SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

BUILDINGS SECTOR SCIENCE-BASED TARGET-SETTING GUIDANCE

Version 0.2.1 - **Draft for Pilot Testing**

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Document history

Version	Change/update description	Date published
0.1	Draft for public consultation	16/05/2023
0.2	Draft for pilot testing	21/11/2023
0.2.1	Minor correction to Section 2 (Sector-specific criteria and recommendations): Buildings-C13, which was missing from the updated section, added. Document version history added.	12/12/2023

DISCLAIMER

To inform the development of robust, clear and practical resources that will support building companies and financial institutions (FIs) in setting 1.5°C-aligned science-based targets, from May 16 to July 16 2023, the Science Based Targets initiative (SBTi) held a two-month public consultation. During this consultation process external stakeholders provided feedback to the Buildings Sector Science-Based Target-Setting Guidance and Tool Drafts, and to the Global Buildings Sector's Embodied Emissions 1.5°C Pathway Development Description Draft. More than 160 respondents provided feedback via the consultation survey. Acknowledging the comments received the SBTi carried out an in-depth review of the guidance which has resulted in the development of the SBTi Buildings Guidance Draft for Pilot Testing.

The SBTi Buildings Guidance and Target-Setting Tool Drafts for Pilot Testing will be used by an initial group of companies and FIs in the sector to test the feasibility of these resources when using their datasets, and help us identify any possible amendments needed to inform its applicability across regions and different business models. Following this phase, a final version of the guidance and tool will be released for use by all relevant stakeholders. For more information on how to express your interest in participating in the pilot testing phase, visit the resources section on the buildings page.

Companies and FIs will continue to have the option to have their science-based targets validated against SBTi Near-Term Financial Sector Science-Based Targets Guidance v1.1, SBTi Criteria and Recommendations for Near-Term Targets and Corporate Net-Zero Standard Criteria during the pilot testing and for six months subsequent to the publication of the SBTi Buildings Sector Guidance.

ACKNOWLEDGEMENTS

This guidance document was developed by the Science Based Targets initiative (SBTi) with support from PricewaterhouseCoopers (PwC). The SBTi is a global body enabling businesses to set ambitious emissions reductions targets in line with the latest climate science. It is focused on accelerating companies across the world to halve emissions before 2030 and achieve net-zero emissions before 2050.

The SBTi mobilizes companies to set science-based targets and boost their competitive advantage in the transition to the net-zero economy. The SBTi is a collaboration between CDP, the United Nations Global Compact, World Resources Institute (WRI), and World Wide Fund for Nature (WWF), and is one of the We Mean Business (WMB) Coalition commitments.

Partners

The SBTi developed the guidance, sectoral pathways and accompanying tool in technical partnership with PwC, Carbon Risk Real Estate Monitor (CRREM), Ramboll, and dss+. PwC is a leading professional services network and helped develop this guidance document with the SBTi. CRREM provides the real estate industry science-based decarbonization pathways for in-use operational emissions. The SBTi's partner in developing the embodied emissions pathways is Ramboll, a global engineering, architecture and consultancy company. The target-setting tool was developed together with dss+.

We would like to acknowledge the SBTi technical review team for their time and support to review this guidance and improve its clarity.

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APPLICABILITY OF THE SBTi BUILDINGS GUIDANCE

For which users is this guidance mandatory?

This guidance is intended to be used by those companies for whom buildings-related emissions are significant in relation to their overall activities. This may include both companies for whom buildings are a key part of the business objectives (i.e. development, landlords, investments) and those for whom buildings are a facilitator for doing other business, such as general office-based companies.

As such, companies shall use the buildings guidance to set targets on buildings-related emissions if any of the conditions in Buildings-C1 apply.

Use of terms “shall”, “must”, “should” and “may”

The terms “shall” and “must” are used throughout this document to indicate what is required for targets to be in conformance with the criteria, whereas the term “should” is used to describe recommendations. The SBTi recommendations are important for transparency and best practices but are not required and will not be validated. The term “may” is used to indicate an option that is permissible or allowable.

Date of application of the guidance

Companies that meet the conditions set out in this guidance must apply this guidance document in full for new target submissions or re-submissions, at the latest, 6 months after the sector guidance publication. Existing 1.5ºC buildings pathways in other SBTi documents and tools will be withdrawn after the 6 months grace period.

1 INTRODUCTION

1.1 Introduction to science-based targets

Science-based targets (SBTs) specify how much and how quickly a company would need to reduce its greenhouse gas (GHG) emissions in order to align with the goals of the Paris Agreement. Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to limiting global warming to 1.5°C above pre-industrial levels.

Statistic call-out: Buildings account for 34% of the global final energy consumption (IEA, 2023).

The buildings sector has a very large emissions footprint. It is responsible directly and indirectly for 34% of global final energy consumption and 26% of global energy-related emissions (IEA, 2023). In 2022, around 8% of global energy- and process-related emissions were related to the use of fossil fuels in buildings, around 18% to the generation of electricity and heat used in buildings, and a further 4% were related to the embodied emissions of buildings - the manufacture of cement, steel, and aluminum used for construction (IEA, 2023). Beyond CO_2, fugitive emissions from fluorinated GHGs are also a substantial, and growing, source of emissions for the buildings sector, mainly arising from refrigeration and air-conditioning equipment. According to a 2020 estimate, hydrofluorocarbons (HFCs), which represent around 80% of fugitive emissions, accounted for 8% of buildings sector GHG emissions (Hu et al., 2020).

Additionally, it is expected that global floor area will increase substantially in the future, by around 15% to 2030, with more than 80% of this area growth predicted to be in developing and emerging economies (IEA, 2023). This area is equivalent to more than the whole built floor area of North America (IEA, 2023). Newly constructed buildings are more energy-efficient, but since 80% of buildings that will exist in 2050 have already been built, decarbonizing our existing stock must be a priority (WEF, 2022). Further, there is an increasing need, particularly in developed economies, to extend the useful life of buildings through retrofitting instead of constructing new buildings which require more energy and resources to build. With fossil fuel demand in the sector growing at an average rate of 0.5% since 2010, and 35% of total buildings' energy consumption still supplied by fossil fuels in 2022, it is clear that the sector's energy intensity needs to follow a steep decline to align with a Net Zero by 2050 scenario (IEA, 2023). Thus, this decade is crucial to designing and enforcing the measures necessary to decarbonize the sector.

To successfully address the contribution of buildings and their construction to global GHG emissions, emission reductions need to be made across the sector's entire value chain. The purpose of this

guidance document and its accompanying target-setting tool is to provide corporates and financial institutions that own, develop and finance buildings with the resources they need to set 1.5°C-aligned near- and long-term decarbonization targets. This document provides sector-specific 1.5°C pathways, as well as guidance on target-setting for in-use operational emissions and embodied emissions.
The document is structured as follows:

- Section 1 gives an overview of the development of the guidance and its use.
- Section 2 provides the sector-specific criteria and recommendations.
- Section 3 provides the context behind near-term, long-term and net-zero science-based targets.
- Section 4 explains the scientific basis for buildings sector 1.5°C decarbonization pathways, the sector-specific intensity convergence approach (SDA)[1], as well as key elements of the pathways, namely the intended users and building typologies within scope of the guidance.
- Section 5 provides clarifications on GHG accounting practices for the buildings sector.
- Section 6 forms the main part of this guidance on target-setting. It includes guidance on target boundaries, calculating emission inventories, constructing targets, and submitting them for validation. This section also addresses challenges specific to the buildings sector, such as acquisitions and divestments, as well as user-specific requirements for near-term scope 3 target setting.
- Section 7 is intended to provide additional guidance for Financial Institutions (FIs) in setting targets, as their interactions with the buildings sector differ compared to other guidance users. The criteria and recommendations in section 2 also apply to FIs.

1.2 Overview of the development process

The SBTi developed the sectoral pathways, accompanying tool, and this guidance in technical partnership with four organizations: Carbon Risk Real Estate Monitor (CRREM), Ramboll, PwC, and dss+. The SBTi worked in collaboration with CRREM and Ramboll to develop 1.5°C-aligned building sector pathways for in-use operational and upfront embodied emissions, respectively. dss+ contributed to the development of the SBTi Buildings Target-Setting Tool. Meanwhile, PwC contributed to the development of this guidance document that provides guidance on emissions accounting, target-setting, and reporting.

A transparent multi-stakeholder development process is central to all SBTi sector projects. The buildings project is accompanied by an Expert Advisory Group (EAG) composed of 33 organizations from industry, civil society and academia to provide detailed input during the development of this guidance and tool. EAG members were selected and invited to join the group based on their geographic

[1] The sector-specific intensity convergence approach was previously known as the 'sectoral decarbonization approach'. This document uses the abbreviation of the former name for cohesiveness with other SBTi resources.

location, expertise, relationship to the sector and, with regards to corporates and FIs, ambition to align their targets with the latest climate science.

Table 1. Expert Advisory Group member organizations

AECOM Aldar Properties APG Arup Better Buildings Partnership (BBP) Bouygues BRE Buro Happold CapitaLand Investment CBRE Climate Bonds Initiative Council on Energy, Environment, and Water (CEEW) Environmental Coalition on Standards (ECOS)	European Climate Foundation (ECF) Finance Ideas Global Real Estate Sustainability Benchmark (GRESB) Green Building Design Group Green Finance Institute International Finance Corporation (IFC) JLL Mitsubishi Estate Co. Multiplex Partnership for Carbon Accounting Financials (PCAF) Ramboll Simon Property Group Skanska	Swire Properties The European Network of Construction Companies for Research and Development (ENCORD) University of Regensburg University of Strathclyde World Business Council for Sustainable Development (WBCSD) World Green Building Council (WorldGBC) World Wide Fund for Nature (WWF)

The SBTi is grateful for the engagement and input from EAG members. The EAG's role was advisory, and final sign-off for deliverables was by the SBTi. Therefore, criteria and recommendations expressed within this document may not represent the views of every EAG organization.

The SBTi's buildings project is primarily funded by the Laudes Foundation.

A public consultation was held from 16 May to 16 July 2023 to obtain feedback and input from stakeholders on this guidance document and the accompanying target-setting tool.

1.3 Intended users of this guidance

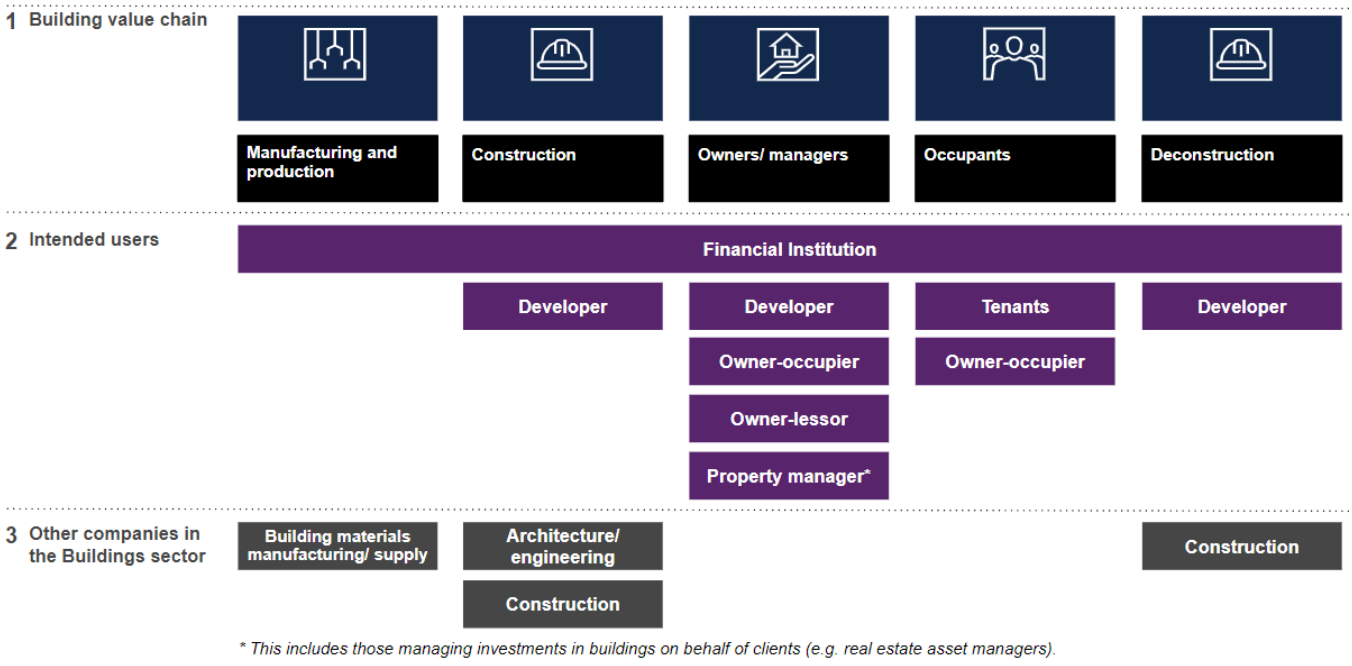
The buildings value chain contains a broad array of actors involved in the design, financing, development, construction, management, and occupation of buildings (see Figure 2). The SBTi appreciates buildings can be viewed differently to their day-to-day functions, for example as financial

assets or even products themselves. The buildings guidance has been designed with this in mind in order to be applicable to both corporates and financial institutions.

However, not all target-setting methods described in this guidance are able to be implemented by each and every intended user. This is due to the need to tailor target-setting methods to various players with different levels of influence and responsibility in the complex buildings value chain. As such, the main text is focused on a core set of users for whom the new target-setting methods are readily implementable, with additional guidance and recommendations provided for supplementary users who should continue to use the SBTi's cross-sector guidance and target-setting methods in section 10.4.

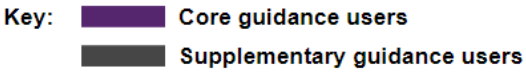
Although architecture, engineering, and construction companies were explored as a part of the development of this guidance, for a number of reasons which are explored in section 10.4, these companies should continue to use SBTi's cross-sector guidance and methods to set targets[2]. Additionally, key suppliers for the buildings sector, including materials manufacturers, are also addressed in section 10.4.

Figure 1. Intended users within the buildings value chain



** This includes those managing investments in buildings on behalf of clients (e.g. real estate asset managers).*

[2] For the avoidance of doubt, as an example: a large commercial architecture company may still be required to use the SBTi Buildings Sector Guidance (in their capacity as a building *owner* or *tenant*) to set targets on their buildings-related emissions, if they meet one or more criteria set out in Buildings-C1. In this case, they are using this guidance as an '*owner-occupier*' or '*tenant*', which are not necessarily related to the emissions from their architectural designs. For additional guidance on accounting and target-setting, see section 10.4.



Section 4.5.1 information to aid in understanding the applicability of this guidance to your organization.

1.4 How does this guidance change target-setting requirements compared to previous practice?

The SBTi previously offered 2°C, well-below 2°C, and 1.5°C pathways for residential and commercial buildings' operational emissions and many companies have already set targets using these. To further advance science-based decarbonization in this sector, the SBTi Buildings Sector Guidance has been developed to codify and clarify criteria already being applied by companies and the SBTi target validation team when assessing and validating SBTs in this sector.

This guidance has been designed to align to the SBTi Criteria and Recommendations for Near-Term Targets and SBTi Corporate Net-Zero Standard and their 1.5°C minimum ambition[3]. To offer the buildings sector more granular pathways reflecting variations in building typology and geography, the SBTi, in collaboration with CRREM, has developed a set of 1.5°C-aligned in-use operational emissions pathways for the sector. Furthermore, to improve accountability for emissions reduction, the in-use operational pathways, and this guidance document, abide by the "whole building approach"[4]. This means that a building's complete operational energy consumption, including both landlord and tenant-controlled spaces, are included and combined within a user's target boundary[5].

This guidance also aims to raise ambition around embodied emissions, which have historically lacked global sectoral decarbonization pathways. Through a collaboration with Ramboll, the SBTi has developed the first set of 1.5°C-aligned embodied emissions pathways for the global buildings sector to aid science-based target-setting. However, it is important to note that the robustness and granularity of these recently developed embodied emissions pathways is currently limited by data availability. The SBTi plans to build on this initial work to identify methods to include additional sub-geographies and building typologies to the pathways in the future.

[3] The latest versions of these documents at the publication of this guidance.
[4]The "whole building approach" means that a building's complete in-use operational energy consumption from landlord and tenant-controlled spaces are included within a user's target boundary and reported on a regular basis. This shall not be confused with Whole (Building) Life Carbon, which means addressing emissions through a building's life cycle.
[5] This entire target boundary does not correspond to all S1+2 emission reporting, rather it spans all relevant emissions categories that are relevant for the in-use operational target boundary.

Companies that meet the conditions set out in Buildings-C1 must follow requirements for target setting and minimum ambition levels as indicated in this sector-specific guidance for target submissions or re-submissions, within 6 months after the sector guidance publication. Targets must be modeled using the latest version of the SBTi Buildings Target-Setting Tool and latest methods approved by the initiative.

1.5 Levers to decarbonize buildings portfolios

To reach the level of deep decarbonization required by the 1.5°C goal, emissions scenarios for the buildings sector point to a wide range of opportunities to reduce emissions (IEA, 2021). Levers already being implemented across the buildings value chain include low-carbon design, the use of low-carbon building materials, electrification, switching to renewable sources of electricity, electric heating and the installation of technologies that reduce energy demand. Electric heat pumps, for example, are almost four times more efficient than conventional boilers (IEA, 2021).

Decarbonization should holistically reduce the energy intensity of the buildings sector, by acting to improve energy efficiency throughout each stage in the life cycle of buildings. In the IEA's Net-Zero emissions by 2050 scenario, the pace of retrofits of existing buildings needs to more than double over the decade, with one in five buildings worldwide retrofitted to be zero-carbon-ready[6] by 2030 (IEA, 2021). Zero-carbon-ready buildings either use renewable energy directly or rely on a source of energy supply that can be fully decarbonized, such as electricity or district energy (IEA, 2023). Highly energy efficient buildings are ready to be scaled up today, reducing CO_2 emissions and cutting energy bills.

Reducing emissions from construction materials starts with building less with less material (UNEP, Yale CEA & GlobalABC, 2023). The adoption of circularity principles in the way we design buildings is a key decarbonization lever and could reduce global carbon emissions from building materials by 38% in 2050, due to reduced demand for steel, aluminum, cement and plastic (Ellen Macarthur Foundation, 2020). Research has shown that up to 25% of materials in residential buildings scheduled for decommissioning or deconstruction can be reused, while up to 70% can be recycled in some form (RICS, 2020). Redevelopment and renovation of the existing building stock to answer the change in demand also serves as a sufficiency measure in the industry by reducing the need for newly constructed buildings.

There are building-level frameworks that help ensure that emissions at an asset level are being appropriately managed and reported. Global certification standards like LEED, BREEAM, and EDGE, or regional ones like Australia's Green Star, Germany's DGNB or Singapore's GreenMark, help verify that

[6] Highest energy efficiency class based on local rating schemes and either uses renewable energy directly or uses an energy supply that will be fully decarbonized by 2050, such as electricity or district heat (IEA, 2023).

buildings are designed, built, and operated to a high standard. Reporting and benchmarking frameworks like GRESB can help those achievements be translated into emissions level reporting that can be used to show compliance with SBTi's pathways and to compare performance against peers. Reporting standards like Royal Institution of Chartered Surveyors (RICS) 'Whole-life Carbon Assessment' help track emissions across an asset's life, while programs like WorldGBC's Global Commitment for Net Zero Buildings help ensure that entities are committed and in alignment with net-zero carbon goals.

2 SECTOR-SPECIFIC CRITERIA AND RECOMMENDATIONS

The below tables provide a quick-reference summary of the sector-specific criteria and recommendations discussed in this guidance that apply in addition to SBTi Criteria and Recommendations for Near-Term Targets and SBTi Corporate Net-Zero Standard. "C" designates a criterion, i.e. it is mandatory; "R" designates a recommendation. Recommendations are important for transparency and best practices but are not required.

2.1 Buildings sector criteria and recommendations

Companies required to comply with the buildings criteria

Buildings-C1 - Thresholds for buildings-related emissions: Companies shall use the buildings criteria to set targets on buildings-related emissions if **any** of the below conditions apply:

1. At least 20% of their total scope 1, 2, and 3 category 1-14 emissions are buildings-related emissions in their chosen base year; ***or***
2. At least 25,000 tCO_2e across scope 1, 2, and 3 category 1-14 are buildings-related emissions[2] in their chosen base year; ***or***
3. The company's real estate portfolio exceeds 100,000 m^2 in total floor area in their chosen base year. The total floor area figure is an aggregated value across owned, leased, managed, and developed buildings.

The conditions above only apply to FIs when the FI also satisfies another intended user category (e.g. tenant or owner-occupier) (see Buildings-FI-C1).

Buildings-related emissions refer to the upfront embodied, in-use embodied, and in-use operational emissions of buildings. Relating to scopes 1 and 2, buildings-related emissions include the on-site fuel combustion (e.g. gas used on site for cooking, water heating, and/or space heating) and refrigerant leakage of buildings, and emissions from purchased electricity from the grid (i.e. usage on an electricity bill) and other centralized energy sources (e.g. steam). Emissions from energy use by installed manufacturing equipment is not included. Buildings-related scope 3 emission sources are described in more detail in Tables 8 and 9 in this guidance.

Buildings-C1				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Buildings-C2 - Intended user categorization: Companies must apply the relevant target-setting guidance for all intended user types that are applicable to their business activities. Companies must also briefly explain their choice of intended user categorization when submitting targets for validation.

This guidance addresses the following user categories, whilst acknowledging that classifications might differ between markets and jurisdictions internationally:

- Developer
- Owner-occupier
- Owner-lessor
- Tenant
- Property manager
- Financial institution (FI)*

*The financial sector's largest impact comes from its investment and lending activities (scope 3 category 15, Investments) and therefore it is imperative that targets for this sector encompass such activities. As guidance for financed emissions follows separate GHG accounting protocols and FIs' interactions with the buildings value chain is sufficiently different to the other users listed, additional target-setting criteria and recommendations are provided in Section 2.2.

Buildings-C2				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Companies required to comply with the buildings criteria in Section 4.5.1
- Intended users in Section 4.5.2
- Target-setting guidance for FIs in Section 7

GHG accounting

Buildings-C3 - Whole building approach: Companies must include emissions arising from operational energy consumption from landlord and tenant-controlled spaces within target boundaries, regardless of their chosen GHG boundary consolidation approach and consequent allocation of emissions across their inventory.

Buildings-C3				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Buildings-C4 - Fugitive emissions: Companies shall include fugitive emissions, from all building types, within their in-use operational emissions and as part of both their GHG inventory and target boundaries.

Buildings-C4				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Buildings-C13 - Location-based accounting approach: If the market-based approach is chosen for target-setting, companies must measure and report their whole building in-use operational emissions intensity using the location-based approach, as an additional separate line item in their annual GHG inventory.

Buildings-R2				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Buildings-R2 - Location-based accounting approach: Companies are recommended to adopt the location-based approach when setting an in-use operational SDA target.

Buildings-R2				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Whole building approach for in-use operational emissions in Section 5.1
- Fugitive emissions in Section 5.5

Permitted target-setting methods

Buildings-C5 - Permitted target-setting methods: Permitted target-setting methods for scope 1, 2 and 3 buildings-related emissions for buildings sector users are laid out in Tables 2a-2c.

All companies shall use the buildings in-use operational emissions SDA to set a target on their whole building in-use operational emissions, irrespective of whether these emissions are categorized as scopes 1, 2, or 3.

Table 2a. Permitted target-setting methods for whole building in-use operational emissions (scopes 1, 2, 3) for corporates

SCOPE	EMISSIONS COVERED (EXAMPLES)	TARGET-SETTING METHODS						
		In-use Operational SDA	Upfront Embodied SDA	Buildings Sector Specific Absolute Reduction	Cross-Sector 1.5C ACA	Cross-Sector WB2C	Economic intensity	Physical intensity
Scopes 1, 2, and 3 for whole building in-use operational emissions[7] **Owner-occupier:** scopes 1 and 2 **Owner-lessor:** scopes, 1, 2, and 3 category 13 **Tenant:** scopes 1, 2, and 3 category 8	In-use operational emissions, as occurred in the reporting year.	✅	X	X	X	X	X	X

Table 2b. Permitted target-setting methods for other scope 1 and 2 emissions

[7] Buildings-related scope 1 and 2 emissions for Developers and Property managers can occur in their capacity as owner-occupiers, owner-lessors, or tenants of buildings (e.g. own offices). See section 4.5.2.2 for guidance where multiple intended users are applicable to your organization.

SCOPE	EMISSIONS COVERED (EXAMPLES)	TARGET-SETTING METHODS						
		In-use Operational SDA	Upfront Embodied SDA	Buildings Sector Specific Absolute Reduction	Cross-Sector 1.5C ACA	Cross-Sector WB2C	Economic intensity	Physical intensity
Other scope 1 and 2	Direct emissions from all other scope 1 and 2 e.g., company cars, fleet vehicles, fuel and electricity use on-site for construction	X	X	X	✅	X	X	X

Table 2c. Permitted target-setting methods for upfront embodied emissions and other buildings-related scope 3 categories

SCOPE 3 CATEGORY	EMISSIONS COVERED (EXAMPLES)	TARGET-SETTING METHODS						
		In-use Operational SDA	Upfront Embodied SDA	Buildings Sector Specific Absolute Reduction	Cross-Sector 1.5C ACA	Cross-Sector WB2C	Economic intensity	Physical intensity
Category 1: Purchased goods and services	Upfront embodied emissions	X	X	X	✅	X	✅	✅
	In-use embodied emissions, as occurred in the reporting year	X	X	X	X	✅†	✅	✅
Category 2: Capital goods	Upfront embodied emissions	X	✅	✅	✅	X	X	X
Category 11: Use of sold products	In-use operational emissions in managed spaces, as occurred in the reporting year[8]	✅	X	X	X	X	X	X
	Lifetime in-use operational emissions of sold buildings (in the reporting year)	X	X	X	✅	X	✅	✅
	Lifetime in-use embodied emissions of sold buildings (in the reporting year)[9]	X	X	X	✅	✅†	✅	✅
Category 12: End-of-life treatment of sold products	End-of-life emissions of sold buildings (in the reporting year)	X	X	X	✅	✅	✅	✅
Category 13: Downstream leased assets	In-use embodied emissions from renovation or retrofit activities purchased by a tenant, as occurred in the reporting year	X	X	X	X	✅†	✅	✅
Category 14: Franchises	Upfront embodied emissions[10]	X	✅	✅	✅	X	✅	✅

[8] For Property managers. May also be categorized under scope 3 category 13 downstream leased assets.
[9] Please note that in-use embodied emissions occurring in category 11 use of sold products do not form part of the minimum boundary for this category according to the GHG Protocol.
[10] Please note that in-use embodied emissions occurring in category 13 downstream leased assets do not form part of the minimum boundary for this category according to the GHG Protocol.

Note to design: Add this as a footnote for where indicated by a cross (†) in this table: "Requiring the well-below 2°C method for in-use embodied emissions can help to encourage renovations over new building construction as this method requires less steep emissions reductions than the 1.5°C upfront embodied emissions SDA method."

Buildings-C5				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Permitted target-setting methods for buildings-related emissions in Section 6.2.3

Near-term scope 3 coverage

Buildings-C6 - Required scope 3 categories: All required emissions categories, as outlined in Table 3, shall be included in a user's target boundary, irrespective of whether or not the user is required to set a scope 3 target or whether minimum scope 3 coverage requirements are already met according to SBTi's general criteria.

To cover the scope 3 coverage requirement set out in the SBTi's general criteria, users may need to set additional scope 3 targets or, if using cross-sector target-setting methods for upfront embodied emissions, select other relevant scope 3 emissions categories, buildings-related or otherwise, to be included in the target boundary.

Table 3. Required near-term targets over scope 3 categories for buildings sector guidance users

INTENDED USER	SCOPE 3 CATEGORY	EMISSIONS (EXAMPLES)
Developer	Category 1: Purchased goods and services and/**or** Category 2: Capital goods[11]	Upfront embodied emissions of new buildings.
	Category 11: Use of sold products	Lifetime in-use operational emissions of sold buildings (in the reporting year).
Owner- occupier	Category 2: Capital goods	Upfront embodied emissions of new buildings acquired in the reporting year - only if first owner of a building (see section 5.4 for further details).

[11] See section 6.2.2.1 for further clarification on inclusion in the target boundary.

INTENDED USER	SCOPE 3 CATEGORY	EMISSIONS (EXAMPLES)
Owner-lessor	Category 2: Capital goods	Upfront embodied emissions of new buildings purchased in the reporting year - only if first owner of a building (see section 5.4 for further details).
	Category 13: Downstream leased assets	In-use operational emissions in tenant-controlled spaces in the reporting year (where not already in scope 1 or 2 using the whole building approach).
Tenant	Category 8: Upstream leased assets[12]	In-use operational emissions from the operation of assets that are leased by the tenant in the reporting year and not already included in their scope 1 or scope 2 inventories (i.e. emissions from lessor-controlled spaces).
Property manager[13]	Category 11: Use of sold products	In-use operational emissions in buildings managed for clients, as occurred in the reporting year (where not in scope 1, 2, or other scope 3 category).

Buildings-C6				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Required scope 3 categories in Section 6.2.2

Targets on upfront embodied emissions

Buildings-C7 - Threshold for upfront embodied emissions targets: For the purposes of setting SBTs, intended users that are the first owner of a new building shall set a scope 3 target on the upfront embodied emissions of new buildings acquired, provided they also meet the following condition:

[12] Whilst the inclusion of this emissions source is required for tenants, its position in a company's GHG inventory might vary due to the consolidation approach chosen. Therefore, the classification by scope and category of each energy supply must be considered individually.
[13] Some Property managers may choose to include emissions from tenant-controlled spaces in scope 3 category 13 (downstream leased assets) instead of category 11, under interpretation of the GHG Protocol Corporate Value Chain Scope 3 Accounting and Reporting Standard, 2011. In this case, the same principles would apply to the user's target boundary i.e. category 13 would be required for these users.

1. In the previous three years, the upfront embodied emissions from new developments or acquisitions of a building as a first owner exceeded 20% of total scope 1, 2, and 3 category 1-14 emissions in any one year.

Buildings-C7				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	X	X

Buildings-C8 - Base year for upfront embodied emissions targets: The base year for upfront embodied emissions targets shall be no earlier than three years prior to the year of submission of targets.

Buildings-C8				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	X	X

Buildings-R5 - Additional disclosure of upfront embodied emissions of complement developments: Developers using method 1 for accounting and target -setting should report the upfront embodied carbon intensity of their completed developments as an additional disclosure to increase transparency and data availability in the sector.

Buildings-R5				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	X	X

Buildings-R7 - Upfront embodied emissions of franchises: Guidance users that are also franchisors should include an optional scope 3 target on the upfront embodied emissions of new buildings constructed as franchises.

Buildings-R7				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Additional target-setting guidance for upfront embodied emissions in Section 6.2.2.1
- Sector-specific target-setting methods for upfront embodied emissions in Section 6.2.3.2
- Franchisors in Section 5.8
- Accounting for upfront embodied emissions of new buildings in Section 5.4
- Defining a building's first owner in Section 5.4.1

Denominator for intensity-based targets

Buildings-C9 - Denominator for intensity-based targets: The intensity pathway for the buildings SDAs shall be expressed in terms of tCO_2e/m^2. For the calculation of intensities, which require a consistent floor area definition as a denominator, the floor area definition used must be applied consistently to a company's GHG accounting and across base and target years. In determining floor area, common areas (e.g. corridors, public lobbies etc.) must be included in accordance with the whole building approach.

Buildings-C9				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Calculating floor area

Buildings-R1 - Calculating floor area: Companies should align to international standards when calculating the floor area, such as the International Property Measurement Standard (IPMS).

Buildings-R1				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Calculating scope 3 emissions from use of sold products

Buildings-C10 - Building lifetime assumptions: Users accounting for scope 3 category 11 use of sold products shall provide the building lifetime assumptions used as a part of the evidence provided in the submission. If a company chooses to use another lifetime estimate than what is recommended in Buildings-R5, the lifetime assumptions they are using must be explained.

Buildings-C10				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	X	X	X	X

Buildings-R5 - Recommendation for building lifetime assumptions: Users accounting for scope 3 category 11 use of sold products should use a minimum building lifetime figure of 60 years in their calculations[14].

Buildings-R5				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	X	X	X	X

Buildings-R10 - Grid decarbonization: Users should use projections for future grid decarbonization in determination of their use of sold products emissions. Projections used should be referenced and justified. Where grid decarbonisation projections are not considered in calculations, justification of this omission should be provided in the submission.

Buildings-R10				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	X	X	X	X

Additional information:

- Building lifetime assumptions in use of sold products in Section 5.3

[14] 60 years is the indicative lifetime as per EN15978 and RICS Guidance.

Target aggregation and validation

Buildings-C11 - Target aggregation: When using the buildings SDAs, companies whose portfolios contain assets across multiple geographies and/or typologies must aggregate their targets to obtain overall reduction targets. Targets for in-use operational and upfront embodied emissions must be kept separate.

Companies shall provide SBTi target setting tools to justify the sufficient ambition of sub-targets which contribute to aggregated targets.

Buildings-C11				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- SBTi Buildings Target-Setting Tool
- Target aggregation and validation in Section 6.5.1

Choice of pathways

Buildings-C12 - Choosing pathways: When using the buildings SDAs, users must select the most appropriate building typology and geographic location for buildings and shall adhere to the SBTi Buildings Target-Setting Tool on choosing an appropriate pathway (selecting building typologies and geographies), including available guidance for when a named pathway is not available.

Buildings that are not covered by the building typologies and/or geographies provided in the latest version of the tool must use the 'Other' pathway.

Buildings-C12				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Building typologies and geographic location in Section 4.5.2

- Using the SBTi Buildings Target-Setting tool in Section 6.4.3
- SBTi Buildings Target-Setting Tool

Additional disclosure to increase transparency

Buildings-C13 - Disclosing buildings-related emissions with the location-based approach: If the market-based approach is chosen for target-setting, companies must also measure and report their whole building in-use operational emissions using the location-based approach, as an additional mandatory disclosure as a separate line item in their annual GHG inventory.

Buildings-C13				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Buildings-R3 - Additional disclosure for increased transparency: Companies should disclose the following information to improve transparency on how emissions reductions were achieved in each reporting year:

- Emissions reductions from decarbonization of assets, (i.e. by using the like-for-like approach).
- Absolute emissions from assets divested in the reporting period.

Buildings-R3				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	X	X

Buildings-R8 - Disclosure of absolute emissions: In order to demonstrate that intensity targets also lead to absolute emissions reductions, and to demonstrate progress through sufficiency measures, companies whose targets are expressed in intensity terms should publish the absolute emissions reductions that will be achieved by their targets.

Buildings-R8				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Mandatory disclosure using location-based approach in Section 5.2
- Addressing the risk of misinterpreting divestments as emissions reductions in Section 5.7.1

Additional commitments

Buildings-C14 - No new fossil fuel equipment: Companies required to use the buildings guidance to set targets must publicly commit to install no new fossil fuel equipment[15] in their buildings portfolios from five years of target submission or by 2030, whichever is sooner.

Commitment language should take the following form:

"[Company X] commits to install no new fossil-fuel-using equipment in its buildings portfolios from [DATE]"

Buildings-C14				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Buildings-R4 - Energy efficiency commitments: Users setting targets over buildings related emissions are strongly recommended to also make a public commitment to implement energy efficiency improvements. These commitments should be inclusive of all buildings in scope of their emission reduction targets. Additional commitments over energy efficiency improvements are not within the scope of the SBTi target validation process.

[15] This commitment is focused on fossil fuel systems used for space heating, cooking, power generation, and hot water. Emergency and back-up systems, such as those used by the healthcare sector, or specific uses in other sectors where required for regulatory reasons as critical, are exempt from this commitment.

Buildings-R4				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Formulating targets

Buildings-R9 - Base years for upfront embodied and operational in-use emissions: Companies are recommended to keep both the selected base year data and the method used to calculate a base year consistent across scopes 1, 2, and 3 for use of the pathways and all buildings-related target-setting.

Buildings-R9				
Developer	Owner-occupier	Owner-lessor	Tenant	Property manager
✅	✅	✅	✅	✅

Additional information:

- Choosing a representative base year in Section 6.3.2
- Examples of target wording in Section 6.4.4

2.2 Additional criteria and recommendations for financial institutions

These sector-specific criteria are in addition to the SBTi for FI sector-criteria. The SBTi strongly recommends that FIs thoroughly review the SBTi Near-Term Financial Sector Science-Based Targets Guidance and Near-Term Criteria and Recommendations for Financial Institutions before developing targets.

FIs shall adhere to all relevant criteria and recommendations in Section 2.1 above when submitting their targets for validation.

Target-setting

Buildings-FI-C1 - Determining the applicable methods and criteria:

- Equity REITs, defined as real estate companies that own and/or manage income-generating properties and lease them to tenants, shall pursue the regular target validation route for companies and should refer to the criteria in Section 2.1 when setting targets.
- FIs must follow the criteria in Section 2.1 when they also satisfy another intended user category (e.g. tenant or owner-occupier), and it is the buildings-related emissions from the activity of that intended user type that is subject to the conditions in Buildings-C1, not the FIs' financed emissions.
- Other FIs may use one or more of the three methods for FIs to set targets on their investment and lending portfolios: the sector-specific intensity convergence (SDA) method, the SBT Portfolio Coverage method, and the Temperature Rating method. FIs are asked to refer to the SBTi Near-Term Financial Sector Science-Based Targets Guidance for an overview of the methods by relevant asset class, followed by a description of each method.

Buildings-FI-C2 - Whole building approach for FIs: When FIs decide to use the sector-specific intensity convergence (SDA) method for their financed emissions, they must abide by the whole building approach, accounting for their proportional share of whole building in-use operational emissions.

Additional information:

- Target-setting for FIs in Section 7.2
- Whole building approach for FIs in Section 7.2.3.2

Upfront embodied emissions disclosure

Buildings-FI-R1 - Upfront embodied emissions disclosure: FIs should disclose the upfront embodied carbon intensity of buildings they acquire, as owners, or re/finance as an additional disclosure to increase transparency and data availability in the sector.

Additional information:

- Upfront embodied emissions disclosure in Section 7.2.3.4

3 NEAR-TERM, LONG-TERM AND NET-ZERO SCIENCE-BASED TARGETS

The SBTi Corporate Net-Zero Standard was published in October 2021. It was developed to guide corporate organizations towards a state of alignment with the goals of the Paris Agreement. Additionally, the SBTi launched v1.1 of the Near-Term Financial Sector Science-Based Targets Guidance in August 2022, which includes guidance for FIs to set science-based targets on their investment and lending activities, for certain sectors where methods are available. Both documents set out three key elements which make up a net-zero target:

(i) near-term SBTs
(ii) long-term SBTs; and
(iii) neutralization of any residual emissions.

SBTs specify how much and how quickly a company would need to reduce its GHG emissions at a minimum to align with limiting global warming to 1.5°C, as per the Paris Agreement. The SBTi makes a distinction between near- and long-term SBTs:

- A near-term SBT has a timeframe of 5-10 years.
- A long-term SBT shows the degree of emission reductions needed for companies to reach net-zero before 2050.

Companies wishing to set a net-zero target must set both near-term and long-term targets. Alternatively, companies may choose to set just a near-term target (but they cannot set only a long-term target).

For the full criteria and explanations, please refer to the SBTi Corporate Net-Zero Standard and the Financial Sector Science-Based Targets Guidance.

4 BUILDINGS DECARBONIZATION PATHWAYS

The SBTi follows a three-step approach to create tools that intended users of the sector guidance can use to calculate SBTs:

- First, the global carbon budget is allocated across sectors.
- Then, emissions pathways describing a plausible decarbonization trajectory that fits within the sector budget are either chosen or developed based on a comparison with the IEA Net-Zero scenario and discussion with the EAG.
- Finally, target-setting methods, such as the sector-specific intensity convergence approach (also named the Sectoral Decarbonization Approach, SDA), are applied to translate the sector pathways into targets.

This section explains the scientific basis for buildings sector 1.5°C decarbonization pathways, the sector-specific intensity convergence approach (SDA), as well as key elements of the pathways, namely the intended users and building typologies within scope of this guidance.

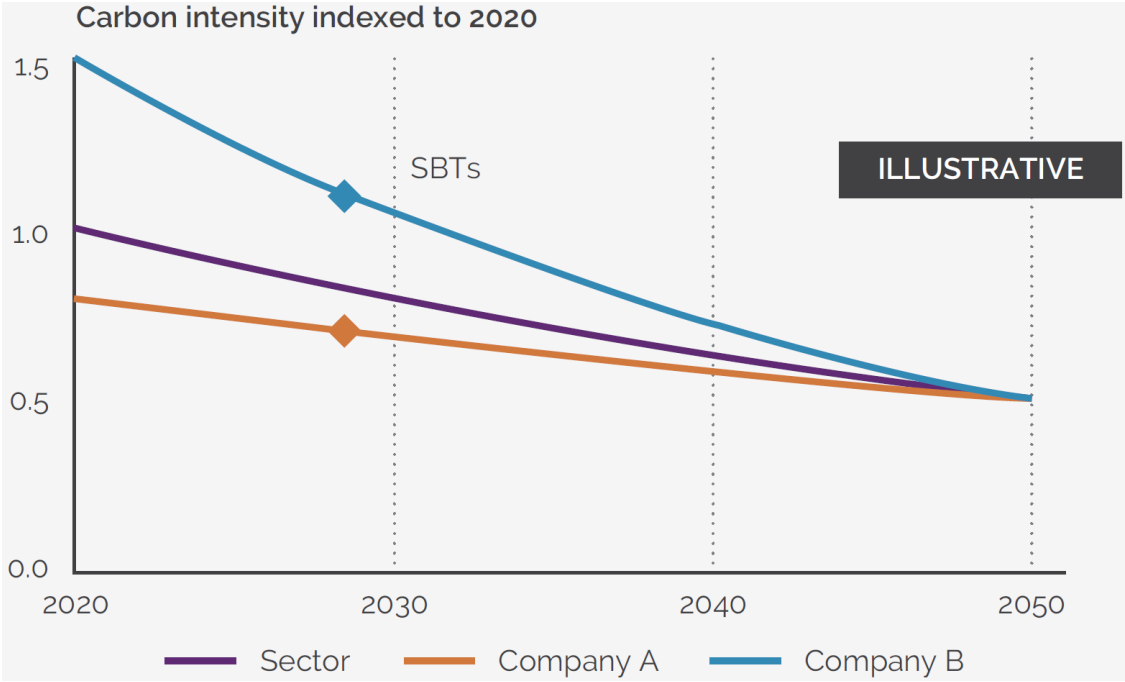
4.1 Target-setting method: sector-specific intensity convergence approach (SDA)

The SDA, also known as the “sector-specific intensity convergence” approach, is a target-setting methodology allowing companies to model physical intensity GHG emission reduction targets that align with a sector-specific pathway. The method allocates the global carbon budget to different sectors, and companies within each sector are able to derive their science-based emission reduction targets based on their relative contribution to the total sector activity and their carbon intensity relative to the sector’s intensity in the base year.

Targets are set by assuming that all companies converge to the same intensity level as the sector average in the long term, usually 2050. SBTs are set in the near term (5 to 10 years) along this convergence path, the steepness of which is defined by the relative intensity of the company compared to the sector in the base year and the rate of forecasted company activity growth by the target year (Figure 2). The further a company is above the curve in the base year, the more stringent the percentage intensity reduction required. For further information on how the SDA method works, please refer to SBTi’s Quick Guide to the SDA.

The SDA is used for sectors that have a dedicated decarbonization pathway. The cross-sector absolute reduction method[16], or absolute reduction more generally, which requires absolute emissions reductions at or above a fixed annual rate (currently defined as 4.2% linear annual reduction), can be used by most sectors, especially those that do not have a sector-specific pathway. However, it is important to note that the buildings sector is an exception, as its sector-specific pathways are more ambitious than the cross-sector pathway due to various technologically and commercially mature options to decarbonize heating and cooling that are already available, including energy efficient building envelopes, heat pumps, and on-site renewables.[17] Therefore, companies operating in the buildings sector must adhere to sector-specific requirements for target-setting and minimum ambition levels as indicated in this guidance.

Figure 2. Illustration of an intensity convergence pathway - companies should converge to the sector average intensity (purple line) by 2050, setting near-term targets along the way.



[16] Formerly known as the cross-sector absolute contraction approach.
[17] Climate Action Tracker (2022)

4.2 Why does the buildings sector warrant dedicated guidance and pathways?

Decarbonizing the buildings sector is critical for meeting the objectives of the Paris Agreement. There are three compelling reasons why the buildings sector warrants dedicated pathways:

1. The vast scale of emissions from the buildings sector (as described in Section 1) and the rate of decarbonization necessary, which is different to other sectors.
2. The diversity and complexity of buildings' lifecycle GHG profiles across multiple typologies and in different geographies gives them a unique distribution of emissions compared to other sectors.
3. The large and diverse ecosystem of different stakeholders in the buildings sector involved in financing, development, ownership, and operation of buildings.

4.3 The lifecycle of buildings

The SBTi acknowledges the importance of taking into consideration emissions from all phases of a buildings' life cycle (see Table 4 and Figure 3). The buildings sector globally is increasingly moving towards performing whole life carbon assessments for all stages of the project life cycle and using these assessments as aids to inform planning, design, construction, and procurement of low-emissions buildings (i.e. RICS, 2023).

To support the sector to take a holistic view on emissions from buildings, this document provides target-setting guidance and methods to enable users to set targets on their embodied emissions at a portfolio level.

Figure 3. Diagram illustrating buildings life cycle and stages adapted from EN 15978:2011 (European Standard, 2012)

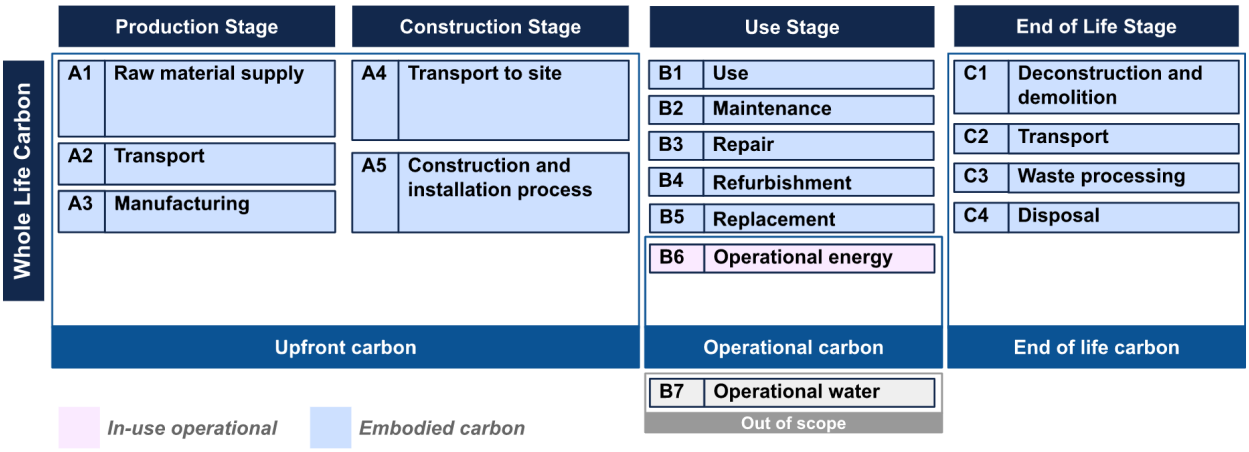


Table 4. Definitions of the phases of a building's life cycle.

PHASE	DEFINITION
Production (A1-A3)	Production refers to the stage in which the building materials and components are manufactured and processed. This phase includes the extraction and processing of raw materials, and the fabrication, packaging and supply of buildings products and materials.
Construction (A4-A5)	The process of planning, design, procurement, transportation and distribution of materials to the site, and building of the structure. It encompasses all activities related to the creation of a building, from the initial concept and design to the practical completion of the building.
Use (B)	A building's operational life phase. During this period, the building is ready for use, regardless of whether it is continuously occupied. Retrofitting activities also take place for general maintenance, to extend the building's useful life, and to improve energy efficiency through the introduction of new materials, products, and technologies. Retrofitting and deep energy renovation are increasingly deemed as pivotal actions in the building sector's decarbonization.
End-of-life (C)	The dismantling, destroying, wrecking, or removal of buildings or structures.

Emissions beyond a building's life can also be considered. However, these emissions are beyond the building's system boundary and are currently beyond the scope of science-based target-setting.

[Box 1]

Terminology used in this guidance and how it link to the life-cycle stages and modules illustrated in Figure 3:

- **In-use operational emissions:** Emissions associated with the operation of a building in its use stage. Module B6 in a building's life-cycle.
- **Upfront embodied emissions**: Emissions associated with materials and construction processes of new buildings. Modules A1-A5 in a building's life-cycle.
- **In-use embodied emissions**: Emissions associated with materials and construction processes during renovations and retrofits of existing buildings. Modules B1-B5 in a building's life-cycle.

[/Box 1]

4.4 Sector carbon intensity pathways

The SBTi has developed two sets of 1.5°C-aligned emissions intensity pathways for the buildings sector, one for in-use operational emissions and the other for upfront embodied emissions from newly constructed buildings. The SBTi Buildings Target-Setting Tool fully integrates both sets of pathways to allow users along the buildings value chain to set 1.5°C aligned science-based targets on their buildings portfolio using the SDA method.

It is up to individual users, based on their user type and business activities, to determine whether they require use of both SDAs when setting targets. It is imperative that corporates and FIs use appropriate targets to avoid delays or rejection in the validation process.

Further detail regarding activities in scope of target setting can be found in section 6.2. In addition, an explanation of how the pathways were developed can be found in the Appendix.

4.4.1 In-use operational emissions

In-use operational emissions are emissions associated with the operation of a building in its use stage, i.e. the energy needed for heating, cooling, power, including any fugitive emissions (B6), as illustrated in Figure 5.

[Box 2]

Setting SBTs with the CRREM-SBTi Global Decarbonization Pathways

In 2021, CRREM and the SBTi joined forces to develop new, 1.5°C-aligned decarbonization pathways for in-use operational emissions. These new pathways that are now used by both organizations for target-setting and risk assessment purposes were published in early 2023. Guidance users may be familiar with using CRREM's resources in understanding and developing their approach to decarbonizing their buildings. CRREM's resources support stakeholders in many ways, including the development of carbon mitigation strategies for their buildings portfolios or to assess climate-related transition risks (CRREM, 2023a).

The SBTi uses these CRREM-SBTi 1.5°C-aligned decarbonization pathways for target-setting for in-use operational emissions by applying the sectors-specific intensity convergence approach (SDA). The SDA derives bespoke decarbonization pathways for individual companies, based on the company's current portfolio, its performance and growth estimates. Companies may therefore notice differences in the target carbon intensity when comparing targets determined using the SBTi's in-use operational emissions SDA vs. modeling using the in-use operational decarbonization pathways only. For further information on the SDA, see the SBTi's report on the SDA (SBTi, 2015).

[/Box 2]

4.4.2 Embodied emissions

Embodied emissions refer to the GHG emissions associated with materials and construction processes throughout the whole life cycle of a building (WorldGBC, 2019). These emissions can occur throughout different life cycle stages of a building, as illustrated in Figure 3.

The intensity pathway developed for the buildings sector corresponds to upfront embodied emissions (A1-A5) only. The assumptions used to derive the sectoral budget for these emissions address changes in the activity of the sector holistically. As embodied emissions are typically scope 3 emissions for nearly all intended users of the buildings sector guidance, the published pathways serve only as proxy pathways to determine the remaining 1.5ºC-aligned carbon budget for the sector, and how it could be distributed for future new construction. For more details on the development of the pathway, please see section 10.2.2.

The inclusion of embodied emissions in target-setting helps bridge the gap in sector-specific SBTi guidance between the production of construction raw materials, as covered by sectoral guidance documents such as the SBTi Cement Guidance and the SBTi Steel Guidance, and the 'end products' of the buildings sector (i.e. the buildings themselves). Thus, despite manufacturing industries not being included as intended users of this guidance, the embodied emissions pathway reflects the intrinsic relationship between those industries and the buildings sector, and the key role emissions reductions from building material manufacturers play in meaningful decarbonization of the built environment. This novel pathway thus incentivizes a cross-sectoral drive towards decarbonization by allowing the inclusion of emissions from raw material production in the scope 3 of intended users of this guidance.

4.5 Definition of the sector covered by the pathways

This section addresses the applicability of the buildings sector guidance in terms of intended users, building typologies, and a building's life cycle stages.

4.5.1 Companies required to comply with the buildings criteria

This guidance is intended to be used by those companies for whom buildings-related emissions are substantial in relation to their overall activities. This may include both companies for whom buildings are a key part of the business' objectives (i.e. development, landlords) and those for whom buildings are a facilitator for doing other business, such as general office-based companies.

As such, companies shall use the buildings guidance to set targets on buildings-related emissions if **any** of the conditions introduced in Buildings-C1. Entities whose buildings-related emissions are below the thresholds in Buildings-C1 are encouraged to set targets following SBTi Corporate Net-Zero Standard.

Please note that entities which identify as a small or medium-sized enterprise (SME) can use either the streamlined target validation route for SMEs or the standard validation route to set SBTs.

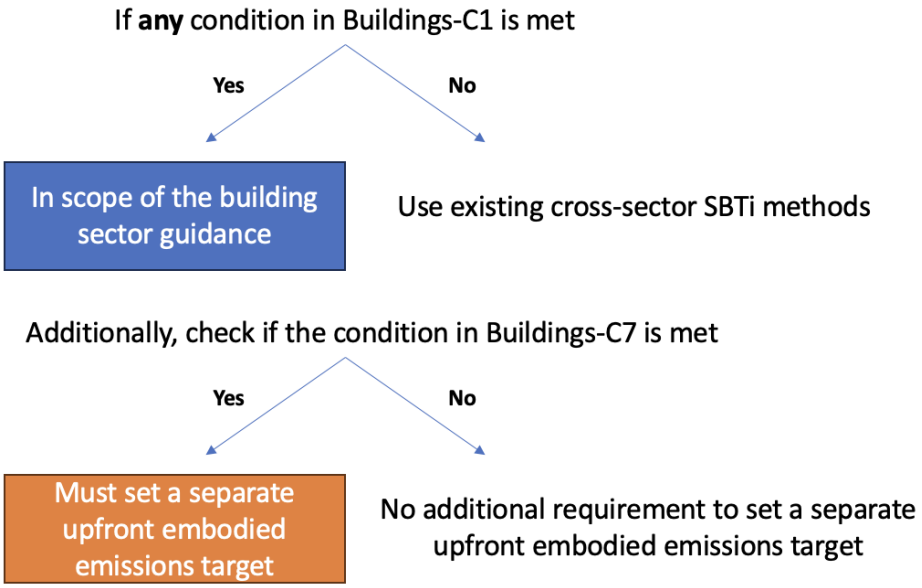
Important notes regarding the condition on upfront embodied emissions (Buildings-C7):

a) This condition is designed to identify companies that are responsible for significant upfront embodied emissions through the development or acquisition of new buildings, and therefore must use the buildings sector guidance to set targets covering their buildings-related emissions.
b) It also determines companies that are required to set a separate target that addresses their upfront embodied emissions.

c) Companies which do not satisfy any of the threshold conditions in Buildings-C1 can still use the buildings sector guidance and methods to set ambitious SBTs for their buildings-related emissions, but are not required to do so. The SBTi recommends companies use the most ambitious methods available to set SBTs.

As outlined in Figure 4 below, all users which meet any of the threshold conditions in Buildings-C1 must also check whether the threshold condition in Buildings-C7 is satisfied when developing their targets.

Figure 4. Who is required to set an upfront embodied emissions target?



4.5.2 Intended users

The buildings sector is broadly a heterogenous, complex sector with various entities spread across the buildings value chain. However, as all users within this sector engage with one 'product', i.e. buildings, common 1.5°C pathways are possible. The pathways are customized to accommodate different building typologies and specific countries[18], influencing the necessary targets themselves.

This guidance provides new, sector-specific target-setting methods for building developers, owners, tenants, managers, and financial institutions. Although architecture, engineering, and construction companies were explored as a part of the development of this guidance, these companies should continue to use SBTi's cross-sector guidance and methods to set targets. Please refer to appendix 10.4 for more details. A notable exclusion from the scope of intended users of this guidance are upstream

[18] Country-level pathways available only for the in-use operational emissions pathway.

manufacturing entities such as raw material producers and intermediate product processors and transporters. They are recommended to seek target-setting guidance from the sector-agnostic SBTi Corporate Net-Zero Standard or from sector-specific guidance documents where relevant.

4.5.2.1 Definitions of intended users

The user categories outlined below in Table 5 have been designed to encapsulate the range of stakeholders found in the buildings value chain. The list and definitions are non-exhaustive. The business activities listed are indicative only and are provided as examples of activities to help intended users understand if and how this guidance applies to their organization. They are intended to capture the wide range of responsibilities which might sit under 'umbrella' user types and are therefore not meant to exclude potential users.

Table 5. Definitions of the intended users of this guidance and their business activities

USER	DEFINITION	BUSINESS ACTIVITIES[19]
Developer	An entity which contracts for the construction of a building with the intent to either own or transfer ownership.[20]	• Project planning and design • Site selection • Project financing • Construction management • Regulatory compliance • Risk management • Aftercare
Owner-occupier	An entity that has ownership and operational control of the building, as they are occupying it or employing its use.	• Legal ownership of building • Operational control of building
Owner-lessor	An entity that has ownership of the building but does not occupy it. This entity is engaged in a lease with one or more third parties for total or partial occupancy and use	• Financial management • Financial ownership • Legal compliance • Authority over property management • Authority over contract management

[19] Non-exhaustive. Furthermore, not all business activities listed will be relevant for all companies within that intended user designation. Variations in core business activities due to diverse business models, and other factors such as leasing arrangements, are expected.
[20] For assessing whether a project qualifies as a new construction, refer to the 'new construction' definition in 2023 Real Estate Reference Guide, 2022.

USER	DEFINITION	BUSINESS ACTIVITIES[19]
	of the property. Depending on the leasing arrangement, an owner-lessor will exert varying levels of operational and financial control over the building.	• Authority over tenant relations and leasing decisions • Authority over investment management of the building • Leasing the property • Rent collection • Contract management and legal compliance • Financial management of building operations • Tenant relations and communication • Risk management • Property inspections • Repairs and maintenance • Facilitating and brokering sale of property, including the listing of properties
Tenant	An entity, to whom a lease is granted, which occupies a property without ownership of the building, in whole or in part.	• Use of building • Payment of rent • Compliance with building rules and regulations • Reporting of maintenance issues • Payment of energy consumption • Operational control of building (depending on leasing arrangements)
Property manager	An entity whose business involves acting as an agent overseeing the operational, financial, or investment management of a building, without the requirement of occupying or owning the property. This includes those providing transaction-related services (e.g. brokers, estate agents) where there is control of	• Leasing the property • Rent collection • Contract management and legal compliance • Financial management of building operations • Asset management to maximize property value and investment returns • Tenant relations and communication

USER	DEFINITION	BUSINESS ACTIVITIES[19]
	building operations and emissions and those managing buildings on behalf of clients.	• Risk management • Property inspections • Repairs and maintenance • Facilitating and brokering sale of property, including the listing of properties
Financial institution (FI)*	An entity whose business (5% or more of a company's revenue) involves the dealing of financial and monetary transactions, including deposits, loans, investments, and currency exchange.[21]	• Directly invests (equity, debt or loans) in a real estate asset or in a listed or unlisted real estate entity • Indirectly invests in real estate assets through investment in listed or unlisted real estate funds

*It is important to note that a company, categorized primarily as a non-FI intended user may undertake activities (i.e. investments) that fall under the FI category. For example, an integrated real estate developer may develop buildings for sale as their main business activity, while also investing directly or indirectly into buildings as part of their portfolio. These users should ensure they read the relevant sections of this guidance for both corporates (section 6) and FIs (section 7) and apply the relevant criteria and recommendations appropriately, ensuring coverage of their relevant business activities as a non-FI and FI user in line with SBTi general criteria. Real estate funds that directly invest in buildings (majority shareholding) would be classified as building owners and must follow the appropriate target-setting guidance for corporates. See section 7.2.3.3 for more information.

4.5.2.2 User classification

Users have discretion in selecting which user category or categories in section 4.5.2.1 best apply to their company's business activities within the buildings sector. Users must briefly explain their applicable intended user categorization when submitting targets for validation (Buildings-C2).

In practice, the building sector is composed of companies whose business activities, roles, and responsibilities are varied. Some users may find that they cannot place themselves firmly within one

[21] Definition of an FI provided in SBTi Financial Sector Science-Based Targets Guidance (v1.1, 2022).

category of user. For such companies, it is recommended that they select the most appropriate user type(s) from the options provided.

[Box 3]

Intended user classification

Example 1: An entity which owns and occupies part of a building, and leases out part of the building to a tenant, would classify as an owner-occupier and an owner-lessor.

Example 2: An entity which develops buildings would classify as a developer. If the entity also owns its own corporate offices, it would be further classified as an owner-occupier. If the entity also leases some floor space in a building (e.g. additional office space), it would be further classified as a tenant.

Example 3: An entity that directly owns buildings (as a majority shareholder or outright owner) for the purposes of letting out space in the buildings to tenants would classify as an owner-lessor and would follow guidelines for corporates (section 6) for target-setting. The same entity also manages indirect investments in real estate, on behalf of investors, so would further classify as an FI, following FI (section 7) guidelines and methods for target-setting.

[/Box 3]

4.5.2 Building typologies and geographies

Buildings with common characteristics can be categorized into individual ‘typologies’. The buildings sector guidance provides separate emissions pathways for available typologies and geographic locations for in-use operational emissions and upfront embodied emissions.[22]

An approach is provided in this guidance for selecting the most appropriate building typology and geographic location for assets, even where an exact match is not available.

4.5.2.1 Building typologies covered by this guidance

Table 6. Building typologies covered by the in-use operational emissions pathways

[22] The upfront embodied emissions pathways are currently only available at a global level.

BUILDING TYPOLOGY	SUB-TYPE	DESCRIPTION[23]
Office		Includes free-standing offices, office terraces, unattributed office buildings and office parks.
Retail	High street	Retail buildings located on the high street in a particular area, usually terraced buildings located in the city center or other high-traffic pedestrian zones.
	Shopping center	Enclosed centers for retail purposes. Examples may include, but are not limited to: regional malls and shopping malls.
	Warehouse	Refers to buildings in an unenclosed retail space, otherwise known as a strip center or strip mall, whereby buildings are usually stand-alone and situated side-by-side with their entrance facing a main street or carpark.
Hotel		Includes hotels, motels, youth hostels, lodging, and resorts.
Industrial distribution warehouse	Warm storage	Refers to a building in an unenclosed space, usually these are stand-alone buildings situated by a car park or truck loading areas as they act as a shipping hub, receiving shipments and holding items until they are loaded onto trucks and distributed elsewhere. Often the warehouses are in the form of large halls and are located around the outskirts of cities.
	Cold storage	
Healthcare		Buildings used for the purpose of primary health care. Examples may include, but are not limited to: hospitals, clinics, physical therapy centers and mental health centers.
Medical office		Offices specifically used for the purpose of medical administration, secondary research or other purposes, exclusive of the property types specified for Healthcare center.
Lodges, leisure & recreation		Includes lodging, sports club houses, gyms, sports stadia, indoor sports arenas, halls, swimming pools, theaters and auditoriums.

[23] Adapted from CRREM's Risk Assessment Reference Guide (CRREM, 2023c).

BUILDING TYPOLOGY	SUB-TYPE	DESCRIPTION[23]
Residential	Multi-family	Refers to multi-family residential buildings.
	Single-family	Refers to single-family residential buildings.
Buildings that are not covered with the building typologies above		Buildings that are not covered by the building typologies above must use the 'Other' pathway for in-use operational emissions.

Table 7. Building typologies covered by the embodied emissions pathway.

BUILDING TYPOLOGY	DESCRIPTION
Retail	Retail refers to properties used for commercial purposes that are primarily focused on selling goods and services directly to consumers. These properties may be located on a high street, in a shopping center, lifestyle center, or strip mall, and may be enclosed or open-air.
Office	Includes free-standing offices, office terraces, unattributed office buildings and office parks.
Residential	All residential properties, including but not limited to single-family and multi-family residential buildings, family homes (not including apartment blocks), student housing, retirement living and other residential properties.
Buildings that are not covered with the building typologies above	Buildings that are not covered by the building typologies above must use the 'Other' pathway for upfront embodied emissions.

4.5.2.2 Geographies covered by this guidance

Compared to other sectors, the buildings sector's 'products' are greatly influenced by the geographies in which they are constructed. Geographic considerations may affect the shape and form of the buildings themselves as they are designed in response to site-specific features such as climate, topography, and even local culture. This results in varying emissions profiles for buildings depending on their geographic location. For these reasons, the in-use operational emissions pathways are subdivided into narrower geographical boundaries where possible, enabling more tailored targets to be set. The upfront embodied emissions pathway provides global level data for reasons explained in the dedicated section below.

Please refer to section 6.4.3.3 for guidance for selecting a building's geography and to section 10.2 for more information regarding pathway development processes.

5 ACCOUNTING FOR BUILDINGS-RELATED EMISSIONS

Note: Guidance in section 5 is applicable to all intended users, including FIs, unless otherwise stated.

This section of the sector guidance intends to clarify and codify accounting and reporting of operational and embodied buildings-related emissions to enable intended users to set SBTs. It builds on the GHG Protocol, and aligns to other relevant accounting standards and guidance. Where any deviation from existing standards or guidance is necessary, explanations are provided. Companies may find it helpful to refer to additional guidance for data quality in commercial real estate provided in Table 5-14 of the PCAF Standard.

Nevertheless, the accounting and reporting guidance provided here is not exhaustive and should not be used as justification for claiming that particular emissions scopes or categories are not relevant to be reported: companies must determine and report emissions from all value chain activities in their scope 3 inventory, at a minimum using screening methods as stated in the SBTi Criteria and Recommendations for Near-Term Targets.

5.1 Whole building approach for in-use operational emissions

This guidance follows the 'whole building approach' (PCAF, GRESB & CRREM, 2023), which requires that all intended users include emissions arising from operational energy consumption and from landlord and tenant-controlled spaces within both their GHG inventory and target boundaries (Buildings-C3)[24].

This is because emissions from a single building can be categorized under different scopes depending on the user, their chosen GHG boundary consolidation approach (i.e. equity share, operational control or financial control), the lease type and utilities arrangements. For example, an Owner-lessor of a multi-tenanted building that purchases electricity for landlord-controlled spaces only and has adopted the operational control approach would categorize emissions arising from operational energy consumption from tenant-controlled spaces within scope 3.

Whilst the inclusion in the target boundary of an Owner-lessor of emissions from both tenant-controlled and landlord-controlled spaces is required through the whole building approach, the classification by

[24] The "whole building approach" as referred to in this guidance, always refers to in-use operational emissions only, and not embodied emissions.

scope and category of each energy supply might differ due to the consolidation approach chosen by the company, and therefore must be considered individually.

For tenants, the application of the whole building approach refers to the inclusion of a proportional share of emissions from landlord-controlled spaces in their inventory and subsequent target boundary. It is important to note that the application of the whole building approach for tenants does not refer to the inclusion of other tenants' emissions in their GHG inventory or target boundary.

For the application of this accounting practice, please consult the worked examples for targets set using the whole building approach.

The whole building approach raises ambition in the sector, encouraging collaboration to decarbonize a building's energy consumption and reduce emissions.

5.2 Market-based and location-based accounting

The Scope 2 Guidance of the GHG Protocol requires measuring and reporting of scope 2 emissions as part of the GHG inventory using two methods:

- A **'location-based'** approach that reflects the average emissions intensity of the local grid from which energy consumption occurs.
- A **'market-based'** approach that reflects emissions from electricity generation that companies have actively sourced using market instruments..

For setting a baseline and tracking progress towards achievement of SBTs, a single and consistent approach must be used for setting and tracking progress.

Additional guidance for intended users in the buildings sector:

- It is recommended that users adopt the location-based approach (Buildings-R2).
- If the market-based approach is chosen for target-setting, companies must measure and report their whole building in-use operational emissions intensity using the location-based approach, as an additional separate line item in their annual GHG inventory (Buildings-C13). A simple example is shown within Box 3 below.
- When the location-based approach is used, companies must take into account the actual location and regional grid performance of all assets within their portfolio.

[Box 4]

Example of requirement to disclose whole building in-use operational emissions.

Company A, an Owner-lessor, chooses the market-based approach to set their SBTs. As per Buildings-C13, Company A must also measure and disclose its whole building in-use operational emissions using the location-based approach. Company A's portfolio consists of 100,000 m2 of residential buildings across the USA.

Category	**Total annual emissions (tCO_2e)**	
Scope 1	300	
Scope 2 location-based	1,700	
Scope 2 market-based	1,200	
Scope 3	4,000	
		Target
Total whole building in-use operational emissions (S1+2+3) *Scope 2 market-based*	5,700 (Scope 1: 300 Scope 2: 1,7000 Scope 3: 4,000)	*"Company A commits to reduce scope 1, 2 and 3 in-use operational GHG emissions of owned and leased buildings by 60.2% per m^2 by 2030 from a 2021 base year."* Whole building in-use operational emissions intensity in the base year is 57.00 $kgCO_2e$/m2 and the company must report progress against its target using the market-based accounting method throughout the years.
Total whole building in-use operational emissions (S1+2+3) *Scope 2 location-based*	6,200 (Scope 1: 300 Scope 2: 11,700 Scope 3: 4,000)	No target set, but the company must disclose its in-use operational location-based emissions intensity, which is 62.00$kgCO_2$/m2 in the base year.

[/Box 4]

5.3 Building lifetime assumptions

Note: This section is only applicable to Developers.

The GHG Protocol Scope 3 Standard states that total expected lifetime emissions from all relevant products sold in the reporting year must be included under scope 3 category 11 “Use of sold products”. For intended users of the buildings guidance required to include emissions from this category within their GHG inventories and targets (see Buildings-C6), this means that the assumed expected lifetime of each sold building is a key input to emissions calculations.

Users may account for upfront embodied emissions of existing buildings[25] by the building seller at the point of transfer.[26]

The GHG Protocol recognises that companies that produce more durable products with longer lifetimes, such as buildings, could appear to be penalized because, as product lifetimes increase, scope 3 emissions increase, assuming all else is constant. To reduce the likelihood for emissions data to be misinterpreted, the GHG Protocol recommends companies to also report relevant information such as product lifetimes and emissions intensity metrics (e.g. $kgCO_2e/m^2$, kWh/m^2, or $tonnes/m^2$) to demonstrate product performance improvements over time.

5.4 Accounting for upfront embodied emissions of new buildings

Existing guidance for the buildings sector recommends that both the developer and the first owner both account for the upfront embodied emissions of newly constructed buildings (UKGBC, 2019). The SBTi’s Buildings Sector Guidance extends this to include financiers of new building development (either through direct investment or corporate loans). However, target-setting for financed embodied emissions for FIs is optional.[27]

5.4.1 Defining a building’s first owner

Note: This section is applicable to Developers, Owner-occupiers, and Owner-lessors.

’New buildings’ are defined as new constructions developed (i.e. reached practical completion) or acquired by the intended user.

[25] See section 5.4.2 for the definition of a new construction.
[26] “Strict interpretation of the GHG Protocol would require the accounting of all whole life emissions for every building sold as well as the accounting of all cradle-to-gate emissions for buildings purchased. However, it is currently difficult for the commercial real estate sector to gather accurate data on whole life impacts for existing buildings” (UKGBC, 2019).
[27] See section 7.2 for further guidance for FIs on this topic.

There can be many different parties involved in the sale or transfer of a new building. Should a new building pass through one or more in rapid succession, (e.g. holding companies or other parties involved in the transaction without control over rental leases or building management) following sale or transfer by the developer and acquisition by the intended 'first owner', it is ultimately the first owner and the developer, who should account for the upfront embodied emissions associated with the new building. As such, these emissions must be included in that user's emissions inventory and target boundary even if they may not be the first owner verbatim. Thus, the first owner starts the use phase of a new building.

Once this 'first owner' sells the building, all subsequent owners will have substantially limited influence over the already emitted upfront embodied emissions and are therefore not required to set targets for the upfront embodied emissions of the acquired building.

It is possible that the same company is both the developer and the first owner of a building. When a developer completes the construction of a building and occupies or leases it, the relationship they have to the building changes from that of a developer to a first owner. The upfront embodied emissions must be reported by the company only once, at practical completion by the latest (please see section 5.4.3). In these cases, no subsequent owners are required to report the upfront embodied emissions of the building.

[Box 5]

Example identifying the 'first owner' of a new building

Developer A contracts a construction company, Company B, to construct a new office building. Developer A sells the office building to Company C, a holding company. After a few months, Company D acquires the building from Company C. Company D is the ultimate first owner of the building, and occupies it for their own use. Financial Institution E provides a loan to Company D to acquire the building. In this example, all activity took place in the chosen base years for each company and the financial institution. Only Developer A and Company D are therefore required to include the upfront embodied emissions of the building in their target boundary, Company D as a first owner of the building and Developer A as a developer. Targets on financed upfront embodied emissions are currently optional for Financial Institution E.

[/Box 5]

5.4.2 Defining a new building

Note: This section is applicable to Developers, Owner-occupiers, and Owner-lessors.

To assess whether a project qualifies as a newly developed/constructed building, this guidance refers to the 'new construction' definition in the GRESB Reference Guide (GRESB, 2022):

> **New Construction:** 'Includes all activities to obtain or change building or land use permissions and financing. Includes construction work for the project with the intention of enhancing the property's value. Development of new buildings and additions to existing buildings that affect usable space can be treated as new constructions.'

A 'new construction' thus differs from a 'major renovation' as defined below (GRESB, 2022):

> **Major Renovations:** 'Alterations that affect more than 50 percent of the total building floor area or cause relocation of more than 50 percent of regular building occupants.'

In the context of this guidance, upfront embodied emissions refer to the upfront emissions from construction of projects classified as 'new construction'.

5.4.3 Accounting practices for developers

Note: This section is only applicable to Developers.

Developers typically use one of two methods when accounting for the upfront embodied emissions of new buildings, depending on their accounting preferences. Both methods are valid for setting SBTs:[28]

> **Method 1: Accounting for the amount of construction completed that year**
> In this method, developers account for the upfront embodied emissions of a building project annually as the construction occurs, even if the project is not finished. Upstream emissions from the extraction, production, and transportation of building materials, as well as all emissions related to the construction of the building are accounted for under scope 3 category 1 purchased goods and services, in the year in which they occur.

[28] For further details on applicable target-setting methods for upfront embodied emissions, see section 6.2.3.

The benefit of this method is that it aligns with existing GHG and financial annual reporting cycles. The principal drawback of this method is that as projects are not completed, it is not possible to use intensity-based target-setting methods, which require calculation using both a total embodied emissions numerator and a corresponding completed floor area (m^2) for the denominator. In addition, the embodied carbon performance of buildings under construction may be obscured by fluctuating levels of activity in a developer's portfolio (e.g. the yearly quantity of cement purchased by a developer could be used for the construction of several energy efficient buildings or a single poorly performing asset) leading to potentially reduced transparency for stakeholders.

Users choosing to use this method must use cross-sector scope 3 target-setting methods (see section 6.2.3).[29]

Method 2: Accounting for finished buildings, at practical completion
In this method, the building is treated as a 'capital good' and upstream emissions from the extraction, production, and transportation of building materials, including all emissions related to the construction of the building, are accounted for under scope 3 category 2 capital goods by the developer in the year in which the building reaches practical completion.

The benefit of this method is that it provides the total emissions and floor area data needed to be able to apply the intensity-based SDA target-setting method. The principal drawbacks of this method are the multi-year time lag between actual emissions to the atmosphere and accounting by the developer, as well as the potential for large fluctuations in total reported emissions in years with projects that reach completion.

Users choosing to use this method may use sector-specific target-setting methods to set targets for upfront embodied emissions (see section 6.2.3).

Developers are encouraged to consider the nature of their involvement in the construction project when choosing the GHG accounting methodology for upfront embodied emissions. For example, companies which are directly involved in the procurement of building materials for a development might find Method 1 to be a more accurate representation of their activities, whilst a company which only provides financing and overview of a development, outsourcing construction to contractors, might prefer Method 2.

[29] General rules and guidance for target-setting for non-buildings-related emissions are found in the SBTi Criteria and Recommendations for Near-Term Targets and Corporate Net-Zero Standard Criteria.

Whichever accounting method is chosen, developers should report the upfront embodied carbon intensity of their completed developments as an additional disclosure to increase transparency and data availability in the sector (Buildings-R6).

5.4.4 Minimum boundary for upfront embodied emissions calculations

The upfront embodied emissions pathways are developed by allocating a global carbon budget to the construction activities and then to construction of new buildings. Please refer to the Global 1.5ºC embodied emissions pathways development description for a more detailed description of the pathway development process.

When calculating upfront embodied emissions from newly constructed buildings, companies should strive for as accurate and detailed calculations as possible. The life cycle assessment scope must include at least structural elements, building envelope, internal walls and finishes. Technical equipment is another important element that should be included in the assessment scope, however embodied carbon data availability for such products is highly limited.

5.5 Fugitive emissions

Under the GHG Protocol, all GHGs should be included in a company's inventory. Further, application of the whole building approach also requires fugitive emissions to be accounted for in a company's emissions inventory if relevant, even if typically associated with tenant-related scope 3 emissions[30].

The decarbonization pathways used to develop the in-use operational emissions SDA targets contain all GHGs, including fluorinated gasses. Therefore, for the purposes of setting SBTs (Buildings-C4):

- Companies shall include fugitive emissions, from all building types, within their in-use operational emissions and as part of their target boundary.
- Where data is not collected on fugitive emissions, companies must use an estimate and disclose their estimation methodology.

For further details on fugitive emissions in the buildings sector see Appendix 10.3.

[30] Fugitive emissions may be categorized under an intended user's scope 1 or scope 3 emissions, depending on the ownership, leasing arrangements, and control over the building in question. Whichever scope the emissions are categorized under, they shall be included within the user's target boundary.

5.6 Additional guidance to report buildings-related emissions in a GHG inventory

Table 8 provides additional guidance to report emissions from buildings' life cycle stages in a corporate GHG inventory.

Note: targets covering optional scope 3 emissions (e.g., indirect use-phase emissions according to the GHG Protocol) do not count towards the 67% minimum scope 3 coverage requirement.[31]

Table 8. Buildings-related emissions allocation in a GHG inventory

INTENDED USER	SCOPE 3 CATEGORY	EMISSIONS (EXAMPLES)
Developer	Category 11: Use of sold products	Lifetime in-use embodied emissions of sold buildings (in the reporting year)[32].
	Category 12: End-of-life treatment of sold products	End-of-life embodied emissions of sold buildings (in the reporting year).
Owner-occupier	Category 1: Purchased goods and services	Embodied emissions of materials and services purchased or acquired by the reporting entity (owner-occupier) for maintenance, repair, replacement, or refurbishment, as occurred in the reporting year.
Owner-lessor	Category 1: Purchased goods and services	Embodied emissions of materials and services purchased or acquired by the reporting entity (owner-lessor) for maintenance, repair, replacement, or refurbishment in owner-controlled spaces, as occurred in the reporting year.
	Category 13: Downstream leased assets	Embodied emissions of materials and services purchased or acquired by tenant for maintenance, repair, replacement, or refurbishment in tenant-controlled spaces, as occurred in the reporting

[31] SBTi Target Validation Protocol, 2023
[32] Embodied emissions during the use phase do not form part of the minimum boundary for this category according to the GHG Protocol and are therefore recommended only.

INTENDED USER	SCOPE 3 CATEGORY	EMISSIONS (EXAMPLES)
		year, where not already in scope 1, 2, or other scope 3 category[33].
Tenant	Category 1: Purchased goods and services	Embodied emissions of materials and services purchased or acquired by the reporting entity (tenant) for maintenance, repair, replacement, or refurbishment in tenant-controlled spaces, as occurred in the reporting year.
Property manager	Category 1: Purchased goods and services	Embodied emissions of materials and services purchased or acquired by the reporting entity (property manager) for maintenance, repair, replacement, or refurbishment in managed spaces, as occurred in the reporting year[46].
Financial institution	See section 7.2	

5.7 Acquisitions and divestments

It is important that acquisitions and divestments are addressed in this target-setting guidance, as multiple intended users can be involved, directly or indirectly, in the transfer of control and ownership of buildings. Thus, acquisitions and divestments form a large part of the economic activity which occurs within the sector.

5.7.1 Addressing the risk of misinterpreting divestments as emissions reductions

In general, divestment should not be used by intended users to report improved emissions performance.

There are many possible reasons for the divestment of single assets or even entire portfolios. However, there is a risk that the impact of such divestments on reported GHG figures could be misinterpreted by stakeholders as constituting an emissions reduction, rather than the asset having simply left the

[33] Embodied emissions during the use phase do not form part of the minimum boundary for this category according to the GHG Protocol and are therefore recommended only.

company's inventory boundary. Such an action simply shifts ownership of the asset from one party to another, without addressing the actual emissions to the atmosphere.

Efforts should instead be made to improve the actual performance of buildings through energy efficiency and other means in the period that they are held by a user, and to ensure that new developments are designed and built with the lowest emissions impact possible from the outset.

To address these concerns and improve transparency around this issue, users should disclose the following information (Buildings-R3):

- Emissions reductions from decarbonization of assets, (i.e. by using the like-for-like approach).
- Absolute emissions of assets divested in the reporting period

Reported information can be either quantitative and qualitative. They should be developed depending on data availability, completeness, and quality and with a view to ensuring the comparability between measurements.

5.7.2 Assets entering the portfolio during the base year

For buildings acquired during the chosen base year, the requirements for inclusion of the operational in-use emissions in the target boundary are:

- **If being acquired to sell,** the owner shall include emissions proportional to the period that they have held the asset during the reporting year. For example, if the building has been owned for only three months' out of twelve in the base year, the user shall include the actual emissions data if available for the hold period or 25% of the emissions in the base year emissions activity.
- **If being acquired for its own occupation or leasing (as lessor)**, the owner shall include emissions for the entire reporting year to ensure that the base year is representative of future portfolio activities as this is deemed an expansion of the portfolio. This is because including only partial building emissions in the base year inventory would imply better performance than what actual annual performance is.

Similarly, for tenancy or property management agreements started during the chosen base year, the tenant or property manager shall include emissions for the entire reporting year to ensure that the base year is representative of future portfolio activities.

5.7.3 Assets leaving the portfolio during the base year

In-use operational emissions for a building leaving the portfolio during the chosen base year shall be excluded from both the reporting year and base year calculation. To ensure that the base year is representative of future portfolio activity such divestments or terminated lease or property management agreements are deemed to be a reduction in the portfolio boundary and including emissions from the building over the whole year would imply an artificially inflated base year performance.

5.7.4 Partial occupancy

Buildings often have vacant space - i.e. are not fully occupied. While emissions quantification should reflect actual performance (PCAF, GRESB & CRREM, 2023) irrespective of occupancy, normalization may be applied for the purposes of setting a representative base year. This is because emissions intensity calculations derived from emissions data for partially vacant buildings as the numerator but using total building floor area as the denominator could imply better than actual performance.

If normalization is applied, 'average annual vacancy' should be used. However, the normalization must only be applied upwards. That is, vacancy may be assumed to go down, however vacancy cannot be assumed to go up. Vacancy rates can fluctuate over a building's lifetime and occur for a number of reasons, such as when a building is being held for sale or undergoing refurbishment.

5.8 Optional considerations for franchisors

Franchisors can have substantial influence over the lifetime emissions of a building. This is because the design and materials used in the construction of a new building owned as part of a franchise arrangement are typically mandated by the franchisor, not the franchisee, whilst the latter typically owns the building.[34] Examples of common buildings that can be found under franchise agreements include restaurants, fuel stations, supermarkets, cinemas, and hotels. According to the GHG Protocol Guidance for Scope 3 Category 14 "Franchises":

> *"Franchisors should account for emissions that occur from the operation of franchises (i.e. the scope 1 and scope 2 emissions of franchisees) in this category".*

To encourage low-carbon design and construction of buildings that are designed by franchisors, but owned by franchisees, and to ensure that accountability for embodied emissions sits with those that

[34] In the case where the franchisor owns the property and the franchisee occupies the property under a lease, the franchisor is the Owner-lessor and the franchisee is a Tenant, under the classifications provided in this guidance.

have the most influence, for the purposes of setting SBTs it is recommended that franchisors should include:[35]

- Upfront embodied emissions from franchisee buildings in their scope 3 category 14 emissions inventory, reported in the year of completion for newly constructed franchisee buildings[36] (Buildings-R7).

[35] Whilst franchisors are not a distinct intended user type themselves, this recommendation is applicable to all guidance users that are also franchisors.
[36] There are no requirements for franchisors included in this document, only recommendations. Embodied emissions do not form part of the minimum boundary for this category according to the GHG Protocol and are therefore recommended only.

6 HOW TO SET A SCIENCE-BASED TARGET

6.1 Overview

Note: Guidance in section 6 is applicable to all intended users, including FIs, unless otherwise stated.

Companies must initially ensure their GHG reporting aligns with the GHG Protocol, as it forms the basis of the following guidance and criteria. Furthermore, users are invited to consult the SBTi cross-sector resources, the SBTi How-To Guide or SBTi Getting Started Guide, followed by reviewing the requirements of target-setting in the latest versions of the SBTi Criteria and Recommendations for Near-Term Targets and the SBTi Corporate Net-Zero Standard Criteria. To understand these requirements in more depth, companies should then review the Target Validation Protocol for Near-term Targets and use the SBTi Buildings Target-Setting Tool to inform the development of their targets.

This section provides additional guidance for intended users of the buildings guidance to set near-term SBTs. Four steps are described:

1. **Determine target boundaries, scopes, and target-setting methods:** Review the SBTi general criteria and this sector-specific guidance document to determine how to set target(s) across relevant activities and scopes.
2. **Calculate emissions inventory**: Calculate base year and most recent year emissions inventories and activity following guidance provided by the GHG Protocol alongside this sector-specific guidance.
3. **Construct targets:** Model buildings-related emissions target(s) using the SBTi Buildings Target-Setting Tool. Other emissions may need to be covered by additional targets to meet the SBTi Criteria and Recommendations for Near-Term Targets and can be modeled using the standard SBTi tools.
4. **Submit targets to the SBTi**: Send a completed Target Submission Form to the SBTi.

6.2 Step 1: Determine target boundaries, scopes and target-setting methods

The following steps should be followed to determine which emissions should be covered by SBTs, and which approaches to use when calculating SBTs:

- Decide whether to set a near-term target only or target(s) aligned with the Net-Zero Standard too (which requires a near-term and a long-term target).

- Decide on a base year and target year for each target. Near-term targets must have a timeframe of 5-10 years from the date of submission. For those choosing to set a long-term target, any required long-term target year must be 2050 or sooner.
- Determine if a scope 3 target is either recommended or required according to the SBTi generic criteria and the sector-specific requirements in section 6.2.2.
- Set target boundaries according to the SBTi Criteria and Recommendations for Near-Term Targets and the sector-specific guidance below (and Corporate Net-Zero Standard Criteria if wishing to commit).
- Choose a target-setting method to apply to each target as listed in the guidance in Tables 2a, 2b and 2c in section 6.2.3.1.

6.2.1 Required target boundary

Intended users of the buildings sector guidance may carry out activities across the buildings value chain. For example, an integrated real estate company may design, build, develop, own, and operate its whole portfolio. Guidance users must follow the target-setting guidance for **all** user types applicable to their activities (Buildings-C2).

Additional requirement for setting near-term targets using the buildings sector guidance:

- All required scope 3 emissions categories as outlined in Buildings-C6 shall be included in a user's target boundary, irrespective of whether or not the user is required to set a scope 3 target according to SBTi's general criteria.[37]

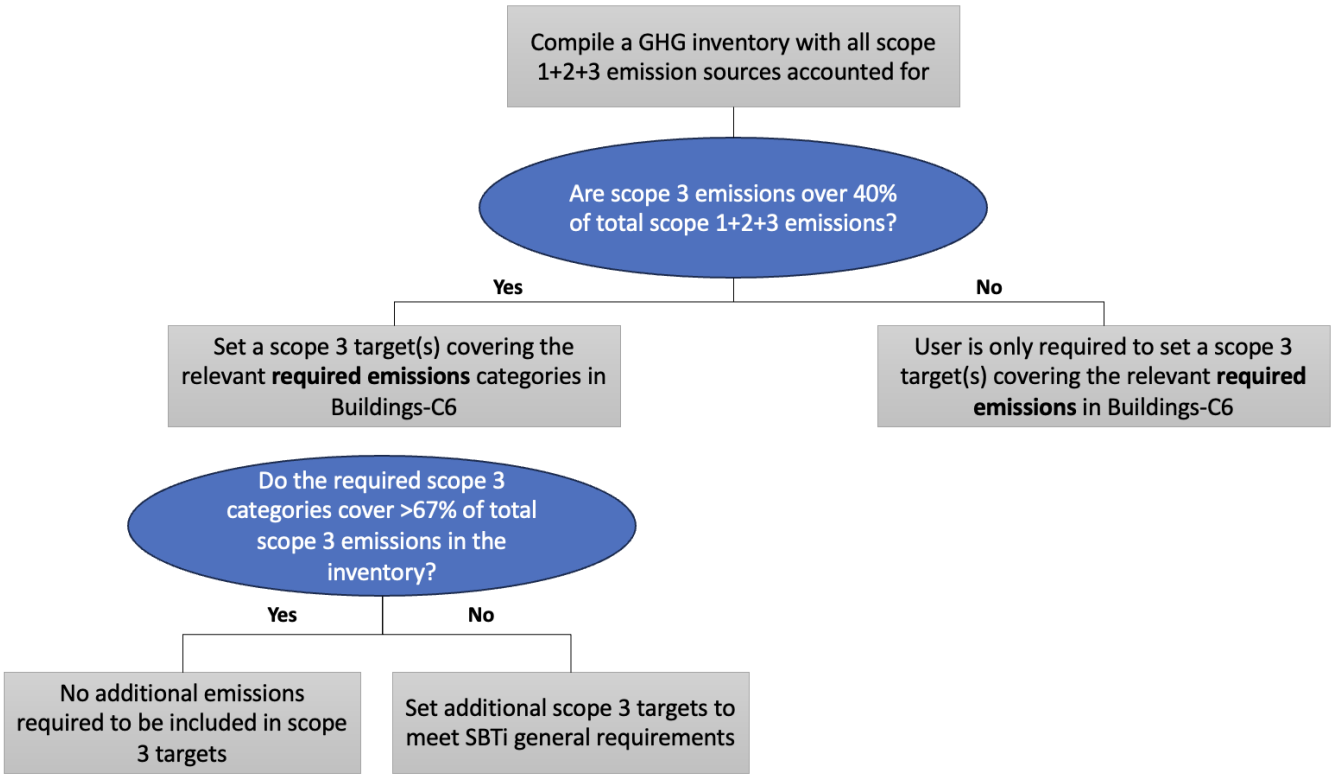
6.2.2 Required scope 3 categories

Required scope 3 categories for buildings-related emissions are shown in Buildings-C6, by user type. It is important to note that guidance on target boundaries is distinct from GHG accounting and reporting requirements. All relevant scope 3 categories must be included in the user's GHG emissions inventory, as required by the GHG Protocol.

The required emissions categories have been determined based on the relevance of each intended user's known business activities, the applicability of individual target-setting methods, and the company's level of influence over associated emissions reductions. The details of which emissions must be included within each user's target boundary are provided in Buildings-C6.

[37] This does not necessarily mean a separate scope 3 target is needed for this category; it could be combined with other scope 3 categories, or with scope 1 and 2 in the case of in-use operational emissions, under the whole building approach.

Figure 5. Flow chart clarifying target-setting for required scope 3 emissions for near-term targets



[Box 6]

Near-term target setting example

Company A, an Owner-lessor, is required to set a whole building in-use operational emissions target for several reasons:

- Company A's total scope 3 emissions corresponding to tenant energy use (category 13 downstream leased assets) exceed the threshold set in Buildings-C1.
- Buildings-C6 requires Company A to set a whole building in-use operational emissions target covering its buildings-related scope 1 & 2 emissions and scope 3 emissions from tenant energy use. It must apply the buildings in-use operational emissions SDA method to set this target (Buildings-C5).

- However, Company A does not meet the threshold in Buildings-C7 and so is not required to set a separate upfront embodied emissions target.
- To ensure minimum coverage of at least 67% of total scope 3 emissions in accordance with general SBTi general criterion C6, the company also decides to set a separate target on scope 3 emissions outside of the in-use operational emissions target boundary, using the cross-sector absolute contraction method.

[/Box 6]

6.2.2.1 Additional target-setting guidance for upfront embodied emissions

Note: This section is applicable to Developers, Owner-occupiers, and Owner-lessors.

Developers and (first) Owners are required to set a target on upfront embodied emissions if this emission source meets the threshold condition in Buildings-C7. Targets on upfront embodied emissions formulated with the SBTi cross-sector methods may be aggregated with other scope 3 emissions categories.

For companies that meet Buildings-C7:

Developers
Developers must choose and consistently apply an accounting method from section 5.4.3 when setting upfront embodied emissions targets.

A company may develop a new building with a view to owning and even managing the property itself in the long term, rather than selling to a buyer. In such cases, there is no 'product' (i.e. a building) being sold and consequently scope 3 category 11 (the use of sold products) and category 12 (end-of-life treatment of sold products) are not applicable. Therefore, the guidance regarding inclusion in the target boundary of lifetime estimates for operational and embodied emissions, as well as end-of-life emissions does not apply. This is on the basis that the leased spaces within the building are instead categorized according to the guidance provided for owner-lessors or owner-occupiers (UKGBC, 2019).

First owner
For the purposes of setting SBTs, intended users that are the first owner/acquirer of a new building shall set targets on upfront embodied emissions of new buildings acquired.

For companies that do not meet the threshold condition in Buildings-C7:

Such companies are strongly advised to consider their deal and development pipelines and model the anticipated embodied emissions impacts. This is because future completed developments or new buildings acquisitions could constitute a significant change[38] that may trigger a target recalculation in accordance with general SBTi general criteria and the potential need to set an upfront embodied emissions target as a result.

Companies that do not meet the condition in Buildings-C7 are nevertheless still strongly encouraged to measure and report upfront embodied emissions from any completed developments (developers) or acquisitions of new buildings (owners) using an intensity-based metric to increase data and transparency of embodied emissions within the industry.

6.2.3 Permitted target-setting methods for buildings-related emissions

Permitted target-setting methods for scope 1, 2 and 3 buildings-related emissions for buildings sector users are laid out in Tables 2a-2c in Buildings-C5. The SBTi recommends using the most ambitious method that leads to the earliest reductions and the least cumulative emissions.

For in-use operational emissions, users must use the in-use operational SDA as a target-setting method. Targets for upfront embodied emissions are recommended to be set using physical intensity convergence (SDA) or sector-specific absolute reduction, but the following **six** approaches are permitted: cross-sector absolute reduction, buildings sector-specific absolute reduction, physical intensity convergence (SDA), economic intensity reduction, physical intensity reduction, or supplier/customer engagement. For any other near-term targets, cross-sector methods can be used.

For scope 3 long-term targets, supplier/customer engagement targets may not be used. All other applicable target-setting methods may be used.

General rules and guidance for target-setting for non-buildings-related emissions are found in the SBTi Criteria and Recommendations for Near-Term Targets and Corporate Net-Zero Standard Criteria. Additional sector-specific guidance can be found in the table below. See section 7 for target-setting guidance for FIs.

[38] 'Significant change(s)' correspond to the significance threshold defined in the SBTi Target Validation Protocol.

6.2.3.1 Sector-specific target-setting method for whole building in-use operational emissions (scopes 1, 2, and 3)

Where the buildings in-use operational emissions SDA can be used, it must be used, as it is more ambitious than the cross-sector absolute reduction method.

Note: While delineation between scopes 1, 2, and 3 is unnecessary for considering whole building in-use operational emissions, this is not the same for scope 3 categories.This is because the in-use operational emissions SDA is based on a building's annual operational energy emissions in the use phase and for some scope 3 categories (e.g. scope 3 category 11 use of sold products in the case of developers), the in-use operational emissions of a building are calculated over its *lifetime*, rather than annually, to comply with the GHG Protocol[39]. In which case, the buildings in-use operational emissions SDA cannot be used and an alternate target-setting method should be applied, as outlined in Buildings-C5.

6.2.3.2 Sector-specific target-setting methods for upfront embodied emissions

Note: This section is applicable to Developers, Owner-occupiers, and Owner-lessors.

The SBTi has developed two sector-specific target-setting methods for users to set targets on upfront embodied emissions for new buildings. Both methods are more ambitious than the previous cross-sector well-below 2°C absolute reduction method and will help companies set ambitious targets on their upfront embodied emissions, which is a key aim of the buildings sector guidance:

Buildings upfront embodied emissions SDA
The sector pathway for upfront embodied emissions enables companies to set an emissions intensity reduction target that converges to a buildings sector-specific intensity. It is derived from the 1.5°C upfront embodied emissions pathway developed by Ramboll and SBTi for the buildings sector (see section 10.2.2 for further details).

Buildings sector-specific absolute reduction method
This method is a sector-specific method that functions similarly to the SBTi's cross-sector absolute reduction method. Absolute emissions are reduced by an amount that is, at a minimum, consistent with a buildings sector-specific pathway; in this case the 1.5°C upfront embodied emissions pathway developed by Ramboll and SBTi. For the buildings sector, the minimum annual sector-specific reduction

[39] GHG Protocol, Chapter 11. See section 5.3 for further details.

is 3.1% annually. This method is currently only applicable to upfront embodied emissions, as stated in Buildings-C5.

6.2.3.4 Sufficiency considerations in sector-specific target-setting methods

Company specific intensity pathways and thus reduction targets formulated with the SDA take into account an entity's current activity as well as the entity's projected market share in future, the so called 'm parameter'. Application of the 'm parameter' means that companies that expect faster growth than the industry in general will have steeper intensity targets. To demonstrate that intensity targets also lead to absolute emissions reductions, and to demonstrate progress through sufficiency measures, companies whose targets are expressed in intensity terms are recommended to also publish the absolute emissions reductions that will be achieved by their targets (Buildings-R8).

The absolute contraction method, in turn, may incentivize companies to build less as it requires companies to reduce emissions from their building activities in absolute terms.

6.3 Step 2: Calculate emissions inventory

In this step, companies should collect data for emissions for their base year and most recent year. All GHG accounting for target-setting must follow the SBTi Target Validation Protocol for Near-term Targets, the GHG Protocol Corporate Accounting and Reporting Standard and the relevant accounting guidance in section 5. If required to use the buildings sector SDA, users must also collect additional data, as outlined below.

Which data points are necessary for companies to use the buildings SDAs?

To set a science-based target using the in-use operational emissions or upfront embodied SDA, intended users of the buildings guidance must collect the following data:

- Base and target year[40] floor area, split by each applicable building typology and geographical region covered by the pathways[41]
- Base year emissions (in-use operational and/or embodied emissions)
- If the most recent year is not used as a base year, the GHG inventory of the most recent year must be calculated

[40] Unless using the "fixed market share" option
[41] Geographic breakdown of floor area is not required for the upfront embodied SDA as these pathways are global.

6.3.2 Selecting a representative base year

Companies need to establish a base year to set meaningful targets and track and report emissions performance consistently and meaningfully over their target period. General considerations for the selection of a base year can be found in the SBTi Corporate Manual.

As such, it is important that base year emissions should be representative of a company's typical emissions profile. Due to potential fluctuations in activity across buildings portfolios, intended users of the buildings guidance may use a rolling base year to set targets.

In this way, companies can assess representativeness of data by comparing inventories and business activity levels over time for the purpose of setting buildings-related targets. If it proves challenging to identify a single year that is representative, companies should instead average GHG data over multiple consecutive years (one of which must be the chosen base year) to form a more representative base period that flattens out fluctuations in emissions. The maximum duration of the rolling base year is three years[42].

[Box 7]

Selecting a representative base year example: Market conditions following the pandemic distort the number of buildings sold by a developer and thus the emissions from its use of sold products in a given year (e.g. 2020). In response, the developer could average emissions over 2019, 2020, and 2021 in order to develop a representative baseline.

[/Box 7]

6.4 Step 3: Construct targets

To construct their SBTs, intended users should follow these steps:

1. Forecast annual floor area figures to the target year (for SDA targets only).
2. Input the emissions inventory data from previous steps into the target-setting tools provided to calculate the reductions required for valid targets for scope 1, 2 and 3 following the additional guidance and examples in this document.
3. Decide on target wording according to the SBTi submission form and the guidance and examples given in this document.

[42] For the avoidance of doubt, averaging GHG data over multiple consecutive years is only permitted in this case to determine a representative base year. Averaging emissions over consecutive years should not be used to determine whether a company has met its target emissions intensity in its target year or to report interim performance.

6.4.1 Guidance on target setting

Target-setting guidance and a selection of examples are provided throughout this guidance and in a separate document with worked examples.

6.4.2 Combined-scope targets

Targets covering annual whole building in-use operational emissions will by design combine emissions across scopes 1, 2 and 3. When using the buildings in-use operational emissions SDA, the individual scope components of these targets do not need to be submitted separately for validation. However, companies shall report scopes 1, 2, and 3 separately as part of their GHG inventory, in line with the GHG Protocol.

As per SBTi general criteria, other targets that combine scopes (1+2 or 1+2+3) are permitted if the SBTi can review the ambition of the individual components of the target and confirm that each individual component meets the relevant ambition criteria[43].

Targets that are an aggregation of different target-setting methods, are permitted only where the following conditions are met:

- Data is submitted for validation that allows the ambition level of each scope or element to be checked separately.
- Aggregation is technically feasible e.g. two different SDA-based targets such as tCO_2 / t cement produced and tCO_2 / m^2 floor area cannot be aggregated as intensity targets as the denominators are different, whereas two absolute targets could be aggregated into one.
- Where intensity targets are converted to absolute targets, it is a requirement that the underlying intensity targets or sub-targets are reported also.

6.4.3 Using the SBTi Buildings Target-Setting Tool

The 1.5°C buildings pathways are integrated into SBTi's Buildings Target-Setting Tool. The tool, and the sections below, contains instructions for how the tool must be used (Buildings-C12).

[43] See SBTi Criteria and Recommendations for Near-Term Targets, Corporate Net-Zero Standard Criteria and Target Validation Protocol for Near-term Targets.

6.4.3.1 Selecting the correct growth rate in the tool

The SBTi Buildings Target-Setting Tool requires the user to input a company's growth rate/activity projection as part of the target calculation. This input differs on whether the target is being set for in-use operational emissions or upfront embodied emissions like so:

- For in-use operational emissions, the company must input its own projected floor area for the specific building typology and geography corresponding to its chosen target year;
- For upfront embodied emissions, the company must input its projected newly constructed floor area for the specific building typology corresponding to its chosen target year.

Care should be taken to choose the correct inputs and a credible growth estimation to avoid target recalculations later on.

6.4.3.2 Selecting a building type

In-use operational emissions
Users should align their assets and target-setting approach as closely as possible with the available typologies in the SBTi Buildings Target-Setting Tool, however, some assets may not be accurately covered by any typology e.g. places of worship, law courts, prisons (see Table 3 for the list of available typologies).

Where a building's type is not covered by the existing definitions provided, a default pathway is available in the tool, named 'Other'.

Companies submitting targets should provide an explanation in the Target Submission Form for using the default pathway. The default pathway must not be used where another pathway is applicable.

The SBTi may choose to update and expand the available building typologies, and accompanying emissions pathways, in the future. It is recommended that users keep up to date with subsequent SBTi communications regarding the buildings sector, to ensure targets are aligned with the latest climate science and emissions pathways for the sector.

When using the target-setting tool for mixed-use assets, users should only include the emissions (and associated floor area) from the relevant typology and set targets on different building typologies separately (see Box 8). The proportional floor areas by typology must sum to the total floor area of the mixed-use building.

[Box 8]

Approach for mixed-use assets in the buildings target-setting tool

Building A has a total floor area of 20,000 m^2. Its usage is split as follows:

- *90% of the floor area is used as an office.*
- *10% of the floor area is used as retail space.*

The user is setting an in-use operational emissions target for their portfolio (for simplicity, their portfolio consists only of Building A). When calculating their base year floor area inventory for 'Section A4: Enter emissions and activity data' in the tool, they will input 18,000 m^2 (90% of Building A's floor area) to their total floor area for office buildings in their portfolio in base year. Similarly, they will also add 2,000 m^2 (10% of Building A's floor area) to their total retail floor area.

[/Box 8]

Embodied emissions
Three embodied emissions typologies are provided in the SBTi Buildings Target-Setting Tool: Residential, Office, and Retail.

Where a building's type is not covered by the existing definitions provided, a default typology, 'Other', is available in the tool. Companies submitting targets should provide an explanation in the Target Submission Form for using the default pathway. The default pathway must not be used where another pathway is applicable.

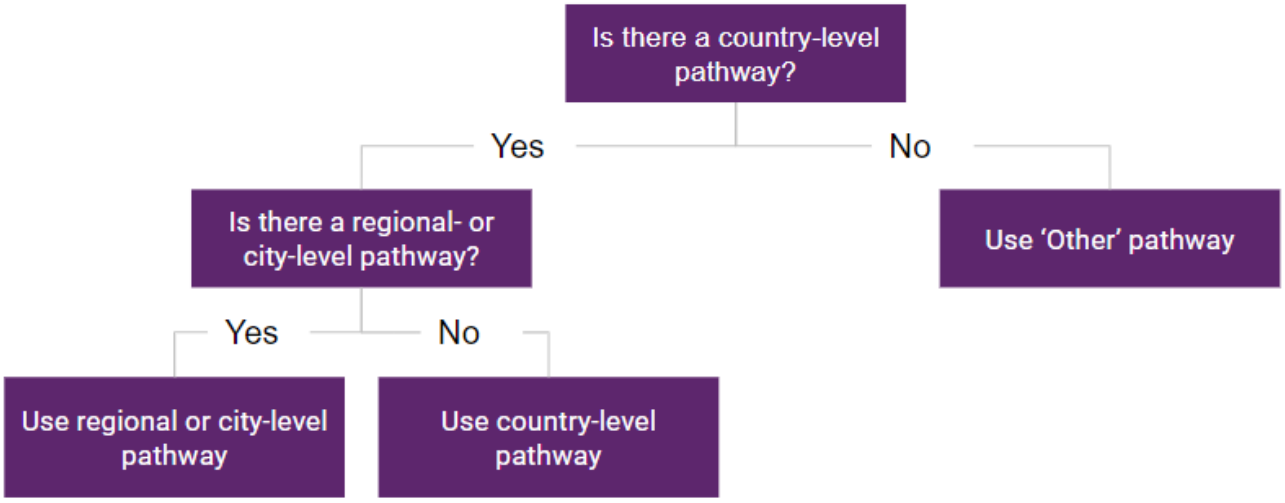
For mixed-use assets companies should select the typology which represents the highest share of floor area of the building (e.g. a building with 40% residential and 60% retail space would be categorized as 100% 'retail').

6.4.3.3 Selecting a building's geography

In-use operational emissions
Decarbonization pathways for a number of geographic regions (e.g. sub-regions, countries, cities) are provided in the SBTi Buildings Target-Setting Tool. It is recommended that users align their assets as closely as possible with the available geographies in the tool, however, some assets may not be adequately covered by the geographic breakdowns provided. Where an asset is located outside of one

of these locations, an 'Other' pathway is available (applicable to all building types). Users shall use the most precise applicable pathway for their buildings. For example, if a city-level pathway exists for a particular building (Houston), it is not permissible to instead select the associated country-level pathway (USA) for that building.

Figure 6. Selecting the pathway based on geographical location.



Further guidance is available in the SBTi Buildings Target-Setting Tool.

Embodied emissions
Embodied emissions pathways in the SBTi Buildings Target-Setting Tool are provided at a global level only.

6.4.4 Examples of target wording

Target wording examples

"[Company X] commits to reduce scope [1, 2 and 3] in-use operational GHG emissions of owned and leased buildings [xx.x]% per m^2 by [TARGET YEAR] from a [BASE YEAR] base year."

"[Company Y] commits to reduce upfront embodied scope 3 GHG emissions of new buildings [xx.x]% per m^2 by [TARGET YEAR] from a [BASE YEAR] base year."

"[Company Z] commits to reduce upfront embodied absolute scope 3 GHG emissions of new buildings [xx.x]% by [TARGET YEAR] from a [BASE YEAR] base year."

Long-term target-setting
To set long-term buildings sector targets using the buildings decarbonization pathways, use the SBTi Buildings Target-Setting Tool. For all other long-term targets, use the SBTi Net-Zero Tool.

6.5 Step 4: Submit targets to the Science Based Targets initiative

Companies should follow the general SBTi guidelines for submitting a target for validation. The following sections include some additional criteria and recommendations for buildings-sector companies.

6.5.1 Submission of targets and additional evidence

To determine if your buildings-related targets are science-based, the SBTi's team of validation experts will review your submission, validate it against our science-based criteria and communicate a decision and detailed feedback. Intended users of the buildings guidance must therefore complete the relevant forms as clearly, completely and accurately as possible, but also provide additional evidence to demonstrate that targets meet all criteria in terms of timeframe, emissions coverage, and ambition when disaggregated by typology and geography. The additional evidence must include all disaggregated emissions and activity data per building type and geography, as well as individual target calculations calculated using the SBTi Buildings Target-Setting Tool which correspond to the individual geographies and typologies present in the user's portfolio (Buildings-C11). Whilst users are not required to publicly report this additional evidence, the information will be used to validate buildings-related targets.

6.5.2 Recalculation and target validity

According to the SBTi general guidance, targets must be reviewed, and if necessary, recalculated and revalidated, at a minimum every 5 years. Additionally, existing targets shall be recalculated, as needed, to reflect significant changes[44] that could compromise relevance and consistency of the existing target[45]. These include significant changes in company structure and activities, significant adjustments to the base year inventory, and/or changes in data to set targets such as growth projections.

[44] 'Significant change(s)' correspond to the significance threshold defined in the SBTi Target Validation Protocol.
[45] Please refer to the SBTi Corporate Net-Zero Standard and the SBTi Target Validation Protocol for the list of changes that should trigger a target recalculation.

Within the buildings sector the following changes may indicate significant changes that should trigger a target recalculation:

- Significant changes in the building typology and/or geographical composition of portfolios.
- New geographies and/or building typologies are added to the portfolio (e.g. through acquisition, development, or business expansion).
- A significant proportion of the total portfolio floor area, as stated in the base year, has changed building typology due to major renovations[46].
- Acquisition or development of new buildings leading to a potential change in whether the condition in Buildings-C7 is met, resulting in the user being required to set an upfront embodied emissions target.

To avoid the requirement for repeated rebaselining for companies whose operating model consists of rapid acquisitions and divestments, section 6.5.3 outlines how these companies can set fixed intensity targets.

In addition to recalculating targets following significant changes, the SBTi recommends an annual review of the validity of targets developed using the buildings tool.

[Box 9]

Defining significant changes within SDA targets:

- A building in an existing geography and building type enters or exits the portfolio:

  The change is considered significant if the floor area of that specific building type and geography deviates by 5% or more below the base year floor area or exceeds the projected target year floor area by 5% or more.

- A building outside existing geographies and building types enter the portfolio:

  The change is considered significant if any of the following conditions is met:
  - In-use operational scope 1 and 2 emissions change by 5% or more
  - In-use operational scope 3 emissions change by 5% or more for buildings with all in-use operational emissions in scope 3
  - Upfront embodied emissions change by 5% or more.

[/Box 9]

[46] Defined according to GRESB (section 5.4.2)

6.5.3 Target-setting for users with high turnover portfolios

The process of acquiring or divesting buildings adds complexity to target recalculation. This is due to different rates of acquisition, divestment, and hold periods across business models and investment strategies in the buildings sector, affecting the stability of portfolios. Companies and FIs with a high level of turnover in their portfolios may therefore find portfolio-level target-setting methods challenging for the following reasons:

1. A reduced ability to effect building improvements due to short hold periods.
2. Difficulty in collecting complete and accurate whole building in-use operational emissions data (including tenant emissions).
3. A frequent requirement to recalculate targets due to regular, significant changes in the portfolio (as outlined in section 6.5.2).

To account for these challenges, the buildings sector guidance allows intended users whose business model results in a high turnover of assets, subject to the conditions below, to set **fixed intensity targets** aligned to sectoral decarbonization pathways for in-use operational emissions and upfront embodied emissions. This method requires companies to meet a specific portfolio emission intensity performance in the target year and exempts users from target recalculation in the intervening period.

This method works as follows (see worked example 7 for an example on how to set targets in worked examples):

- Set an in-use operational emissions intensity target and an upfront embodied emissions intensity target in line with the in-use operational emissions and upfront embodied emissions pathways respectively, for a chosen target year, using the SBTi Buildings Target-Setting Tool.
- Commit to ensuring that their portfolio emissions intensity is in line with (or better than) the ambition level set by the pathway for each individual year within the target period.
- Commit to reporting portfolio emissions intensity annually for transparency.

To qualify for this target-setting method, the following conditions must be valid:

- The user is classified as an owner-occupier, owner-lessor, or an FI; and
- The user can demonstrate high portfolio turnover is integral to their business model. A non-exhaustive list of examples is provided below:
    - The user is an opportunistic fund, acquiring older less efficient buildings and repositioning via refurbishment or redevelopment prior to sale i.e. they may have no common assets over a 36-month period.

- The user is an 'instant buyer', i.e. a real estate company that uses algorithms and technology to buy and resell residential buildings quickly.
- The user has a historical and/or projected average buildings portfolio turnover ratio over the next 5-10 years of over 70%, where the yearly ratio is defined as:

$$Portfolio\ turnover\ ratio(\%) = \frac{|divested\ building\ floor\ area\ (m^2)| + |acquired\ \ building\ floor\ area\ (m^2)|}{Average\ Portfolio\ Area\ (m^2)} \times 100$$

6.5.4 Maintenance targets

Corporates and FIs[47] that are classified as Owner-lessor, Owner-occupier and/or FI and meet the following conditions may set an emissions intensity maintenance target up to 2030 for their buildings portfolio:

- a portfolio emissions intensity that is at or below the 2050 sector intensity level in a 1.5°C-aligned pathway for its building typology- and geography-specific pathway, and
- a commitment to maintain the base year portfolio emissions intensity through 2030 and only finance and/or own and/or lease 1.5°C aligned real estate assets,
    - Where 1.5°C aligned financing for the real estate sector is defined as a commitment to only finance new developments that are zero-carbon-ready (i.e., highest energy efficiency class based on local rating schemes and either uses renewable energy directly or uses an energy supply that will be fully decarbonized by 2050, such as electricity or district heat) and/or existing developments if they have an emissions reduction plan consistent with limiting warming to 1.5°C with no or limited overshoot.

This maintenance target aims to accommodate corporates and FIs that have already achieved, at a portfolio level, the emissions intensity required to align with the 2050 sector intensity level in a 1.5°C pathway.

Commitment language should take the following form:

"[Company X] commits to maintain its scope [1, 2 and 3] in-use operational GHG emissions of owned and leased buildings at or below [xx.x]CO2e per m^2 up to [TARGET YEAR] from a [BASE YEAR] base year."

[47] FIs may refer to the SBTi Near-Term Financial Sector Science-Based Targets Guidance for additional options to set maintenance targets.

7 ADDITIONAL GUIDANCE FOR FINANCIAL INSTITUTIONS

Note: The SBTi strongly recommends that FIs thoroughly review this guidance document in full, including sections 1-6, before developing their targets. The relevant criteria and recommendations in section 2.1 also apply to FIs. This sector-specific guidance for FIs, including any criteria and recommendations in section 4.2, are in addition to the criteria and recommendations provided in the SBTi Near-Term Financial Sector Science-Based Targets Guidance.

7.1 Introduction and target audience

7.1.1 The role of financial institutions in the buildings sector

FIs play a critical role in providing the necessary funding and financing solutions that enable the various players throughout the buildings value chain to undertake their activities. This financing can come in the form of loans, bonds, or equity investments to support the development and construction of new assets, acquisition of existing assets, and ongoing management and maintenance of properties including through refurbishments, renovations, and upgrades.

In order to accelerate the decarbonization of the buildings sector it is therefore important for FIs to be able to set SBTs on their investment and lending portfolios related to real estate[48] assets and companies, demonstrating their commitment to align their portfolio emissions reductions to limit global temperature increase to 1.5°C above pre-industrial levels.

7.1.2 Context and target audience for this guidance

This section builds on existing SBTi guidance (Financial Sector and Private Equity Sector) to provide FIs with additional target-setting criteria and recommendations for investments and lending activities related to the buildings sector, aligned to a sector-specific 1.5°C decarbonization pathway. Any deviation from existing guidance has been highlighted.

For detailed guidance on setting targets as an FI, please refer to the SBTi's Near-Term Financial Sector Science-Based Targets Guidance and Private Equity Sector Science-Based Target Guidance.

[48] Many FIs are familiar with the term real estate when considering their financing activities. While there are meaningful differences between the terms 'real estate sector' and the 'buildings sector', in this section they are considered analogous and used interchangeably.

The SBTi defines an FI as a company whose business involves the arrangement and execution of financial and monetary transactions, including deposits, loans, investments, and currency exchange (SBTi, 2022a). More specifically, the SBTi deems a company an FI if 5% or more of its revenue or assets comes from the activities described above. In practice, the primary audience includes banks, asset managers[49], asset owners (pension funds, closed-end funds, insurance companies), private equity firms, and mortgage real estate investment trusts (REITs). This framework is also relevant for any FI that meets the definition above and has holdings in the following asset classes related to the buildings sector, where target-setting methods are currently available:

- Real estate assets
- Mortgages
- Corporate loans
- Equity (investment)
- Fixed income (investment)

Asset classes beyond this list are currently out of scope. Bilateral and multilateral development financial institutions (e.g., the World Bank) are not considered an intended user of the guidance.

Equity REITs, defined as real estate companies that own and/or manage income-generating properties and lease them to tenants, shall pursue the regular target validation route for companies and should refer to section 6 of this document for further guidance.

7.2 How to set science-based targets

7.2.1 Measuring financed emissions to facilitate target setting

Harmonized measurement and disclosure of financed emissions (scope 3 category 15) are key to ensuring comparability and transparency among FIs. The SBTi has identified the Global GHG Accounting and Reporting Standard for the financial industry, developed by the Partnership for Carbon Accounting Financials (PCAF), as a freely available approach to measure portfolio-wide or asset-level–financed emissions.

The Accounting and Reporting of GHG Emissions from Real Estate Operations authored by PCAF, GRESB, and CRREM builds on the PCAF Standard to provide real estate sector-specific guidance that is applicable to FIs.

[49] Real estate asset managers who tactically manage investments and their related properties, shall pursue the regular target validation route for companies and should refer to section 6 of this document for further guidance. Section 3.5.1.2 outlines the appropriate intended user definition for these companies.

7.2.2 Approaches to setting scope 3 portfolio targets

The SBTi supports three methods for FIs to set targets on their investment and lending portfolios: the sector-specific intensity convergence (SDA) method, the SBT Portfolio Coverage method, and the Temperature Rating method. The SBTi developed criteria specific to these three methods, which are used to assess the targets set using these methods. These methods use asset class approaches to link FIs' investment and lending portfolios with climate stabilization pathways. An asset class-oriented approach was chosen for this framework to take into consideration the varying degree of data availability, market liquidity, and levels of ownership of different asset classes.

Among these three methods, the SDA is the only approach that requires emissions measurement on an asset level. **As the SDA is also the only sector-based approach, it will be the focus of the guidance provided in this document.**

It is worth noting that while FIs may wish to aggregate their emissions data across multiple asset classes (e.g. equity investment in real estate companies, commercial real estate lending), in order to set a target on their real estate activities as one sector-level target; this approach may not be practical given the emissions data that would be needed. In addition to the SDA, FIs with a high turnover in their portfolio may use a fixed intensity target, provided they meet the eligibility criteria. Please see section 6.5.3 for further details.

The SBT Portfolio Coverage and Temperature Rating methods take an engagement-oriented approach focused on portfolio companies' actions to measure and reduce emissions. Both methods are applicable to all sectors for the corporate instrument asset classes.

SBT Portfolio Coverage is a financial sector analogue to supplier engagement targets for "real economy" companies' scope 3 emissions. The Temperature Rating Approach expands the scope of the SBT Portfolio Coverage Approach and enables FIs to assess the ambition of portfolio companies based on their public GHG reduction targets, as compared to approved SBTs only.

FIs may use one or more of these methods to develop asset-class level targets for an SBT submission. Please refer to the SBTi Near-Term Financial Sector Science-Based Targets Guidance for an overview of the methods by relevant asset class, followed by a description of each method.

7.2.3 Compiling a GHG inventory

Care has been taken in this guidance document to draw on existing GHG accounting guidance for the real estate sector, clarifying where necessary, and indicating which emissions must be included within an FI's target boundary for the purposes of setting SBTs.

7.2.3.1 Setting organizational and operational boundaries for financial institutions

To simplify target-setting, the SBTi Near-Term Financial Sector Science-Based Targets Guidance requires FIs to use one of either the operational control or financial control approaches in line with the GHG Protocol when accounting for emissions and include all investment and lending activities in scope 3, category 15 investments (financed emissions)[50].

Furthermore, FIs shall impose the PCAF Standard for the purpose of delineating emissions for scopes for accounting of financed emissions in the real estate sector. In practice, this means applying an operational boundary over the whole building and an attribution method based on a proportional share. The PCAF, GRESB & CRREM technical guidance provides further guidance on this topic to increase comparability and avoid double counting and emissions omissions.

Further, FIs can finance and invest in building assets in various ways and do so for different purposes, including their own use, acting as an owner-lessor, and/or for investment purposes (through equity investment or loans to finance/refinance the acquisition or construction of a building). This has implications for how emissions are accounted for and reported according to different scopes and categories by each intended user. The main drivers between how and where emissions are reported are:

1. The chosen consolidation approach by the FI.
2. Whether the FI is also leasing the building to others or acting only as an investor/lender.

GHG accounting for lessors of real estate (wholly owned, majority equity share, or controlling partner) must follow the GHG Protocol Corporate Standard, whereby the consolidation approach will match the objectives of the reporting of the FI (PCAF, GRESB & CRREM, 2023). These are **not considered financed emissions**.

Non-controlling actors (minority equity investments or lenders) in real estate will follow the PCAF Standard, whereby the relevant emissions (considered **financed emissions** and accounted for in scope 3, category 15 investments) are attributed to the appropriate level of aggregation using the

[50]See section 4.1.4 of SBTi Near-Term Financial Sector Science-Based Targets Guidance for further information.

appropriate financial share metric (PCAF, GRESB & CRREM, 2023). This approach means that the emissions from a single building can be distributed across scopes 1, 2, and 3.

Therefore, for the purposes of setting SBTs:

- Where an FI is an owner (occupier or lessor) of a building they should refer to section 6 for guidance on target-setting, following the GHG Protocol Corporate Standard. These emissions are not considered financed emissions.
- Where an FI finances real estate through investment or lending activities they should refer to the guidance in section 7. These emissions are considered scope 3 category 15 financed emissions.

7.2.3.2 Whole building approach for financial institutions

FIs shall include all in-use operational emissions from the entire building in GHG accounting ("whole building approach"). This requires the quantification of all in-use operational GHG emissions (including fugitive emissions) of buildings in operation, irrespective of the organizational boundaries or control approaches used by various stakeholders in their corporate reporting. This is referred to as the whole building approach (PCAF, GRESB & CRREM, 2023)[51].

Note that this approach does not contradict existing methods to allocate emissions to multiple investors based on the appropriate control approach or using PCAF attribution methods for real estate, and so these should still be used. In essence, the whole building approach ensures that in-use operational emissions from both landlord and tenant spaces, which have not always been considered together in the past, must be included in the user's target boundary.

7.2.3.3 In-use operational emissions from real estate

Table 9 summarizes the ways in which FIs finance real estate and how this affects the accounting of emissions from their investments in buildings as assets.

[51] See section 5.1 for more information.

Table 9. In-use operational emissions for FIs[52]

INVESTOR / LENDER ACTIVITY	USE OF ASSET	GHG EMISSIONS CLASSIFICATION FOR THE INVESTOR / LENDER	ARE THESE CONSIDERED FINANCED EMISSIONS?	GHG EMISSIONS ACCOUNTING FOR TARGET SETTING
Directly invests (equity) into a real estate asset and is a **majority** equity shareholder or controlling partner in a joint venture.	Investor occupies the building, for their own use (e.g. as their headquarters).	Investor's scope 1 and 2.	No	These are not considered financed emissions, however, for the purposes of setting SBTs these assets shall be included within an investor's target boundary. See section 6 for guidance on how to set targets as an owner-occupier. The investor shall abide by the whole building approach for in-use operational emissions.
	Investor acts as an owner-lessor.	Depending on the chosen consolidation approach and the lease type, these emissions are accounted for in the lessor's scope 1 and 2, and/or scope 3 Cat 13 (downstream leased assets).	No	Investors shall follow the GHG Protocol Corporate Standard, whereby the consolidation approach will match the reporting objectives of the FI. See section 6 for guidance on how to set targets as an owner-lessor. The

[52] Adapted from Accounting and Reporting of GHG Emissions from Real Estate Operations, 2023.

INVESTOR / LENDER ACTIVITY	USE OF ASSET	GHG EMISSIONS CLASSIFICATION FOR THE INVESTOR / LENDER	ARE THESE CONSIDERED FINANCED EMISSIONS?	GHG EMISSIONS ACCOUNTING FOR TARGET SETTING
				investor shall abide by the whole building approach for in-use operational emissions, ensuring that emissions from lessor and tenant spaces are included within the target boundary.
Directly invests (equity) into real estate asset and is a **minority** equity shareholder **or** any **debt investment** into a real estate asset (acting as a lender), **including mortgages.**	The use of proceeds is **known**, however, the investor/lender typically **cannot** dictate how the asset is used.	Considered financed emissions and accounted for in the investor / lender's scope 3 category 15 investments.	Yes	Investor/lender shall follow the PCAF Standard, with the relevant emissions attributed to the appropriate level of aggregation using the appropriate financial share metric. The investor/lender shall abide by the whole building approach, accounting for their proportional share of whole building in-use operational emissions.
Indirect investment into a real estate asset (e.g. through investment into a listed or unlisted	The use of proceeds is **unknown**, therefore the investor **cannot** dictate how the	Considered financed emissions and accounted for in the investor / lender's scope 3 category 15	Yes	Investor/lender shall follow the PCAF Standard, with the relevant scope 1, 2, and 3 emissions attributed to the

INVESTOR / LENDER ACTIVITY	USE OF ASSET	GHG EMISSIONS CLASSIFICATION FOR THE INVESTOR / LENDER	ARE THESE CONSIDERED FINANCED EMISSIONS?	GHG EMISSIONS ACCOUNTING FOR TARGET SETTING
real estate company[53], REIT, or fund, and business loans, corporate bonds etc.).	asset is used.	investments.		appropriate level of aggregation using the appropriate financial share metric. The investor/lender shall abide by the whole building approach, accounting for their proportional share of whole building in-use operational emissions, even if these are categorized in the investee's scope 3[54].

7.2.3.4 Embodied emissions from real estate

The SBTi's Buildings Sector Guidance is focused on upfront embodied emissions as defined in section 4.4.2. FIs may set targets on upfront embodied emissions from their loans and investments in real estate, however this is currently optional:

[53] For example REITs, developers, property management companies, construction companies, housing providers etc.
[54] For example, FI A invests in a publicly traded REIT which owns and leases buildings. The in-use operational emissions from tenant consumption in the REIT's buildings must be included in FI A's GHG inventory and target boundary.

Table 10. Optional target-setting for embodied emissions for FIs

INVESTOR / LENDER ACTIVITY	INCLUSION OF UPFRONT EMBODIED EMISSIONS IN TARGET BOUNDARY
Directly invests (equity) into a real estate asset and is a **majority** equity shareholder or controlling partner in a joint venture.	**Required, if the threshold is met in Buildings-C7.** These are not considered financed emissions and the FI should follow guidance in sections 5 and 6 for building first owners, with emissions categorized under scope 3 category 2 capital goods.
Directly invests (equity) into real estate asset and is a **minority** equity shareholder **or** any **debt investment** into a real estate asset (acting as a lender), **including mortgages.**	**Optional.** This would cover the majority of cases where FIs lend to building owners, developers, and construction companies to finance/refinance the purchase, development, or construction of buildings.
Indirect investment into a real estate asset (e.g. through investment into a real estate company[55], REIT, or fund listed or unlisted, business loans, corporate bonds etc.).	**Optional.**

Targets on upfront embodied emissions set using the available methods for upfront embodied emissions should be separate and not aggregated with in-use operational emissions targets or any other targets on embodied emissions from other stages i.e. in-use or end-of-life embodied emissions.

Additional disclosure recommendation for FIs
All FIs are strongly encouraged to report data on embodied emissions (at any life cycle stage, but particularly for upfront embodied emissions) for buildings they acquire or finance (Buildings-FI-R1).

For example, FIs should report the emissions intensity of total construction emissions per square meter for a given building, measured at practical completion, for any building they acquire or finance through loans to owners, developers, or constructors. This disclosure will increase transparency and data collection, and support future target-setting on these emissions.

[55] For example REITs, developers, property management companies, construction companies, housing providers etc.

7.2.4 Defining the boundary of portfolio targets

To seek approval from the SBTi, FIs shall follow the criteria in the Near-Term Financial Sector Science-Based Targets Guidance to set target(s) on their investment and lending activities[56]. Depending on the composition of their portfolios, an FI may be able to meet criteria using methods that do not require measurement of financed emissions. Therefore, it is possible that FIs do not need to quantify any financed emissions of their holdings or only need to do so in a partial manner.

Financial sector activities have been organized into three categories: required, optional, and out-of-scope activities to determine the target boundary. For detailed guidance on the minimum boundary of portfolio targets for FIs, including definitions of required, optional, and out-of-scope activities see SBTi's Near-Term Financial Sector Science-Based Targets Guidance.

7.2.5 Description of methods to set portfolio targets

This section provides a sector specific overview of methods available to set targets on FIs' investment and lending portfolios in the buildings sector.

7.2.5.1 Sector-specific intensity convergence approach (SDA)

The sector-specific intensity convergence (or SDA) is a method for setting physical intensity targets that uses convergence of emissions intensity. An intensity target is defined by a reduction in emissions relative to a specific business metric, such as production output of the company (e.g., metric tonne CO_2e per tonne product produced e.g. cement).

For buildings, this metric is metric tonne CO_2e per m^2 of floor area. In the buildings sector, two distinct decarbonization pathways utilizing the SDA method were developed, one for in-use operational emissions and another for upfront embodied emissions. For further details on how the SDA has been developed and applied to the buildings sector, see Section 4 of this guidance document.

The SDA is the only applicable method for several asset classes, as specified in the SBTi Near-Term Financial Sector Science-Based Targets Guidance. For the remaining asset classes, the SDA can be used on its own or with one or both other methods to collectively meet the minimum required boundary coverage. FIs should refer to the SBTi Near-Term Financial Sector Science-Based Targets Guidance for further detail on calculating emissions intensities for SDA targets. Detailed guidance on the methods to calculate financed emissions per asset class is provided in the PCAF Standard (2022).

[56] Partial targets will not be officially recognized and published by the SBTi even if they meet all relevant criteria.

Calculating the portfolio emissions intensity is the first step FIs need to take to set emissions-based targets. This is followed by converging the projected emission intensity to the same level as the sector-specific decarbonization pathway in 2050.

SDA for Real Estate
A real estate investment is the allocation of capital for partial or full ownership of property. This can be through direct (equity) investment into a property or through lending for commercial real estate.

Required targets on a real estate portfolio are set using the 1.5°C in-use operational decarbonization pathways, disaggregated by building typology and geography accordingly. FIs shall abide by the whole building approach when accounting for the in-use operational emissions of buildings.

FIs should use the SBTi Buildings Target-Setting Tool to set targets on their real estate portfolios. FIs are currently permitted to continue using the existing mortgages and real estate target-setting tool. However, this tool will be retired at a later date.

SDA for Mortgages (consumer loans)
A mortgage is a lending agreement to purchase a residential property in exchange for a regular repayment at interest, which the lender is entitled to with the condition that the loan becomes void upon the payment of the debt. Residential property refers to a building for a single family or multifamily that is used primarily for human dwelling (i.e., apartments and houses).

Required targets on a mortgage portfolio are set using the 1.5°C in-use operational decarbonization pathways, disaggregated by building typology and geography accordingly. FIs shall abide by the whole building approach when accounting for the in-use operational emissions of the household.

FIs should use the SBTi Buildings Target-Setting Tool to set targets on their real estate portfolios. FIs are currently permitted to continue using the existing mortgages and real estate target-setting tool. However, this tool will be retired at a later date.

SDA for Corporate Instruments
This methodology covers listed equity, private equity, corporate bonds, and corporate loans. Targets are set on the relevant “Required Activities” available in SBTi Near-Term Financial Sector Science-Based Targets Guidance.

Regarding the emissions scopes of investee/borrower companies that shall be included in the targets, FIs shall abide by the approach as set out by user type in section 6.2.2 including, at a minimum, the required scope 3 emissions for that user type. For instance, FIs’ targets on lending to an equity REIT,

categorized as an owner-lessor for the purposes of this guidance, must include their scope 1 and 2 emissions, as well as scope 3 category 13 'downstream leased assets' for in-use operational emissions in tenant spaces.

An exception to this is when the investee/borrower is categorized as a developer; for investments into this user type, FIs must use an engagement approach to set SBTs (Portfolio Coverage or Temperature Rating) and cannot use the buildings SDAs[57].

FIs' targets for operational and embodied emissions shall not be combined and must be set separately.

7.2.5.2 Other target-setting methods: Portfolio Coverage for Corporate Instruments

FIs may use the SBT Portfolio Coverage method to set targets on their corporate instrument asset classes, including corporate loans, listed equity and bonds, and private equity and debt to drive adoption of science-based targets. This method can be used on its own or with the other methods to collectively meet the minimum coverage for all "Required Activities." See SBTi Near-Term Financial Sector Science-Based Targets Guidance for further details on using this method.

FIs' borrowers and/or investees that are in scope of the buildings sector as defined in Section 4, shall follow the latest buildings sector criteria and recommendations for companies to set SBTs.

7.2.5.3 Other target-setting methods: Temperature Rating for Corporate Instruments

FIs may use the Temperature Rating Approach to address and cover corporate instruments, including corporate loans, listed equity and bonds, and private equity and debt (see relevant "Required Activities" in the SBTi Near-Term Financial Sector Science-Based Targets Guidance). Under this approach, FIs determine the current temperature score of their portfolio based on the public GHG emissions reduction targets of their borrowers and/or investees. It enables FIs to set targets to align their base year portfolio temperature score to a long-term temperature goal. This approach can be used on its own or with the other three methods to collectively meet the minimum coverage for all "Required Activities." See SBTi Near-Term Financial Sector Science-Based Targets Guidance for further details on using this method.

FIs' borrowers and/or investees that are in scope of the buildings sector as defined in section 4, shall follow the latest buildings sector criteria and recommendations for companies to set SBTs.

[57] This is because this user type is required to set targets on certain scope 3 emissions using non-SDA methods as part of their minimum requirements for SBTs. Developers must use the cross-sector absolute reduction method to set targets on scope 3 category 11 lifetime in-use operational emissions of sold buildings. As these emissions are not suitable for target-setting using the buildings in-use operational SDA, FIs also cannot use the SDA method for financing activities of these user types.

7.2.5.4 Approaches to set targets on other scope 3 categories

For FIs to focus their efforts on their investment and lending activities the SBTi recommends, but does not require, that FIs measure emissions and set targets on scope 3, categories 1–14, except in the case of direct investment in real estate (acting as an owner-occupier or owner-lessor) where a whole-building in-use operational emissions target must be set across scopes 1, 2, and 3 as stated elsewhere in this section.

7.3 How to communicate science-based targets and tracking progress

Refer to the Near-Term Financial Sector Science-Based Targets Guidance for further details. In addition, FIs are also recommended to disclose their emissions reductions in line with Buildings-R3. Refer to section 5.7.1 in the buildings sector guidance for further guidance on this topic.

7.4 Target recalculation and validity

General SBTi Near-Term Criteria and Recommendations for FIs are applicable, specifically on Recalculation and Target Validity.

FIs should also refer to section 6.5.2 of the buildings sector guidance for further guidance on this topic.

8 GLOSSARY

TERM	DEFINITION
ARA	Absolute Reduction Approach
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CRREM	Carbon Risk Real Estate Monitor
EAG	Expert Advisory Group
EMBODIED EMISSIONS	The greenhouse gas (GHG) emissions, measured in carbon dioxide equivalent (CO_2e), associated with materials and construction processes throughout the whole life cycle of a building
F-GAS	Fugitive gasses
FI	Financial institution
FLAG	Forest, Land and Agriculture
GHG	Greenhouse gas
GRESB	Global Real Estate Sustainability Benchmark
HVAC	Heating, ventilation and air conditioning
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IPMS	International Property Measurement Standard
LCA	Life-cycle Assessment
OPERATIONAL EMISSIONS	Emissions associated with the operation of a building in its use stage, also referred to as ‘in-use operational emissions’ or ‘in-use emissions’

PC	Portfolio coverage
PCAF	Partnership for Carbon Accounting Financials
RICS	Royal Institution of Chartered Surveyors
REIT	Real estate investment trust
SBT	Science-based target
SBTi	Science Based Targets initiative
SME	Small and medium-sized enterprise
T&D	Transmission and distribution
TR	Temperature Rating

9 BIBLIOGRAPHY

Carbon Risk Real Estate Monitor (CRREM), 2023a. CRREM, Objectives & Benefits

Carbon Risk Real Estate Monitor (CRREM), 2023b. From global emission budgets to decarbonization pathways at property level

Carbon Risk Real Estate Monitor (CRREM), 2023c. Risk Assessment Reference Guide - User manual for the CRREM Risk Assessment Tool V2.

Ellen Macarthur Foundation, 2020. Reimagining our buildings and spaces for a circular economy

European Standards, 2012. BS EN 15978:2011. Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method. [*accessed March 2023*]

United States Environmental Protection Agency (EPA), 2022. Fluorinated greenhouse gas emissions and supplies reported to the GHGRP.

German Sustainable Building Council (DGNB), 2020, ENV1.1 Building Life Cycle Assessment

Green Building Council Australia (GBCA), 2018, A Climate Positive Roadmap for Buildings

Greenhouse Gas Protocol (GHG Protocol), 2011. GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard

Global Real Estate Sustainability Benchmark (GRESB), 2023. 2023 Real Estate Reference Guide

Hu, S., Cabeza, L. F., & Yan, D., 2020 . Review and estimation of global halocarbon emissions in the buildings sector. Energy and Buildings, 225, 110311.

International Energy Agency (IEA), 2021. Net Zero by 2050.

International Energy Agency (IEA), 2023. Buildings, IEA. Paris, License: CC BY 4.0

Intergovernmental Panel on Climate Change (IPCC), 2022. Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, pp. 197-377.

Partnership for Carbon Accounting Financials (PCAF), 2022. The global GHG accounting & reporting Standard for Financed Emissions (v2)

Partnership for Carbon Accounting Financials, Global Real Estate Sustainability Benchmark, Carbon Risk Real Estate Monitor (PCAF, GRESB, CRREM), 2023. Accounting and Reporting of GHG Emissions from Real Estate Operations

Petrov, I. & Ryan, L., 2021. The landlord-tenant problem and energy efficiency in the residential rental market. Energy Policy, 157, 112458.

Royal Institution of Chartered Surveyors (RICS), 2020. Zero waste construction: the circular economy in numbers [*accessed March 2023*]

Royal Institution of Chartered Surveyors (RICS), 2023. Whole Life Carbon Assessment for the Built Environment, RICS Professional Standard, 2nd edition (Public consultation)

SBTi, 2015 Sector Decarbonization Approach (SDA) (v1.0)

SBTi, 2020. SBTi Criteria and Recommendations for Financial Institutions (v.Pilot)

SBTi, 2021. Pathways to Net-Zero - SBTi Technical Summary (v1.0)

SBTi, 2021. Private Equity Sector Science-Based Targets Guidance (v1.0)

SBTi, 2022a. Financial Sector Science-Based Target Guidance (v1.1)

SBTi, 2022b. The evolution of scope 2 accounting, target-setting and monitoring [blog]

SBTi, 2023. Draft Financial Sector Target-Setting Guidance (Public consultation)

SBTi, 2023. Getting Started Guide for Science-Based Target Setting (v.1)

SBTi, 2023. SBTi Corporate Net-Zero Standard (v1.1)

SBTi, 2023. SBTi Corporate Manual (v2.1)

SBTi, 2023. SBTi Criteria and Recommendations for Near-Term Targets (v5.1)

SBTI, 2023. Target Validation Protocol for Near-term Targets (v3.1)

UK Green Building Council (UKGBC), 2019. Guide to Scope 3 Reporting in Commercial Real Estate

United Nations Framework Convention on Climate Change (UNFCCC), 2020.Kyoto Protocol: Parties & Observers. [*accessed March 2023*]

World Business Council for Sustainable Development (WBCSD), 2023. Net-zero buildings - Halving construction emissions today

World Economic Forum (WEF), 2022. To create net-zero cities, we need to look hard at our older buildings [*accessed May 2023*]

Weidner T., & Guillén-Gosálbez G., 2023. Planetary boundaries assessment of deep decarbonisation options for building heating in the European Union

WorldGBC, 2019. Bringing embodied carbon upfront

United Nations Environment Programme, Yale Center for Ecosystems + Architecture & GlobalABC (UNEP, Yale CEA & GlobalABC), 2023. Building Materials and the Climate: Constructing a New Future

Ramboll, 2023. A 1.5°C Pathway for the Global Buildings Sector's Embodied Emissions.

10 APPENDIX

10.1 Choice of emissions scenarios for 1.5°C

The SBTi's procedure for developing target-setting methods always begins with determining a representative set of emissions scenarios. Such emissions scenarios should meet our criteria of plausibility (credibility of narrative), responsibility (reduced risk of not meeting the 1.5°C goal), objectivity (not biased towards any particular industry or organization) and consistency (they should have a strong internal logic).

In 2015, the Science Based Targets initiative (SBTi) developed the Sector-specific intensity convergence approach, a scientifically-informed method for companies to set GHG reduction targets necessary to stay within a 2°C temperature rise above pre-industrial levels.

However, the Paris Agreement and the recent IPCC 6th Assessment Report have highlighted the need to keep warming within a 1.5°C temperature rise. As such, the SBTi's buildings project is focused on the development of new methodologies, tools and guidance for the sector that build on the previously developed sector-specific intensity convergence methodology for buildings to create 1.5°C-aligned resources.

In particular, the SBTi's buildings project aims to achieve three objectives:

1. Establish a global pathway for buildings' in-use operational emissions aligned with 1.5°C.
2. Establish a global pathway for buildings' upfront embodied emissions aligned with 1.5°C.
3. Issue guidance on emissions accounting and reporting as well as target setting and validation.

By setting emission reduction targets in line with this goal and defining appropriate decarbonization strategies, companies in the building sector can help accelerate the transition to a net-zero economy and prevent the worst effects of climate change.

10.2 Development of pathways

The SBTi published an assessment of possible 1.5°C emissions scenarios for all sectors in its Pathways to Net-Zero: SBTi Technical Summary (2021). This reviewed estimates of the remaining emissions budget, top-down mitigation scenarios, and sectoral studies to determine 1.5°C-aligned pathways at the global and sectoral level. According to the IPCC, the remaining budget to limit global warming to 1.5°C with a 50% probability is about 500 GT of CO_2 (IPCC 2021). In aggregate,

1.5°C-aligned pathways used by the SBTi stay within the 500 GT carbon budget and reach net-zero CO_2 at the global level by 2050, under the assumption of at least 1-4 GT CO_2 removal per year by 2050. Within this framework, the SBTi developed a cross-sector emissions corridor that covers CO_2, CH_4, and N_2O emissions from energy supply, buildings, industry and transport based on published studies and expert judgment.

However, it was noted that further detail and study was required to accurately capture the variances in budget allocation for the buildings sector. Furthermore, it was decided that embodied emissions from buildings needed to be accounted for within the sector too. Therefore, the SBTi set out to develop 1.5°C-aligned science-based target-setting methodologies, tools and guidance for companies in the building sector for in-use operational emissions, as well as the first pathway for upfront embodied emissions.

10.2.1 In-use operational emissions pathway

The SBTi has provided global pathways for in-use operational emissions for commercial and residential real estate for several years. In order to offer the building sector more granular pathways reflecting different geographical locations and building typologies, the SBTi embarked on a partnership with CRREM in January 2022 to provide a joint set of 1.5°C-aligned pathways for the industry to decarbonize.

CRREM has been providing the industry with appropriate science-based carbon reduction pathways at building, portfolio and company level and financial risk assessment tools to cost-effectively manage carbon mitigation strategies since its inception in 2017. Their objective is to optimize the buildings sector's investments in energy efficient retrofits by making risks more transparent and by unveiling climate-related opportunities for property owners and investors. The CRREM project is therefore well-aligned with the goals of the SBTi's buildings project.

CRREM developed regional pathways for buildings by downscaling the 1.5°C emissions pathway for buildings from the Net Zero Emissions by 2050 Scenario (NZE) published by the International Energy Agency (IEA).[58] The 'Other' pathway, which is provided for buildings and geographies that are not covered by the existing CRREM pathways, is developed from the remaining carbon budget and projected floor area developments for the regions that do not currently have a CRREM pathway. For an in-depth explanation of the downscaling methodology used by CRREM to produce the in-use operational emissions pathway, please refer to their downscaling methodology document : 'From global emission budgets to decarbonization pathways at property level'.

[58] IEA (2021), Net Zero by 2050

The SBTi and CRREM technical teams have worked together to ensure that the underlying assumptions, carbon budgets, and methodological foundation for the in-use operational emissions pathways are fully aligned. Furthermore, CRREM's technical work underwent a thorough review process by the SBTi between August to September 2022. The methodology was assessed in comparison to relevant literature, methodological choices were subjected to sensitivity analyses, and limitations to the method were identified.

The CRREM in-use operational emissions pathway provides data for CO_2 emissions from the buildings sector globally (Figure 7), as well as for CO_2e emissions intensity in terms of floor area in square meters (Figure 8).

Figure 7. Graph showing the global carbon emission pathways on a square meter basis (CO_2-only) of 1.5°C scenario (CRREM, 2023b)

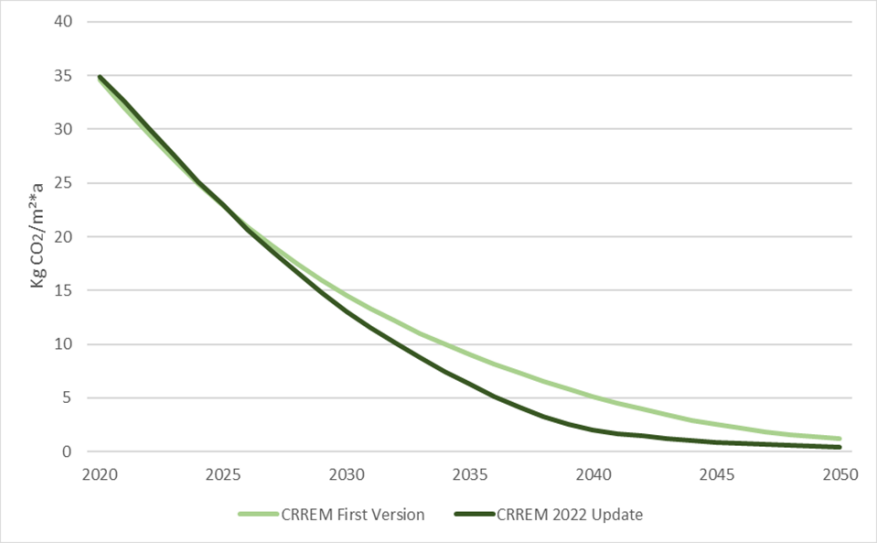
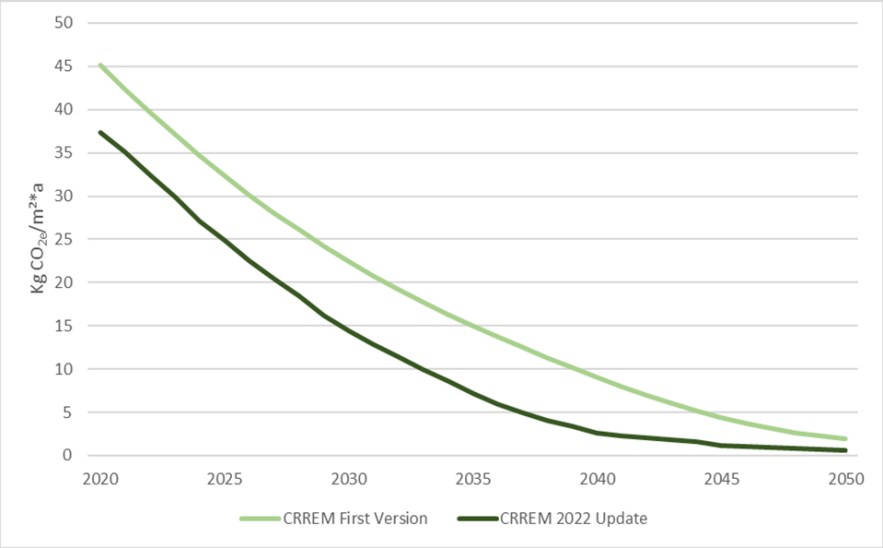


Figure 8. Graph showing the global building sector CO_2e intensity pathways (CRREM, 2023)



As observed, the CRREM pathway has become steeper following its 2022 update, highlighting the inadequate level of decarbonization which has been occurring in the sector.

10.2.2 Embodied emissions pathway

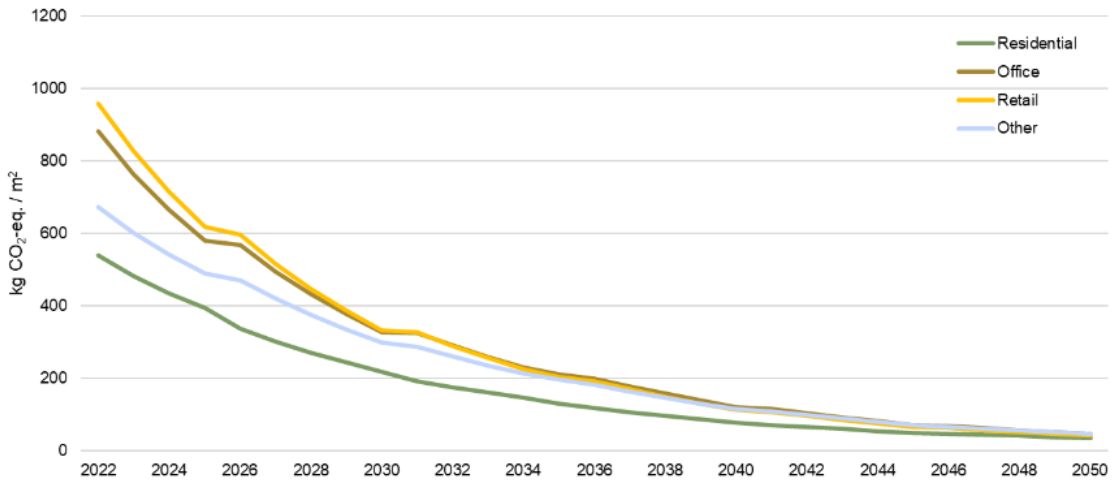
The SBTi has developed the upfront embodied emissions pathways together with Ramboll. A 1.5°C Pathway for the Global Buildings Sector's Embodied Emissions outlines in detail the process of developing the SBTi upfront embodied emissions pathways. The document, includes information regarding:

- The role of embodied emissions of buildings in the SBTi framework
- The scope of a relevant embodied carbon pathway
- Allocation principles for downscaling; and
- Development of the embodied emissions pathway.

Figure 9 shows the default pathway for the upfront embodied emissions of new buildings (including life-cycle stages A1-A5) using a grandfathering based downscaling approach, corrected for renovation.

Please refer to the supplementary document for further details.

Figure 9. Graph showing the decarbonization pathway for embodied CO_2 emissions in buildings, using scenario AR6 IPCC C1, grandfathering, corrected for renovation. (SBTi embodied emissions pathway development description, 2023)



10.3 Fugitive emissions in the buildings sector

Fugitive or 'F-gas' emissions are the most important non-CO_2 GHGs for decarbonization of the buildings sector. The U.S. EPA summarizes F-gasses as follows[59]:

> *The five main types of fluorinated GHGs are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), nitrogen trifluoride (NF3), and other fully fluorinated greenhouse gasses. These fluorinated GHGs can be emitted from F-gas production as by-products, reactants, intermediates, or products, and from process vents, leaks, container venting, or destruction processes.*

According to the IPCC, F-gasses account for 2.3% of total global GHG emissions, with 250% growth since 1990[60]. According to Hu et al. (2020), HFCs account for 8% of global building sector GHG

[59] EPA, Fluorinated greenhouse gas emissions and supplies reported to the GHGRP (2022).
[60] Parmesan, C. et al. (2022). Terrestrial and Freshwater Ecosystems and their Services. In: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 197-377, doi:10.1017/9781009325844.004

emissions as of 2017.[61] HFCs typically account for approximately 80% of F-gas emissions in buildings. HFCs are the most relevant F-gas in the building sector because of their use in refrigeration, cooling, heat pump, and fire suppression equipment. HFC emissions have increased steadily since 1990, when they were first adopted as substitutes for ozone-depleting chemicals following the Montreal Protocol. Increasing urbanization in developing economies, typically accompanied by increased demand for space cooling and refrigeration, will likely result in further F-gas emissions growth in a business-as-usual scenario.

F-gas emissions in the buildings sector occur primarily via leakage during equipment installation, operation, servicing, maintenance and disposal. Hermetically sealed systems and strict procedures for charging and discharging equipment can help to reduce leakage rates.

CRREM's downscaling methodology for the buildings sector aims to account for non-CO_2 GHGs such as F-gasses by implementing a tripartite pathway: CO_2-only, non-CO_2 GHGs, and all GHGs. This approach allows for buildings sector pathways and company targets that accurately account for F-gas emissions.

10.4 Additional guidance and recommendations for architecture, engineering, and construction firms

Architecture, engineering, and construction companies are vital to the decarbonization of the buildings sector, providing a variety of complex services typically involving collaboration among multiple companies. Table 11 below defines these intended users and includes a non-exhaustive list of typical services for illustration, some of which may be supplied individually by a specialist provider or more likely offered together by a multidisciplinary company.

Table 11. Architecture, engineering, and construction company definitions

INTENDED USER	DEFINITION	SERVICES (NON-EXHAUSTIVE)
Architecture or engineering company	An entity whose business involves the preparation or modification of a design, blueprint, plan, schematic or prototype which informs the	• Architectural design • Planning • Design specifications • Structural engineering

[61] Hu, S., Cabeza, L. F., & Yan, D. (2020). Review and estimation of global halocarbon emissions in the buildings sector. Energy and Buildings, 225, 110311. https://doi.org/10.1016/j.enbuild.2020.110311

	development and construction of a building and related structures.	• Mechanical, electrical, and plumbing engineering • Interior design • Project management • Producing construction documentation • Structural quality control • Site analysis and assessment • Feasibility studies
Construction company	An entity whose business is the construction, renovation, or structural alteration of a building, in whole or in part in compliance with design specifications, safety standards, and regulations.	• Construction site management • Lead contractor • Sub-contractors working on individual elements of construction projects • Site analysis and assessment • Project management • Preparing site for construction (which may include demolition of pre-existing structure) • Construction execution • Safety management
Building materials manufacturing or supply company	An entity involved in the manufacture or supply of one or more building materials such as steel, cement, concrete, sand and gravel, timber, or glass etc. that are used in the construction of buildings.	• Primary or intermediate product processing • Manufacturing, transport, or supply of relevant building materials

The SBTi Buildings Sector Guidance provides new, sector-specific target-setting methods for building developers, owners, tenants, managers, and FIs. Although architecture, engineering, and construction companies were explored as a part of the development of this guidance, these companies should continue to use SBTi's cross-sector guidance and methods to set targets for the following reasons.

Architecture and engineering companies:

There are no new target-setting methods available for these companies to use.

- The SBTi's buildings in-use operational emissions SDA is an intensity-based target-setting method that is calculated using an emissions numerator and a floor area denominator. For many such companies only involved in part of the design of a building (e.g. a building services engineer appointed to design the fire protection system), whilst it could be technically feasible to calculate emissions, the lack of an available coterminous floor area figure makes it impractical to apply this target-setting method. In addition, for planning, financial and other reasons, there can be a significant time-lag of many years between a completed design and a constructed building including changes to the design by additional designers. As the SDA method is derived from a sector-specific carbon budget, this time-lag makes this method less appropriate, compared to an absolute reduction approach.
- Whilst these companies must allocate in-use operational emissions from the use of building projects that have been constructed in their use of sold products[62], there is no consensus on the treatment of embodied emissions in their scope 3 using the GHG Protocol.

Construction companies:

In most cases, there are no new target-setting methods available for these companies to use.

- The buildings upfront embodied emissions SDA provides a target-setting method for companies covering the upfront embodied emissions of newly constructed buildings. As it is an intensity-based pathway, with floor area as the denominator, it requires upfront embodied emissions reported at practical completion as the numerator, rather than annual emissions from construction activities that may take place over multiple years.
- Further, construction activities frequently involve the collaboration of several companies and subcontractors, which are each responsible for separate features of the final building. It can therefore be impractical for construction companies to determine the share of their scope 1, 2, and 3 emissions that are attributable to the floor area of a newly constructed building, which is necessary to use the SDA method. However, where a construction company is the main contractor, they may be able to use the intensity-based SDA method, taking responsibility for all emissions involved in the construction of the building, and using the total floor area as the denominator. In these cases, construction companies may follow the same target-setting guidance as Developers in order to set targets on their upfront embodied emissions using the upfront embodied emissions SDA .

Additional recommendations on GHG accounting, target-setting, and reporting are also provided in order to increase transparency, promote best practice, and support the rapid reduction of emissions

[62] SBTi Target Validation Protocol. Targets set using existing SBTi cross-sector methods.

within the buildings sector. The additional recommendations in this section may be revisited in future versions of the buildings sector guidance.

10.4.1 Additional recommendations for architecture and engineering companies

Target-setting
Architecture and engineering companies should continue to use SBTi's cross-sector guidance and methods to set targets. The companies:

- Must allocate the emissions from the use of building projects that have been constructed as direct use-phase emissions in their scope 3 use of sold products, as required in SBTi's Target Validation Protocol.[63]
- May use customer engagement targets when setting near-term targets.[64]
- **Optional:** Companies may include whole life carbon (operational and embodied) emissions in their use of sold products.[65]

Additional disclosure recommendation

- Architecture and engineering companies are strongly encouraged to calculate and publicly disclose whole life carbon for all of their designed buildings, even if their work only relates to part of the final building. This is recommended as a separate disclosure, outside of the GHG inventory.

10.4.2 Additional recommendations for construction companies

Target-setting
Construction companies should continue to use SBTi's cross-sector guidance and methods to set targets. Please note:

- Depending on the accounting approach chosen for emissions, Construction companies may use the intensity-based SDA to set an upfront embodied emissions target for buildings where they are the main contractor, similarly to guidance provided for Developers (see 5.4.3).
- Construction companies may use supplier/customer engagement targets when setting near-term targets, as per the SBTi's Target Validation Protocol.
- Construction companies are also encouraged to include in-use and end-of-life embodied emissions in their scope 3 target boundary when setting SBTs.

[63] SBTi's Target Validation Protocol
[64] As stated in SBTi's Target Validation Protocol.
[65] Optional scope 3 emissions will not be counted towards the minimum two thirds scope 3 target boundary. See SBTi Corporate Manual.

Additional disclosure recommendation

- Construction companies are strongly encouraged to focus on improving the whole life carbon profile of their construction projects, whether they are a lead contractor or sub-contractor, and to improve the measurement and public disclosure of GHG emissions, particularly for embodied carbon.

10.4.3 Other upstream companies in the building sector

Another notable exclusion from the scope of intended users of this guidance are upstream manufacturers and suppliers of building materials (e.g. cement and steel). While their products are intrinsic to the buildings sector, and are involved in setting embodied emission targets, given the variety of materials required to construct a modern building (such as concrete, cement, steel, timber, stone, glass, foam etc.) which would each require specific decarbonization pathways, these companies are beyond the scope of the buildings sector guidance. They are recommended to seek target-setting guidance from the sector-agnostic Corporate Net-Zero Standard or any other sector guidance applicable to their activities.

END