SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

# REMOVALS EXPERT WORKING GROUP

## Session 1: Framework for residual emissions

15 April 2025

# Today's objectives

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**Framework for addressing residual emissions**

Present the three options to address residual emissions in the consultation draft

**SBTi guiding principles**

Present the SBTI principles for development of technical foundations in the context of the residual emission framework

**Group Exercise**

Assess each options against principles and discuss gaps and diverging views

# Today's agenda

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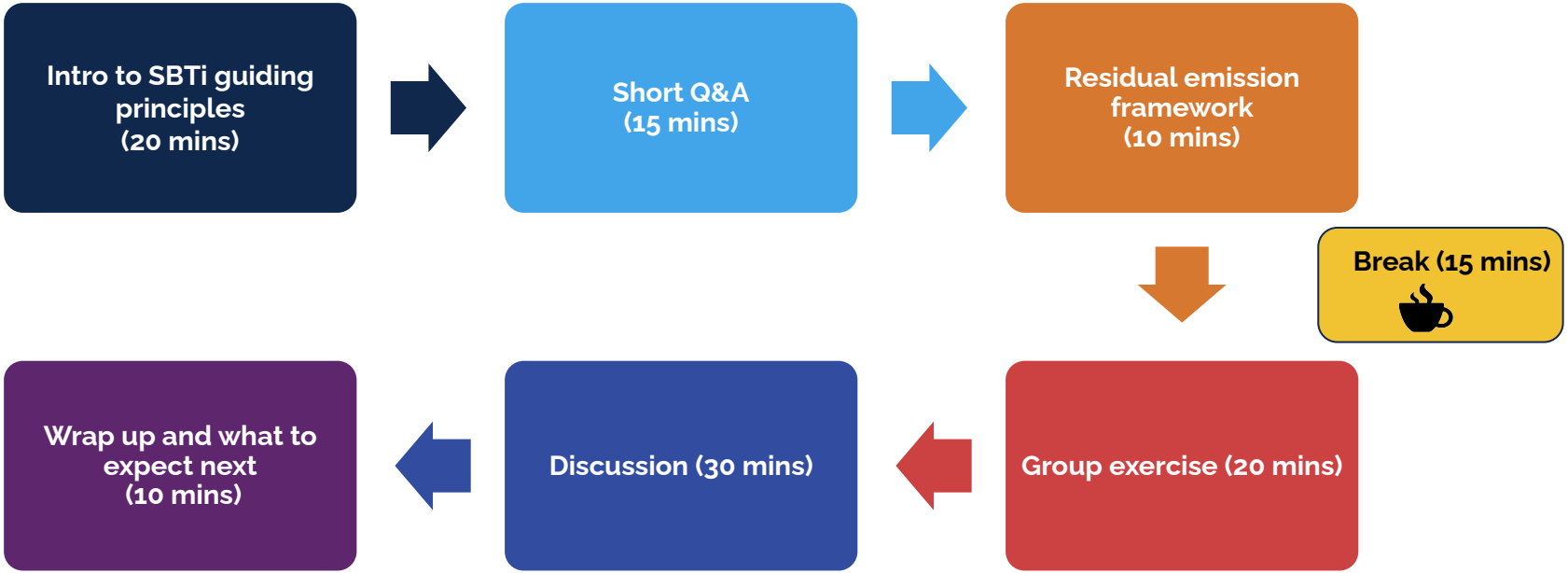
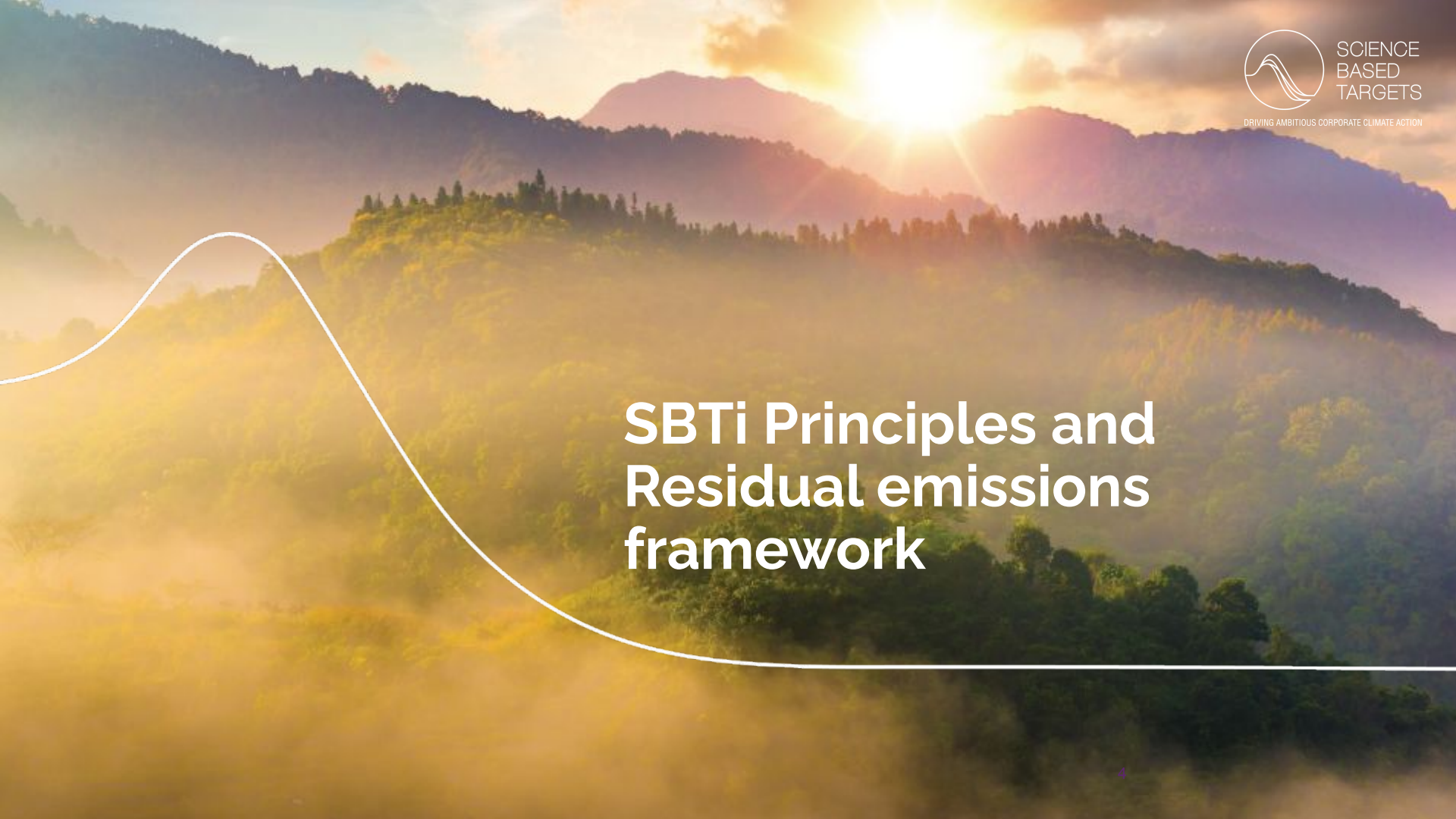




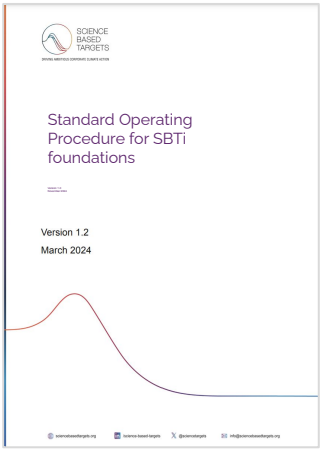

# SBTi Principles and Residual emissions framework

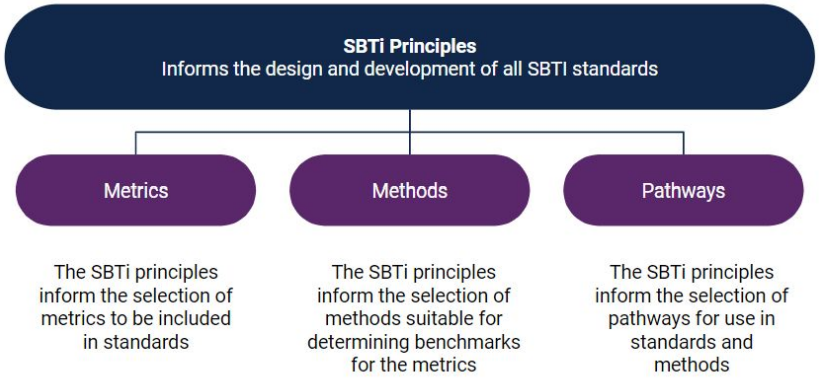
# SBTi SOP and Principles for technical foundations

Well-defined principles are needed **to steer and justify expert judgments that must be applied when it comes to designing standards,** and the selecting the **technical foundations that underpin them**.

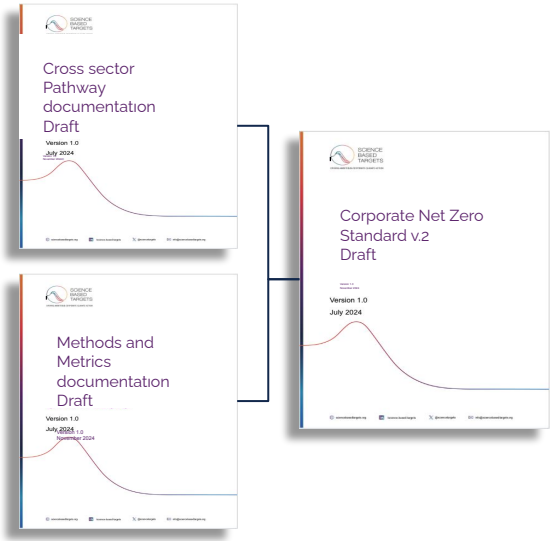
The principles are meant to express the **high-level goals and values** that the SBTi seeks to serve in development of technical foundations.

## Standard Operating Procedures (SOP)




## Technical Foundations



# Consolidated Principles for SBTi standards

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**SBTi MISSION:** **To drive science-based climate action in the corporate sector consistent with limiting warming to 1.5° C**

**Ambition**
SBTi standards aim to drive bold and transformative emissions reductions aligned with the 1.5°C climate goal

**Rigorous**
SBTi standards should be informed by the best available science,

**Transparent**
SBTi standards should ensure transparency by making all relevant information publicly accessible

**Robust**
SBTi standards should be rigorous and impartial, safeguarding the independence of the standard-setting process.

**Actionable**
SBTi standards should offer clear, measurable steps that enable organizations to take effective and immediate climate action.

**Responsible**
SBTi standards should support an equitable net-zero transition by recognizing diverse contexts and minimizing risks to broader sustainability goals.

# Applying SBTi principles to the residual emissions framework

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**The options to address residual emissions will be evaluated against the SBTi principles**

**PRINCIPLES:**

| | |
|---|---|
| AMBITIOUS | The option aligns with 1.5 goal and support the achievement of net zero by 2050 or earlier. |
| RESPONSIBLE | The option considers sector-specific residuals, abatement potential, and synergies with the removal industry. |
| ROBUST | The option promotes flexibility to accommodate uncertainty in future emissions, technologies, or removals. |
| ACTIONABLE | The option acknowledges that companies with high expected residuals may operate on low margins and may face barriers to invest in removals. |
| RIGOROUS | The option ensures removals scale in line with science and complement deep abatement. |
| TRANSPARENT | The methodology underlying the option is well documented, replicable and allows for transparent reporting. |


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Principle - Ambition

# Ambition: Alignment with 1.5 pathways

***The option should align with 1.5°C and achieve net-zero by 2050 at the latest***

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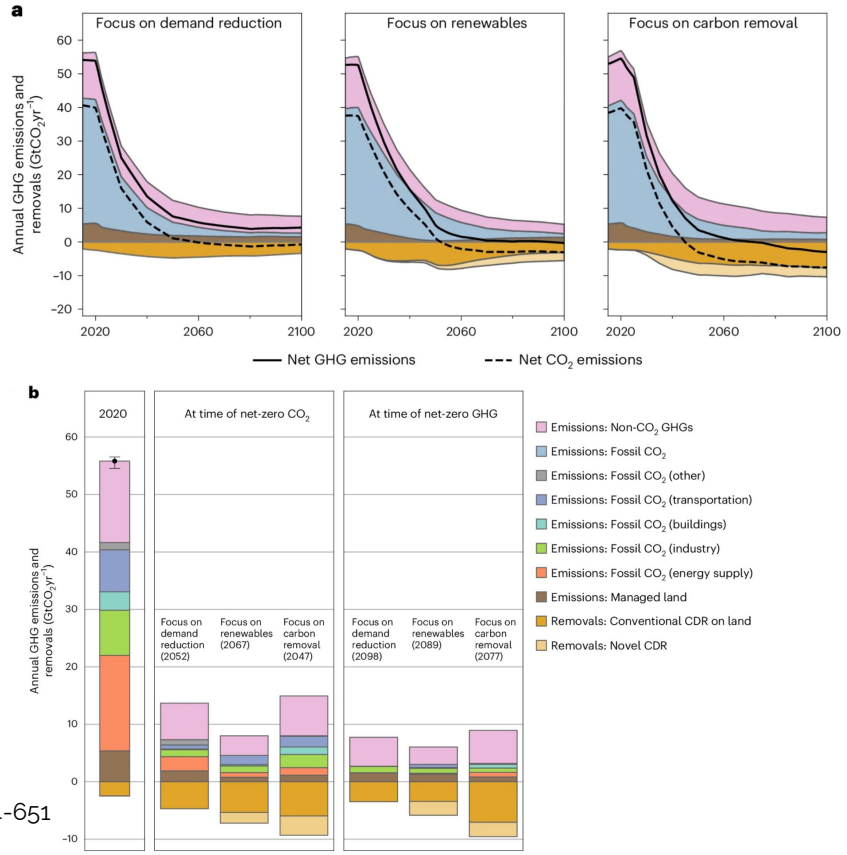
**Scenarios that hold warming below 1.5 C depict different level of final energy consumption, emission reductions and removals**

- 3% of IPCC C1 category scenarios reach net zero **without novel removals** but entirely through energy demand reductions and deep emission cuts
- Some scenarios assume **rapid penetration of renewables**, with very limited contribution of novel removals (~1 GtCO2/year by 2050)
- Whilst the scale of novel CDR at 2050 ranges between 0 - 17 GtCO2, all available scenarios project land sinks capacity enhancement by 2050 (2.3-4 GtCO2/year)




Source: Lamb et al. (2024). The carbon dioxide removal gap. nature Climate Change 14,644-651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# Ambition: Encourage companies to champion climate action

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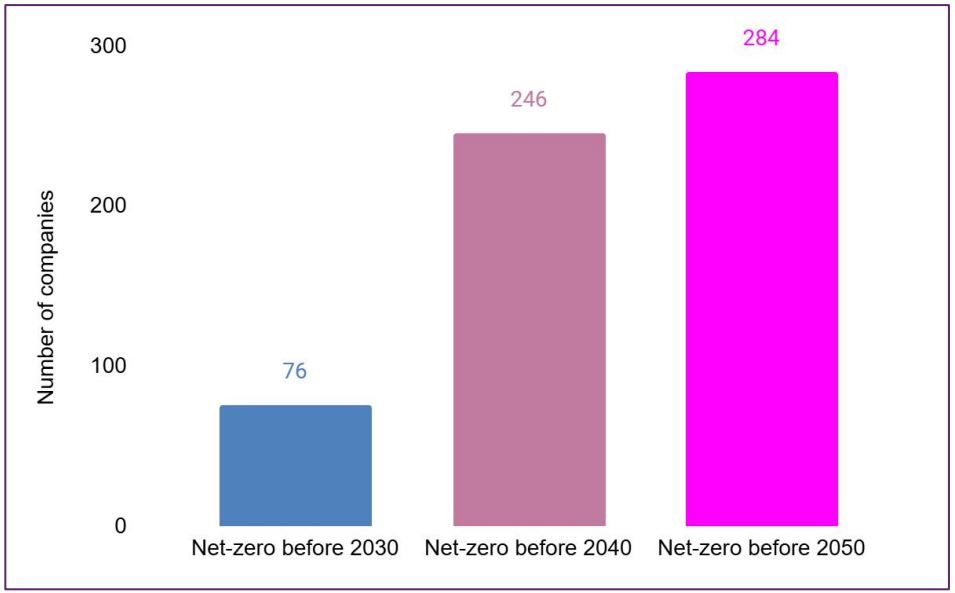
***The option preserves the integrity of net-zero targets by ensuring that the companies achieve net-zero S1 emissions by 2050 or earlier***

**Delaying mitigation action risks weakening climate ambition.**

- Real climate leadership means delivering **rapid and sustained emission cuts**, not deferring action or relying heavily on future removals
- Achieving net zero Scope 1 emissions by 2050 or earlier signals serious commitment to the 1.5˚C goal
- According to the Net-Zero Tracker, among all companies with net-zero targets, 9% aim to reach net zero by 2030, 28% by 2040, and 33% by 2050.




10 Source: Net Zero tracker (2023): Net Zero by 2050: A roadmap for the Global Energy Sector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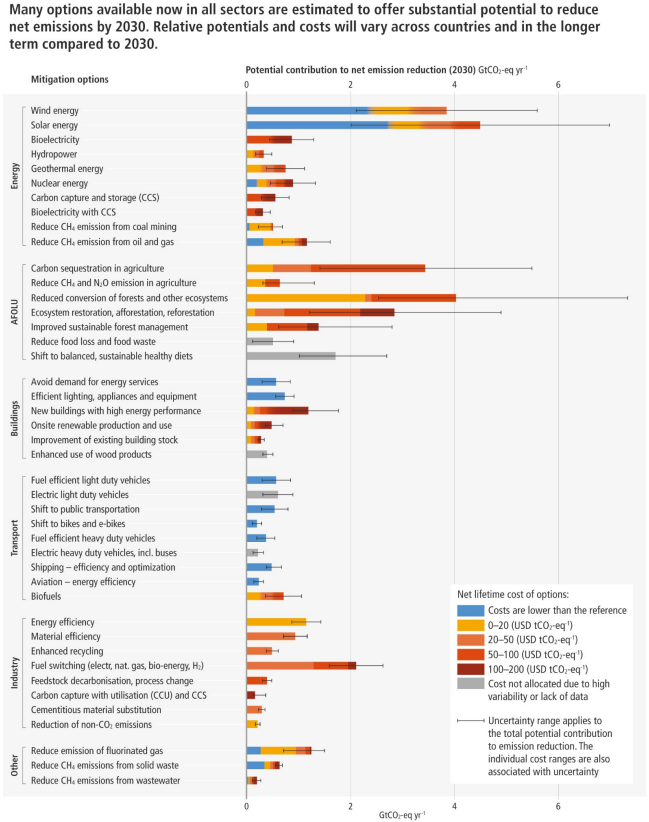
Principle - Responsible

# Responsible: Recognition of sectoral decarbonisation opportunities

***The option should account for diverse decarbonization levers across sectors and companies, recognizing that some may have fewer technological alternatives .***

- According to the IPCC, half of global emission reduction required could come from mitigation options costing 100 $/tCO2eq or less by 2030 (high confidence)
- Options costing less than 20 $/tCO2eq make up more than half of this potential
- **Decarbonisation potential varies significantly across sectors**: While the power sector offer the highest potential for cost-effective emissions reductions, other sectors—such as agriculture, heavy industry, and aviation—face more limited options due to technological barriers, or inherently lower mitigation potential.




**Overview of mitigation options and their estimated ranges of costs and potentials in 2030**

Source: IPCC (2023): IPCC, 2022: Summary for Policymakers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# Responsible: Recognition of sectoral removal opportunities

***The option should account for the removal opportunities generated from activity directly or indirectly controlled by the company***

- Certain sectors are uniquely positioned to contribute to carbon dioxide removal due to their access to feedstock streams that can be leveraged for high-durability removal pathways.
- Companies operating within these sectors might control or are located near, critical infrastructure that significantly lower the logistical and economic barriers to deploying permanent carbon storage solutions.

| Sector | Removal solution | Sector synergies |
|---|---|---|
| **Cement**  | Mineralization/concrete carbonation | Well established infrastructure and supply chains for carbonated construction materials |
| **Agriculture**  | Biochar | Co-product of pyrolysis process/already used for soil amendments |
| **Waste to energy**  | BECCS | requires CCS retrofit to generate negative emissions |



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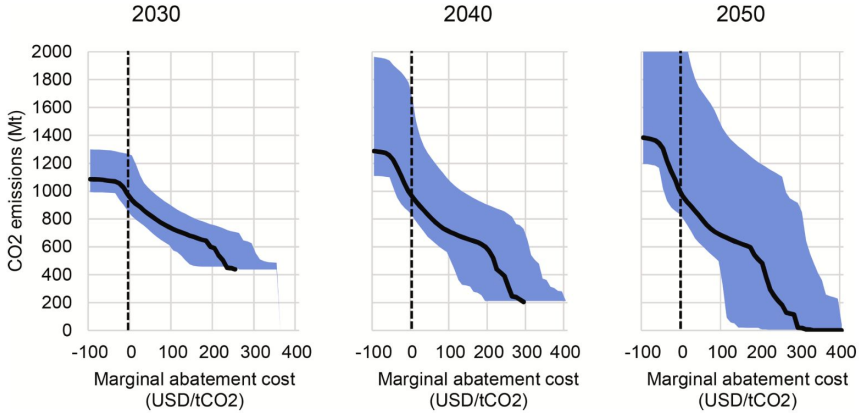
Principle - Robust

# Robust: Adaptability to long term uncertainty

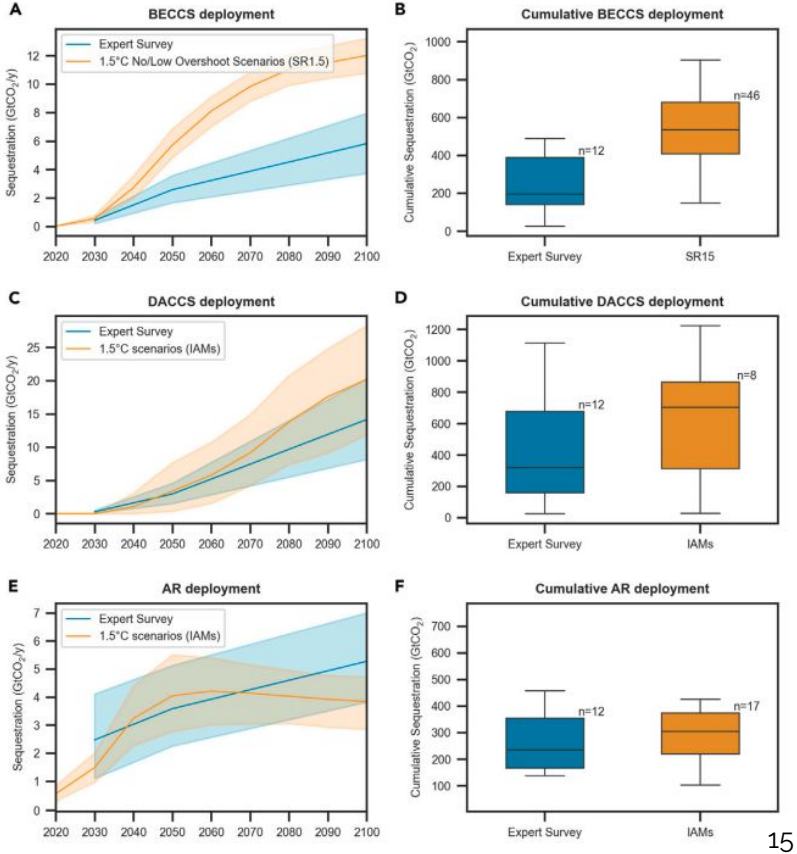
***The option account for uncertainties associated with long term projections***




**Left**: Range of marginal abatement cost curves for $CO_2$ reduction in shipping across 2030–2050 under different assumptions.

**Right**: Projected cumulative deployment of key CDR pathways from IAMs (1.5˚C scenarios) vs expert judgment ranges.

Together, these studies illustrate the deep and persistent uncertainties that affect both carbon removals and emissions abatement solutions in long-term projections. (Sources: Fuhrman et al., 2021; Longva et al., 2024)

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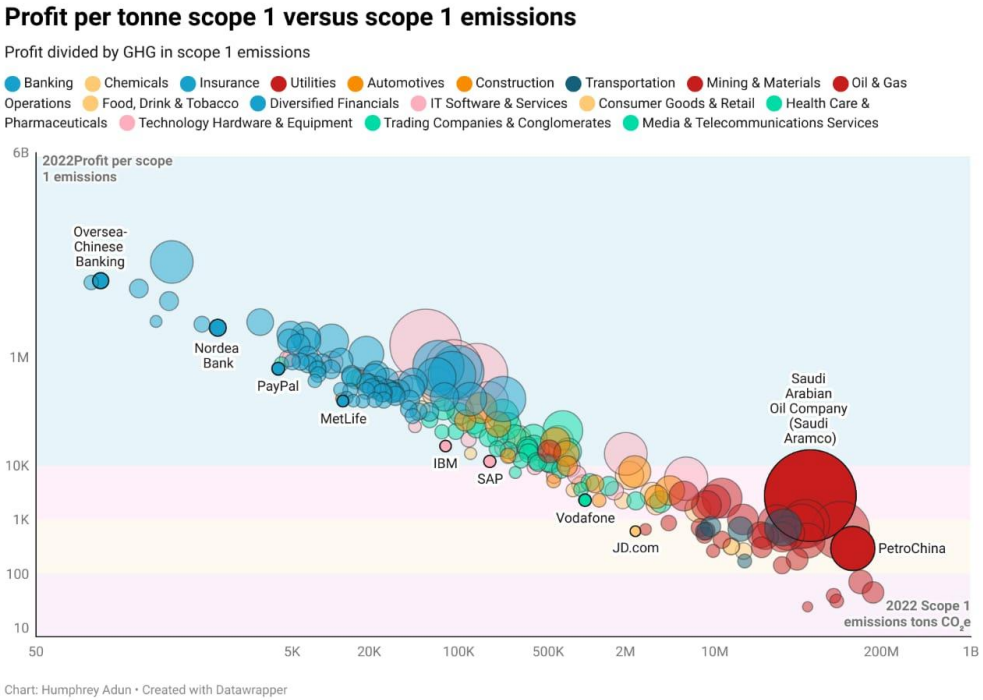
Principle - Actionable

# Actionable: Economic Viability

***The option acknowledges that companies with high expected residuals may operate on low margins and may face barriers to invest in removals***




Data source: Who can pay for carbon removal? Carbon Gap (2024)



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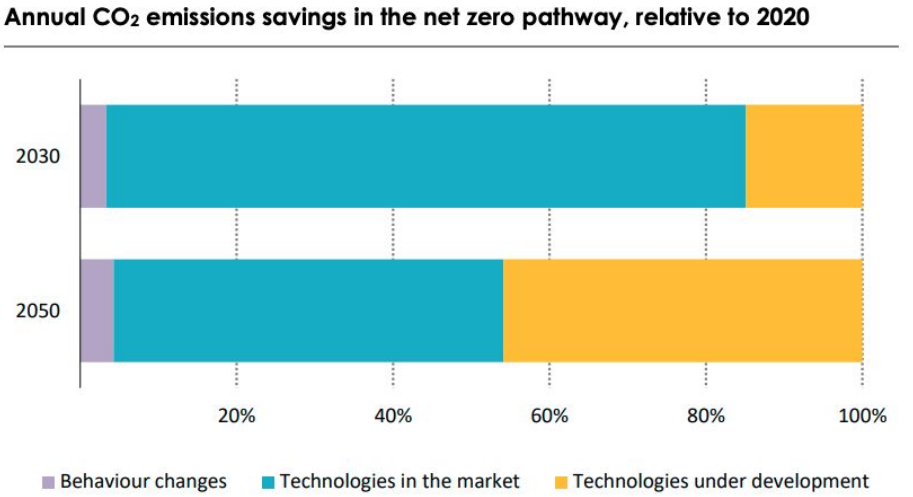
Principle - Rigorous

# Rigorous: prioritization of near term actions

***The option should not delay progress in climate action by creating incentives for companies to delay investments required to drive the net zero transformation***

## Net zero by 2050 requires huge leaps in clean energy innovation

- Reaching net zero by 2050 requires further rapid deployment of available technologies as well as widespread use of technologies that are not on the market yet
- According to the IEA NZE, most of the global reductions in $CO_2$ emissions through 2030 come from technologies readily available today.
- But in 2050, almost ***half the reductions*** come from technologies that are currently at the demonstration or prototype phase.
- The biggest innovation opportunities concern **advanced batteries, hydrogen electrolysers, and direct air capture and storage.**




19 Source: IEA (2023): Net Zero by 2050: A roadmap for the Global Energy Sector

# Rigorous: Level of transformation aligns with best available science

***The option ensures removals scale in line with science and complement deep abatement.***

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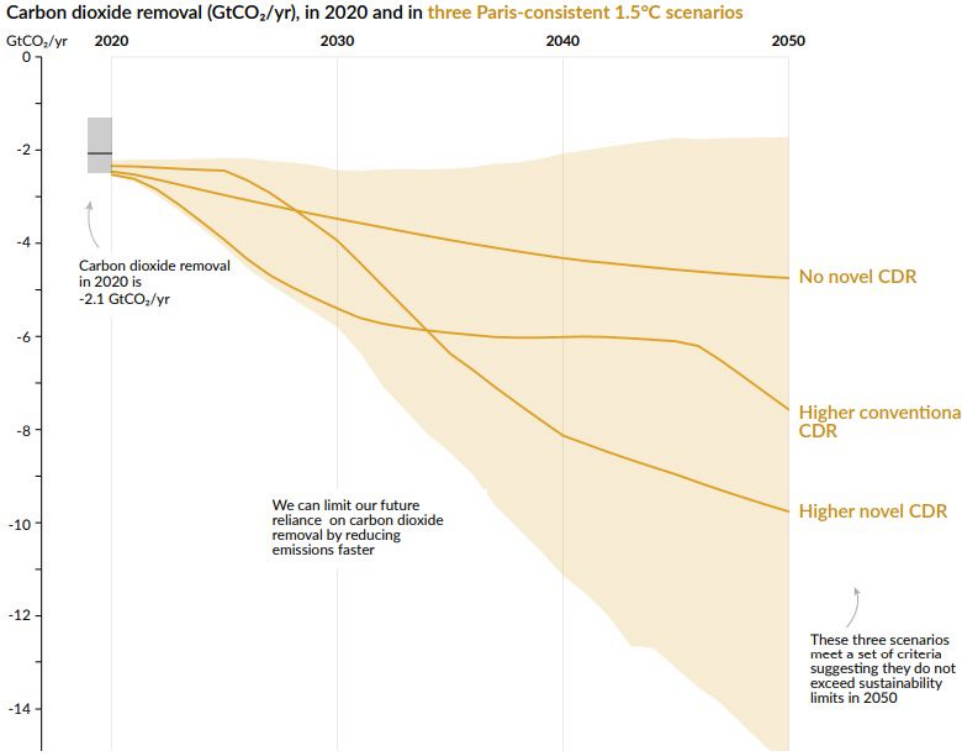


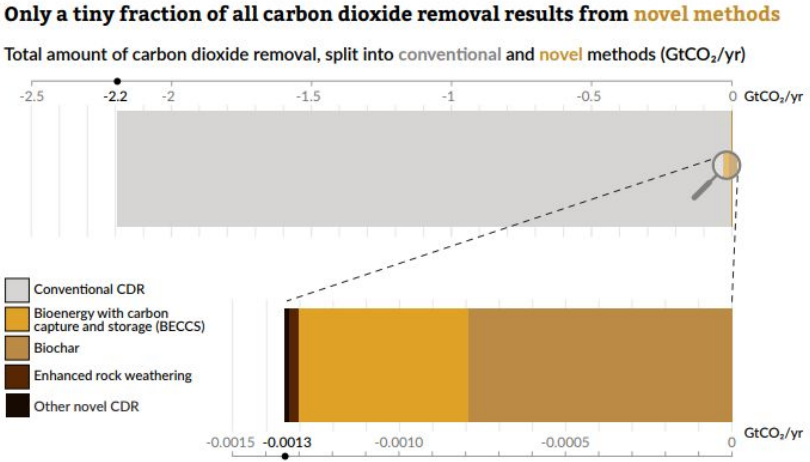


Source: State of CDR report (2023): Smith, S. M., Geden, O., Gidden, M. J., Lamb, W. F., Nemet


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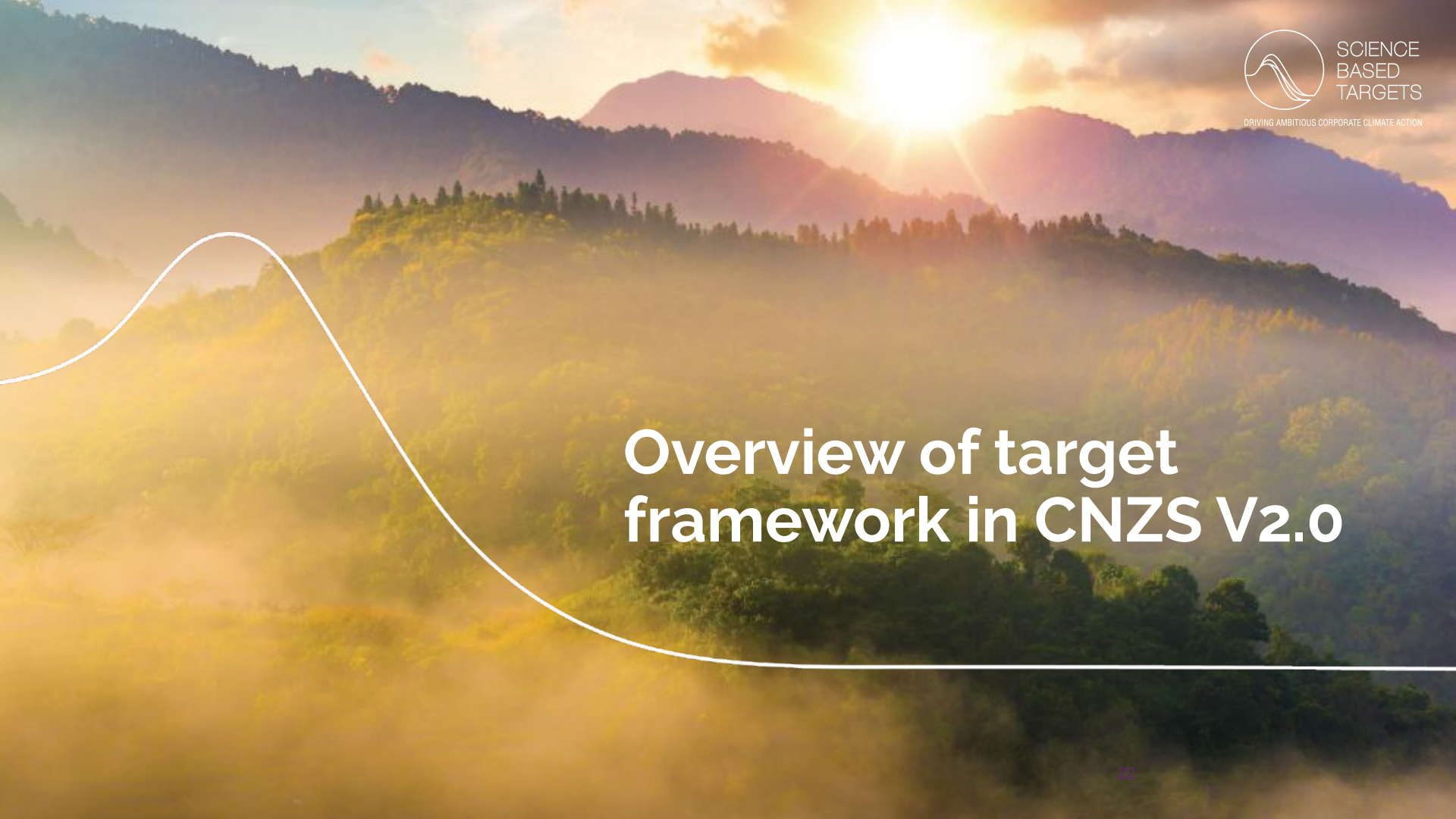
Short Q&A




# Overview of target framework in CNZS V2.0

# Removals are required to neutralize residual emissions, but can also be used in the lead-up to the net zero year

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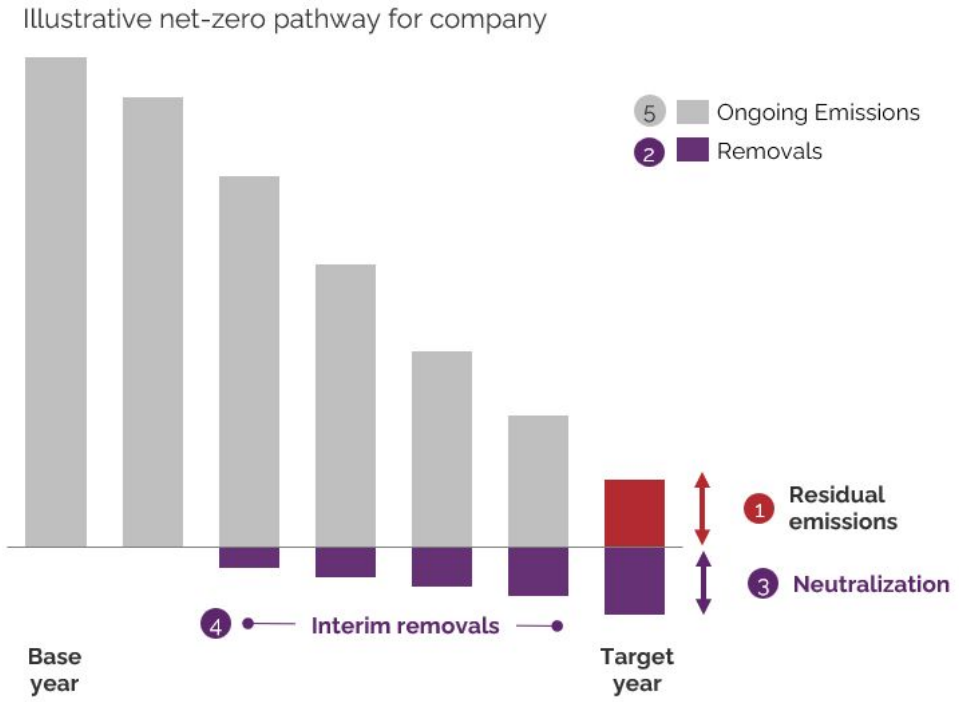
1 **Residual emissions** represent the emissions that cannot be completely eliminated despite implementing all available mitigation measures contemplated in pathways that limit warming to 1.5˚C with no or limited overshoot. In the context of SBTs, residual emissions refer to the company's emissions that remain once its long-term emissions reduction target has been achieved.

2 **Carbon removals** (removals) are actions that sequester $CO_2$ from the atmosphere and durably store it in geological, terrestrial, or ocean reservoirs (or in products). Storage of removals can vary in durability.

3 **Neutralization** refers to the measures companies take to counter-balance residual emissions through removals **at and after** their net-zero target year.

4 **Interim removals** are removals that companies use in the lead-up to the net-zero target year to proactively address residual emissions.

5 **Ongoing emissions** are emissions occurring from the target base year before the net-zero target year. Companies may receive additional recognition for addressing ongoing emissions through Beyond Value Chain Mitigation (BVCM).



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# How residual emissions are integrated into company's requirements

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1. Companies are **required to** set removal targets to address projected residual emissions
2. Companies may **receive additional recognition for** setting removal targets to address projected residual emissions
3. Companies address residual emissions through **additional scope 1 emissions reductions or removals**

| Dimensions | Option 1 | Option 2 | Option 3 |
|---|---|---|---|
| **Type of action** | Prescribed (removals) | Prescribed (removas) | Flexible (removals or additional abatement) |
| **Target stringency** | Required | Recognised | Required |



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# Removals – options 1 & 2 | Companies purchase increasing volume of removals to meet interim targets

Companies are required to (Option 1), or receive additional recognition for (Option 2), setting **interim removal targets** every 5 years from 2030 until annual removals equal **residual emissions in the net-zero year target year**

## 1 Identify scope 1 pathway

Companies identify their **scope 1 target pathway** for scope 1 emissions determined by cross- or sector-specific pathways for emissions reduction

## 2 Determine net-zero residual

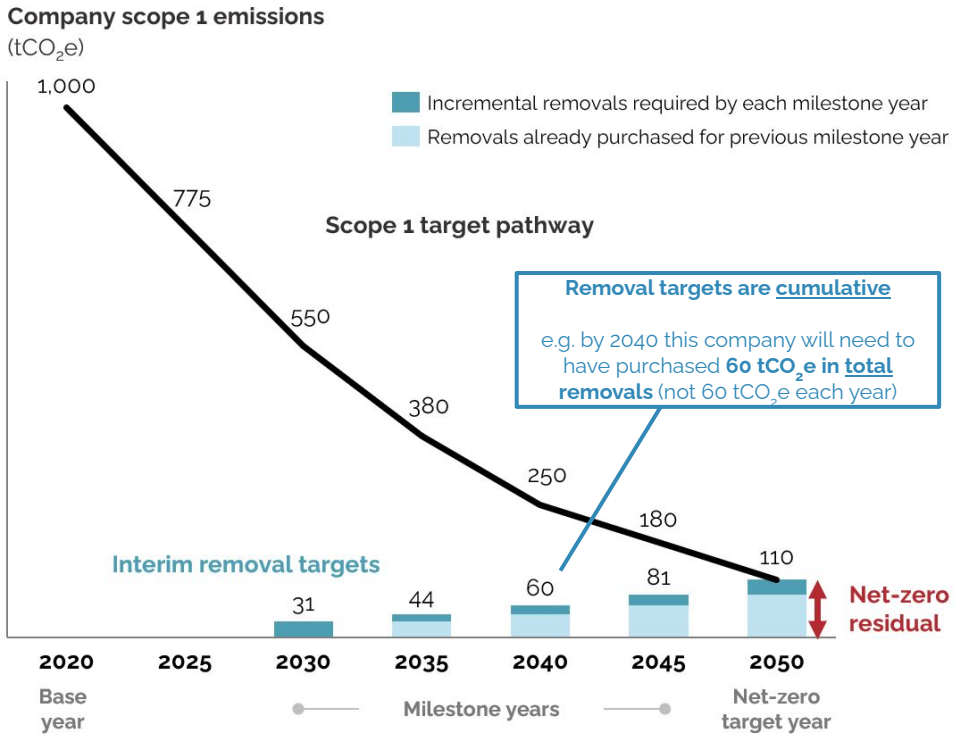
The **net-zero residual** is the projected remaining scope 1 emissions in the target year. These can range from 0% to 34% of base year emissions, dependent on sector.

## 3 Determine interim removal targets

**Interim removal targets** set the level of removals needed to be achieved by each milestone year. These are calculated based on company's net-zero residual emissions and **interim removal factors (IRFs)** (set by SBTi, based on global ratio of removals needed at milestone year to removals needed at the net-zero target year[1] )

$$\textit{Interim removal target } (tCO_2e) = \textit{Net zero residual } (tCO_2e) \times \textit{Interim Removal Factor}(\%)$$

*Method for selecting IRF to be determined by consultation*




1. Based on IPCC 1.5°C Degree pathways

# Removals – option 3 | Residual emissions addressed through additional abatement or removals

No additional removal target, instead companies have flexibility to address projected residual emissions through **additional abatement or removals**, or a combination of the two.

## 1 Identify scope 1 target pathway

Companies identify **their scope 1 target pathway** for scope 1 emissions determined by cross- or sector-specific pathways for emissions reductions and volume of allowed removals.

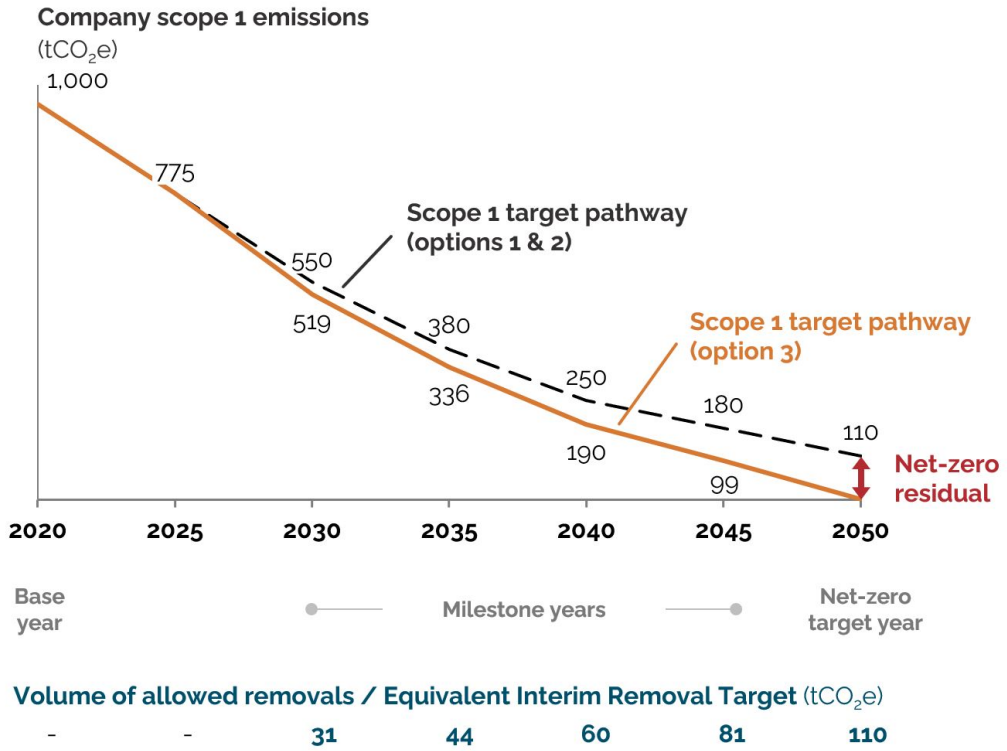
## 2 Mitigate scope 1 emissions

Companies **mitigate their scope 1 emissions** to meet their scope 1 target pathway:

- Gross emissions must be reduced at least to the level of their SBTi-assigned emissions pathway.
- Additional scope 1 emission reductions beyond this can be achieved through further mitigation, removals, or both.

## 3 Allowable removals

The **maximum volume of removals allowed in this option is the same** as the removal target volume. However, this option allows companies to address these emissions through reductions first where possible, in alignment with the mitigation hierarchy.



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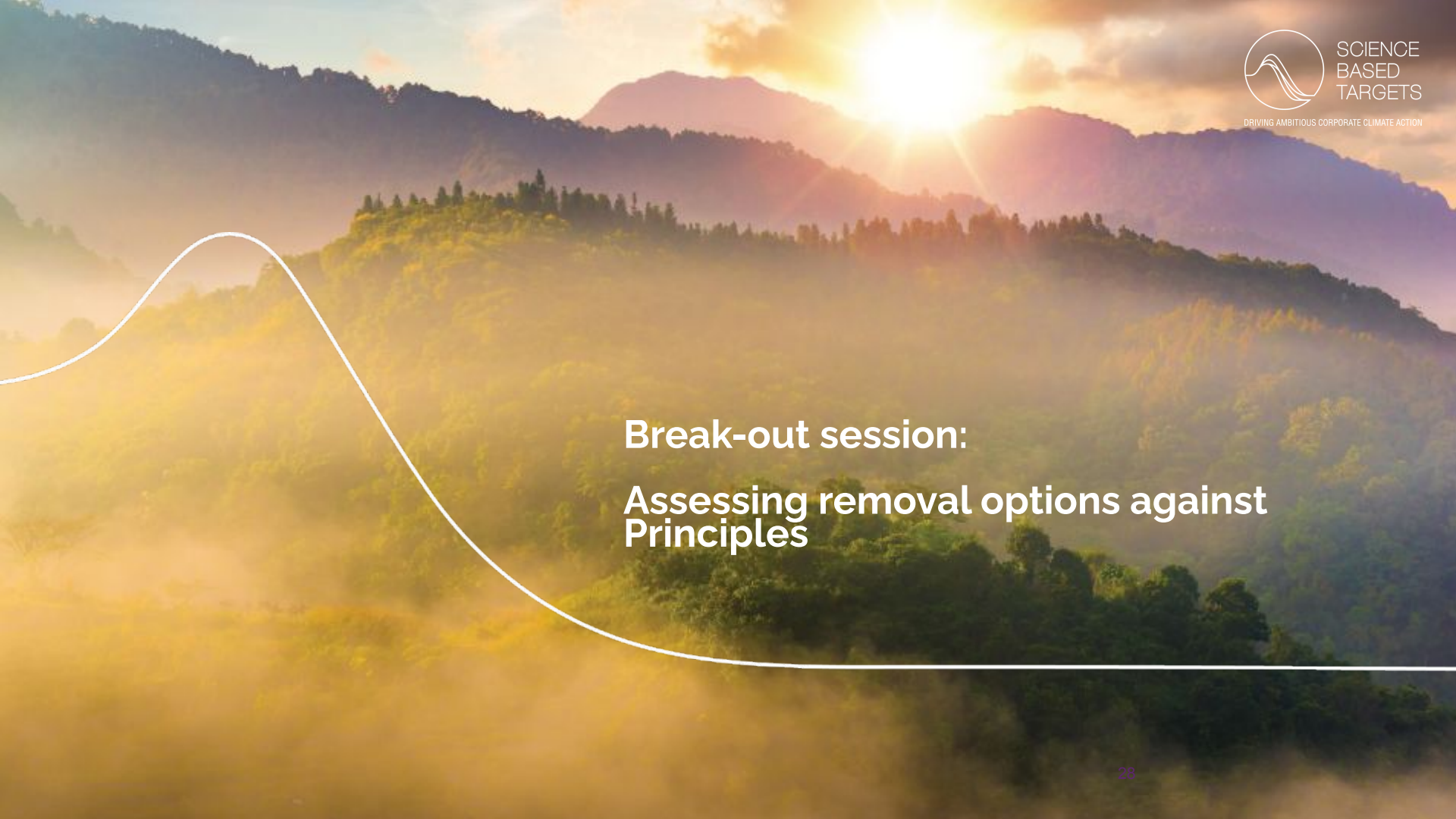
Break (15 mins)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Break-out session:
Assessing removal options against Principles

# Group exercise and discussion (45 mins)

Assessing each options against principles

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Open the miro link in the chat on a new window on your browser

**Scoring exercise (15 mins):**

- You will see a table with key questions for each principles to guide your evaluation
- Each option should be scored using a coloured dot based on how it perform against each principle : red = misaligned; yellow = partially aligned; green = fully aligned
- Each option should be assessed individually, not against each other (for instance all option might score poorly or being equal against a principles)

**Group discussion (30 mins):**

- We will invite to share your comments
- Discuss diverging views
- Identify gaps (for instance if none of the options meet a principle)


# Wrap up and next steps

# CDR EWG meeting plan and outputs

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**15th April**

**Framework for residual emissions**

- Overview of SBTi principles
- Assessing options for addressing residual emissions against principles

**30th April**

**Overlaps with BVCM**

- Overview of the Responsibility to Remove (RTR) framework
- How to allocate responsibility for removals, versus other quantifiable mitigation

**7th May**

**Durability of removals**

- Overview of approaches to define minimum durability threshold
- Assessing durability options of carbon removals against principles

**3-5 June**

**Quality criteria & cross cutting themes**

- Resolution of open issues
- Cross-cutting themes , including:
  - Quality criteria
  - Data quality and claims

***Sessions will include:***

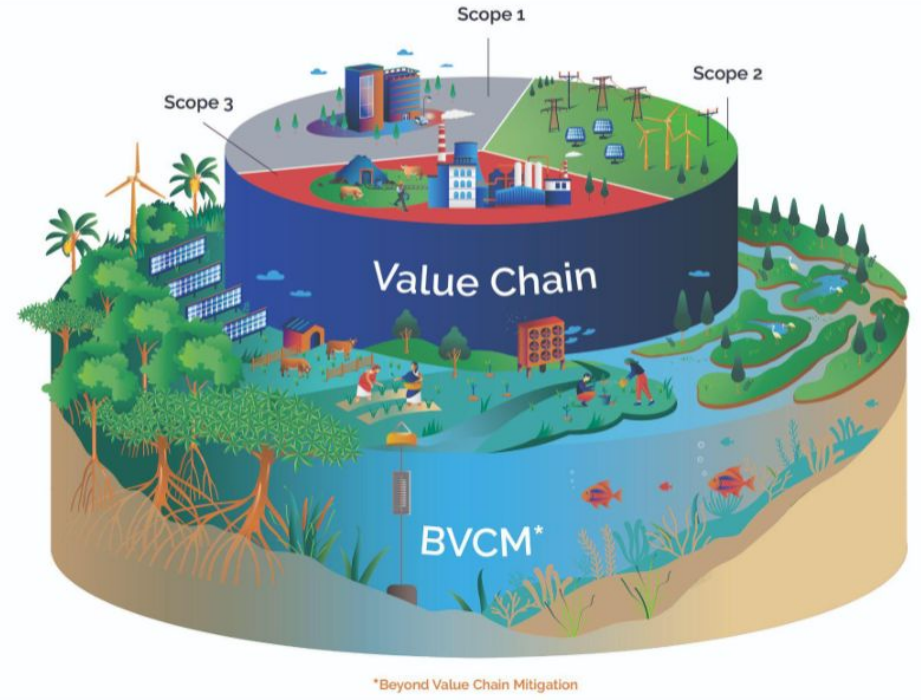
Brief presentations

External insights and examples

Structured discussion and input

**Pre-reads shared 5 days in advance. Please arrive prepared to engaged!**

# DEFINING BVCM




**Definition:** Mitigation action or investments that fall outside a company's value chain, including activities that avoid or reduce GHG emissions, or remove and store GHGs from the atmosphere.

**Purpose:**

- BVCM enables companies to accelerate the global net-zero transition by helping other economic and social actors to reduce and / or remove GHG emissions.

- BVCM allows companies to take responsibility for unabated emissions that continue to be released into the atmosphere as they progress towards the delivery of their science-based targets.

# BVCM IS A LEVER FOR SYSTEM-LEVEL CHANGE

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## BVCM GOALS


Deliver **additional near-term mitigation outcomes** to achieve the peaking of global emissions in the mid-20s and the halving of global emissions by **2030**.


Drive **additional finance into the scale-up of nascent climate solutions and enabling activities** to unlock the systemic transformation needed to achieve net-zero by **mid-century** globally.

## BVCM PRINCIPLES


**SCALE:**
Maximizing climate mitigation


**FINANCING NEED:**
Focusing on under-financed mitigation


**CO-BENEFITS:**
Supporting the SDGs


**CLIMATE JUSTICE:**
Addressing inequality

# THE ROLE OF BVCM IN THE IMPACT MODEL OF THE DRAFT CORPORATE NET-ZERO STANDARD V2.0 x

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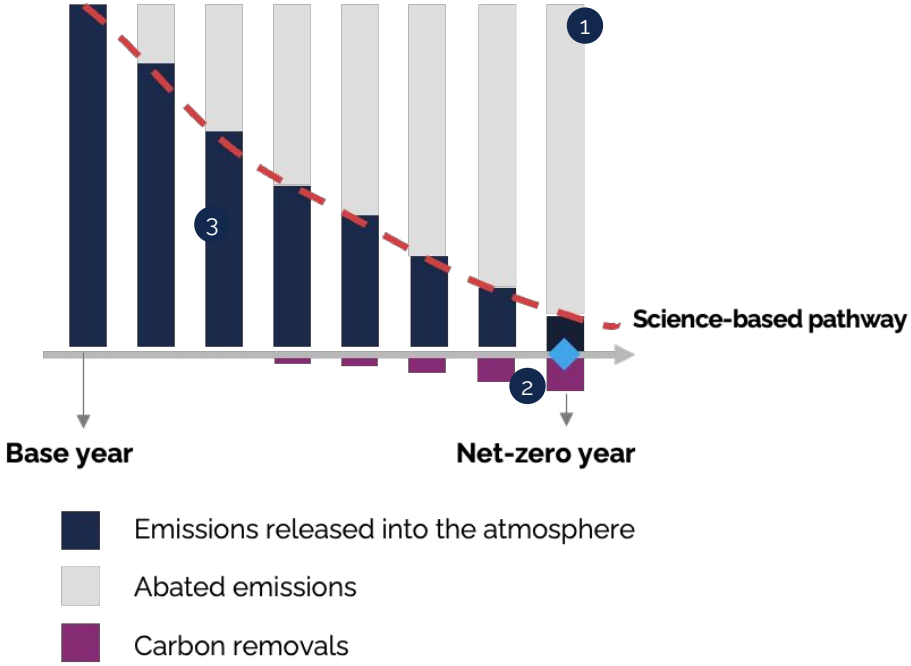
*Illustrative net-zero pathway for company*




1. **Target-setting:** Companies are **required** to set targets to abate the emissions associated with their operations, products and supply chains,

2. **Residual emissions:** Companies are incentivized to address the impact of projected residual emissions from the net-zero target year and, increasingly, in the period leading up to it through removals and/or additional scope 1 emissions reductions (options under consultation) (new).

3. **Ongoing emissions:** Companies are recognized for taking responsibility for the emissions released into the atmosphere during their transition to net-zero by contributing to mitigation outside their value chains **(new)**.