from clinker production.
- **In the chemicals sector**, emissions reductions are achieved through improvements in process efficiency, electrification and the substitution of fossil feedstocks with low-carbon alternatives such as hydrogen, biomass and recycled carbon streams, while circular economy approaches reduce demand for primary petrochemical production.
- **In aluminium production**, emissions intensity declines through increasing secondary production from recycled scrap, and the use of low-carbon electricity in energy-intensive smelting processes.
- **In the road sector**, increasing production of electric vehicles and biofuels plays a key role before 2030. After 2030, electrification is the prominent lever, with electricity representing three-quarters of energy consumption in road transport in 2050.
- **In aviation and shipping**, bioenergy and hydrogen-based fuels ramp up slowly from less than 1% today in shipping and aviation to supplying the majority of fuel by 2050. Energy efficiency improvements in shipping and behaviour-driven demand reduction in aviation are also expected to play key roles in decarbonising these transport modes.

For lower-carbon sources, the pathway assumes S-curve adoption of lower-carbon commodities and transport services, using a logistic diffusion model, widely used in innovation diffusion, technology adoption, and policy uptake forecasting. While the total production today of lower-carbon materials is uncertain, the model assumes a rapid uptake of lower-carbon material by 2030.

For net-zero aligned sources, the IEA NZE scenario (IEA, 2023) is used to define the upper bound of the pathway ranges. The IEA NZE estimates that many major commodities will achieve adoption rates of approximately 10% by 2030 (e.g., the share of near-zero emission iron production is modelled at 8%, whereas the share of near-zero emission primary aluminium production is modelled at 7%). Other commodities, such as primary chemicals, are assumed to reach higher production rates of 17% by 2030.

Given the uncertainty in these model assumptions, and to avoid over reliance on a single pathway, a range is applied. This range now serves for illustrative purposes and will be used to guide the development of more commodity specific pathways.

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ANNEX 1: ILLUSTRATIVE BENCHMARKS

Illustrative benchmarks for different commodities

Definitions of lower-carbon and net-zero emissions commodities and services need to be ambitious, stable, and sufficiently aligned across stakeholders to support consistent corporate target-setting and implementation. Given that specific definitions and quantitative emissions thresholds remain under development (IEA, 2024), this generic sourcing pathway presents a set of options to be refined, through a stakeholder consultation

There are currently no standardised definitions of how to define lower-carbon or net-zero / near-zero commodities or transport. For this reason, multiple options are presented in this Annex, representing some common approaches that are being used by pathway developers and other standard setters.

Table A1. Illustrative benchmarks for different commodities

Commodity	Lower-carbon sources	Net-zero sources
Cement	<p>a) Commodities meeting any of the following thresholds at the time of sourcing (see IEA, 2024 for overview of emerging definitions):</p> <ul style="list-style-type: none"> • 50% below market average emissions intensity • Emissions intensity below global average based on a recognised net-zero pathway • Six times (6x) the net-zero aligned intensity value <p>b) Commodities delivered through activities classified as eligible under recognised taxonomies, e.g., the EU Taxonomy defines cement manufacturing as a transitional activity when emissions intensity is below a threshold of 0.722 tCO₂e per tonne of clinker. This threshold is informed by EU ETS benchmarks, which are based on the average emissions performance of the most efficient installations within the sector.</p>	<p>≤ 0.125 tCO₂e/tonne of cement Or CCUS equipped (used as a proxy when emissions intensity of production is unknown)</p>
Steel		<p>≤ 0.4 tCO₂e/tonne of crude steel Or hydrogen-based EAF, CCUS-equipped processes</p>
Aluminium		<p>≤ 0.05 tCO₂e/tonne of aluminium Or CCUS-equipped, inert anode process, recycled aluminium</p>
Ammonia		<p>≤ 0.09 tCO₂e/tonne of ammonia Or CCS-equipped, green hydrogen-based</p>
Methanol		<p>≤ 0.09 tCO₂e/tonne of methanol Or CCUS-equipped, green hydrogen-based</p>
High Value Chemicals (Ethylene, Propylene, Benzene, Toluene, Xylene)		<p>≤ 0.043 tCO₂e/tonne of HVC Or CCUS-equipped, green hydrogen-based</p>

Plastics (Primary Polymer Production)	Recycled plastics	N/A
FLAG	Deforestation free certification, such as the Forest Stewardship Council (FSC) and Rainforest Alliance certification schemes.	Deforestation free certification and commodity produced at or below net-zero intensity values from approved SBTi FLAG commodity pathways

Illustrative benchmarks for different transportation services

Table A2. Illustrative benchmarks for different transportation services

Transportation service	Lower-carbon sources	Net-zero sources
Road (Light duty vehicles)	Transport services meeting any of the following thresholds at the time of sourcing: a) 50% below market average emissions intensity b) Emissions intensity below sector average based on a recognised net-zero pathway	$\leq 6 \text{ gCO}_2/\text{tkm}$ (WTW) Or Electric, low carbon hydrogen powered vehicles
Road (Heavy goods vehicles)		$\leq 10.8 \text{ gCO}_2/\text{tkm}$ (WTW) Or Electric, low carbon hydrogen powered vehicles
Rail Freight		$\leq 0 \text{ gCO}_2/\text{tkm}$ Or Electric powered trains
Shipping (Ocean)		$0.78 \text{ gCO}_2/\text{t. n.m}$ Or Ships using low carbon hydrogen, biofuels, ammonia, methanol
Aviation (Freight)		$20 \text{ gCO}_2/\text{Revenue Tonne Kilometer (R.T.K)}$ ($>1500\text{km}$) $38 \text{ gCO}_2/\text{R.T.K}$ ($<1500\text{km}$) <i>(SBTi 1.5C pathway - dedicated freight)</i> Or Aircraft using synthetic hydrogen-based fuels, biofuels



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SBTi PATHWAY SPECIFICATION

Generic Products Pathway

Version 0.1 - *Draft for Public Comment*

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1. PATHWAY DESCRIPTION

This pathway describes the transition in the alignment of sold products that underpins economy-wide decarbonization consistent with achieving net-zero CO₂ emissions by 2050. It defines key milestones for the increasing share of sold products and services classified as lower-carbon or net-zero products, over the 2020–2050 period.

1.1 Pathway type

The net-zero aligned product pathway is classified as an alignment pathway.

2. APPLICABILITY

The pathway is applicable to entities who sell products that either directly release GHG emissions (e.g., via combustion) or are products that directly consume energy (such as appliances or vehicles where the fuel source is inherent to the product's design). Applicable products are those that result in emissions during their use phase (Scope 3 Category 11) and end-of-life treatment (Scope 3 Category 12), corresponding to downstream stages of the product life cycle.

More specific pathways, definitions, or methodological criteria may be developed for particular sectors and products. Where such sector- or product-specific specifications exist, entities shall apply those specifications in place of the generic provisions set out in this pathway.

2.1 Geographical applicability

The pathway has global applicability.

2.2 Method applicability

The pathway shall be used in conjunction with the **Index Alignment method**.

3. METRIC DEFINITION

This pathway specifies the share (%) of products sold or used in a given year that meet the low-carbon or net-zero alignment criteria for the use-phase and/or end-of-life stages. The share is calculated on a revenue or volume basis relative to the total revenue or volume of all applicable products within the organizational boundary in a given year. Annex 1 provides a list of illustrative benchmarks used for product alignment classification.

For the purposes of this pathway specification, the following definitions apply to product use-phase (Scope 3, Category 11):

1. **Lower-carbon use phase:** Sale of products that meet any of the following criteria:

- a. The product has use-phase emissions intensity at or below the emissions-intensity from recognised science-based pathways at the time of sale.
 - b. The product is classified as transitional under recognised taxonomies;
 - c. The product meets the highest grade in recognised energy efficiency standards and does not combust fossil fuels during its use phase.
2. **Net-zero use phase:** Sale of products that meet any of the following criteria:
- a. The product has use-phase emissions at or below the residual emissions level consistent with levels established in accepted SBTi net zero pathways
 - b. The product is classified as a climate solution under recognised taxonomies;

For the purposes of this pathway specification, the following definitions apply to product end-of-life (Scope 3, Category 12):

1. **Lower-carbon end-of-life design:** Sale of products that meet any of the following criteria:
 - a. Products that are designed so that their underlying commodities and materials can be reused, recycled, or otherwise recovered at the end of their useful life,
 - b. Products that use primarily reused or post consumer recycled materials, which can potentially avoid EoL emissions from previous product life cycles
2. **Net-zero end-of-life design:** Sale of products that meet any of the following criteria:
 - a. Products with recognised circular end-of-life solutions that eliminate end-of-life emissions in line with credible circularity standards.
 - b. Products that use primarily reused or post consumer recycled materials that result in zero or near-zero emissions
 - c. Products whose end-of-life treatment results in zero or near-zero emissions

4. PATHWAY VALUES

The pathway is expressed in terms of the minimum share of low-carbon or net-zero product sales for each 5 year milestone between 2030 and 2050. A linear interpolation is used to define minimum values between the milestone years.

The pathway has been developed by the SBTi and it reflects expected penetration of lower-carbon and net-zero aligned products, over time:

- **Growth rates for lower-carbon products** reflect the relatively broad and evolving definition of lower-carbon performance, resulting in a high initial share of products meeting these criteria and a progressive increase over time. This increase is driven by improvements in product efficiency, compliance with emerging standards, and the uptake of lower emission production technologies.
- **Growth rates for net-zero aligned products** reflect the requirements associated with achieving near-zero emissions across product use-phase and end-of-life stages. Deployment is expected to be limited in the near term, followed by accelerated adoption as technologies operating at or below residual emissions levels, together with circular design solutions, become more widely available.

Table 1. Pathway values for Generic Products Pathway

Metric	2030	2035	2040	2045	2050
Share (%) of lower carbon products	≥70%	≥85%	≥95%	≥95%	≥95%
Share (%) of net zero products	≥10%	≥25%	≥55%	≥80%	≥95%

Lower-carbon products automatically include net-zero aligned products.

5. PATHWAY SCOPE

This pathway applies to the use-phase and end-of-life stages of sold products. Use-phase represents any emissions generated during the use of the product, including the direct release of emissions by the product and the indirect release of emissions from the energy consumed to use the product.

6. SCENARIO SOURCE

The pathway is not derived from a specific climate scenario, but is constructed based on current status of product alignment and assumptions about the expected growth in lower-carbon and net-zero aligned products consistent with achieving a specified climate goal (i.e., net-zero global emissions by 2050).

7. KEY ASSUMPTIONS

This pathway reflects an ambitious product redesign approach requiring more efficient use-phase and end-of-life circularity. The share of net-zero aligned product production is assumed to follow a slower build out up to 2035, but eventually reach ≥95% with grid decarbonization and the phase-out of fossil fuel consuming products.

ANNEX 1: ILLUSTRATIVE BENCHMARKS

Table A1. Illustrative benchmarks for different products

	Lower-carbon	Net-zero aligned
Product use-phase	<ul style="list-style-type: none"> • Emission intensity: 50% below emissions intensity of the recognised net-zero pathway • Energy efficiency standards, e.g., minimum energy performance standard, EU Ecodesign and Energy Label • Taxonomies, e.g., EU Taxonomy for Sustainable Activities 	Verified product carbon footprint which shows that the product operates at zero or near-zero emission levels established in SBTi pathways
Product end-of-life	<ul style="list-style-type: none"> • N/A 	Circularity standards / frameworks such as: <ul style="list-style-type: none"> • Cradle to Cradle certification • ISO 59040 • WRAP Circular Living Standards



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SBTi PATHWAY SPECIFICATION

Power Generation Asset Transition Pathway

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June 2026

Disclaimer: This pathway will be under consultation as part of the SBTi Power Sector Standard development process. It is included for illustrative purposes only to demonstrate the application of the Asset Decarbonization Plan (ADP) method.

1. PATHWAY DESCRIPTION

The power generation asset transition pathway provides a framework for assessing how power generation assets must be transformed over time, through the abatement, retrofit, retirement, or replacement of existing fossil fuel assets, to be consistent with achieving global net-zero CO₂ emissions by 2050.

1.1 Pathway type

The power generation asset transition pathway is a transition pathway.

2. APPLICABILITY

This pathway applies to companies that own or operate fossil-fuel power generation assets, including electric power producers and entities with onsite or captive generation for internal electricity use or export to the grid.

2.1 Geographical applicability

The pathway has global applicability and reflects differentiated transition dynamics for Advanced Economies, and Emerging Markets and Developing Economies, consistent with the regional categorization used in the International Energy Agency World Energy Outlook 2024 Net Zero Emissions by 2050 scenario (IEA WEO NZE (2024)). (See [Section 4](#) for country classification).

2.2 Method applicability

The pathway shall be used in conjunction with the **Asset Decarbonization Plan (ADP), Milestones approach**.

3. METRIC DEFINITION

The pathway is expressed in Megawatt (MW) and Megawatt-hour (MWh).

4. PATHWAY VALUES

The pathway is expressed through time-bound milestones indicating the year by which installation of new capacity for unabated fossil fuel power generation must be halted and unabated generation must be phased out. Phase-out refers to the cessation of unabated power generation, excluding non-baseload power generation (e.g., generation dedicated to peak- or emergency-load management⁵).

⁵ See forthcoming SBTi Power Sector Net Zero Standard.

Table 1a. Regional power generation asset transition pathway for advanced economies

Power generation type	No new unabated capacity	Phase-out of unabated generation
Unabated coal	2025	2030
Unabated oil	2025	2035
Unabated natural gas	2025	2040

Applicable geography: Advanced economies. These countries are Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States, Bulgaria, Croatia, Cyprus, Malta, Romania.

Table 1b: Regional power generation asset transition pathway for Emerging Markets and Developing Economies

Power generation type	No new unabated capacity	Phase-out of unabated generation
Unabated coal	2025	2040
Unabated oil	2025	2040
Unabated natural gas	2030	2045

Applicable geography: Emerging Markets and Developing Economies. These countries include all other countries not included in the Advanced Economies regional grouping.

5. PATHWAY SCOPE

This pathway covers activities and assets whose primary function is the generation of power or combined heat and power (CHP).

6. SCENARIO SOURCE

The power generation asset transition pathway is informed by an assessment of scenarios from the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) and the IEA WEO NZE (2024) scenario. Scenarios were evaluated against defined thresholds across the following criteria (SBTi, 2025):

- Primary energy from bioenergy does not exceed the sustainability limit of 100 EJ in any year, consistent with the IPCC thresholds for medium sustainability risks (Frank et al., 2021).
- Bioenergy with carbon capture and storage (BECCS) deployment does not exceed 3 GtCO₂ per year in any year between 2020 and 2050 to reflect risks to land use, biodiversity, and livelihoods (Warszawski et al., 2021).
- Carbon dioxide removal (CDR) from afforestation is limited to 3.6 GtCO₂ per year in 2050, consistent with estimates of sustainable sequestration potential (Fuss et al., 2018).
- Novel CDR technologies do not exceed observed deployment levels of 2.3 MtCO₂ in 2020 to reflect current feasibility constraints.
- Carbon capture and storage (CCS) deployment over 2010-2050 does not exceed the feasible limit of 214 GtCO₂, reflecting biophysical, infrastructural, and market constraints (van de Ven et al., 2023).
- Primary energy from fossil fuels follows a sustained decline beyond 2050 (Spangenberg et al., 2021).
- Cumulative emissions from Agriculture, Forestry and Land-use (AFOLU) over 2020-2050 remain within 99 GtCO₂, consistent with the SBTi FLAG pathway (SBTi, 2022).

In addition, only scenarios that provide technology-specific asset transition milestones, including regionally differentiated timelines, are selected to construct the pathway. This results in retaining only the IEA WEO NZE 2024 scenario as the credible pathway source. Table 2 summarizes the key characteristics of the IEA WEO NZE 2024 scenario used to derive the power generation intensity pathway.

Table 2: Characteristics of scenarios to derive the power generation asset transition pathway

Model	Version	Modelling approach	Scenario	Global carbon budget (2020 onwards)
IEA Global Energy and Climate (GEC) model	2024	Hybrid	World Energy Outlook Net Zero Emissions scenario by 2050	~500 GtCO ₂

7. KEY ASSUMPTIONS

This section describes the pace of regionally differentiated power sector transformation across Advanced Economies and Emerging Markets and Developing Economies. In Advanced Economies, moderate demand growth allows the transition to be driven primarily by displacing unabated fossil fuel generation with renewables, supported by nuclear and bioenergy. In Emerging Markets and Developing Economies, rising demand from economic growth and expanding electricity access drives a larger expansion of total system output, met with immense renewable growth. While some fossil fuel generation capacity remains on the grid in both geographies, these assets have very low running rates by 2050, limiting their

use to grid stability and peak management purposes. Tables 3 and 4 provide an overview of the key assumptions across the most relevant transition indicators over the near term (2020-2030) and the long term (2030-2050).

Table 3: Regional assumptions characterizing sector decarbonization in advanced economies.

Assumption category	2020-2030	2030-2050
Total electricity output	Increases by ~35%	Increases by ~75%
Total installed generation capacity	Increases by ~60%	Increases by ~85%
Renewable capacity ⁶	Increases by ~155%	Increases by ~115%
Nuclear capacity	Increases by ~10%	Increases by ~50%
Unabated FF generation capacity	Decreases by ~15%	Decreases by ~65%
Bioenergy capacity	Increases by ~60%	Increases by ~70%

Table 4: Regional assumptions characterizing sector decarbonization in Emerging Markets and Developing Economies.

Assumption category	2020-2030	2030-2050
Total electricity output	Increases by ~60%	Increases by ~115%
Total installed generation capacity	Increases by ~170%	Increases by ~170%
Renewable capacity ¹	Increases by ~415%	Increases by ~225%
Nuclear capacity	Increases by ~70%	Increases by ~125%
Unabated FF generation capacity	Decreases by ~20%	Decreases by ~80%
Bioenergy capacity	Increases by ~120%	Increases by ~245%

⁶ Includes geothermal, hydropower, solar, and wind

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