SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

NEAR-TERM FINANCIAL SECTOR SCIENCE BASED TARGETS GUIDANCE

Version 2.0 - Consultation Draft

June 2023

VERSION HISTORY

Version	Change/Update Description	Date Finalized	Effective Dates
Pilot	The pilot version of the Financial Sector Science Based Targets Guidance	October 2020	October 2022 to January 2022
1.0	No changes made to the criteria/guidance. Version changed from pilot to 1.0 to recognize the end of the pilot phase.	February 2022	February 2022 to July 2022
1.1	Clarification for loan coverage metric, that financed emissions can be used to cover the 67% minimum threshold. Clarification to the coverage footnote (footnote B), that SME lending does not have to be included in the calculation of the minimum 67% coverage.	July 2022	August 2022 to February 2022
2.0	Updates to criteria FI-C6, FI-C8, FI-C17.1, FI-C17.3, FI-C17.4, and various clarifications – see page Appendix G for summary	June 2023 draft for public consultation	From September 2023 (to be confirmed)

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EXECUTIVE SUMMARY

The scientific community has clearly stated the need to reach net-zero global carbon dioxide (CO_2) emissions by mid-century to limit global warming to 1.5°C and to reduce the destructive impacts of climate change on human society and nature. While financial institutions' business models are vulnerable to climate disruptions, greater attention is also being given to the influence of investment and lending portfolios on climate outcomes. This transition is marked by unprecedented growth of environmental, social, and corporate governance (ESG) investments, a profusion of high-level climate commitments by financial institutions (FIs), and burgeoning financial regulatory action on climate-related financial disclosures.[1] FIs are seeking to lead zero-carbon transformation rather than just minimize risks related to climate impacts.

To decarbonize the global economy in alignment with the goals established by the Paris Agreement, all economic actors in the real economy need to reduce their greenhouse gas (GHG) emissions at a rate sufficient to be consistent with the emissions pathways established by climate science.

FIs differ from other economic sectors: they provide finance and other services to the companies that are responsible for reducing GHG emissions, rather than exercise direct control over GHG emission reductions. The central enabling role of finance is recognized in the Paris Agreement's Article 2.1(c) on "making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development." The Science Based Targets initiative (SBTi) defines FIs as companies whose business involves the dealing of financial and monetary transactions, including deposits, loans, investments, and currency exchange. If 5% or more of a company's revenue or assets comes from activities such as those described above, they are considered to be an FI.

The SBTi near-term framework for FIs aims to support FIs in their efforts to address climate change by providing resources for science-based target setting. The framework includes target setting methods, criteria, a target setting tool and this guidance document. This guidance document includes the following:

- Business case for setting science-based targets.
- Guidance for FIs to use the target validation criteria and recommendations, target setting methodologies and tools to prepare near-term targets for submission to the SBTi for approval.
- Case studies from global FIs on their application of target setting methods.

[1] On September 14, 2020, New Zealand announced it was the first country to require annual climate risk reporting by large banks, asset managers, and insurers; see https://www.afr.com/companies/financial-services/new-zealand-makes-climate- reporting-compulsory-20200915-p55vno. Meanwhile, the UK has made it mandatory, from April 6, 2022 on, for Britain's largest businesses to disclose their climate-related risks and opportunities, in line with Taskforce on Climate-related Financial Disclosures (TCFD) recommendations; see https://www.gov.uk/government/news/uk-to-enshrine-mandatory-climate-disclosures-for-largest-companies-in-law. Similarly, starting in 2024, sustainability reporting will be mandatory in the EU for large companies, including banks and insurance companies; see https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en. Also, the U.S. Securities and Exchange Commission proposed in 2022 the inclusion of climate disclosures in line with the TCFD and the Greenhouse Gas Protocol; see https://www.sec.gov/news/press-release/2022-46.

- Recommendations about how FIs can communicate their science-based targets, as well as how they aim to contribute to reducing GHG emissions in the real economy through the implementation of their targets.
- Recommendations on steps that FIs can take to achieve their targets, building on the understanding that setting targets is only one of various steps (high-level commitments, measuring financed emissions, scenario analysis, target setting, enabling action, reporting) that FIs need to take to ultimately reduce GHG emissions in the real economy.

The business case for setting science-based targets

FIs have historically focused on maximizing economic return on investment as a guiding principle and business model. However, the meaning of fiduciary duty, that is FIs' legal and ethical obligation to act in their clients' best interests, is shifting in the face of climate change. The new business case for FIs to set science-based targets for their investment and lending portfolios is based on a four-part rationale: resilience, policy, demand and innovation. Adoption of science-based targets can help FIs augment their resilience and competitiveness in the face of extreme weather events and other climate-related risks. By becoming change makers rather than change takers, FIs can effectively anticipate climate policy and regulatory shifts. Clients are increasingly demanding climate actions by their FIs, and science-based targets help to provide transparent credibility. Finally, science-based targets help direct FI innovation toward potentially higher-margin products that support emissions reductions in the real economy.

How to set science-based targets

FIs' largest impact on climate change is through their investment and lending activities; thus, it is essential they prioritize target setting in these areas. The SBTi has adopted an asset class–specific approach to enable robust and meaningful targets. After an extended stakeholder engagement process, the SBTi has selected four methods that link FIs' investment and lending portfolios with climate stabilization pathways, each of which can be used for one or more asset classes:

- Sectoral Decarbonization Approach (SDA): Emissions-based physical intensity targets are set for real estate and mortgage–related investments and loans, as well as for the power generation, cement, transport, pulp and paper, iron and steel, buildings, Forest, Land and Agriculture (FLAG), aviation and maritime shipping sectors within corporate instruments.
- SBTi Portfolio Coverage Approach: Engagement targets are set by FIs to have a portion of their borrowers and/or investees set their own SBTi-approved science-based targets such that the FI is on a linear path to 100% portfolio coverage by 2040.
- The Temperature Rating Approach: FIs can use this approach to determine the current temperature rating of their portfolios and take actions to align their portfolios to ambitious long-term temperature goals by engaging with portfolio companies to set ambitious targets.
- The Fossil Fuel Finance Targets Approach: FIs can use this approach to set targets to disclose, arrest, transition, and phaseout its fossil fuel related assets and activities, as per the criteria provided in the Fossil Fuel Finance Position Paper.

The SBTi recognizes that these methods are neither exhaustive nor comprehensive and welcomes review of additional methods. In addition to setting targets for their investment and lending activities, FIs are required to set targets for their operations (i.e. scope 1 and 2 emissions) consistent with a 1.5°C pathway. FIs may also set targets for the remaining scope 3 categories, as defined by the GHG Protocol (GHGP) Scope 3 Standard.

How to communicate targets

Science-based targets give FIs an indication of how much is needed to align their activities with the Paris climate goals. As outlined above, FIs' primary means for affecting GHG emission reductions is through the companies they finance. To preserve credibility and robustness, FIs must communicate clearly about their science-based targets and the actions they take to implement their science-based targets. The SBTi has developed communications guidelines, a communications pack and a template that provides instructions for FIs on how best to do the following:

- Define a headline target that sets out which asset classes are included in their targets and how much of their total portfolio is covered.
- Define targets for individual asset classes that include the method they have used as well as specific target language.
- Outline the actions they will take to reach their headline and asset class–specific target(s).

The SBTi recognizes that currently there is insufficient clarity about which FI actions lead to GHG emissions in the real economy. To make further progress in this field the SBTi requires that, after target approval, FIs disclose actions or strategies taken during the year to meet scope 3 portfolio targets, and disclosure of progress against all approved targets on an annual basis. As FIs set targets, this reporting will help to identify which actions are most effective to realize GHG emission reductions in the real economy.

How to track progress and achieve targets

Actions FIs can take to fully integrate climate change in their organizations and services and potentially influence GHG emission reductions in the real economy include the following:

- Engaging key stakeholders, such as companies, service providers, and policymakers on complementary components of climate action.
- Public disclosure of strategies employed to reduce the impact of the FI on climate change.
- Integration of climate change in governance and decision-making.

How to join the SBTi and submit targets for approval

The publication of this framework in October 2020 commenced a pilot target validation project for 20 FIs. As with companies, the first generation of science-based targets provides proof of concept that catalyzes further action and target setting among peer FIs. Following the conclusion of the pilot in February 2022, all interested FIs are invited to follow the five-step SBTi Call to Action process: commit

to set a science-based target, develop a target, submit the targets for validation, announce the approved targets, and disclose target progress. In 2023, the SBTi published clarifications to the target criteria and recommendations for FIs based on the lessons learned in the early target validation phase.

Please note that this consultation draft document, including the draft recommendations, is not intended to constitute legal advice and as such does not establish compliance with any legal or regulatory requirements. Users should seek independent legal advice on applicable national laws and regulations.

GLOSSARY

Term	Definition
Absolute emissions	Greenhouse gas emissions attributed to a financial institution's lending and investing activity, expressed in metric tons of carbon dioxide (CO_2) equivalent (tCO_2e).
Asset class	A group of financial instruments that have similar financial characteristics.
Attribution share or attribution factor	The share of total greenhouse gas emissions of the borrower or investee that are allocated to the loan or investments.
Avoided emissions	Emission reductions that the financed project produces versus what would have been emitted in the absence of the project (the counterfactual baseline emissions); avoided emissions are not included in science-based targets.
Biogenic carbon dioxide-equivalent (CO_2e) emissions	Emissions from a stationary source directly resulting from the combustion or decomposition of biologically based materials other than fossil fuels.
Business/corporate loan	Loans and lines of credit with unknown use of proceeds to businesses, nonprofits, and any other structure of organization. Revolving credit facilities and overdraft facilities are also included in the business loans asset class.
Carbon accounting of financial portfolios	The annual accounting and disclosure of greenhouse gas (GHG) emissions associated with loans and investments at a fixed point in time in line with financial accounting periods. This is also called "portfolio carbon accounting."

Climate impact	In the context of this framework, climate impact refers to the GHG emissions that occur as a result of financing of loans and investments.
Climate-related risks	Financial risk associated with climate-related investments and activities, including carbon asset risk or transition risk, physical risk, and legal risk.
CO_2-equivalent (CO_2e)	The amount of CO_2 that would cause the same integrated radiative forcing (a measure for the strength of climate change drivers) over a given time horizon as an emitted amount of another GHG or mixture of GHGs. Conversion factors vary based on the underlying assumptions and as the science advances.
Commercial real estate loans	Loans for the purchase, refinance, construction, or rehabilitation of commercial real estate (CRE). For the purposes of target validation, this will include all real estate loans (i.e., residential and service buildings) that are not provided to consumers.
Consolidation approach	Refers to how an organization sets boundaries for corporate GHG accounting. Types include equity approach, financial control and operational control as per the GHG Protocol Corporate Standard.
Consumer loan	A loan given to consumers to finance specific types of expenditures. A consumer loan is any type of loan made to an individual (rather than a company) by a creditor. For example, a mortgage or a motor vehicle loan.
Corporate bonds	This asset class includes all investments in debt securities without known use of proceeds (regardless of how they are traded) that are issued by listed companies (i.e., those that have equity listed and traded on a stock exchange, including financial institutions).
Debt	A financing instrument that normally requires repayment of a specified amount by the borrower at a certain date in the future, often with interest payments being made by the borrower in the interim.

Direct emissions	Emissions from sources that are owned or controlled by the reporting entity and/or the borrower or investee.
Double counting	Occurs when a single GHG emission reduction or removal, achieved through a mechanism issuing units, is counted more than once toward attaining mitigation pledges or financial pledges for the purpose of mitigating climate change within one or multiple organizations.
Emission intensity metric	Emissions per a specific unit, for example: tCO_2e/$million invested, tCO_2e/MWh, tCO_2e/ton produced, tCO_2e/$million company revenue.
Emission removal	The action of removing GHG emission from the atmosphere and storing it through various means, such as in soils, trees, underground reservoirs, rocks, the ocean, and even products like concrete and carbon fiber.
Emission scopes	The Greenhouse Gas Protocol (GHGP) Corporate Standard classifies an organization's GHG emissions into three scopes. Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting organization, including both upstream and downstream emissions.
Enterprise Value Including Cash (EVIC)	The sum of the market capitalization of ordinary shares at fiscal year- end, the market capitalization of preferred shares at fiscal year-end, and the book values of total debt and minorities' interests. To avoid the possibility of negative enterprise values and considering that cash as an important financing sources for many companies should carry its fair share of emissions, no deductions of cash or cash equivalents are made.
Environmentally extended input- output (EEIO) data	EEIO data refer to EEIO emissions factors that can be used to estimate cradle-to-gate (all upstream) GHG emissions for a given industry or product category. EEIO data are particularly useful in screening emissions sources when prioritizing data collection efforts.

Equity	Bank's or investor's ownership in a company or project. There are various types of equity, but equity typically refers to shareholder equity, which represents the amount of money that would be returned to a company's shareholders if all of the assets were liquidated and all of the company's debt were paid off.
EXIOBASE	A global, detailed Multi-Regional Environmentally Extended Supply-Use Table (MR-SUT) and Input-Output Table (MR-IOT). It was developed by harmonizing and detailing supply-use tables for a large number of countries, estimating emissions and resource extractions by industry.
Financed emissions	Absolute emissions that banks and investors finance through their loans and investments. Financed emissions can be calculated and disclosed at an asset class level.
Financial institutions (FIs)	The SBTi defines FIs as companies whose business involves the dealing of financial and monetary transactions, including deposits, loans, investments, and currency exchange. If 5% or more of a company's revenue or assets comes from activities such as those described above, they are considered to be FIs. Development FIs are currently out of project scope.
Fund of funds	This refers to a pooled investment fund that invests in other funds. Its portfolio is comprised of the different underlying portfolios of other funds, rather than investments in securities/assets directly.
Greenhouse gas (GHG) emissions	The seven gases covered by the United Nations Framework Convention on Climate Change (UNFCCC)—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).
Greenhouse Gas Protocol (GHGP)	Comprehensive global standardized frameworks to measure and manage GHG emissions from private and public sector operations, value chains, and mitigation actions. The GHGP supplies the world's most widely used GHG accounting standards. The Corporate Accounting and Reporting Standard

	provides the accounting platform for virtually every corporate GHG reporting program in the world.
Greenhouse gas (GHG) accounting	GHG accounting techniques that include two primary approaches to tracking GHG emissions resulting from a company's operations: corporate accounting through an annual GHG inventory, which involves financed emissions as part of the accounting; and project accounting through estimating net emission reductions or increases from individual projects or activities relative to a baseline scenario.
Green financing	Financial flows (such as lending, equity positions, or underwriting and advisory services) associated with zero- or low-carbon assets or activities. This term is often used to reflect non-climate-specific "green" activities as well, such as "green" bonds, which can support climate- relevant activities or water, conservation, and other related activities.
Grey financing	Financial flows toward activities and technologies that contribute significantly to GHG emissions.
Hedge fund	This refers to a pooled alternative investment fund often characterized by its more complex investment strategies that generally can only be marketed to accredited investors (with a high net worth).
Indirect emissions	Emissions that are a consequence of the activities of the reporting entity but occur at sources owned or controlled by another entity.
Investment	The term investment is broadly defined as "putting money into activities or organizations with the expectation of making a profit." Most forms of investment involve some form of risk taking, such as investment in equities, debt, property, projects, and even fixed interest securities, which are subject to inflation risk, among other risks.
Listed equity	This asset class includes all investments in equity securities (regardless of how they are traded) that are issued by listed companies (i.e., those that have equity listed and traded on a stock exchange, including financial institutions).

Mortgage	Loans used to purchase residential property, including multifamily properties with no limit on the number of units. This definition implies that the property is used for residential purposes.
Motor vehicle loan	Loans that are used to finance one or several motor vehicles.
Paris Agreement	The Paris Agreement, adopted within the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015, commits all participating countries to limit global temperature rise to well-below 2°C (WB2C) above preindustrial levels and pursue efforts to limit warming to 1.5°C, to adapt to changes already occurring, and to regularly increase efforts over time.
Private credit/debt	This refers to all loans to private companies (i.e., those that do not have equity listed and traded on a stock exchange, including financial institutions) as well as investments in debt securities without known use of proceeds (regardless of how they are traded) that are issued by private companies.
Private equity	This asset class includes all investments in equity securities (regardless of how they are traded) that are issued by private companies (i.e., those that do not have equity listed and traded on a stock exchange, including financial institutions).
Project finance	Loan or equity (private) with known use of proceeds that are designated for a clearly defined activity or set of activities (rather than to a company for general purposes), such as the construction of a gas-fired power plant, a wind or solar project, or energy efficiency projects.
Scenario analysis	A process of analyzing future events by considering alternative possible outcomes.
Science-based reduction targets	Targets adopted by companies to reduce greenhouse gas emissions are considered “science-based” if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement—to limit global warming to well-below 2°C above preindustrial levels and pursue efforts to limit warming to 1.5°C.

Scope 1 emissions	Emissions from operations that are owned or controlled by the reporting company.
Scope 2 emissions	Emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company.
Scope 3 emissions	All indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.
Scope 3, category 15 (investments) emissions	This category includes scope 3 emissions associated with the reporting company's loans and investments in the reporting year, not already included in scope 1 or scope 2. For category 15, the Greenhouse Gas Protocol Scope 3 Standard only requires the inclusion of corporate debt holdings with known use of proceeds. The SBTi financial sector project goes beyond this requirement and thus expands the minimum boundary of category 15. Financial institutions shall follow the emissions measurement requirements in the relevant asset class methods and measure emissions of debt and equity investments with and without known use of proceeds, as well as loans, where applicable.
Sequestered emissions	Refers to atmospheric carbon dioxide emissions that are captured and stored in solid or liquid form, thereby removing their harmful global warming effect.
Sector-specific metrics	Energy or carbon intensity metrics that use a physical unit denominator and are applicable to a specific sector. Examples include $kgCO_2/MWh$ (power), MWh/m^2 (real estate), etc.
Small and medium- sized enterprises (SMEs)	As the definition of SMEs can vary from region to region, financial institutions may use their own definitions of SMEs to define this category. For companies, the SBTi provides a streamlined target validation route for SMEs, where an SME is defined as a non-subsidiary, independent company with fewer than 500 employees. Financial institutions interested in engaging SMEs to set science-based targets and whose threshold for SMEs is higher than 500 employees (e.g., 1,000 employees)

	may be required to direct their SME clients or investees to the regular SBTi validation route.
Total balance sheet value	A balance sheet is a financial statement that reports a company's assets, liabilities, and shareholders' equity. The balance sheet value refers to the value of total debt plus equity.
World Input-Output Database (WIOD)	World Input-Output Tables and underlying data, covering 43 countries, and a model for the rest of the world for the period 2000–2014. Data for 56 sectors are classified according to the International Standard Industrial Classification revision 4 (ISIC Rev. 4).

1 INTRODUCTION

The former governor of the Bank of England, Mark Carney, has warned that the global financial system is backing carbon-producing projects that will raise the temperature of the planet by over 4°C – severely overshooting what is required to achieve the goals of the Paris Agreement and stay well-below 2°C (WB2C).[2] At the same time, extreme weather events and other climate impacts pose growing threats to financial institutions' (FIs') economic models. While many FIs are working on reducing their exposure to risks from climate impacts, the Science Based Targets initiative (SBTi) Near-Term Financial Sector Science Based Targets Guidance (NT Guidance) provides a near-term framework for FIs to reduce their impact on the climate. More specifically, it is designed to clarify, improve, and accelerate FIs' alignment with the goals of the Paris Agreement.

To decarbonize the global economy in alignment with the goals established by the Paris Agreement, all economic actors in the real economy need to reduce their greenhouse gas (GHG) emissions at a rate sufficient to remain aligned with the emissions pathways established by climate science. Corporate emissions do not occur in a vacuum, but rather within a broader economic and regulatory system that creates a complex web of incentives and disincentives for economic actors to reduce emissions. In many ways, all actors across a given value chain, namely the upstream and downstream activities associated with each company's operation, and those connected through policy and other incentives, share influence over the direct emissions of each actor and, therefore, share responsibility for reducing them. FIs have unique influence over other actors through their provision of investment and lending services. To drive Paris-aligned systemic decarbonization, it is critical to leverage shared influence and responsibility for aligning incentives as well as eliminating barriers to emission reductions.

1.1 Purpose of this Document

To date, nearly 200 FIs have publicly committed to set emissions reduction targets through the SBTi. This list can be found in the target dashboard on the SBTi website. The list of FIs with validated near-term science-based targets as of May 2023 is included below in alphabetical order:

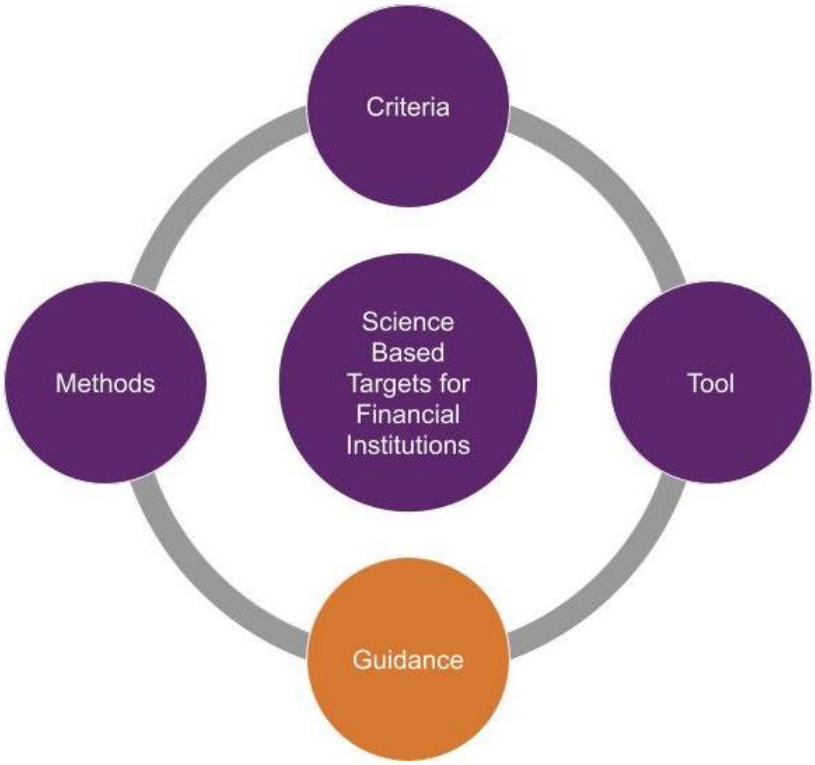
Accent Equity AB	E.SUN Financial Holding Co., Ltd.	Legal & General Reinsurance
Actiam N.V.	EQT AB	Meanings Capital Partners
AIB Group plc	Eurazeo	Montagu
Amalgamated Bank	EV Private Equity	NatWest Group
Andera Partners	FSN Capital Partners	Norron Asset Management
Argos Wityu Partners S.A.	Fubon Financial Holdings	Pictet Group
Astorg	Groupe Bruxelles Lambert	Piraeus Financial Holdings S.A.

[2] For more information on Mark Carney's statement, please see https://www.theguardian.com/business/2019/oct/15/bank-of-england-boss-warns-global-finance-it-is-funding-climate-crisis.

Aviva plc	Hana Financial Group	Raiffeisen Bank International AG
Axcel Management	Hannon Armstrong	Rathbones Group Plc
Bank Australia	Hg Capital	Schroders
Bank of Ireland Group	IK Investment Partners Limited	Shinhan Financial Group
Bregal Investments	Intermediate Capital Group	SK Securities Co., Ltd
Bupa	Investindustrial	Storebrand ASA
CapMan plc	JAB Holding Company	Sycomore Asset Management
Carnegie Fonder AB	JB Financial Group Co., Ltd.	Taishin Financial Holdings
Cathay Financial Holding Co., Ltd	KB Financial Group	Terra Alpha Investments LLC
COFRA Holding AG	KIRKBI A/S	Triodos Bank N.V.
Commerzbank AG	La Banque Postale	VP Capital
DeVolksbank N.V.	Legal & General America	Yuanta Financial Holding Co Ltd
DGB Financial Group	Legal & General Assurance Society	
Direct Line Insurance Group plc	Legal & General Capital Investments Limited	

Recognizing the pressing need for a tailored, yet standardized approach for FIs, the SBTi launched a project in 2018 to develop target setting methods, target validation criteria and recommendations, a target setting tool, and a guidance for FIs to align their lending and investment portfolios with the ambitions of the Paris Agreement (see Figure 1.1).

Figure 1.1: Four components of the SBTi's Framework for FIs



Source: Authors 2020.

This guidance document is a part of the science-based target setting framework for FIs that ties the three other components together, namely the target validation criteria and recommendations, target setting methods, and description of an open-source tool for target setting methods. FIs are invited to use the criteria and recommendations (Section 3) and methods (Sections 4 and 5) described in this document to formulate their targets.

The criteria and recommendations will also be used by the SBTi Target Validation Team (TVT) to assess FIs' near-term target submissions. The SBTi Finance Tool described here is freely available through the project website along with all other project resources to facilitate target setting. Finally, the case studies and other information included FIs' target development, submission, and implementation processes.

In addition, this document provides recommendations to FIs on how to set science- based targets for scope 1, 2, and 3 emissions (Sections 4 and 5), informed suggestions on communicating targets and actions (Section 6), examples of actions FIs can take to achieve their targets (Section 7), and instructions on committing to the SBTi and submitting targets for validation (Section 8). The document finishes by outlining areas for discussion and further research (Section 9).

1.2 The SBTi's Financial Sector Project Audience

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. 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, asset owners (pension funds, closed-end funds, insurance companies), private equity firms, and mortgage real estate investment trusts (REITs). The framework is also relevant for other FIs that have holdings in the following asset classes where methods are currently available:

1. Real estate
2. Mortgages
3. Electricity generation project finance
4. Corporate and consumer loans, bonds, and equity

Asset classes beyond this list are currently out of scope. Bilateral and multilateral development FIs (e.g., the World Bank) are not the primary audience of the project. Equity REITs, namely real estate companies that own or manage income-generating properties and lease them to tenants, are not a target audience of this project and shall pursue the regular target validation route for companies. Additional audiences and asset classes are expected to be included in the FI Net-Zero (FINZ) Standard project.

For real-economy companies going through the corporate target validation route that have some financial activities, the general approach proposed for incorporating their financed emissions (if/when relevant) is for the company to:

- Disclose if it is involved in any kind of financial services (e.g., lending, equity, debt, project finance). If yes, then calculate the % revenue/assets coming from all financial services. If the revenue/assets from financial services represents more than 5% of revenue/assets, then check the asset classes involved.
- Calculate the percentage of revenue/assets coming from in-scope asset classes as listed in Table 5.2. Only in-scope asset classes (e.g. corporate loans, equity and debt investments (including the management of them), electricity generation project finance) would be relevant. Financing related to all other asset classes (e.g. personal loans, credit card debt) would currently be out of scope.
- If those activities are in scope and represent >5% of total company revenue/assets, then a financed emissions inventory would need to be compiled to see how relevant they are in emissions terms relative to the other scope 3 categories. Since real-economy companies (that are going through the corporate target validation route but have some financial activities) must set one or more near-term targets that collectively cover(s) at least two-thirds (67%) of their total (reported and excluded) scope 3 emissions (considering the minimum boundary of each scope

3 category in conformance with the GHG Protocol (GHGP) Corporate Value Chain (Scope 3) Accounting and Reporting Standard), then it may be the case that the company would not need to cover their financed emission sources with FI targets if their other scope 3 categories made up over 67% of their total scope emissions and are already being covered by near-term targets.

- Once the financed emissions inventory is compiled, the target boundary should be defined, and the need to include the financed emissions will depend on their size relative to the other scope 3 emissions.
- If the company wants or needs to cover these financed emissions sources, then it can use this Guidance document to set FI targets.

1.3 The SBTi's Financial Sector Project Context

FIs differ from other economic sectors: they provide finance and other services to the companies that are responsible for reducing GHG emissions, rather than exercise direct control over GHG emission reductions. The central enabling role of finance is recognized in the Paris Agreement, which contains Article 2.1(c) on "making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development."

As reflected by Article 2.1(c), FIs require an approach within the SBTi that is tailored to their role and recognizes that climate target setting is one of numerous activities needed for systemic transformation. Due to the lack of complete understanding and evidence regarding the climate impacts of FIs' investment and lending portfolios, the SBTi's financial sector project focuses on trackable activities. Activities that connect financial flows with GHG emission reductions in the real economy include physical and transition risk assessment, emissions measurement and disclosure, target setting, tracking of mitigation actions, and performance and disclosure. Thus, the SBTi near-term target framework for FIs contributes to the wider portfolio transition framework through its transparent and robust target setting platform and disclosure requirement regarding actions taken by FIs to achieve targets.

1.4 What are Science Based Targets?

1.4.1 Science-based targets for companies

Targets adopted by companies to reduce GHG emissions are considered "science-based" if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement—to limit global warming to well-below 2°C above preindustrial levels and pursue efforts to limit warming to 1.5°C.

Among companies globally, there is a growing momentum for science-based target setting through the SBTi. As of June 2023, 5285 companies and 224 FIs have publicly joined the SBTi, among which 2850 companies have had their targets officially approved (see Figure 1.2).[3]

The pace at which companies have set science-based targets and committed to set targets doubled each year between 2017 and 2022. When the SBTi was launched in 2015, science-based target setting emerged as a novel corporate sustainability practice. Since then, the initiative is on track to maintain an exponential rate of growth, and science-based targets have now become a shared language for ambitious corporate climate ambition.

The SBTi has made substantial progress against its goal of making science-based target setting a standard business practice for companies seeking to play a leading role in driving down global GHG emissions.

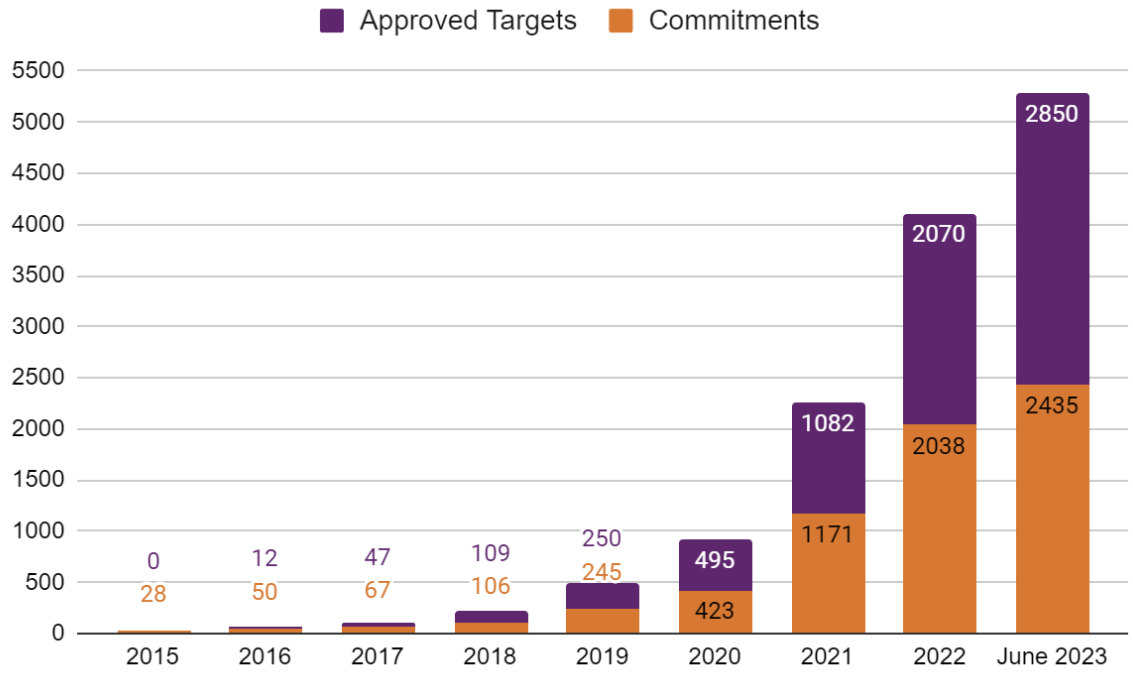


Figure 1.2: Company activity in the SBTi since June 2015

Source: SBTi

[3] For more information on committed and approved companies, please visit https://sciencebasedtargets.org/companies-taking-action.

1.4.2 Overview of the SBTi

The SBTi is a global body enabling businesses and FIs to set ambitious emissions reductions targets in line with climate science. It is focused on accelerating companies across the world to halve emissions before 2030 and achieve net-zero emissions before 2050.

The initiative is a collaboration between four of the world's most respected environmental organizations: CDP, the United Nations Global Compact (UNGC), World Resources Institute (WRI) and the World Wide Fund for Nature (WWF), and is one of the We Mean Business coalition (WMB) commitments.

The SBTi defines and promotes best practice in science-based target setting, offers resources and guidance to reduce barriers to adoption, and independently assesses and approves companies' targets.

1.5 How is the Financial Sector Addressing Climate?

FIs are increasingly attuned to climate, both in terms of adaptation to warming and reducing climate impacts of investment and lending portfolios. Actions in this latter mitigation category can be categorized into six rubrics: high-level commitments to act, measurement of financed emissions/disclosure, scenario analysis, target setting, implementation actions, and reporting. Table 1.1 below summarizes 15 related financial sector initiatives alongside these six rubrics.

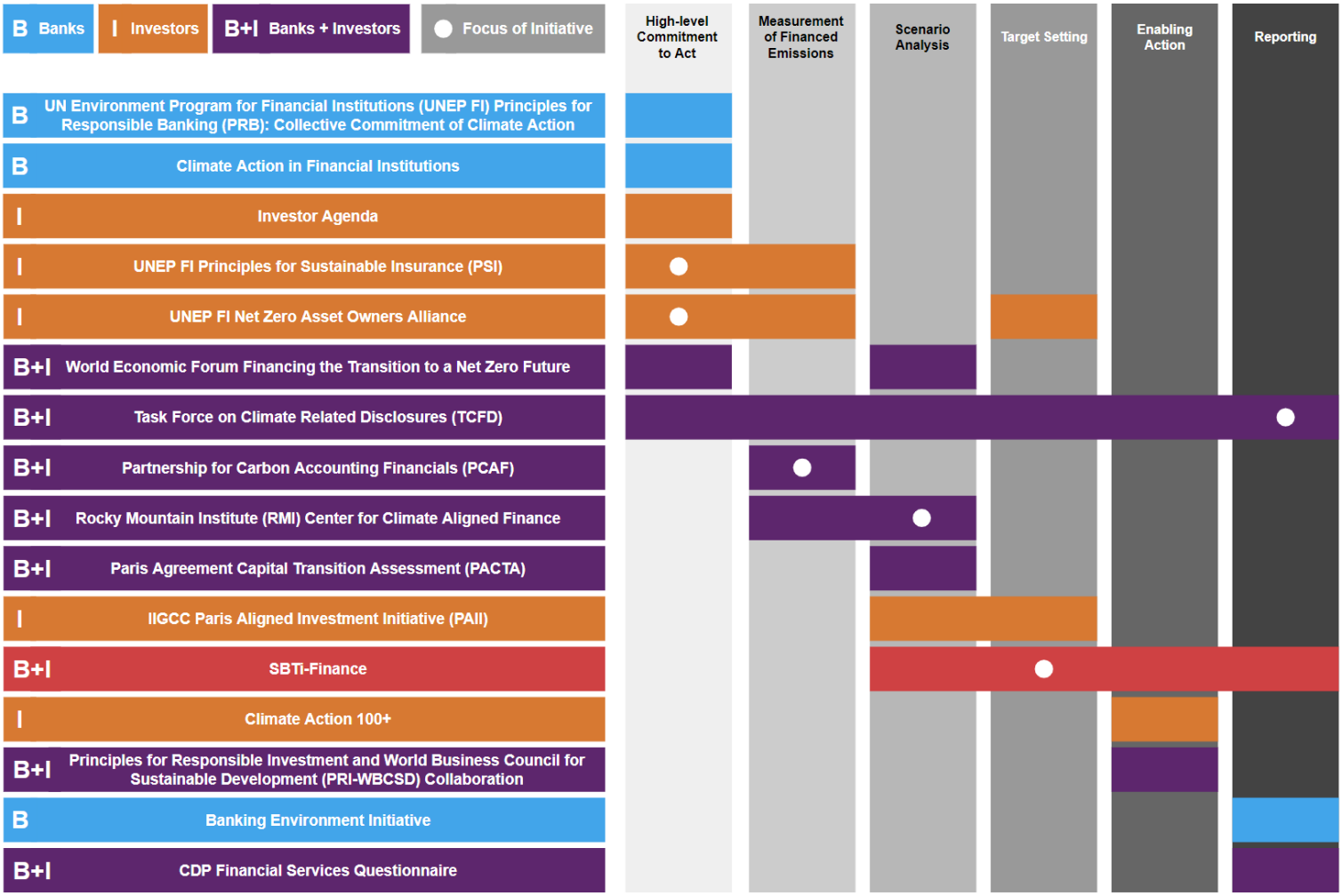


Table 1.1: Relevant initiatives that support FIs' climate actions

Notes: UNEP = United Nations Environment Program; IIGCC = Institutional Investors Group on Climate Change; CDP
Source: Authors.

The SBTi's financial sector project is focused on the target setting component in the broader portfolio transition process. The first climate mitigation step for many FIs is a high-level commitment to act through an international initiative such as the UN-convened Net-Zero Asset Owners Alliance, Principles for Responsible Banking, the Investor Agenda, or a commitment to Task Force on Climate-related Financial Disclosures (TCFD) reporting. To develop emissions metrics, the Partnership for Carbon Accounting Financials (PCAF) provides asset class methods and data resources for quantification of financed emissions. The Institutional Investors Group on Climate Change (IIGCC) Paris Aligned Investment Initiative builds from a high-level commitment to set out a range of actions investors should take to align their portfolios. Target setting with the SBTi is intended to provide specific, shorter-term components of the high-level commitments and build on the financed emissions and scenario analysis.

After the targets are set and published, the SBTi seeks to harmonize with action and reporting–focused initiatives to facilitate implementation, accountability, and compilation of evidence.

Outside of the areas described in Table 1.1 above, FIs are also mitigating their climate impact by measuring emissions intensity of their portfolios, distinguishing green versus grey financing, and divesting from fossil fuels. The emissions intensity approach calculates emissions per economic unit, often grams carbon dioxide (CO_2) equivalent (gCO_2e)/$ assets under management, to quantify sector differences and track changes over time. Green versus grey metrics are exemplified by WRI's Green Targets tool, which illustrates the distribution of banks' sustainable finance commitments relative to their fossil fuel finance.[4] University endowment and other FIs' commitments to divest from fossil fuels represent another type of action. The SBTi financial sector project complements and augments these approaches with its focus on target setting.

1.5.1 Framework development process

Science-based target setting resources for FIs has been developed through a two-year inclusive multi-stakeholder process, including consultation with an Expert Advisory Group (EAG) representing FIs, consultants, nongovernmental organizations (NGOs), and academic institutions; FIs participating in method road testing; and a broad, inclusive Stakeholder Advisory Group (SAG), which provides input at key milestones in the framework development process.

Below are highlights and milestones from the development process:

- September 2018: First EAG meeting.
- December 2018: EAG meeting to introduce the draft methods and solicit initial feedback.
- February 2019: EAG meeting to obtain feedback on the road-testing process.
- April 2019: Launch of draft methods for road-testing process.
- April–September 2019: Gathered feedback from FIs and other stakeholders on draft asset class–based methods through road-testing process and an open stakeholder consultation.
- October 2019: Hosted a webinar to share a summary of feedback received from companies participating in the road-testing process.
- November 2019: Cohosted a webinar with Global Compact Network Australia and WWF to share progress on methodologies with FIs in Oceania and Asia Pacific.
- February 2020: Hosted workshops in London and Tokyo to gather feedback from stakeholders on draft target validation criteria.
- April 2020: Hosted a webinar to initiate public call for feedback on development of a new temperature rating draft methodology for companies and investment portfolios.
- April–May 2020: Conducted public consultation to gather input from stakeholders on draft target validation criteria and tool development process that will serve as central components of the SBTi's near-term framework for FIs.

[4] For more information on WRI's Green Targets tool for banks, see https://www.wri.org/finance/banks-sustainable-finance-commitments/.

- May 2020: Hosted a webinar to share a summary of stakeholder feedback on draft target validation criteria.
- May 2020: Participated in a webinar hosted by the Institute of International Finance to share a project overview and update.
- April–May 2020: Hosted a webinar to launch the consultation process for the temperature rating methodology.
- July 2020: Hosted a webinar to launch the Temperature Rating and Portfolio Coverage tool beta-testing process and provided an overview of the Financial Sector Science Based Targets Guidance and the feedback process.
- August 2020: Shared the first draft of the Financial Sector Science Based Targets Guidance for public comments.
- August 2020: Public consultation on the first draft of the Financial Sector Science Based Targets Guidance took place from August 6 to 27, 2020.
- July–August 2020: Beta testing of an open-source tool, which covers the Temperature Rating and Portfolio Coverage methods, target setting tool launched on July 23. Two webinars were hosted for beta testers: Beta Tester Technical Deep Dive: Setting Up and Integrating the Tool in Your Workflow (August 6); Beta Tester Workshop: How To Run the Tool and Use Cases (August 7). The tool is based on a new open-source Temperature Rating methodology developed by CDP and WWF. The methodology and tool are suitable for setting targets for unlisted and listed equity and corporate debt portfolios.
- August–October 2020: Revised the first draft of the guidance based on feedback received in the survey and other engaged stakeholders; revised the Temperature Rating and Portfolio Coverage tool and tool documentation based on feedback received in the beta-testing process.[5]

[5] More documentation of the framework development process can be found on the project website: https://sciencebasedtargets.org/sectors/financial-institutions.

2 BUSINESS CASE FOR FINANCIAL INSTITUTIONS TO SET SCIENCE-BASED TARGETS

FIs are uniquely positioned to influence other actors through their investment and lending activities. To drive Paris-aligned systemic decarbonization, it is critical to leverage shared influence and responsibility for aligning incentives as well as eliminating barriers to emissions reductions.

FIs that set science-based targets commit to align their lending and investment portfolios with the level of ambition required to achieve the goals of the Paris Agreement. This commitment, along with the strategy and actions that will be taken to achieve the targets not only contribute to the transition to a net-zero economy but also bring substantial benefits to the FI. Key benefits include the following:

- **Build business resilience and increase competitiveness:** Performing scenario analysis and applying methods to set science-based targets enable FIs to align with the zero-carbon economy, to identify and capitalize on a range of opportunities, and to mitigate climate risks and increase competitiveness by gaining insights into the transformations faced by the economic sectors they lend to and invest in.
- **Drive innovation:** As science-based targets include a long-term vision, FIs can plan future financing options that prioritize the zero-carbon transformation. Engaging with their clients, FIs can develop innovative financial products and services that enable customers to reduce emissions in the real economy.
- **Build credibility and reputation:** As compared to targets initiated solely by FIs, science-based targets have higher credibility with stakeholders since they are based on the latest available science and validated against a set of robust criteria developed through a multi-stakeholder consultative process. FIs with science-based targets can serve as lower-risk options for long-term shareholders and investors that are seeking to hedge climate-related risks. In addition, FIs with science-based targets demonstrate leadership in sustainability, which improves an FI's reputation with all stakeholders.
- **Influence and prepare for shifts in public policy:** Science-based targets help FIs adapt to changing policies and send a stronger signal to policymakers, allowing the industry to better influence policy decisions. FIs with science-based targets are much better positioned to respond to future regulatory adjustments as governments ramp up their climate action.
- **Demonstrate leadership:** While metrics and methods to set science-based targets for FIs are new and best practice is still evolving, this is no reason to delay action. FIs that undertake the target setting process lead the way and push the market toward the most credible and practical solutions.

3 THE SBTi TARGET VALIDATION CRITERIA AND RECOMMENDATIONS FOR FINANCIAL INSTITUTIONS

This section presents Version 2.0 of the SBTi target validation criteria and recommendations for FIs. These sector-specific criteria supersede the general SBTi criteria for companies. Sections 1 to 4 and 7 of the criteria (Section 3.1, 3.2, 3.3, 3.4, 3.5, and 3.8) on GHG inventory, scope 1 and 2 targets, and target validity and recalculations. Version 5.1 of the SBTi general criteria for companies serves as the basis for these sections, with slight deviations for FIs.[6] Where relevant, these criteria are subject to the SBTi's annual update of corporate criteria.

Developed through extensive stakeholder consultation, Sections 3.6 and 3.7 of the criteria are designed specifically for FIs' target setting, progress-tracking, and action reporting related to their investment and lending activities. In 2023, the SBTi published clarifications to this initial set of criteria based on lessons learned in the target validation pilot phase for FIs. The SBTi also reserves the right to make adjustments to the criteria, as needed, to reflect the most recent emissions scenarios, partner organization policies, GHG accounting approaches, and evolving understanding of best practice in science-based target setting.

All the criteria presented here must be met for FIs' targets to be recognized by the SBTi. In addition, FIs shall follow the GHGP Corporate Standard, Scope 2 Guidance, and Corporate Value Chain (Scope 3) Accounting and Reporting Standard for their emissions accounting and reporting.[7] In the context of the criteria and this guidance, 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. The term "may" is used to indicate an option that is permissible or allowable. Unless otherwise noted (including specific sections), all criteria apply to scopes 1, 2, and 3.

A select group of criteria and recommendations most relevant to FIs are expanded on in further sections throughout this document, which include additional information on successfully fulfilling these requirements.[8] The SBTi strongly recommends that FIs thoroughly review the guidance before target development.

The initiative also reserves the right to withdraw a target approval decision if it becomes apparent that the FI provided incorrect information during the target validation process that results in any of the criteria existing during the assessment not being met, or if requirements following the approval of the target are not respected (i.e., target progress-reporting and recalculations).

[6] Please see Version 5.1 of the SBTi general criteria for corporates here: https://sciencebasedtargets.org/resources/files/SBTi-criteria.pdf.

[7] Limited deviations from the scope 3 standard in this framework are described in Section 4.1 Compiling a GHG Inventory.

[8] For more information on criteria not expanded further in this guidance, please refer to the SBTi Target Validation Protocol that describes the underlying principles, process, and criteria followed to assess targets and to determine conformance with the SBTi criteria.

3.1 GHG Emissions Inventory and Target Boundary

Criteria

FI-C1 – Scopes: FIs must set a target(s) that covers institution-wide scope 1 and scope 2 emissions, as defined by the GHGP Corporate Standard, and scope 3 investment and lending activities as per FI-C15 and FI-C16. FIs may set targets for remaining scope 3 emissions categories as per FI-R9.

FI-C2 – Significance Thresholds: FIs may exclude up to 5% of scope 1 and scope 2 emissions combined in the boundary of the inventory and target.[9]

FI-C3 – Greenhouse Gases: Scope 1 and 2 targets must cover all relevant GHGs as required per the GHGP Corporate Standard. If optional targets on scope 3, categories 1–14 are set, they shall also cover all relevant GHGs. Coverage of all relevant GHGs is recommended, where possible, for FIs' scope 3 portfolio targets. If FIs are unable to cover all GHGs for scope 3 portfolio targets, they shall cover carbon dioxide (CO_2) emissions at a minimum.

FI-C4 – Bioenergy Accounting: Direct CO_2 emissions from the combustion, processing and distribution phase of biomass and biofuels for institution-wide operational use, as well as GHG removals associated with bioenergy feedstock,[10] must be reported alongside the FI's inventory. Additionally, they must also be included in the target boundary when setting a science-based target, as well as when reporting progress against that target (in scopes 1, 2, and/or 3, as relevant). If biogenic emissions from biomass and biofuels are considered climate neutral, the FI must provide justification of the underlying assumptions. FIs must report emissions from nitrous oxide (N_2O) and methane (CH_4) from bioenergy use under scope 1, 2, or 3, as required by the GHGP, and must apply the same requirements on inventory inclusion and target boundary as for biogenic carbon.

FI-C5 – Subsidiaries: It is recommended that FIs submit targets only at the parent- or group-level, not the subsidiary level. Parent companies must include the emissions of all subsidiaries in their target submission, in accordance with boundary criteria above. In cases where both parent companies and subsidiaries submit targets,[11] the parent company's targets must also include the emissions of the subsidiary if the subsidiary falls within the parent company's emissions boundary, given the chosen inventory consolidation approach.[12] For example, asset owners with asset management businesses

[9] Where FIs' scope 1 or 2 emissions are deemed immaterial (i.e., under 5% of total combined scope 1 and 2 emissions), FIs may set their science-based target solely on the scope (either scope 1 or scope 2) that covers more than 95% of the total scope 1 and 2 emissions. FIs must continue to report on both scopes and adjust their targets as needed, in accordance with the GHG Protocol's principle of completeness and as per FI-C21-Mandatory target recalculation.

[10] Non-bioenergy–related biogenic emissions must be reported alongside the inventory and included in the target boundary. GHG removals that are not associated with bioenergy feedstock are currently not accepted to count as progress toward science-based targets or toward net emissions in the inventory.

[11] This criterion applies only to subsidiaries. Brands, licensees, and/or specific regions or business divisions (with the exception of banks' asset management divisions) of an FI will not be accepted as separate targets unless they fall outside of a parent company's chosen consolidation approach.

[12] Under this version of the criteria, it is optional for banks to include their asset management divisions in their scope 1, 2, and 3 target boundaries. If such an exclusion is made, it shall be disclosed clearly in the target language. See Section 5.3 for more information. All other

that submit at the group level must include all third-party assets owned or managed by group-owned asset managers. Otherwise, targets submitted at a subsidiary level must cover all in-scope asset classes owned or managed by the target setting entity. Multiple subsidiaries within a group may submit targets, but must do so separately and their target language must explicitly state the specific target setting entity.

Recommendations and additional guidance

FI-R1 – Direct Land Use Change (LUC) Emissions: When relevant, FIs are encouraged to account for direct LUC emissions and include them in their target boundary. FIs seeking to implement mitigation actions aimed at reducing LUC as part of their science-based targets (e.g., through preventing deforestation from their supply chains) should include LUC emissions in their base year inventory. Since methods to calculate LUC can differ widely, and there is currently no standardized method recognized under the GHGP, FIs should disclose the method used to calculate these impacts in their GHG inventory. FIs with indirect land use emissions can report these separately alongside the inventory and similarly disclose the method used to calculate these impacts.

FIs that finance companies with Forest, Land & Agriculture (FLAG) related emissions that total 20% or more of overall emissions across scopes are recommended to set a Portfolio Coverage target on those companies. These companies would then be required to set a separate FLAG target to account for their FLAG-related emissions (gross biogenic land CO_2 emissions and removals). The FLAG target includes all emissions from direct LUC and land management (biogenic CO_2, N_2O and CH_4).

Companies and FIs shall calculate their FLAG base year emissions (tCO_2e) in line with the forthcoming GHGP Land Sector and Removals Guidance. The SBTi FLAG Target Setting Guidance and FLAG Target Setting Methods Addendum are also available.[13]

FI-R2 – Bioenergy Accounting: Assumptions of neutrality for bioenergy tend to overlook that there is a significant time lag between the bio-based resource removal (wood/crop) and later regeneration. They also overlook possible differences in productivity among forest/crop systems used as bioenergy feedstock and the effects of long-term carbon storage in bio-based products and/or disposal. For these reasons, until a standardized method for bioenergy GHG accounting is developed under the GHGP, the SBTi strongly recommends FIs to take into account the time of emissions (i.e., wood/crop removal) and sequestration (i.e., forest/crop regrowth) in their accounting methodologies.

FIs must include their asset management businesses in their scope 1, 2, and 3 target boundaries. In addition, if an FI is involved solely or mainly in optional asset classes, it should contact the SBTi to discuss a minimum target coverage boundary of these asset class(es) for the portfolio targets to be considered credible.

[13] The SBTi is managing a sector development project, the SBTi Forest, Land and Agriculture project ("SBTi FLAG") to address the FLAG methodology. This effort focuses on the development of methods and guidance to enable the food, agriculture, and forest sectors to set science-based targets that include deforestation, and possibly other land-related impacts. In parallel to this effort, World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) are leading the development of three new GHGP Standards on how companies should account for GHG emissions and removals in their annual inventories. The three standards will cover: Carbon Removals and Sequestration; Land Sector Emissions and Removals; and Bioenergy. For more information on this work and how to participate, see here. The FLAG project and the new GHGP Standards are complementary workstreams that will provide the infrastructure needed for corporate target setting, accounting, and reporting of AFOLU-related emissions.

3.2 Scope 1 and 2 Target Time Frame

Criteria

FI-C6 – Base and Target Years: Scope 1 and 2 targets must cover a minimum of 5 years and a maximum of 10 years from the date the target is submitted to the SBTi for an official validation.[14] The choice of base year shall be representative of the FI's activities and shall be no earlier than 2015.

FI-C7 – Progress to Date: Targets that have already been achieved by the date they are submitted to the SBTi are not acceptable. The SBTi uses the year the target is submitted to the initiative (or the most recent completed GHG inventory) to assess forward-looking ambition. The most recent completed GHG inventory must not be earlier than two years prior to the year of submission.

Recommendations and additional guidance

FI-R3 – Base Year: The SBTi recommends choosing the most recent year for which data are available as the base year.

FI-R4 – Target Year: Targets that cover more than 10 years from the date of submission are considered long-term targets. Long-term targets will only be validated in accordance with the FI Net-Zero Standard upon its publication.

FI-R5 – Consistency: It is recommended that FIs use the same base and target years for all targets.

3.3 Scope 1 and 2 Target Ambition

Criteria

FI-C8 – Level of Ambition: At a minimum, scope 1 and scope 2 targets will be consistent with the level of decarbonization required to keep global temperature increase to 1.5°C compared to preindustrial temperatures. Both the target time frame ambition (base year to target year) and the forward-looking ambition (most recent year to target year) must meet this ambition criteria.[15]

FI-C9 – Absolute vs. Intensity: Intensity targets for scope 1 and scope 2 emissions are only eligible when they lead to absolute emissions reduction targets in line with climate scenarios for keeping global warming to 1.5°C or when they are modeled using an approved sector pathway. Absolute reductions must be at least as ambitious as the minimum of the range of emissions scenarios consistent with the

[14] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

[15] Scope 1 and 2 targets must meet the same minimum ambition as described in the SBTi Target Validation Protocol. For example, using the cross-sector absolute reduction method, the minimum ambition of near-term scope 1 and 2 targets is a 4.2% linear annual reduction between the base year and target year plus an adjustment for base years later than 2020. Also, for companies using a base year earlier than the most recent year, scope 1 and/or scope 2 targets must also have sufficient forward-looking ambition. The SBTi only allows two years prior as valid most recent year inventories. For targets submitted for an official validation in 2023, the most recent inventory data submitted must be for 2021 at the earliest. However, if 2021 and 2022 are not representative of the FI's activities due to impacts from the COVID-19 pandemic, the SBTi will accept 2019 inventories in 2023 to assess forward-looking ambition, though inventory data for 2021 or 2022 must still be provided for reference. An explanation of COVID-19 impacts shall be provided if using 2019 inventories.

1.5°C goal or aligned with the relevant sector reduction pathway within the Sectoral Decarbonization Approach (SDA).

FI-C10 – Method Validity: Targets must be modeled using the latest version of methods and tools approved by the SBTi. Targets modeled using previous versions of the tools or methods can only be submitted to the SBTi for an official validation within six months of the publication of the revised method or the publication of relevant sector-specific tools.

Recommendations and additional guidance

FI-R6 – Choosing an approach: The SBTi recommends using the most ambitious decarbonization scenarios that lead to the earliest reductions and the least cumulative emissions.

3.4 Emissions accounting requirements

Criteria

FI-C11 – Offsets: The use of offsets must not be counted as emission reductions toward the progress of companies' or FIs' science-based targets. The SBTi requires that FIs set targets based on emission reductions through direct action within their own operations or their investment and lending portfolios. Offsets may only be considered as an option to finance additional climate mitigation beyond their science-based targets.

FI-C12 – Avoided Emissions: Avoided emissions fall under a separate accounting system from corporate and FIs' inventories and do not count toward science-based targets.

3.5 Scope 2

Criteria

FI-C13 – Approaches: FIs shall disclose whether they are using a location- or market-based accounting approach as per the GHGP Scope 2 Guidance to calculate base year emissions and to track performance against a science-based target. FIs shall use a single, specified scope 2 accounting approach ("location-based" or "market-based") for setting and tracking progress toward their science-based targets. FIs are encouraged to report both market and location-based scope 2 emissions; however, FIs setting renewable electricity procurement targets that will be achieved through market-based mechanisms must report market-based scope 2 emissions.

FI-C14 – Renewable Electricity Procurement: Targets to actively source renewable electricity at a rate that is consistent with 1.5°C scenarios are an acceptable alternative to scope 2 emissions reduction targets. The SBTi has identified 80% renewable electricity procurement by 2025 and 100% by 2030 as thresholds (portion of renewable energy over total energy use) for this approach in line with the recommendations of the RE100 initiative. For the purposes of target validation, the SBTi will use the same definition of renewable electricity as the RE100. FIs that already source electricity at or above

these thresholds shall maintain or increase their use share of renewable electricity to qualify. FIs that have zero scope 1 emissions and will cover scope 2 emissions with a renewable electricity procurement target shall also set a target to maintain zero scope 1 emissions.

Recommendations and additional guidance

FI-R7 – Purchased Heat and Steam: For science-based target modeling purposes using the SDA, it is recommended that FIs model purchased heat and steam–related emissions as if they were part of their direct (i.e., scope 1) emissions.

FI-R8 – Efficiency Considerations for Target Modeling: If FIs are using a method that does not already embed efficiency gains for the specific sector, market, and the decarbonization projected for the power sector based on a 1.5°C scenario, it is recommended that these factors be taken into account when modeling electricity-related scope 2 targets.

3.6 Scope 3 – Portfolio Target Setting Requirements

Criteria

FI-C15 – Requirement to Set Target(s) on Investment and Lending Activities: All FIs shall set targets on their investment and lending activities as required by FI-C16, irrespective of the share of quantified scope 3 portfolio emissions as compared to the total scope 1 + 2 + 3 emissions of the FI. FIs may choose from the applicable methods for target setting, by asset class, as defined in Table 5.2.

FI-C16 – Portfolio Target Boundary: FIs shall set targets on all “Required Activities” in the Required Activities and Methods Table (Table 5.2) following the minimum boundary coverage requirement.

FI-C17.1 – Sectoral Decarbonization Approach Targets[16]: FIs’ targets using the SDA are considered acceptable when the following conditions are met:

- Boundary: FIs shall set SDA targets on their real estate and electricity generation–related activities as specified in the Required Activities and Methods Table (Table 5.2). SDA targets may also be set on other activities listed in Table 5.2, such as residential mortgages, corporate loans, listed and private equity and debt for sectors where methods are available.
- Ambition: Portfolio SDA targets must meet minimum ambition indicated by sector-specific methods for 1.5°C pathways. When a 1.5°C pathway for a sector is not available, a well-below 2°C pathway may be used instead. Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period to calculate their emissions intensity.

[16] Please see Section 5.4.1 for more information on the SDA.

- Time frame: Portfolio SDA targets must cover a minimum of 5 years and a maximum of 10 years from the date the FI's target is submitted to the SBTi for an official validation.[17] The same base year shall be used for all SDA targets. FIs are further encouraged to develop long-term targets up to 2050, under the SBTi FINZ Standard, in addition to the required near-term targets.
- Scope of Borrower and/or Investee Emissions: Targets on portfolio companies' scope 1 and 2 emissions are required for real estate and electricity generation related activities as defined by SDA methods (if relevant). For other Required Activities in Table 5-2, FIs shall set targets on emissions scopes as required by the relevant SBTi sector-specific guidance.[18]

FI-C17.2 – Portfolio Coverage Targets: FIs' targets to drive the adoption of science-based emissions reduction targets by their borrowers and/or investees are considered acceptable when the following conditions are met:

- Boundary: FIs shall set engagement targets on activities as specified in the Required Activities and Methods Table (Table 5.2).
- Ambition: FIs shall commit to having a portion of their borrowers and/or investees set their own approved 1.5°C aligned science-based targets such that the FI is on a linear path to 100% portfolio coverage by 2040 (using a weighting approach in the SBTi Finance Tool). For example, an FI starting with 10% coverage in 2020 would need to increase coverage by 4.5% per year ((100% – 10%) / (2040 – 2020)) and reach at least 32.5% (10% + [(2025 – 2020) x 4.5%]) coverage by 2025. FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period. As the Portfolio Coverage (PC) method is binary and we're using the Temperature Rating aggregation methods, we can replace the outcome from the Temperature Rating method for the companies (i.e. TS, in the formula with the outcome of the PC-assessment, 1 if the company has an approved target or 0 if the company does not have an SBTi-approved target). This means that you can use the same weighting methods for both Temperature Rating and Portfolio Coverage. Simply replace TS with PC in the formula.
- Time Frame: FIs' Portfolio Coverage targets must be fulfilled within a maximum of five years from the date the FI's target is submitted to the SBTi for validation.[19] FIs may also set a second, longer-term 100% Portfolio Coverage target but only if it is in addition to one that meets the aforementioned five-year time frame. The same base year shall be used for all Portfolio Coverage targets. Fulfillment of portfolio coverage targets mean that borrowers' and/or investees' science-based targets have been approved by the SBTi.
- Scope of Borrower and/or Investee Emissions: FIs' borrowers and/or investees shall follow the latest SBTi criteria for companies to set science-based targets. For example, corporates must

[17] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.
[18] A list of the sector-specific guidance and requirements is available in Section 5 of the SBTi Target Validation Protocol.
[19] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

cover at least 67% of their scope 3 emissions when their scope 3 emissions are more than 40% of total scope 1, 2, and 3 emissions.

FI-C17.3 – Portfolio Temperature Rating Targets: FIs' targets to align the Temperature Rating of their portfolios with the temperature goals set out in the Paris Agreement are considered acceptable when the following conditions are met:

- Boundary: FIs shall set portfolio Temperature Rating targets on activities as specified in the Required Activities and Methods Table (Table 5.2).
- Ambition: FIs shall align their portfolio scope 1 + 2 temperature score with a minimum 1.5°C scenario and in addition align their portfolio scope 1 + 2 + 3 temperature score with a minimum well-below 2°C scenario by 2040. FIs shall commit to reducing their portfolio temperature scores such that the FI is on a linear path to the stated goal by 2040. Separate targets for scope 1 + 2 and for scope 1 + 2 + 3 shall be set.

  For example, an FI setting a Temperature Rating target with a base year of 2021, target year of 2027, starting portfolio scope 1 + 2 temperature score of 2.8°C, starting portfolio scope 1 + 2 + 3 temperature score of 3.0°C, and a temperature alignment goal of 1.5°C for both scope 1 + 2 and scope 1 + 2 + 3 would need to reach at least a 2.39°C portfolio scope 1 + 2 temperature score [2.8°C – ((2.8°C – 1.5C) / (2040 – 2021) * (2027 – 2021))] and a 2.53°C portfolio scope 1 + 2 + 3 temperature score [3.0°C – ((3.0°C – 1.5°C) / (2040 – 2021) * (2027 – 2021))] by 2027.

  FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

- Time Frame: Portfolio Temperature Rating targets must be fulfilled within a maximum of five years from the date the targets are submitted to the SBTi for an official validation.[20] The same base year shall be used for all Temperature Rating targets.
- Scope of Borrower and/or Investee Emissions: Temperature scores are calculated for FIs' borrowers' and/or investee's scope 1 +2 and scope 1 + 2 + 3 emissions, for both of which FIs must set separate targets on.

FI-C17.4 – Fossil Fuel Finance Targets: For FIs' portfolio companies in the fossil fuel sector, the SDA method will only be available after the SBTi Oil & Gas sector guidance is published. In the meantime, FIs may set Portfolio Coverage or Temperature Rating targets. For Portfolio Coverage, FIs may set targets but the validation of oil & gas companies is currently paused until the SBTi Oil & Gas sector guidance is published. Alternatively, FIs may use the Fossil Fuel Finance Targets approach as a fourth-target setting option to address financial flows (i.e., financial activities or services, including but not limited to loans, investments, asset management, and securities and insurance underwriting) to the

[20] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

fossil fuel sector. FIs' targets that use the Fossil Fuel Finance Targets approach are considered acceptable when they meet the following requirements:

- Boundary: FIs shall set targets on activities related to the fossil fuel sector as specified in the Required Activities and Methods Table (Table 5.2). Any out-of-scope activities related to the fossil fuel sector shall also be disclosed.
- Disclose: FIs shall publicly disclose information on an annual basis to provide a sufficient level of transparency to aid stakeholders' understanding of (i) the GHG impact of the financial services provided; and (ii) action being taken to reduce/eliminate emissions from fossil fuel activities at a group level and with subsidiary level granularity. The following datapoints shall be disclosed annually for all fossil fuel activities covered, beginning in the target submission (i.e., for the base year of the target):
  - Absolute emissions (scope 1+2+3) per GHG from fossil fuel exposures across all financial flows; and
  - Aggregated financial exposures (monetary amounts and final investment decisions) across all financing and facilitation activities; and
  - Forward-looking plans of fossil fuel portfolio companies.
- Arrest: FIs shall implement the immediate cessation, upon publication of the FI's science-based target, of new financial flows via a public commitment according to Table 5.5, including the cessation of all:
  - New financial flows to the coal value chain (see Annex 2 of the Fossil Fuel Finance Position Paper) for both companies and projects, with the exception of new financing for permanent decommissioning of production activities and capacity.
  - New financial flows to all unabated oil and gas value chain-associated activities (see Annex 2 of the Fossil Fuel Finance Position Paper) at the project level.
  - New financial flows provided to companies that are involved in expanding production and/or capacity of any applicable oil and gas value chain associated activities.
- Transition: FIs shall establish near-term targets, which must be fulfilled within a maximum of five years from the date the FI's target is submitted to the SBTi for validation, for all financial flows to existing fossil fuel activities at the company level as well as at the portfolio level[21]:
  - Company level: to engage fossil fuel counterparty companies to transition along 1.5°C pathways by establishing 2030 quantitative public targets, including absolute, intensity, and capex metrics that cover the scope 1, 2, and 3 emissions of the fossil fuel companies; and set clear commitments for no new expansion and the phasing down/out of production along approved 1.5°C pathways with low/no overshoot.
  - Portfolio level: for no new or increased portfolio exposure in terms of financed and facilitated emissions from fossil fuel activities that are not clearly aligned with a 1.5°C transition.
  - Additionally, a transition of activities to reduce methane emissions from all fossil fuels by at least 75% by 2030 is required as a milestone for near-term targets.

[21] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

- Phaseout: FIs shall commit to phasing out all financial activities linked to unaligned companies and projects according to the time frame and regional criteria outlined in Table 5.5.

  For the engagement of fossil fuel companies receiving existing financial flows, FIs shall phaseout at the latest after two years if the engagement efforts fail to bring the project/company into alignment (or at the next roll-over date after this two-year period, if applicable). The FI engagement period should begin as soon as the science-based target is published.

- Scope of Borrower and/or Investee Emissions: Targets shall cover the scope 1 + 2 + 3 emissions of FIs' fossil fuel exposures.

Recommendations and additional guidance

FI-R9 – Measuring Emissions and Setting Targets for Scope 3, Categories 1–14: It is recommended but not required for FIs to measure and set target(s) on categories 1–14 emissions as defined by GHGP Corporate Value Chain (Scope 3) Accounting and Reporting Standard. When submitting categories 1-14 targets for validation, FIs shall include a complete emissions inventory following the minimum boundary for each category in conformance with the GHGP Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Optional targets on these categories must meet the scope 3 criteria in the latest SBTi criteria for companies (e.g., including 6, 13-14, 18-20) to be approved by the SBTi. It is recommended that targets for scope 3, categories 1-14 are set separately from scope 1 and 2 targets.

FI-R10 – Phaseout of Thermal Coal Financing: If the Fossil Fuel Finance Targets Approach is not used, FIs should establish a policy within six months from the time of target approval that dictates phasing out financial support to thermal coal across all their activities in line with a full phaseout by 2030 globally. Notably, this includes immediately ceasing all financial or other support to thermal coal companies* that are building new infrastructure or investing in new or additional thermal coal expansion, mining, production, utilization (i.e., combustion), retrofitting, or acquiring of coal assets.

** Coal companies are defined as companies with greater than 5% of revenues from thermal coal mining, exploration and drilling, mining services, processing, trading, transport and logistics, equipment manufacturing, operations and maintenance (O&M) services, engineering, procurement and construction (EPC) services, transmission and distribution of coal-fired electricity, coal to liquids (Ctlg) and coal to gas (CtG).*

FI-R11– Disclosure of Fossil Fuel Investments and Lending: If the Fossil Fuel Finance Targets Approach is not used, FIs with approved science-based targets, should annually disclose the annual investments (listed equity, private equity, corporate bonds, and private debt), direct project financing and lending to fossil fuel (oil, gas, and thermal coal) projects and companies* in U.S. dollar amount (or other currencies) (See FI-R13 for recommendations on where to disclose).

FIs that fail to phaseout coal financing or disclose fossil fuel investments and lending make themselves susceptible to risk of stranded assets and reputational damage.

*This includes:

i. *Companies that have activities (i.e., identified as share of revenues) in the exploration; extraction; refining; transportation and distribution; storage; retailing; marketing; trading; or power, heat, or cooling production from oil and gas. FIs should disclose the threshold used to delineate oil and gas companies; the SBTi recommends a 5% threshold and for the threshold to not exceed 30%.*
ii. *In line with FI-R10, companies with greater than 5% of revenues from thermal coal mining, exploration and drilling, mining services, processing, trading, transport and logistics, equipment manufacturing, operations and maintenance (O&M) services, engineering, procurement and construction (EPC) services, transmission and distribution of coal-fired electricity, coal to liquids (Ctlg) and coal to gas (CtG).*

FI-R12 – Consistency: It is recommended that FIs use the same base and target years for all targets.

3.7 Reporting

Criteria

FI-C18 – Disclosure of Target(s) Portfolio Coverage: At the time of target announcement and along with approved targets, FIs shall disclose the percentage of their total investment and lending activities covered by portfolio targets on the SBTi website, in a metric representative of the magnitude of FIs' main business activities, which may involve any combination of lending, own investments, and asset management (on behalf of third parties). Examples include total financed emissions associated with investment and lending activities (if quantified), or any combination of total balance sheet assets, total investments, total lending book, and total assets under management, as relevant. For transparency, FIs are also strongly recommended to disclose a full GHG emissions inventory for their portfolios from the most recent year, covering all activities for which a GHG accounting method is available at the time of target submission.

The formula below will be used to calculate the percentage of activities covered by targets:

$$\%\ coverage = \frac{All\ financing\ covered\ by\ targets}{All\ required,\ optional,\ and\ out\ of\ scope\ asset\ classes}$$

Out of scope asset classes include those listed as such in Table 5.2 and all other tangible assets that are held, owned, controlled, or managed by the FI, such as cash and deposits at central banks. Intangible assets (e.g., goodwill, deferred tax assets) may be excluded from the denominator. For example, asset managers will need to cover all assets managed under discretionary mandates while assets administered under advisory and/or execution-only mandates will need to be included in the denominator even if targets are not required.

FI-C19 – Implementation Reporting: At the time of target submission, the FI shall submit a brief summary of how it intends to meet its scope 3 portfolio targets in conformity with the template provided in the target submission form. This disclosure is intended to create transparency. The content of the summary will not be used as a basis for validation of targets. At the time of target announcement, the summary of how the FI intends to achieve its targets shall be made public.[22]

FI-C20 – Tracking and Reporting Target Progress: After target approval, the SBTi requires annual disclosure of scope 1 and 2 GHG emissions, disclosure of progress against all approved targets in the relevant metric,[23] and disclosure of actions/strategies taken during the year to meet scope 3 portfolio targets. If optional targets on scope 3 categories 1–14 as described in FI-R9 are submitted and approved by the SBTi, their progress shall be included in the disclosure of progress as well. FIs are strongly recommended to annually disclose a full GHG emissions inventory for their portfolios, covering all activities for which a GHG accounting method is available at the time of target submission.

Recommendations and additional guidance

FI-R13 — Where to Disclose: There are no specific requirements regarding where the scope 1 and 2 inventory, progress against all approved targets, and actions/strategies to meet scope 3 portfolio targets should be disclosed, as long as it is publicly available. Recommendations include annual reports, sustainability reports, the FIs' website, and/or CDP's annual questionnaire.

3.8 Recalculation and Target Validity

Criteria

FI-C21 – Mandatory Target Recalculation: To ensure consistency with most recent climate science and best practices, targets must be reviewed, and if necessary, recalculated and revalidated, at a minimum, every five years. FIs with an approved target that requires recalculation must follow the most recently applicable criteria at the time of resubmission.

FI-C22 – Target Validity: Target language must be agreed upon in order for the target submission to be validated. FIs with approved targets must publish their target on the SBTi website within six months of the approval date. Targets unannounced after six months will have to go through the approval process again, unless a different publication time frame was agreed with the SBTi.

Recommendations and additional guidance

FI-R14 – Triggered Target Recalculation: Targets should be recalculated and reset, as needed, to reflect significant changes that would compromise relevance and consistency of the existing target. Targets should be recalculated as soon as possible to reflect significant changes to remain relevant to

[22] FIs will have opportunities to review the summary language before the SBTi publishes it on the website.

[23] See Section 6.1 on guidance to disclose progress against targets.

the current institutional structure and operations. FIs should re-baseline anytime structural changes prompt a change of 5% or greater to their overall (i.e., scope 1, 2, and 3) emissions inventory and then recalculate their targets (after re-baselining) to check that the ambition and coverage are still sufficient. The following list includes example changes that should trigger a target recalculation:

- Exclusions in the inventory or target boundary change significantly and/or exceed allowable exclusion limits.
- Significant changes in institutional structure and activities (e.g., acquisitions, divestitures, mergers, insourcing or outsourcing, shifts in product or service offerings, changes in proportion of investments by asset classes, addition of new products covered by available methods, major updates in the latest climate science) that would affect the FI's target boundary or ambition.
- Significant changes in data used to calculate the targets such as changes in growth projections and discovery of significant errors or several cumulative errors that are collectively significant.
- Other significant changes to projections/assumptions used with science-based target setting methods.

FI-R15 – Validity of Target Projections: The SBTi recommends that FIs check the validity of target-related projections annually. The FI should notify the SBTi of any significant changes, report these major changes publicly, and consider a target recalculation, as relevant.

4 HOW TO SET SCIENCE BASED TARGETS

4.1 Compiling a GHG Inventory

4.1.1 Setting organizational and operational boundaries for a GHG inventory

An institution-wide GHG inventory is the foundation to setting science-based targets. The SBTi requires that FIs follow the GHGP Corporate Standard, Scope 2 Guidance, and Corporate Value Chain (Scope 3) Accounting and Reporting Standard to measure and report GHG emissions.

This section presents target validation criteria that are relevant to GHG emissions inventory and target boundary, and introduces the concepts of organizational and operational boundaries from the GHGP Corporate Standard. It also denotes where this framework deviates from or goes beyond these existing standards for setting targets on FIs' investment and lending activities.

Criteria

FI-C1 – Scopes: FIs must set a target(s) that covers institution-wide scope 1 and scope 2 emissions, as defined by the GHGP Corporate Standard, and scope 3 investment and lending activities as per FI-C15 and FI-C16. FIs may set targets for remaining scope 3 emissions categories as per FI-R9.

FI-C2 – Significance Thresholds: FIs may exclude up to 5% of scope 1 and scope 2 emissions combined in the boundary of the inventory and target.[24]

FI-C3 – Greenhouse Gases: Scope 1 and 2 targets must cover all relevant GHGs as required per the GHGP Corporate Standard. If optional targets on scope 3, categories 1–14 are set, they shall also cover all relevant GHGs. Coverage of all relevant GHGs is recommended, where possible, for FIs' scope 3 portfolio targets. If FIs are unable to cover all GHGs for scope 3 portfolio targets, they shall cover CO_2 emissions at a minimum.

4.1.2 Ensure the target boundary is aligned with the GHG inventory boundary

As a first step to compile a GHG inventory, an FI should define its organizational boundary by selecting a single consolidation approach based on a range of institution-specific considerations. The chosen consolidation approach should be applied consistently across its institutional structure. The boundaries of its science-based targets must align with the organizational boundaries of the GHG inventory.

The GHGP Corporate Standard defines three different approaches for determining the organizational boundaries of institutional GHG inventories:

[24] Where financial institutions' scope 1 or 2 emissions are deemed immaterial (i.e., under 5% of total combined scope 1 and 2 emissions), FIs may set their science-based target solely on the scope (either scope 1 or scope 2) that covers more than 95% of the total scope 1 and 2 emissions. Financial institutions must continue to report on both scopes and adjust their targets as needed, in accordance with the GHG Protocol's principle of completeness and as per FI-C21-Mandatory target recalculation.

- Operational control: An FI accounts for 100% of the emissions from operations at which it has the full authority to introduce and implement operating policies as its direct (i.e., scope 1) emissions. It does not account for any of the emissions from operations in which it owns an interest but does not have operational control as direct emissions.
- Financial control: An FI accounts for 100% of the emissions from operations at which it can direct financial and operating activities with a view to gaining economic benefits from those activities as its direct emissions.
- Equity share: An FI accounts for direct GHG emissions and emissions from purchased electricity, heat, and steam from operations according to its share of equity in the operation. The equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation.

To simplify the target setting process, FIs should use the operational control or financial control approach and include all investment and lending activities in scope 3, category 15. For more information on this, please refer to Chapter 4 “Setting Organizational Boundaries” of the GHGP Corporate Standard.

4.1.3 Setting the operational boundary

After selecting an organizational boundary, an FI sets its operational boundary to distinguish between direct emissions from sources it owns or controls from indirect emissions. The GHGP Corporate Standards defines three scopes of emissions for setting organizational boundaries:

- **Scope 1**: Direct GHG emissions that are emitted from sources owned and controlled by a company.
- **Scope 2**: GHG emissions from the generation of electricity, heat, and steam purchased by a company.
- **Scope 3**: “Indirect” emissions from a company’s value chain activities.

The GHGP Corporate Value Chain (Scope 3) Standard further categorizes scope 3 emissions into 15 categories, where category 15 (investments) is designed primarily for private FIs and is likely the most significant category for these institutions (see Figure 4.1). Together with the Technical Guidance for Calculating Scope 3 emissions, the Scope 3 Standard provides initial, high-level guidance to account for emissions from a set of asset classes.

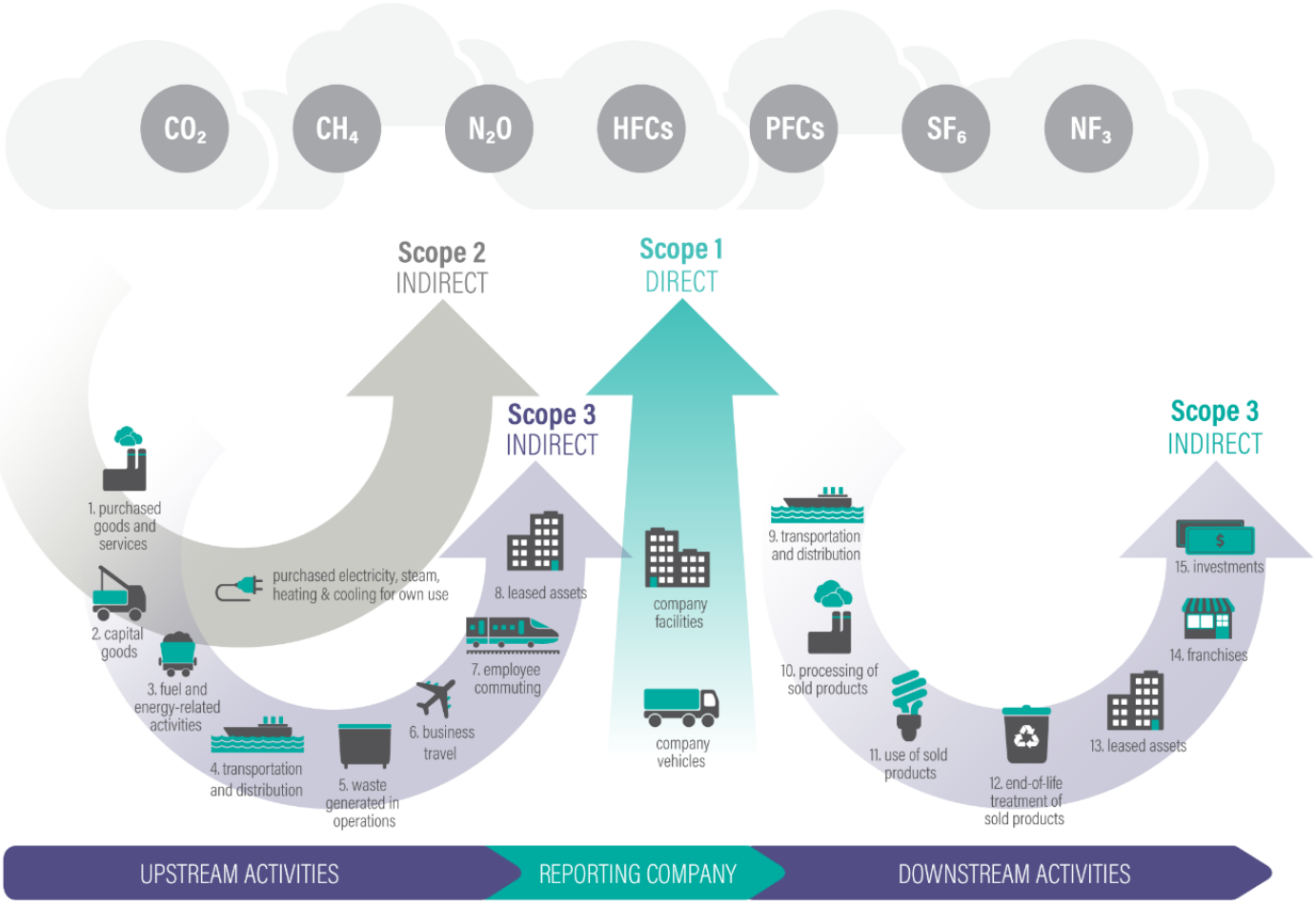
For category 15, the scope 3 standard only requires the emissions measurement of corporate debt holdings with known use of proceeds.[25] **This framework goes beyond this requirement and therefore expands the minimum boundary of category 15**. This means FIs shall follow the emissions measurement requirements in the relevant asset class methods and measure emissions of debt and equity investments with and without known use of proceeds, as well as loans, where

[25] Please find more information on page 52 of the Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

applicable. Section 4.2 and Section 5.4.1 explain that among the current methods supported by the SBTi, only the SDA requires the measurement of financed emissions of the relevant asset classes. Therefore, FIs are not required to measure and annually report total financed emissions for the "Required Activities" in Table 5.2. Nor are FIs setting SDA targets required to annually report the absolute amount of financed emissions in metric tons of CO_2e (tCO_2e) or metric tons of CO_2 (tCO_2) covered by these targets (See for more information on reporting target progress).

Measurement of all seven GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and NF_3) is required for scope 1 and 2 emissions. Considering data availability challenges, **FIs should cover all GHGs for category 15 if possible, with measurement of CO_2 as the minimum requirement**.

Figure 4.1: Overview of GHGP scopes and emissions across the value chain



Source: GHGP, Scope 3 Standard.

4.1.4 Choosing an inventory consolidation approach

The GHGP Scope 3 Standard specifies that FIs may decide under which scope investment and lending activities are included, depending on the chosen consolidation approach. For instance, if an FI chooses the equity share approach, it has the flexibility to account for investment-related emissions from equity investments in scope 1 and scope 2.[26] To simplify the target setting process, **FIs should use the operational control or financial control approach** and include all investment and lending activities in scope 3, category 15.

4.2 Measuring Financed Emissions to Facilitate Target Setting

Harmonized measurement and disclosure of financed emissions 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 PCAF, as a freely available approach to measure portfolio-wide or asset-level–financed emissions. The standard has been reviewed by the GHGP and is in conformance with the requirements set forth in the Corporate Value Chain (Scope 3) Accounting and Reporting Standard, for Category 15 investment activities." The Standard provides detailed methodological guidance on measurement and disclosure of GHG emissions associated with loans and investments. The standard is applicable to multiple geographies and includes GHG accounting methods for the asset classes covered in this SBTi guidance document (i.e., mortgages, real estate, electricity generation project finance, and corporate equity and debt). See Figure 4.2 below for more information.

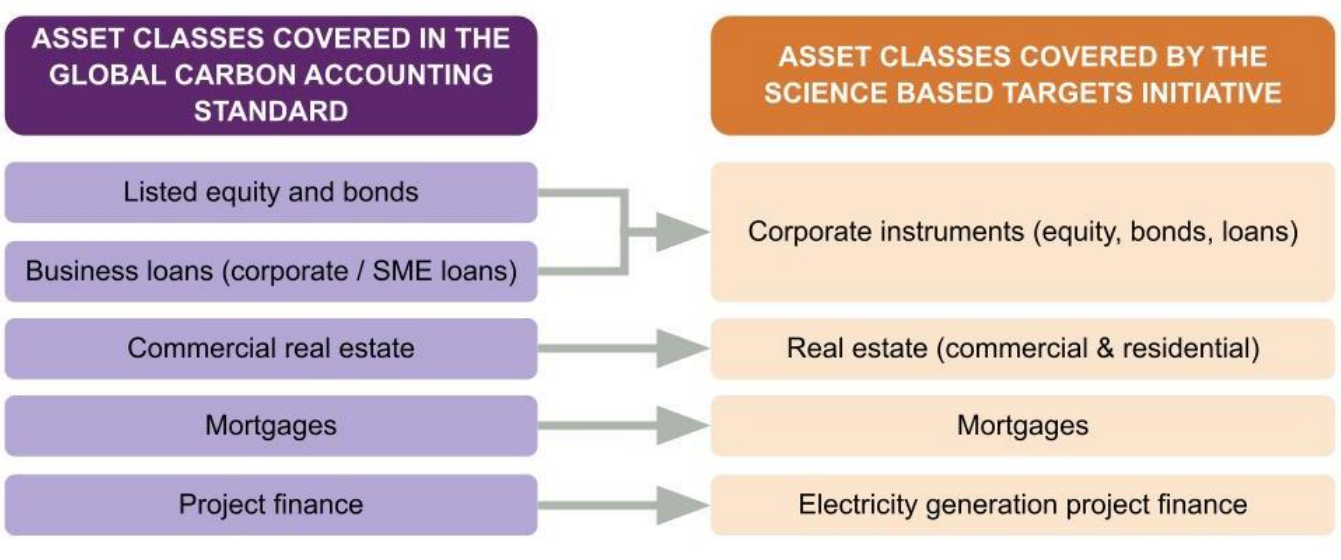
For FIs that are interested in understanding the overall exposure to emissions of their portfolios, they may use PCAF methods to conduct a portfolio-wide emissions screening and prioritize which part of a portfolio to focus on for target setting (i.e., asset classes and sectors). Following this prioritization, FIs measure emissions associated with their investing and lending activities to determine the emission baselines from which emission-based science-based targets are set. While the SBTi has determined required activities that FIs shall include in the target boundary, FIs may still set targets on optional activities if these activities are deemed significant and to increase the percentage of their investment and lending covered with targets (see Section 5.3 for more information on this topic). For instance, while residential mortgage has been determined as an optional activity in the current project phase, FIs with significant mortgage holdings are still encouraged to include this asset class in their targets.

At the monitoring stage, FIs setting SDA targets shall annually measure their progress against the target, at which point, measuring portfolio emissions intensity and comparing it with the baseline intensity is required. For more detailed explanation on how to use PCAF as a starting point for target setting, see Section 5.4.1 on the SDA.

[26] Please find more information on page 51 of the Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

PCAF's asset class–specific methods facilitate a harmonized approach for measuring FIs' year-on-year absolute emissions of loans and investments, fostering transparency and accountability in the financial industry. PCAF's asset class methods are shown in Figure 4.2.

Figure 4.2: Asset class coverage of partnership for carbon accounting financials[27]



Note: SME = Small and medium-sized enterprise.
Source: PCAF 2020.

The PCAF Global GHG Accounting and Reporting Standard for the financial industry also incorporates a data quality scoring with specific guidance per asset class (see Figure 4.3). Data quality ranges from estimated data with very limited support with score 5 (i.e., economic-based sectoral emissions factors) to audited GHG emissions data on client-level with highest quality score 1. Economic-based sectoral emissions factors can easily be applied and are often the first step used for screening purposes to identify hotspots in a diversified lending and investment portfolio. Scoring and disclosing on the data quality enables FIs to develop a strategy to improve the data quality over time, collecting client-level data especially for the hotspot.

[27] PCAF asset class coverage reflects the methods developed for the first edition of the Global GHG Accounting and Reporting Standard. It is expected that PCAF will develop financed emissions methods for additional asset classes in the future.

Figure 4.3: PCAF's general data quality score card[28]

Source: PCAF 2020.

Case Study: Wells Fargo - Testing PCAF Methodology

Background on Wells Fargo

Wells Fargo & Company (NYSE: WFC) is a diversified, community-based financial services company with $1.97 trillion in assets. Founded in 1852 and headquartered in San Francisco, Wells Fargo provides banking, investment and mortgage products and services, as well as consumer and commercial finance, through 7,300 locations, more than 13,000 ATMs, digital platforms, and contact centers. Wells Fargo has offices in 31 countries and territories to support customers who conduct business in the global economy. With approximately 266,000 active, full-time equivalent team members, Wells Fargo serves one in three households in the United States and is ranked number 30 on Fortune's 2020 rankings of America's largest corporations.

Operational sustainability focus

Wells Fargo first appeared on the CDP Disclosure Leadership Index in 2008 and continues to evolve its sustainability program with enterprise-level GHG emissions reduction targets. Since 2017, the company has purchased renewable electricity to meet 100% of its global operations' needs. Part of that

[28] This is a generic data quality score card. The PCAF Standard has asset-class specific data quality score cards with detailed description of data in relation to each score.

commitment includes utilizing renewable energy credits (RECs) as well as transitioning to long-term agreements that fund green sources of power generation and support grid modernization.

Financial sustainability focus

Understanding the importance of scope 3, category 15 (investments) also referred to as "financed emissions," means reassessing how to quantify and qualify these particular downstream emissions. Earlier engagement with WRI and peers demonstrated the difficulty of calculation, and new initiatives such as the PCAF help to address common challenges.

Measuring the emissions associated with products and services across various geographies, sectors, product types, and line of business originations presents unique challenges to any FI. One goal of portfolio or multisector aggregations of GHG emissions is to determine consistent and repeatable carbon-related metrics for sustainability reporting, and disclosures. Determining scoping boundaries, calculation approaches, and relevant touchpoints with the financial product, customer, geography, sector, and underlying operating assets is essential. A disciplined procedure ensures data integrity, purpose alignment, and ultimate utility for internal and external stakeholders.

PCAF methodology overview

To begin the process, Wells Fargo narrowed its focus to identify the most suitable and practical way to quantify a portfolio or multisector approach for financed emissions using one of PCAF's methodologies. The selected approach required data on loan exposures ("investment"), sector-level codes, and economic activity–based emissions factors, which together yield a high-level screening mechanism. Wells Fargo utilized a trial run of the PCAF emissions factor database, which was in an early beta format, to download the correct emissions factors in-scope for the testing. The referenced emissions factors used constituted a ratio of sectoral emissions to sectoral total assets, which could also be considered carbon intensities at the sector level (See Figure B1.1).

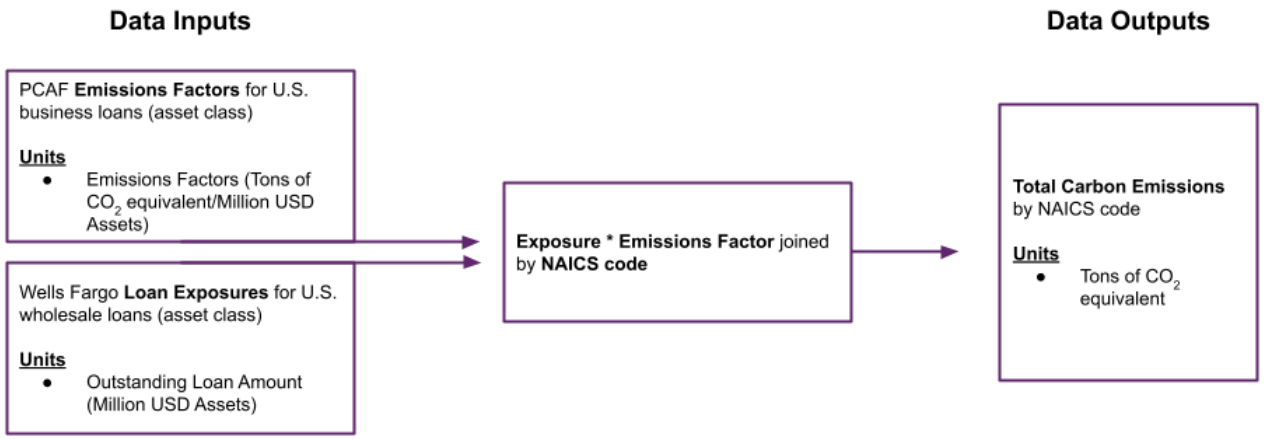


Figure B1.1: PCAF methodology overview: economic activity–based emissions for business loans

Note: NAICS = North American Industry Classification System.
Source: Wells Fargo based on PCAF Global GHG Accounting and Reporting Standard (PCAF 2020).

As visualized above, PCAF assigns its lowest data quality score ("5") to this method because it utilizes a pure estimation approach suited to screening and identifying hotspots in a diversified loan portfolio. This method relies on attributing emissions factors stated per dollar of lending (e.g., tCO_2e/million $), which can be multiplied against an outstanding loan exposure (e.g., M$) to result in a total emissions estimate stated in tons of CO_2 equivalent (tCOe).

Applying PCAF methodology

To begin the process, multisector commercial and industrial loan exposure values were extracted from internal systems with a look-back period of two years to ensure time variance elements such as level and trend were also considered in the carbon accounting. These exposures were then aggregated using North American Industry Classification System (NAICS) codes at the most granular level possible to match with PCAF sector-based emission factors.

The first run yielded emissions estimates that were further assessed after conferring with corporate economists and cross-referencing against external research and NGO stock-takes of system-level emissions such as national accounting.

Lessons learned

The main learning point was that the applied approach at a top-down level provided a good starting point for screening diversified loan portfolios. Wells Fargo appreciated the opportunity to test the PCAF database as it illuminated the complex moving parts of conducting top-down (i.e., sector or multisector down) analysis and encouraged further work on bottom-up (i.e., products or customers up) and sector-specific approaches where hotspots were identified. Wells Fargo will continue to engage with PCAF and other external initiatives on improving the top-down and bottom-up approaches to contextualize GHG intensities relevant for science-based targets, temperature alignment, and nonfinancial disclosures.

4.3 How to Set a Science Based Target for Scope 1 and 2 Emissions

Scope 1 and 2 emissions are the starting point for setting science-based targets. While scope 3 emissions, in particular category 15 (investments) are more significant for FIs than scope 1 and 2 emissions, scope 1 and 2 targets consistent with a 1.5°C pathway at a minimum are required for all FIs.

This section presents the latest SBTi target validation criteria for scope 1 and 2 targets. Detailed guidance on applying the scope 1 and 2 criteria can also be found in the SBTi Target Validation Protocol and SBTi Corporate Manual.

Criteria

FI-C6 – Base and Target Years: Targets must cover a minimum of 5 years and a maximum of 10 years from the date the target is submitted to the SBTi for an official validation.[29] The choice of base year shall be representative of the FI's activities and shall be no earlier than 2015.

FI-C7 – Progress to Date: Targets that have already been achieved by the date they are submitted to the SBTi are not acceptable. The SBTi uses the year the target is submitted to the initiative (or the most recent completed GHG inventory) to assess forward-looking ambition. The most recent completed GHG inventory must not be earlier than two years prior to the year of submission.

FI-C8 – Level of Ambition: At a minimum, scope 1 and scope 2 targets will be consistent with the level of decarbonization required to keep global temperature increase to 1.5°C compared to preindustrial temperatures. Both the target time frame ambition (base year to target year) and the forward-looking ambition (most recent year to target year) must meet this ambition criteria.[30]

FI-C9 – Absolute vs. Intensity: Intensity targets for scope 1 and scope 2 emissions are only eligible when they lead to absolute emissions reduction targets in line with climate scenarios for keeping global warming to 1.5°C or when they are modeled using an approved sector pathway. Absolute reductions must be at least as ambitious as the minimum of the range of emissions scenarios consistent with the 1.5°C goal or aligned with the relevant sector reduction pathway within the SDA.

4.3.1 Methods for setting scope 1 and 2 science-based targets for financial institutions

This section describes the methods that are most applicable to FIs for setting scope 1 and 2 targets. An integrated science-based target setting tool is available and provides target modeling options for the methods described below.

FIs are encouraged to use the Absolute Contraction Approach (ACA) to set scope 1 and 2 emissions reduction targets. The ACA is the most straightforward approach for linking targets to 1.5°C pathways. It requires a minimum of 4.2% annual linear reduction in terms of absolute emissions between the base

[29] For targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

[30] Scope 1 and 2 targets must meet the same minimum ambition as described in the SBTi Target Validation Protocol. For example, using the cross-sector absolute reduction method, the minimum ambition is of near-term scope 1 and 2 targets is a 4.2% linear annual reduction between the base year and target year plus an adjustment for base years later than 2020. Also, for companies using a base year earlier than the most recent year, scope 1 and/or scope 2 targets must also have sufficient forward-looking ambition. The SBTi only allows two years prior as valid most recent year inventories. For targets submitted for an official validation in 2023, the most recent inventory data submitted must be for 2021 at the earliest. However, if 2021 and 2022 are not representative of the FI's activities due to impacts from the COVID-19 pandemic, the SBTi will accept 2019 inventories in 2023 to assess forward-looking ambition, though inventory data for 2021 or 2022 must still be provided for reference. An explanation of COVID-19 impacts shall be provided if using 2019 inventories.

year and target year plus an adjustment for base years later than 2020 for 1.5°C targets.[31] For companies using a base year earlier than the most recent year, scope 1 and/or scope 2 targets must also have sufficient forward-looking ambition. Please refer to the Target Validation Protocol for more details.

FIs can also set physical intensity targets for scope 1 and 2 emissions. The main method available through the SBTi for setting physical intensity targets is the SDA, which uses convergence of emissions intensity. SDA provides multiple sector-specific pathways, and the pathway most relevant to FIs is "Services/Commercial Buildings." This pathway mainly encompasses the "space heating and cooling, water heating, lighting, appliances (HVAC is the technical term), and miscellaneous equipment (such as office equipment and other small plug loads in the service sectors)" of buildings (SBTi 2015, p. 63).

An alternative approach to setting physical intensity targets that requires less data input and allows for more flexibility with Temperature Rating options is to set targets in line with the ACA but express them in physical intensity terms. FIs may choose physical units that are representative of their operational activities and have direct physical relationships to the quantity of emissions generated. Considering the projected growth of the chosen unit, FIs shall ensure that the underlying absolute emissions reduction is in line with the ACA with a 4.2% annual linear reduction for a 1.5°C alignment. Some common physical units for target setting for the financial services industry include per employee (e.g., full-time equivalent) or square meter. Although square meter is the same unit as the one used in SDA, under this option, the target ambition is assessed against the ACA.

[31] The paper Foundations of Science-based Target Setting provides supplementary technical information on how science-based target setting methods have been developed in accordance with the best available climate science.

5 APPROACHES TO SETTING SCOPE 3 PORTFOLIO TARGETS

5.1 Background and Brief Literature Review

At the start of this work, the SBTi assessed various methods and tools on their applicability to support target setting for FIs. Triggered by the recommendation of the TCFD, multi-data and service providers have developed methods and tools to perform scenario analysis and assess climate-related financial risks, which are not designed to set climate targets.

Prior to this project, existing target setting methods for FIs could be categorized into four approaches:

1. Sector-based approach: Global carbon budget is divided by sector and emission reductions are allocated to the sector (sometimes within an asset class) on the portfolio based on the sector's budget.
2. Absolute-based approach: Percent reduction in absolute emissions required by a given scenario is applied to all portfolios equally.
3. Economic-based approach: Based on the assumption that the sum of all economic actors' gross profits worldwide equates to global GDP, a portfolio's share of emissions is determined by the sum of the gross profit of portfolio companies.
4. Capacity-based approach: Alignment with various climate scenarios is assessed based on physical asset–level production capacity and technology-type data (e.g., vehicles manufactured per year, gigawatts [GW] electricity, etc.)

The lack of comprehensive emissions data has led some stakeholders to explore the use of capacity-based approaches that use physical asset data for climate alignment assessment purposes. An example of a capacity-based approach is the Paris Agreement Capital Transition Assessment (PACTA) method produced by the 2 Degrees Investing Initiative (2dii).[32] The capacity-based method provides data that FIs could use to understand sector-based alignment with technology-specific metrics, rather than a GHG emissions–based metric. Previously in 2019, the SBTi road tested the PACTA method with a select group of FIs. However, further development is needed for this method to be incorporated into the SBTi target framework for FIs and accepted as a method to formulate targets in line with the criteria.

Among the approaches developed prior to this project, the sector-based approach is considered most tangible for the financial sector because it enables FIs to manage the emissions they financed in specific sectors of the economy. As such, FIs can assess their portfolios per asset class or sector, steer asset-level financed emissions within the global carbon budget assigned to each sector, and monitor their improvements in emission reductions more transparently.

[32] Additional information is available via the PACTA website.

This level of influence in the real economy is difficult to achieve with the other three approaches. Absolute-based targets could be achieved by shifting or lowering the exposure to certain sectors within the portfolio without having a clear impact on the real economy. An economic-based approach is sensitive to economic fluctuations in gross profits of portfolio companies (e.g., target achievements can be influenced if the actual gross profit of the portfolio companies deviates strongly from the global GDP projections). Lastly, the capacity-based approach can be limited as a robust linkage between capacity factors and utilization rates with the global carbon budgets has yet to be proven.

5.2 Overview of Available Asset Class-Specific Methods, Broader Methods, and Existing Gaps

For the current phase of this project, the SBTi supports four methods for FIs: the Sectoral Decarbonization Approach (SDA), the Portfolio Coverage Approach, the Temperature Rating Approach, and the Fossil Fuel Finance Targets Approach. The SBTi developed criteria specific to these four methods (FI-C17.1–FI-17.4), 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.[33]

Among these four methods, SDA is the only approach that requires emissions measurement on an asset class level. SDA is also the only sector-based approach,[34] and is applicable to all asset classes covered in the current project phase wherever sector methods are available. The 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.[35] 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 Portfolio Coverage Approach and enables FIs to assess the ambition of portfolio companies based on their public GHG reduction targets, as compared to approved science-based targets only. The Fossil Fuel Finance Targets Approach involves setting targets on the disclosure, arrest, transition, and phaseout of fossil-fuel related assets and activities, as per the criteria in the Fossil Fuel Finance Position Paper.

[33] An initial project survey distributed in February 2018 with 34 responses from financial institutions and other stakeholders also indicated that, in the order of votes received, corporate loans, listed equity, project finance, real estate, and mortgages are asset classes considered most important for inclusion in the framework.

[34] The sector and asset class coverage of SDA is listed in Table 5.3.

[35] See Table 5.2 for more information on the applicability of methods to different asset classes.

FIs may use one or more of these four methods to develop asset class-level targets for a science-based target submission (see Section 5.3 for more guidance on this topic).[36] Table 5.1 below provides an overview of the methods by asset class, followed by a description of each method; more in-depth method descriptions are provided in the Appendices while a detailed target language template is provided in Table 6.1.

Table 5.1: Portfolio target setting methods for FIs

Asset Class	Method	Description	Potential Target Output Example
Real estate	SDA	Emissions-based physical intensity targets are set for residential and/or nonresidential buildings' intensity and total GHG emissions.	FI A commits to reduce its real estate investment/loan portfolio GHG emissions XX% per square meter by 2030 from a 2020 base year. or FI A commits to maintain the emissions intensity of its real estate investment/loan portfolio at or below [the base year emissions intensity] $kgCO_2e/m^2$ from [base year] through 2030 and only finance 1.5°C aligned real estate assets.* ** Please see Appendix B for more details (e.g., eligibility conditions for setting a maintenance target).*

[36] The SBTi is developing a set of principles or "meta-criteria" to evaluate the use of alternative methods for near-term science-based targets for financial institutions. In 2019, the SBTi Technical Working Group developed the following criteria for new methods: maintains global carbon budget, consistency with SBTi theory of change and GHG measurement and disclosure practices, technology agnostic, and practicality of application, as well as that the method should be freely available. The meta-criteria will update and expand this original work to provide a more comprehensive guide for methods developers. In general, SBTi methods for financial institutions' portfolios are expected to follow the GHG Protocol principles of relevance, completeness, consistency, transparency, and accuracy. For more information, see https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

Mortgages (consumer loan)	SDA	Emissions-based physical intensity targets are set for residential buildings' intensity and total GHG emissions.	FI A commits to reduce its mortgage portfolio GHG emissions XX% per square meter by 2030 from a 2020 base year.
Electricity generation project finance	SDA	Emissions-based physical intensity targets are set for electricity generation projects' intensity and total GHG emissions.	FI A commits to continue providing electricity generation project finance for only renewable electricity through 2030. or FI A commits to reduce its electricity generation project finance portfolio GHG emissions XX% per kWh by 2030 from a 2020 base year. or FI A commits to maintain the emissions intensity of its electricity generation project finance portfolio at or below [the base year emissions intensity] gCO_2e/kWh from 2020 through 2030 and only finance 1.5°C aligned electricity generation projects.* ** Please see Appendix C for more details (e.g., eligibility conditions for setting a maintenance target).*

Corporate instruments (equity, bonds, loans)	SDA	Emissions-based physical intensity targets are set at sector level within the portfolio for the following sectors: power generation, cement, pulp and paper, transport, iron and steel, buildings, FLAG, aviation and maritime shipping.	FI A commits to reduce GHG emissions from the steel sector within its corporate loan portfolio XX% per ton by 2030 from a 2020 base year.
	Portfolio Coverage	FIs commit to having a portion of their borrowers and/or investees set their own SBTi-approved science-based targets such that the FI is on a linear path to 100% portfolio coverage by 2040 (in consistent emissions or monetary terms).	FI A commits to XX% of its listed equity portfolio by [metric] setting SBTi validated targets by 2025 from a 20xx base year.
	Temperature Rating	This approach enables FIs to determine the current temperature rating of their portfolio and take actions to align their portfolios to ambitious long-term temperature goals by engaging with portfolio companies to set ambitious targets.	FI A commits to align its scope 1 + 2 portfolio temperature score by invested value within other sectors of its corporate bond portfolio from X.XX°C in 2020 to X.XX°C by 2025. FI A commits to align their scope 1 + 2 + 3 portfolio temperature score by invested value within other sectors of its corporate bond portfolio from X.XX°C in 2020 to X.XX°C by 2025.

	Fossil Fuel Finance Targets	FIs set targets related to the disclosure, arrest, transition and phase-out of fossil fuel assets and activities in line with the Fossil Fuel Finance Position Paper.	FI A commits to publicly disclose on an annual basis the total exposure, absolute GHG emissions, and portion of its fossil fuel portfolio aligned to 1.5°C transition pathways. FI A commits to immediately end all new company- and project-level financing for non-aligned upstream, midstream, and downstream oil and gas and all coal. FI A commits to transition its fossil fuel portfolio using [both company/project and portfolio level] metrics. FI A commits to reduce the absolute methane emissions from its fossil fuel portfolio by [≥75%] by 2030. FI A commits to phaseout all financial flows to unaligned fossil fuel companies and unabated fossil fuel projects by [target year].

Source: Authors 2023.

5.3 Defining the Boundary of Portfolio Targets

To seek approval from the SBTi, FIs shall follow FI-C15 and FI-C16 to set target(s) on their investment and lending activities.[37] Depending on the composition of their portfolios, an FI may be able to meet FI-C16 using methods that do not require measurement of financed emissions. Therefore, it is possible

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

that FIs do not need to quantify any financed emissions of their holdings or only need to do so in a partial manner.

Criteria

FI-C15 – Requirement to Set Target(s) on Investment and Lending Activities: All FIs shall set targets on their investment and lending activities as required by FI-C16, irrespective of the share of quantified scope 3 portfolio emissions as compared to the total scope 1 + 2 + 3 emissions of the FI. FIs may choose from the applicable methods for target setting, by asset class, as defined in Table 5.2.

FI-C16 – Portfolio Target Boundary: FIs shall set targets on all "Required Activities" in the Required Activities and Methods Table (Table 5.2) following the minimum boundary coverage requirement.

Financial sector activities have been organized into three categories: required, optional, and out-of-scope activities to determine the target boundary (See Table 5.2):

1) **Required activities**, if relevant, shall be included in the target boundary. For example, FIs shall include 100% of the activity by kWh from electricity generation project finance and long-term loans to companies in the electricity generation sector in the target boundary (if relevant).

   For corporate loans to the fossil fuel sector and all other sectors (other than electricity generation), coverage can be based on loan value or financed emissions. If using financed emissions, the scope 1 + 2 + 3 emissions of portfolio companies in the automotive and fossil fuel sectors shall be included in the calculation while the scope 1 + 2 emissions of portfolio companies in all other sectors shall be included. Separately, targets can be set on loan outstanding or loan commitment amounts.

   - Fossil fuel sector: Targets shall cover at least 95% of long-and short-term corporate loans to companies in the fossil fuel sector. FIs should disclose the percentage of fossil fuel lending covered in the target wording for transparency and comparability. In the context of this project, **coal companies** are defined as companies with greater than 5% of revenues from thermal coal mining, exploration and drilling, mining services, processing, trading, transport and logistics, equipment manufacturing, operations, and maintenance (O&M) services, engineering, procurement and construction (EPC) services, transmission and distribution of coal-fired electricity, coal to liquids (Ctlg) and coal to gas (CtG).[38] **Oil and gas companies** are defined as companies that derive more than 30% of revenues from the exploration, extraction, refining, transportation and distribution, storage, retailing, marketing, trading, or power, heat, or cooling production from oil and gas.[39]

[38] The 5% threshold is determined based on a 1–5% range for the share of revenue the European Commission ("Commission Delegated Regulation [EU]" 2020) and FIs such as KLP ("KLP Goes Coal Free" 2020) use to identify coal companies.
[39] The 30% threshold is based on a 20-30% range for the share of revenue used to exclude oil and gas companies by FIs such as Robeco Institutional Asset Management (Robeco Institutional Asset Management B.V. 2020) and Natixis (NATIXIS 2018).

- All other sectors: Targets shall cover at least 67% of long-term corporate loans to listed companies in all other sectors (other than electricity generation), not per sector. The 67% may include the coverage of loans to companies in the fossil fuel sector as well as commercial real estate loans based on loan value or financed emissions. Commercial real estate loans must also separately meet a 67% minimum coverage requirement based on base year activity or financed emissions. General purpose long-term loans to FIs, real estate investment trusts (REITs), real estate companies, and infrastructure companies all fall under this threshold and shall be covered accordingly.
- Small & Medium Enterprises (SMEs): All loans to companies in the fossil fuel sector and long-term loans to companies in the financial sector, regardless of the companies' number of employees, shall be included in the target boundary (if relevant) while long-term and short-term loans to SMEs in all other sectors are optional.

For listed equity, all investments (direct holdings and via funds) in equity securities (regardless of how they are traded) that are issued by listed companies (i.e., those that have equity listed and traded on a stock exchange, including FIs, REITs, and real estate companies) shall be covered by targets. The same is valid for corporate bonds issued by listed companies, except that bonds issued by SMEs in sectors other than the fossil fuel and financial sectors are optional. The coverage requirement for listed equity and corporate bonds applies to securities in both the trading book and banking book, including those with a remaining maturity of less than one year.

2) **Optional activities** may be included by FIs in the target boundary.[40] There is no minimum coverage requirement on optional activities, and FIs may cover as much of these activities as they wish. For example, FIs that wish to set targets on the optional category of residential mortgage consumer loans (i.e., loans extended to individuals to purchase or refinance a home) shall use the SDA method and could determine the target boundary themselves. These activities are deemed optional as they can be impractical to set targets for, given challenges such as unavailability of data or short-term period of an investment/loan.

   For private equity and private debt, any investments (direct holdings or via funds) in equity or debt securities (regardless of how they are traded) that are issued by unlisted companies (i.e., those that do not have equity listed and traded on a stock exchange, including FIs, REITs, and real estate companies) are currently deemed optional, except for the fossil fuel sector.

3) **Out-of-scope activities** cannot currently be covered by available methods or do not apply to the project audience. Asset classes not listed in Table 5.2 are likely also out of scope. For example, infrastructure project finance and investments in infrastructure assets are currently out of scope. However, loans to infrastructure companies and investments in equity/debt securities issued by infrastructure companies are in scope.

[40] Overtime, SBTi may update "optional activities" to be required, depending on factors such as changes in availability of data or FIs' readiness to set targets on certain asset classes.

For asset managers and other FIs, FI-C15 and FI-C16 also apply to investments managed under discretionary mandates while investments administered (on behalf of third parties) under advisory or execution-only mandates are optional. If an asset manager/FI can make investment decisions or have been or is involved in designing the investment strategy (i.e. have had or has some influence over fund/security selection and/or can vote for the securities in its portfolio), these assets shall be included in the target boundary. This requirement also applies to passive investment strategies and vehicles such as exchange traded funds (ETFs) that are following rules-based investment strategy where the asset manager/FI has been able to influence the design of the strategy (e.g. "Smart Beta" products). The SBTi strongly recommends but does not require that banks' asset management divisions follow Table 5.2 to set targets on these funds. If banks decide to exclude their asset management divisions from their parent company–level targets, they shall disclose this exclusion in the target wording for transparency and comparability. All other FIs must include their asset management businesses in their scope 1, 2, and 3 target boundaries.

Table 5.2 is all-encompassing and may not apply to certain FIs. If an FI is involved solely or mainly in optional asset classes, it should contact the SBTi to discuss a minimum target coverage boundary of these asset class(es) for the portfolio targets to be considered credible. The SBTi has devised minimum target coverage requirements for mortgage REITs and private equity firms described below, which are two exceptions to Table 5.2.

Mortgage REITs that invest in residential and commercial mortgages, residential mortgage-backed securities and commercial mortgage-backed securities shall, at a minimum, cover 67% of residential mortgages by base year activity in square meter. **Private equity firms** shall develop targets for their private equity investments in line with the SBTi Private Equity Sector Science Based Target Setting Guidance, as well as other relevant asset classes in line with Table 5.2. Private equity firms are encouraged to use the Portfolio Coverage approach to cover all private equity investments, regardless of the percentage share the firm has in its investees, given that they often have more influence over their investees compared to other FIs. For the time being, private debt is considered optional for private equity firms.

The SBTi aims to strike the right balance between robustness and practicality for the criteria. Factors such as data availability, FIs' level of influence, and sector's contribution to climate change have been taken into consideration when determining if an activity should be required and the corresponding minimum coverage requirements. As more data becomes available, methods become more mature, and FIs gain more experience in target setting, the SBTi may revise Table 5.2 through the annual criteria update process. FIs may also set additional targets to increase the coverage of targets on their portfolios as methods become available for additional asset classes and sectors.

Table 5.2 below presents these three categories of activities, the minimum coverage for required activities (only relevant to required activities), and applicable method(s) for each activity type:

- **When only one method is listed**, it means that it is the only applicable method for the specific financial activity. For example, only the SDA can be applied to electricity generation project finance.
- **When multiple methods are listed**, FIs may choose one or more of the methods to set targets that collectively meet the specific minimum coverage requirement for these products. However, each specific loan/investment can only be covered by one target method in order to ensure that all assets are being covered. It is also important that the targets are clear and transparent for external stakeholders to be able to understand and track which target/method a current as well as future loan/investment would fall under. As such, the boundaries of each target must be clearly defined (e.g., by sector or asset class). For example, FIs may use both the SDA (for sectors where the method is available) and the temperature rating method (for all other sectors) to collectively cover 100% of their corporate bonds portfolios.

The SBTi also allows certain asset classes and activities to be grouped together under one target as long as they follow the same criteria (the strictest set, if different) under the same target method. For example, one target could cover all:

- listed equity investments, corporate bond investments, and corporate loans;
- loans to public and private companies;
- listed equity and private equity investments; or
- financing for the same sector (e.g., electricity generation project finance and corporate loans).

Table 5.2: Required, optional, and out-of-scope activities and applicable methods

Legend

Required Activities
Optional Activities
Out of Scope

Asset Class	Sub-asset class	Sector / Market Specifications	Minimum Coverage Requirement[a]	Applicable Methods[b]
Consumer loan	Residential mortgages	Real estate	Optional[c]	SDA
	Motor vehicle loans	Transport	n/a	n/a
	Other consumer loans	n/a	n/a	n/a

Project finance	Electricity generation project finance (direct or via funds)		100% of base year activity (kWh)	SDA
	Fossil fuel project finance (direct or via funds)		95% of base year loan value or financed emissions	SDA[d] / FFF
	Other project finance (e.g., infrastructure projects/assets)		n/a	n/a
Corporate loan	Long-term (more than one year) corporate[e] loans	Electricity generation (listed and private companies)	100% of base year activity (kWH)	SDA
		Fossil fuel (listed and private companies) and all other sectors (listed companies)	67% of base year loan value or financed emissions[f], **including** 95% of base year loan value or financed emissions of fossil fuel companies and 67% of base year loan value or financed emissions of commercial real estate loans	SDA[d] / PC / TR / FFF
		All other sectors (private companies)	Optional	SDA / PC / TR
	Long-term (more than one year) SME[g] loans	All sectors (listed and private companies), except financial and fossil fuel	Optional	SDA / PC / TR
	Short-term corporate[e] and SME[g] loans (one year or less, such as line of credit, intraday, and overdraft facilities)	Fossil fuel (listed and private companies)	95% of base year loan value or financed emissions	SDA[d] / PC / TR / FFF
		All other sectors (listed and private companies)	Optional	SDA / PC / TR
	Supranational, sovereign, sub-	n/a	n/a	n/a

	sovereign, and government loans			
Equity (investment)	Common and preferred stock of corporates[e] and SMEs[g] (direct holdings)	Fossil fuel (listed and private companies) and all other sectors (listed companies)	100%	SDA / PC / TR / FFF
	Private equity (direct and co-investments)	All other sectors (private companies)	Optional[h]	SDA / PC / TR
	via Funds (e.g., exchange traded funds, mutual funds, hedge funds, fund of funds, other collective investment schemes)	Fossil fuel (listed and private companies) and all other sectors (listed companies)	100%	SDA / PC / TR / FFF
		All other sectors (private companies)	Optional	SDA / PC / TR
		With unknown underlying assets[i]	Optional	SDA / PC / TR
Real estate	Direct investment in real estate assets (for own use or investment purposes)		67% of base year activity (m^2) or financed emissions	SDA
	Commercial real estate asset loans (residential and service buildings)[j]		67% of base year activity (m^2) or financed emissions	SDA
	Investment in real estate funds (listed and private)	REITs and real estate companies (listed)	100%	SDA / PC / TR
		Real estate assets	67% of base year activity (m^2) or financed emissions	SDA
		REITs and real estate companies (private)	Optional	SDA / PC / TR
Fixed income (investment)	Corporate[e] bonds (direct holdings and via funds)	Fossil fuel (listed and private companies) and all other sectors (listed companies)	100%	SDA / PC / TR / FFF
		All other sectors (private companies)	Optional	SDA / PC / TR
	SME[g] bonds (direct holdings and via funds)	All sectors (listed and private companies), except	Optional	SDA / PC / TR

		financial and fossil fuel		
	via Funds	With unknown underlying assets[i]	Optional	SDA / PC / TR
	Supranational, sovereign, sub-sovereign (including municipal), government, and agency bonds (direct holdings or via funds)	n/a	n/a	n/a
	Securitized fixed income: including asset-backed securities, mortgage-backed securities, covered bonds (direct holdings or via funds)	n/a	n/a	n/a
Other	Derivatives	n/a	n/a	n/a
Other	Advisory services (e.g., mergers and acquisitions), debt and equity securities underwriting	n/a	n/a	n/a
	Brokerage services, transaction services, commodities, insurance brokerage	n/a	n/a	n/a
	Insurance underwriting, reinsurance, credit guarantees	n/a	n/a	n/a

Notes:

[a] In case of any ambiguity over which minimum coverage requirement applies for a particular activity and its sector/market specifications, the stricter criteria shall apply.

[b] PC = Portfolio Coverage; TR = Temperature Rating; FFF = Fossil Fuel Finance Targets Approach.

[c] As an exception to this table, mortgage REITs shall cover at a minimum of 67% of residential mortgages by base year activity in square meter.

[d] For companies in the fossil fuel sector, the SDA method will only be available after the SBTi Oil & Gas sector guidance is published. In the meantime, FIs may set Portfolio Coverage or Temperature Rating targets. For Portfolio Coverage, FIs may set targets but the validation of oil & gas companies is currently paused until the SBTi Oil & Gas sector guidance is published. Alternatively, FIs may also set fossil fuel sector targets that meet the criteria provided in the SBTi Fossil Fuel Finance Position Paper on the relevant asset classes above.

[e] For the purposes of Table 5.2, "corporate" includes FIs. For example, corporate bonds include bonds issued by FIs.
[f] The 67% applies to companies in all sectors (including fossil fuel, which has a minimum coverage requirement of 95%, and commercial real estate loans, which have a minimum coverage requirement of 67%, that fall within the 67%) other than electricity generation, not per sector, and is based on loan value or financed emissions. Commercial real estate loans must also separately meet a 67% minimum coverage requirement based on base year activity or financed emissions. It is optional to include SMEs in the calculation of the 67% coverage threshold. The calculation of financed emissions should include scope 1 and 2 GHG emissions of portfolio companies, and where applicable, scope 3 GHG emissions. Scope 1, 2, and 3 emissions shall be included at a minimum for oil and gas and automotive sectors.
[g] As the definition of SMEs can vary from region to region, FIs may use their own definitions of SMEs to interpret this category. For companies, the SBTi provides a streamlined target validation route for SMEs, where an SME is defined as a non-subsidiary, independent company with fewer than 500 employees. This does not include FIs or fossil fuel companies, which shall be considered corporates regardless of employee count. FIs interested in engaging SMEs to set science-based targets and whose threshold for SMEs is higher than 500 employees (e.g., 1,000 employees) may have to direct their SME clients to the regular SBTi validation route. For more information on the SBTi's target setting option for SMEs, please see https://sciencebasedtargets.org/resources/files/FAQs-for-SMEs.pdf.
[h] As an exception to this table, private equity firms shall cover their private equity investments per the SBTi Private Equity Sector Science Based Target Setting Guidance, as well as other relevant asset classes, as detailed in Table 5.2.
[i] This optionality is restricted to cases where the investment strategy precludes transparency on the underlying holdings (e.g., some hedge funds).
[j] Commercial real estate asset loans refer to all loans for the purchase, refinance, construction, or rehabilitation of real estate assets (i.e., residential and service buildings) that are not provided to consumers. General purpose loans to REITs or real estate companies can be included under "all other sectors" of corporate loans.
Source: Authors 2023.

Table 5.2 shows that investments and corporate loans in real estate require a minimum coverage of 67% of investment and lending activity (m^2). In ensuring this coverage, FIs should prioritize the inclusion of assets in regions where buildings' emissions data or buildings' energy-related data are available, or where data quality is generally higher quality. However, this should not deter institutions from including assets in regions where only proxy or average data are available.[41]

Similarly, corporate loans to companies in sectors other than electricity generation require a minimum coverage of 67% (including minimum coverage requirements of 95% for loans to companies in the fossil fuel sector and 67% of commercial real estate loans) based on loan value or financed emissions. Commercial real estate loans must also separately meet a 67% minimum coverage requirement based on base year activity or financed emissions. To determine the coverage, FIs could screen the emissions of their lending portfolio to identify emissions hotspots, which would help in making an informed decision on which sectors to cover for target setting. They could also prioritize loans issued to companies in high-emitting sectors.

For investments via funds and collective investment schemes, a SDA, Portfolio Coverage, Temperature Rating, or Fossil Fuel Finance target shall be set based on the underlying holdings. For example, if an FI invested in a fund that invests in corporate instruments, then the FI could set a Portfolio Coverage or Temperature Rating target on the underlying companies. To achieve this target, the FI could both

[41] This recommendation is also applicable to the optional (required for mortgage REITs) residential mortgage asset class.

engage the underlying companies directly as well as engage its fund managers themselves to set targets.

5.4 Description of Methods to Set Portfolio Targets

This section provides an overview of methods available to set targets on FIs' investment and lending portfolios, along with case studies of FIs globally that have tested these methods in the method road-testing process for SDA and Portfolio Coverage in 2019, and the SBTi Finance Tool beta-testing process in 2020. Given that these case studies were conducted before the final release of the guidance, the target setting exercises described may not align fully with the criteria presented in the guidance. FIs shall follow the criteria and recommendations to prepare targets for submissions to the SBTi.[42]

Detailed method descriptions and instructions for application are included in the Appendices.

5.4.1 The Sectoral Decarbonization Approach

The Sectoral Decarbonization Approach (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 ton CO_2e per ton product produced). The SDA assumes global convergence of key sectors' emissions intensity by 2050. For example, the emissions intensity of steel production in China, the United States, and Brazil is assumed to reach the same level by 2050, regardless of its current diversity.[43] Regional pathways have not been incorporated into this method.

The SDA is the only applicable method for several asset classes, as specified in Table 5.2. For the remaining asset classes, SDA can be used on its own or with one or both other methods to collectively meet the minimum required boundary coverage.

The SBTi first developed the SDA for companies in 2015 using the International Energy Agency (IEA) Energy Technology Perspectives (ETP) scenario data. The method development process is described in the SBTi's SDA report published in 2015.[44]

The SDA uses the Beyond 2°C Scenario (B2DS) scenario from the Energy Technology Perspectives 2017 report, which comprises emissions and activity projections used to compute sectoral pathways aligned with limiting warming to WB2C (IEA 2017). The SBTi also provides a 1.5°C aligned pathway for

[42] Several FIs also mentioned that they have set net-zero targets in the case studies. Please note these targets have not been approved by SBTi. SBTi is currently developing a standard to enable financial institutions to set robust and credible net-zero targets in line with a 1.5°C future.
[43] Each sectoral budget is maintained, to the extent the sum of sectoral activity does not go beyond that projected for the scenario (for homogeneous sectors) and no new businesses are created.
[44] Please find the report here: https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf. The original method was also described in Krabbe et al. 2015.

the power sector that enables electric utilities to submit 1.5°C aligned targets for official recognition.[45] The SBTi also provides 1.5°C aligned pathway for other sectors such as FLAG, Residential and Service buildings, Cement and Maritime shipping.

The criteria box below presents requirements for SDA targets.

Criteria

FI-C17.1 – Sectoral Decarbonization Approach Targets[46]: FIs' targets using the SDA are considered acceptable when the following conditions are met:

1. Boundary: FIs shall set SDA targets on their real estate and electricity generation–related activities as specified in the Required Activities and Methods Table (Table 5.2). SDA targets may also be set on other activities listed in Table 5.2, such as residential mortgages, corporate loans, listed and private equity and debt for sectors where methods are available.
2. Ambition: Portfolio SDA targets must meet minimum ambition indicated by sector-specific methods for 1.5°C pathways. When a 1.5°C pathway for a sector is not available, a well-below 2°C pathway may be used instead.
3. Time frame: Portfolio SDA targets must cover a minimum of 5 years and a maximum of 10 years from the date the FI's target is submitted to the SBTi for an official validation.[47] The same base year shall be used for all SDA targets. FIs are further encouraged to develop long-term targets up to 2050, under the SBTi FI Net-Zero Standard that is currently under development, in addition to the required near-term targets.
4. Scope of Borrower and/or Investee Emissions: Targets on scope 1 and 2 emissions are required for real estate and electricity generation related activities as defined by SDA methods (if relevant). For other Required Activities in the Table 5.2, FIs shall set targets on emissions scopes as required by the relevant SBTi sector-specific guidance.[48]

Once the IEA publishes its updated 2020 ETP scenarios, the SBTi may develop a customized SDA tool for FIs' portfolios. In the meantime, FIs can use the existing SBTi target setting tools developed for companies to set targets on the relevant asset classes or sectors (see Table 5.3). An inventory of asset class emissions must be conducted before modeling targets in the tool.

Table 5.3 below summarizes the sectors covered by the SDA, the corresponding emission intensity units required by the method, the available temperature pathways, and relevant target setting tools.

[45] Please find more project information here: https://sciencebasedtargets.org/sectors/power.

[46] Please see Section 5.4.1 for more information on the Sectoral Decarbonization Approach.

[47] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

[48] A list of the sector-specific guidance and requirements is available in Section 5 of the SBTi Target Validation Protocol.

Total emissions and activity data are required for the Aviation, FLAG, and Maritime shipping SDA tools. If activity data is not available or FIs use a different emissions intensity unit, they will not be able to set an SDA target and should use the Portfolio Coverage or Temperature Rating method instead.

Table 5.3: Sector and asset class coverage of SDA and available temperature rating and target setting resources

Asset Class	Sector and Emission Intensity Units	Temperature Rating	Available Target Setting Tool
Real estate	Residential and service buildings ($kgCO_2e/m^2$)	1.5°C	1.5°C aligned tool
Electricity generation project finance	Power generation ($kgCO_2e/kWh$)	1.5°C	1.5°C aligned tool
Corporate equity, bonds, and loan	Aluminum ($kgCO_2e$/ton)	WB2C (min. requirement)	SBTi Target Setting tool- SDA for Aluminum
	Aviation (gCO_2e/RTK)	WB2C (min. requirement)	SBTi Target Setting tool- SDA for Aviation
	Cement ($kgCO_2e$/ton)	1.5°C	1.5°C aligned tool
	Chemicals TBD	Not available	The chemical sector SDA pathway cannot be used at present. Chemical companies should use the general SBTi methods in the SBTi Target Setting tool. The SBTi is developing sector-specific guidance for the chemical and petrochemical industry.

	FLAG (tCO_2e/t fresh wt, tCO_2e/t fresh wt FPCM, tCO_2e/m^3)	1.5°C	The SBTi Target Setting Tool (SDA for FLAG)
	Oil and gas (TBD)	Not available Oil and gas sector ongoing development by the SBTi	Not available
	Iron and steel ($kgCO_2e$/ton)	WB2C (min. requirement)	The SBTi Target Setting tool-SDA for Iron and Steel
	Maritime shipping (gCO_2e/tnm)	WB2C (min. requirement) 1.5°C	The SBTi Target Setting tool-SDA for Maritime shipping
	Power generation ($kgCO_2e$/kWh)	1.5°C	1.5°C aligned tool
	Pulp and Paper ($kgCO_2e$/ton)	WB2C (min. requirement)	The SBTi Target Setting tool-SDA for Pulp and Paper
	Transport: passenger, freight, auto manufacturing (scope 3 – use of sold products) ($kgCO_2e$/vehicle-kilometer, $kgCO_2e$/ton-kilometer, $kgCO_2e$/vehicle-kilometer)	WB2C (min. requirement)	The SBTi Transport Tool The SBTi Transport: PLDV Tool

Source: Authors 2023.

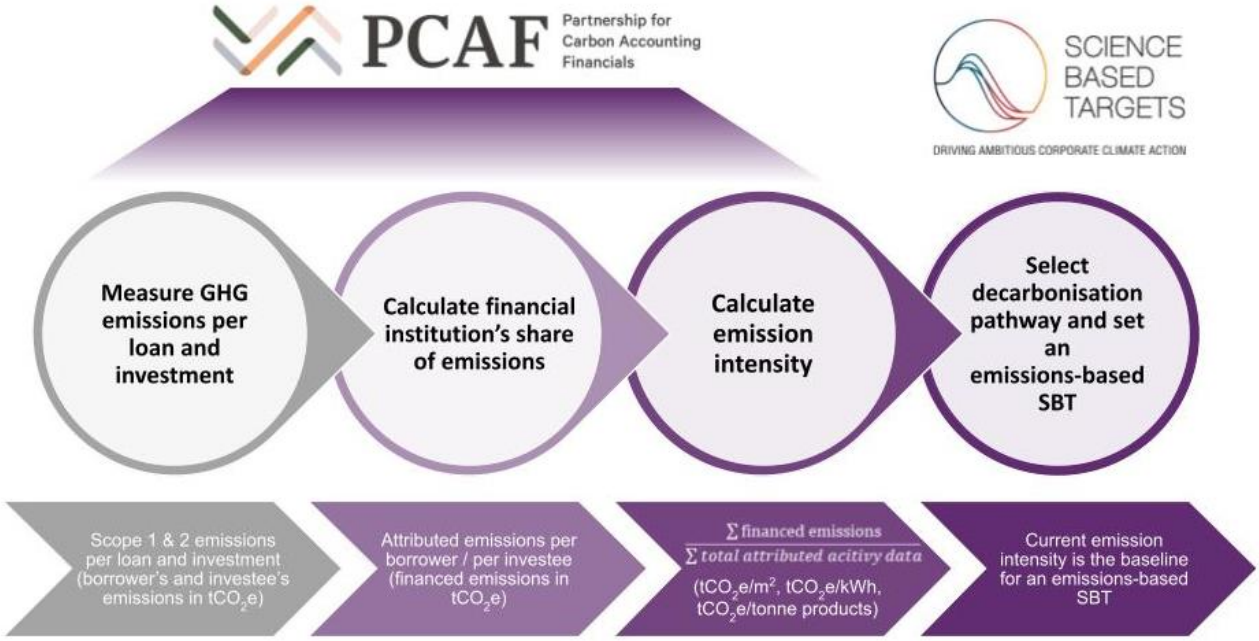
How to calculate physical emissions intensity for SDA targets

For FIs, determining portfolio emissions intensity is the starting point to apply the SDA for target setting. Portfolio emissions intensity refers to financed emissions per unit of activity data (e.g., $kgCO_2e/m^2$, $kgCO_2e$/kWh, $kgCO_2e$/ton cement). Three steps are taken to derive this:

- Measure the absolute GHG emissions of each investment and/or loan in a specific asset class (i.e., scope 1 and 2 emissions of borrowers and/or investees and scope 3 emissions where possible or applicable)
- Calculate the share of borrowers' and/or investees' emissions that should be attributed to the FI (i.e., financed emissions).
- Calculate the share of borrowers' and/or investees' activity that should be attributed to the FI (i.e., attributed floor area, attributed annual electricity generated, etc.).
- Divide the sum of financed emissions by the sum of attributed activity data of all investments and/or loans in the specific asset class.

Figure 5.1 illustrates the three steps to derive the emissions intensity baseline of an FI that applies the SDA.

Figure 5.1: Steps to calculate baseline emissions intensity for setting SDA targets



Source: PCAF 2020.

It is important to note that the attribution factor to calculate FI's share of emissions and share of activity data varies across asset classes, as shown in Figure 5.2 below.

Asset Class	Attribution Factor
Real Estate	$\frac{\text{Loan value outstanding}}{\text{Property value at time of origination}}$
Mortgages	$\frac{\text{Loan value outstanding}}{\text{Property value at time of origination}}$
Electricity Generation Project Finance	$\frac{\text{Outstanding amount}}{\text{Total equity + debt}}$
Corporate Instruments (equity, bonds, loans)	For loans to listed companies and equity investment in listed companies: $\frac{\text{Outstanding amount}}{\text{Enterprise value including cash}}$ For loans to private companies and bonds and equity investment in private companies: $\frac{\text{Outstanding amount}}{\text{Total equity + debt}}$

Figure 5.2: Attribution factors for various asset classes in the partnership for carbon accounting financials framework

Source: PCAF 2020.

Detailed guidance on the methods to calculate financed emissions per asset class is provided in the Global GHG Accounting and Reporting Standard for the financial industry (PCAF 2020).

Calculating the portfolio emission 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 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).

Targets on a mortgage portfolio are set using the global decarbonization pathway for residential buildings (i.e., the global floor area projections and emissions intensity pathways for residential buildings used by the SBTi Target Setting tool, per Table 5.3).

Case Study: De Volksbank - Testing SDA for Mortgages

Background on de Volksbank

De Volksbank is the fourth-largest retail bank in the Dutch market, with 3.2 million customers and nearly 3,000 employees. The bank provides mortgages (€47.8 billion in 2018), manages savings (€37 billion) and offers 1.5 million customers a current account. It also offers a limited range of insurance and investment products and loans. The bank provides its services through four brands: ASN Bank, BLG Wonen, Regio Bank, and SNS.

De Volksbank started measuring the climate impact of its portfolio in 2015 and continued to do so on a quarterly basis. In 2018, 85% of de Volksbank's financed emissions were attributed to mortgages. Thus, sustainable housing is the focal point of de Volksbank's climate ambition, creating customer value by increasing comfort and energy-efficient living. As such, applying the science-based targets method for mortgages helps de Volksbank answer the key question: To what extent and at what pace should the bank help its customers to "decarbonize" their own homes?

SDA applied to de Volksbank's mortgage portfolio

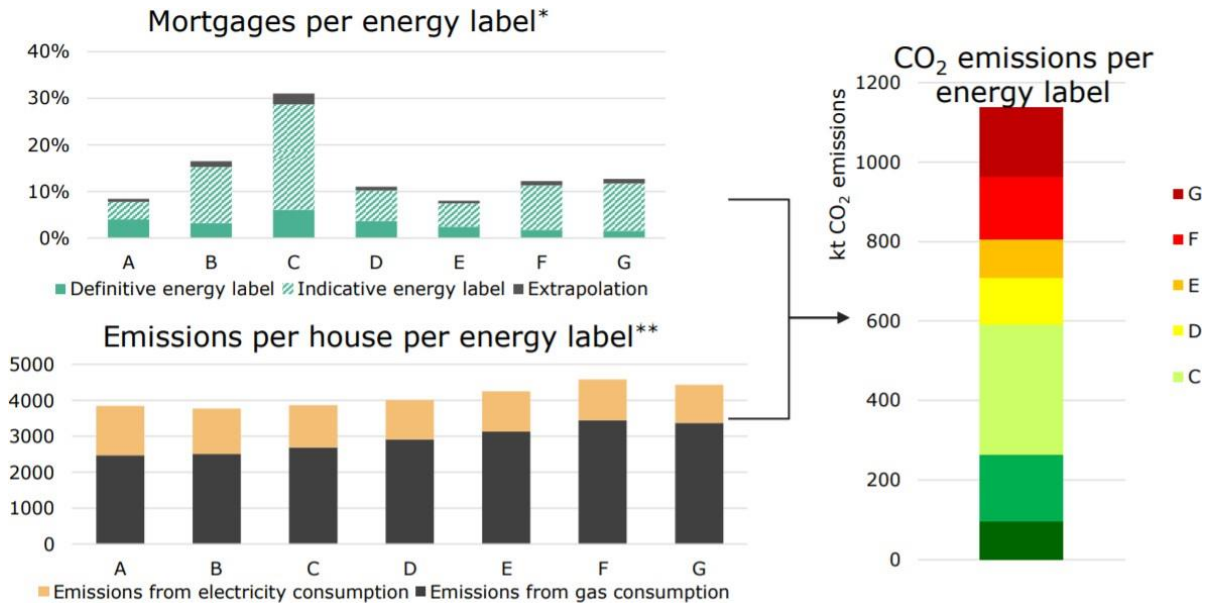
De Volksbank applied the SDA method for mortgages in April 2019 and presented the results to the SBTi community in June 2019.

The methodology combines the floor area of the buildings it financed, the growth forecast of its mortgage portfolio until 2030, and the absolute financed emissions it regularly measures using the GHG accounting methods developed by the PCAF.

Floor area: The surface area data from the housing units financed by the bank were retrieved from the Dutch Cadastre, which collects and registers administrative and spatial data on all Dutch properties.

Absolute financed emissions: This includes total scope 1 and 2 emissions for each housing unit in de Volksbank's portfolio. De Volksbank derived these emissions by converting the average electricity and gas consumption per energy label[49] to CO_2 emissions, using national average emission factors.[50] See Figure B2.1.

Figure B2.1: Distribution of energy labels in de Volksbank's mortgage portfolio and emissions profile



Source: De Volksbank 2020.

Emissions intensity: De Volksbank combined the absolute financed emissions with the floor area to derive the emissions intensity of its mortgage portfolio in 2018. The baseline emissions intensity was calculated to be 30.8 $kgCO_2/m^2$, from which de Volksbank projected into the future until 2050.

[49] Energy labels express the energy performance of dwellings and are provided by the Dutch Enterprise Agency (De Rijksdienst voor Ondernemend Nederland (RVO]). Where "A" label is the best and "G" label is the worst.

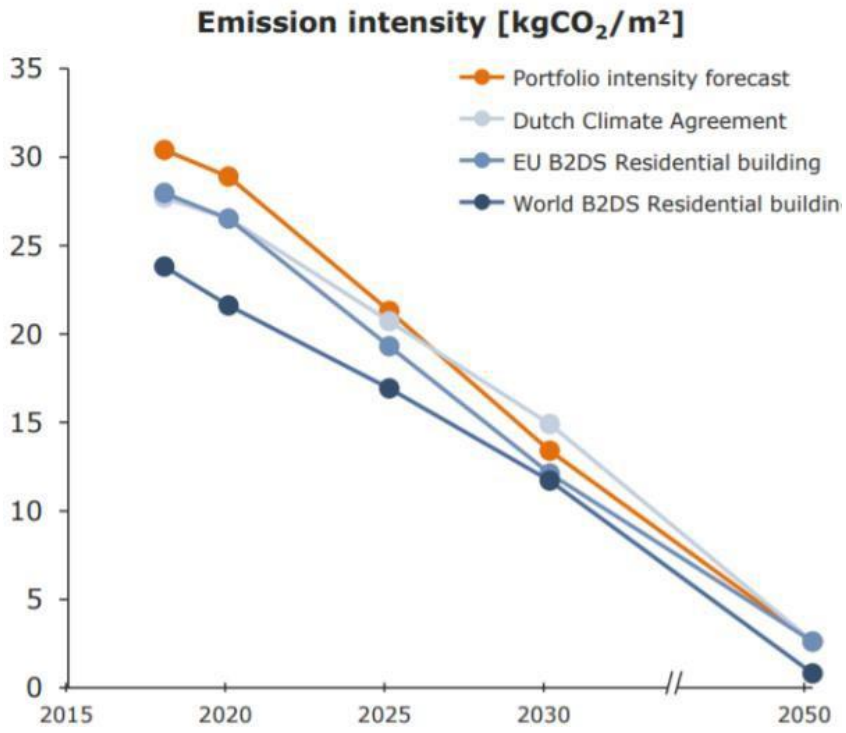
[50] Average gas and electricity consumption derived from Wonen in Ongewone; https://datawonen.nl/Jive/ViewerReportContents.ashx?report=cowb_framework and converted to emissions using factors from https://www.co2emissiefactoren.nl/.

Selecting the decarbonization pathway: De Volksbank compared its projected emissions intensity with three building emissions pathways from the following scenarios (see Figure B2.2):

- Dutch Climate Agreement[51];
- European Union Beyond 2°C Scenario (EU B2DS) for residential buildings; and
- World B2DS for residential buildings.

De Volksbank selected the EU B2DS residential building decarbonization pathway to model the science-based targets on their mortgage portfolio.

Figure B2.2: Emission intensity of de Volksbank's mortgage portfolio compared with three pathways



Source: De Volksbank 2020

Outcome and potential actions to achieve targets

Using the EU B2DS, de Volksbank identified the intensity and absolute targets shown in Figure B2.3.

[51] The Dutch Climate Agreement scenario goes until 2030, and we assume it converges to the European Union Beyond 2°C scenario (B2DS).

Figure B2.3: Absolute and intensity targets resulting from this case study

Intensity Targets [kg CO_2/m^2]				
2018	2020	2025	2030	2050
30.4	28.9	21.3	13.4	2.6

Absolute Targets [kton CO_2]				
2018	2020	2025	2030	2050
1,139	1,092	838	548	123

Intensity Targets [% compared to 2018]				
2018	2020	2025	2030	2050
--	-5%	-30%	-56%	-91%

Absolute Targets [% compared to 2018]				
2018	2020	2025	2030	2050
--	-4%	-26%	-52%	-89%

Source: De Volksbank 2020

The challenge de Volksbank encountered with these targets is that steering emissions on energy labels will not be sufficient to achieve a 91% reduction of emission intensity by 2050. Even if the bank achieves "A" labels for the entire portfolio, it would only be able to reduce 40% of emissions.

While de Volksbank would need more granular emissions data per mortgage, the bank identified a crucial driver that could help it steer emissions. In the Netherlands, most of the buildings' scope 1 and 2 emissions are caused by natural gas combustion. Thus, the bank sees great value in focusing its strategy on engaging with clients in fostering electrification of the heating systems (i.e., heat pumps), installation of more renewable energy systems (e.g., solar panels), and increasing energy efficiency.

Conclusions and recommendations

The results show the pace and the extent to which emissions per square meter financed by de Volksbank's mortgage portfolio must be reduced to align its portfolio with national, European, and global emissions scenarios. In 2020, de Volksbank is examining whether and how it can incorporate the results into its present target of a climate-neutral balance sheet by 2030.

In the meantime, as the bank works with peers within PCAF to increase data granularity for mortgage portfolios, a unique collaboration between PCAF and the Dutch Central Bureau of Statistics (Centraal Bureau voor de Statistiek [CBS], also known as Statistics Netherlands) led to access actual electricity and gas consumption data of for seven FIs in the Netherlands, including de Volksbank.[52] The bank plans to recalculate the emission intensity baseline of its mortgage portfolio using this actual energy consumption data and rerun the target setting analysis.

[52] For more information about the results of the collaboration between PCAF and CBS on actual energy consumption for mortgage portfolios, see https://carbonaccountingfinancials.com/en/newsitem/cbs-publishes-co2-emissions-of-dutch-banks-mortgage-portfolios#newsitemtext.

SDA for Real Estate

A real estate investment is the allocation of capital for partial or full ownership of property, real estate investment groups, real estate trading, real estate investment trust (REIT), etc. Both residential and service buildings under real estate investments and loans are included in this methodology. Residential buildings refer to private dwellings such as apartments and houses, whereas service buildings include properties related to trade, finance, retail, public administration, health, food and lodging, education, and commercial services.

Targets on a real estate portfolio are set using the global decarbonization pathway for service buildings and/or residential buildings accordingly (i.e., the global floor area projections and emissions intensities pathways used by the SBTi Target Setting tool, per Table 5.3).

FIs that meet the following conditions may set an emissions intensity maintenance target up to 2030 for an investment/lending portfolio of real estate assets:

i. a portfolio emissions intensity that is at or below the 2030 sector intensity level in a 1.5°C aligned pathway for the real estate sector (based on Carbon Risk Real Estate Monitor country-level pathways when available, otherwise 19 $kgCO_2e/m2$ for service buildings and 10 $kgCO_2e/m2$ for residential buildings globally), and
ii. a commitment to maintain the base year portfolio emissions intensity through 2030 and only finance new 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 FIs that have already achieved, at a portfolio level, the emissions intensity required to align with the 2030 sector intensity level in a 1.5°C pathway. It is meant to encourage FIs to maintain the enabling role they play in decarbonizing the real estate sector towards net-zero by only financing 1.5°C aligned real estate assets. Nevertheless, the SBTi strongly encourages these FIs to further reduce their portfolio's emissions intensity. Additional follow-on targets must be aligned with the upcoming SBTi FI Net-Zero Standard to ensure that all post 2030 targets are compatible with net-zero pathways. Please see Table 6.1 for target language examples.

Case Study: Bank J. Safra Sarasin, Ltd. - Testing SDA for Real Estate

Background on Bank J. Safra Sarasin, Ltd.

Bank J. Safra Sarasin, Ltd. is a leading Swiss private bank and pioneer with over 30 years of experience in sustainable investments. The bank is part of the international J. Safra Sarasin Group and

has more than 25 locations in Europe, Asia, the Middle East, and Latin America. By the end of 2019, the J. Safra Sarasin Group had assets under management in excess of CHf 180 billion.

Bank J. Safra Sarasin asset management climate pledge

In May 2020, Bank J. Safra Sarasin Asset Management launched a Climate Pledge aiming for a carbon-neutral outcome by 2035 in assets under management and banking operations (Bank J. Safra Sarasin 2020).

The J. Safra Sarasin Investment Foundation (SAST) was established by Bank J. Safra Sarasin, Ltd. in 1991. Under SAST, the sustainable investment group, "Sustainable Real Estate Switzerland" was established in 2009 as a portfolio of directly held real estate properties in Switzerland. Bank J. Safra Sarasin, Ltd. developed a holistic sustainability approach, which fully integrates environmental, social, and corporate governance (ESG) criteria in every step of the investment process at SAST "Sustainable Real Estate Switzerland." An important component of the sustainability approach is the Environmental Management System (EMS), established in 2017. It monitors the energy and water consumption of the real estate properties and, based on Swiss emission factors, calculates the resulting GHG emissions (scope 1 and 2). The EMS serves as the foundation for implementing the Bank J. Safra Sarasin Asset Management Climate Pledge.

SDA applied to SAST "Sustainable Real Estate Switzerland"

As of September 2020, Switzerland is in the process of overhauling its CO_2-law and determining the climate regulation until 2030. This also includes building-related CO_2 benchmarks related to retrofit measures (Swiss Parliament 2020). In July 2020, Bank J. Safra Sarasin, Ltd. applied the SDA for Real Estate included in the Science Based Target initiative's (SBTi) finance sector framework on the real estate portfolio of SAST "Sustainable Real Estate Switzerland." Bank J. Safra Sarasin, Ltd. aims to validate the ambition formulated by its own Climate Pledge and deliver ambitious climate action for the assets under management, investors, and tenants. For the real estate portfolio, it consequently means to validate the proposed decarbonization pathway and compare it to the level of decarbonization required for the sector as proposed by the SDA approach.

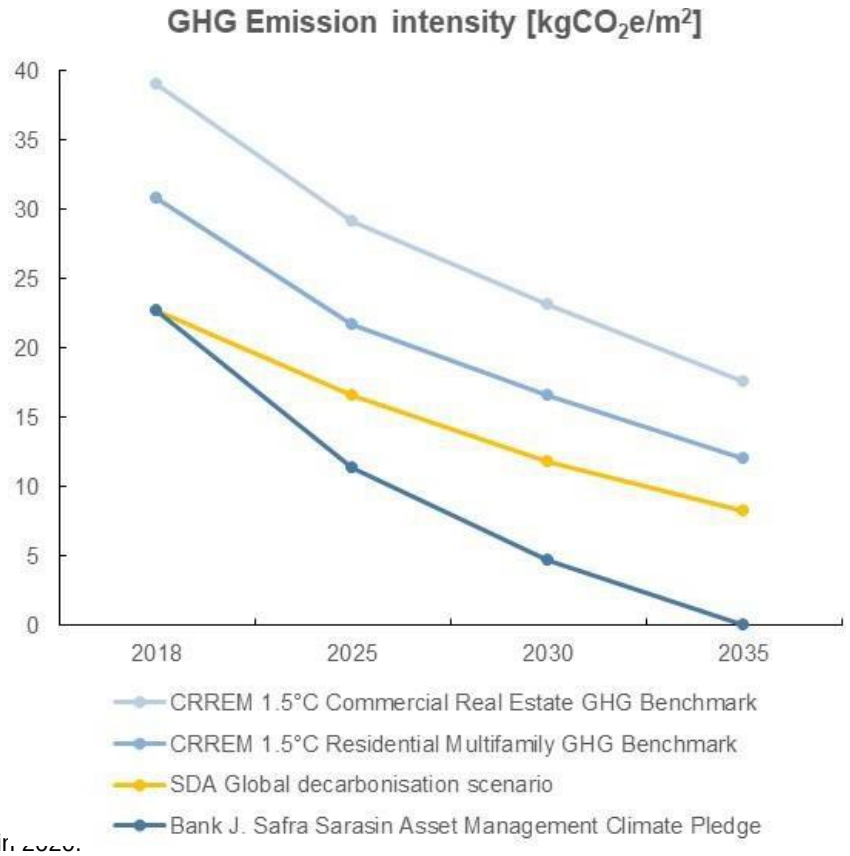
The real estate portfolio consists of 30 built real estate properties in Switzerland with approximately 75% multifamily houses, 20% commercial, and the remaining 5% mixed-use properties. Of the 30 real estate properties, 29 are reporting in the EMS as of June 2020. Five projects were under construction, and the gross asset value was at CHf 0.72 billion with a total floor area of 0.1 million m^2. The methodology combines the entire floor area of the portfolio, floor area growth forecast until 2035, and resulting GHG emissions based on scope 1 and 2 emissions of the real estate properties. Scope 1 emissions include all emissions resulting from energy production at the site of the real estate properties, such as photovoltaic (PV) systems, heat pumps, etc. Scope 2 emissions include all purchased electricity and energy carriers for heating, and, where available, measured or otherwise statistically estimated tenant electricity consumptions. The energy consumption was normalized with average active floor area for the reporting period. Bank J. Safra Sarasin, Ltd. calculated the total annual

GHG emissions using emission factors published by the Swiss government (BAFU 2016)[53] (energy consumption type [kWh] x emission factor = GHG emissions [kgCO_2e]). The emission intensity results in using the floor area normalized by active area, where unoccupied floor area is excluded. To develop a decarbonization pathway, 2018 was defined as base year and annual growth was assumed at approximately 3%.

Outcome

Bank J. Safra Sarasin Asset Management aims for an alignment of the decarbonization pathway with a 1.5°C warming scenario (Figure B3.1).

Figure B3.1: GHG emission intensity of J. Safra Sarasin's asset management climate pledge compared with three pathways



Source: J. Safra Sarasin, 2020.

Therefore, the decarbonization pathways published by Carbon Risk Real Estate Monitor (CRREM) (CRREM 2020)[54], which includes a 1.5°C warming scenario, was used as a reference benchmark for Swiss commercial and residential multifamily real estate. The decarbonization pathway modeled by the SDA method used the global decarbonization scenario, and the result was compared to the

[53] BAFU (2016), Lifecycle Inventory Data in the Building Sector: .

[54] According to the CRREM "Global Pathways" documentation, the 1.5°C scenario was developed by Friends of the Earth with a GHG emission budget by 2050 of 890 GtCO_2e; https://www.crrem.org/pathways/.

decarbonization pathway based on the J. Safra Sarasin Asset Management Climate Pledge aiming for a carbon-neutral outcome by 2035. By utilizing the SDA, the resulting absolute and intensity targets are shown in Table B3.1, compared against the goals of the Climate Pledge:

Table B3.1: Absolute and intensity targets of J. Safra Sarasin's real estate portfolio resulted from the analysis

Intensity Targets [kg CO_2e/m^2]					
	2018	2020	2025	2030	2050
SDA	22.7	16.6	11.9	8.3	1.0
Climate Pledge	22.7	11.4	4.7	0.0	0.0

Absolute Targets [tCO_2e]					
	2018	2020	2025	2030	2050
SDA	1989	2271	1883	1523	5
Climate Pledge	1989	1553	748	1	0

Intensity Targets [% compared to 2018]					
	2018	2020	2025	2030	2050
SDA	--	-27%	-48%	-63%	-96%
Climate Pledge	--	-50%	-79%	-100%	--

Absolute Targets [% compared to 2018]					
	2018	2020	2025	2030	2050
SDA	--	14%	-5%	-23%	-86%
Climate Pledge	--	-22%	-62%	-100%	--

Source: J. Safra Sarasin 2020.

Conclusion

By applying the SDA method, Bank J. Safra Sarasin, Ltd. was able to compare a sectoral decarbonization pathway with its own Climate Pledge, leading to achieving similar reduction targets, although 15 years ahead of the target deadline. Furthermore, it shows that the Bank J. Safra Sarasin Asset Management Climate Pledge is aligned with a 1.5°C warming scenario based on the CRREM decarbonization pathways, used as a reference benchmark. The challenge will be in implementing a number of sustainability measures on an asset level, necessary to deliver the carbon-neutral outcome of the Climate Pledge by 2035. As of June 2020, the SAST "Sustainable Real Estate Switzerland" portfolio is at 85% renewable energy use for warm water and heating. Therefore, a necessary measure will include abandoning fossil fuels, for example, switching to biogas at properties with gas heating and eventually to entirely renewable heating systems. Renewable electricity purchasing needs to be extended to all properties, and, where applicable, on-site PV systems need to be installed. Here Swiss law enables the creation of self-consumption associations (Zusammenschluss zum Eigenverbrauch) with tenants, where they purchase solar electricity generated on-site from the owner (SAST 2019).[55] At two real estate properties of the SAST "Sustainable Real Estate Switzerland" portfolio, zero-emission vehicles (ZEVs) were launched and the aim is to implement them in every new construction project.

[55] SAST (2019) Sustainable Real Estate Switzerland, Sustainability Report; https://www.jsafrasarasin.com/content/jsafrasarasin/language-masters/en/expertise/sustainable-investments.html.

Regarding energy efficiency, the real estate portfolio benefited from a strategy of using building certifications where possible for new construction projects. To further decrease and optimize energy consumption, further efficiency measures, such as energy retrofits, will be necessary. More generally, a decarbonization pathway can serve as a forward-looking indicator, guiding the journey toward net-zero. On this basis, the EMS will include reporting on the Climate Pledge and be continuously updated with higher-quality and more topical data. Bank J. Safra Sarasin, Ltd. is committed to setting science-based targets through the SBTi and to deliver exemplary climate action based on the J. Safra Sarasin Asset Management Climate Pledge.

Case Study: Storebrand - Testing SDA for Real Estate

Background on Storebrand

The Storebrand Group is a leading player in the Nordic market for long-term savings and insurance. The group manages more than NOK 830 billion, making Storebrand Norway's largest private asset manager. As a significant asset owner, insurer and asset manager, we see great economic opportunities in the alignment of investment portfolios to a sustainable agenda. Hence, sustainability is integral to Storebrand's business. Storebrand's standard for sustainable investments is based on the expectation that companies who contribute to solving society's problems in a sustainable way will be more profitable in the long run.

Storebrand was the first Norwegian company to establish a sustainable investment department in 1995. Environmental, social, and corporate governance (ESG analysis has been increasingly integrated into the daily risk management and company selection processes of Storebrand's fund managers. Customers are thus enabled to invest more sustainably. Currently NOK 277 billion under management are invested in fossil fuel-free products, and NOK 53.7 billion in Sustainable Solutions, defined as investments contributing to sustainable development without causing substantial harm to the environment or society. This definition includes a whitelist of Solution companies, Green Bonds, and real estate with Green Building Certificates.

In 2019, Storebrand was one of the 12 founding members of the UN-backed Net-Zero Asset Owner Alliance, committing to transition its investments to net-zero GHG emissions by 2050.

Setting science-based targets for Storebrand's real assets

Storebrand Real Estate manages properties of around 1 million square meters, which are mostly commercial buildings located in Norway and Sweden. These direct investments in the real estate asset class are a diversification from equities and bonds. They constitute NOK 45 billion, or about 5% of the Storebrand Group's total assets under management, and have more than doubled since 2013. External investors hold about one-third of the capital, through the entities Storebrand Eiendomsfond Norge KS and SPP Fastigheter AB, while the entities Storebrand Trygg, Vekst and Utvikling AS are wholly owned by the Storebrand pension fund.

With near full coverage of metering data from the buildings, including energy consumption of tenants, Storebrand has conducted carbon accounting for its real estate portfolio over the last few years. Since its 2016 real estate pledge to meet the Paris Agreement, Storebrand realized that shifting the emissions trend to meet its pledge was a challenging task. Quantifying science-based targets is crucial to bringing clarity to the necessary path ahead for Storebrand.

For the target setting exercise, Storebrand chose 2019 as the baseline year, and 2030 stood out as the natural medium-term target year. A modeling tool built by Guidehouse, a consultancy, was used to model the real estate science-based targets according to the SDA in the SBTi framework for FIs. Under this framework, the SDA approach is applied on FIs' real estate portfolios to derive physical intensity targets. Storebrand has recently committed to a 1.5°C scenario in 2050, so the targets were modeled in line with this goal.[56]

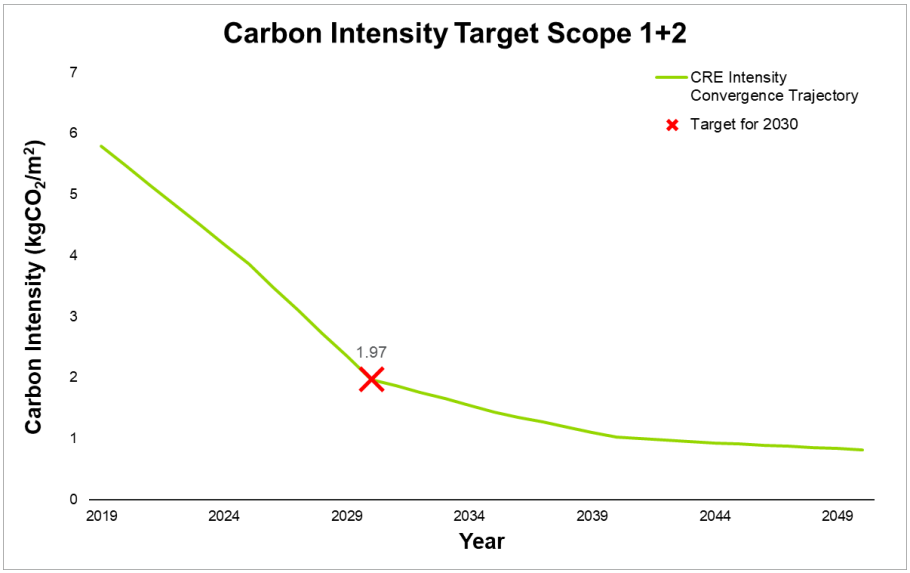
Under the SDA approach, scope 2 emissions in the modeling covers only electricity consumed. Emissions from district heating/cooling are categorized as scope 1 emissions. Because the portfolio's initial scope 1 emissions intensity was already lower than the level of sectoral intensity required in 2050, the convergence model was not appropriate, and thus the modeling assumes that scope 1 emissions intensity remains constant. The final target is based on the combined pathway of scope 1 and scope 2 emissions intensity, where the latter plays the major role in achieving the target. Emissions from tenants' energy use were included in the assessment.

Outcome/Experience

Compared to previous models explored by Storebrand Real Estate, the applied SDA method for 1.5°C scenario gives a steeper pathway decrease toward 2030, resulting in 60 to 75% reductions from 2019 to 2030. For the scope 2 emissions, including the energy use of the tenants, Storebrand modeled the target based on both location-based emissions factors and market-based emissions factors, as shown in Figure B4.1 and Figure B4.2. The assumed activity growth rate was 2% per year.

[56] Guidehouse, the consultancy that supported the case study development, adjusted the power pathway in line with the 1.5°C based on the SBTi 1.5°C guidance for utilities. As Storebrand's scope 1 emissions intensity was already very low, one can assume that the combined scope 1 + 2 is in line with 1.5°C.

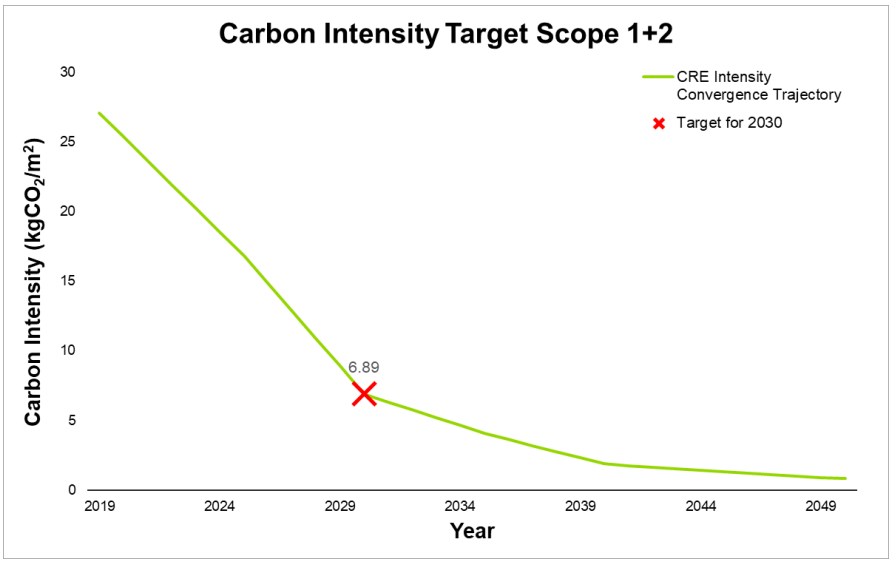
Figure B4.1: Location-based intensity pathway, Trygg and Vekst Entities



Source: Storebrand 2020.

In the location-based trial shown in Figure B4.1, initial scope 1 + 2 emission intensity in 2019 was 5.80 $kgCO_2/m^2$, which decreases to 1.97 $kgCO_2/m^2$ in 2030. This represents a 66% decrease from the base year level.

Figure B4.2: Market-based intensity pathway, Trygg and Vekst Entities



Source: Storebrand 2020.

In the market-based trial shown in Figure B4.2, initial scope 1 + 2 emission intensity in 2019 was 27.05 $kgCO_2/m^2$, which decreases to 6.89 $kgCO_2/m^2$ in 2030. This represents a 75% decrease from the base year level.

Conclusions and recommendations

The applied SDA model to Storebrand's Real Estate assets resulted in 60–75% emissions intensity reductions (CO_2 per m^2) from 2019 to 2030, mainly due to the steep emissions reductions in the scope 2 emissions in line with a 1.5°C scenario. To set a science-based target on a real estate portfolio, an FI must first choose between location-based or market-based scope 2 emissions accounting as the basis for modeling a target. The two methods may result in quite different emissions and target figures as shown in the graphs above, but the results also allows for different options to reach the target. Going beyond the operational and technological measures of the location-based method implies flexibility to utilize market-based measures like Renewable Energy Certificates. Before concluding, further investigation into opportunities and challenges of meeting the two different targets is needed. Storebrand will also explore scope 3 real estate emissions targets and measures for waste and transport-related emissions, although these are not within the scope of the SDA for real estate method.

SDA for Electricity Generation Project Finance

Project finance is the financing of a project, such as infrastructure, and public and industrial assets using a limited-resource structure, including debt, equity, and/or mezzanine. This method focuses on projects in the power sector; other types of project finance (other than in the fossil fuel sector) are currently out of scope (see Table 5.2).

Targets on an electricity generation project finance portfolio are set using global decarbonization pathways for power generation (i.e., the global electricity production projections and emissions intensity pathways used by the SBTi Target Setting tool, per Table 5.3). A quick start guide is also available to support target development (SBTi 2020e).

FIs that already only finance renewable electricity projects in the base year may set targets to continue doing so. For the purposes of target validation, the SBTi will use the same definition of renewable electricity as the RE100 initiative.

Separately, FIs that meet all the following conditions may set an emissions intensity maintenance target up to 2030 for an electricity generation project finance portfolio:

i. a portfolio emissions intensity that is at or below the 2030 sector intensity level in a 1.5°C aligned pathway for the power sector (100 gCO_2e/kWh), and
ii. at least 80% renewable or other zero-emissions electricity generation project financing, and
iii. a commitment to maintain the base year portfolio emissions intensity through 2030 and only finance 1.5°C aligned electricity generation projects.
    - Where 1.5°C aligned financing for the power sector is defined as a commitment to only finance new capacity from zero-emission sources and/or additional exposure to existing capacity if the infrastructure has an emissions reduction plan consistent with limiting warming to 1.5°C with no or limited overshoot.

This maintenance target aims to accommodate FIs that have already achieved, at a portfolio level, the emissions intensity required to align with the 2030 sector intensity level in a 1.5°C pathway. It is meant to encourage FIs to maintain the enabling role they play in decarbonizing the power sector towards net-zero by only financing 1.5°C aligned electricity generation such as the development and operation of renewable and zero-emission electricity generation projects. Nevertheless, the SBTi strongly encourages these FIs to further reduce their portfolio's emissions intensity and set a target to continue only financing renewable electricity projects. Additional follow-on targets must be aligned with the upcoming SBTi FI Net-Zero Standard to ensure that all post 2030 targets are compatible with net-zero pathways. Please see Table 6.1 for target language examples.

Case Study: Mizuho Financial Group - Testing SDA for Electricity Generation Project Finance

Background on Mizuho Financial Group

The Mizuho Financial Group is one of the largest FIs in Japan, offering a broad range of services including banking, trust and securities, and other business related to financial services through its group companies. The group was established in September 2000. Under the umbrella of the holding company Mizuho Financial Group, the major group companies include Mizuho Bank (MHBK), Mizuho Trust & Banking (MHTB), and Mizuho Securities (MHSC).

As an initiative to address climate change, Mizuho Bank ("Mizuho") has already developed its own carbon accounting methodology to measure CO_2 emissions and CO_2 emission reductions targeted for large-scale power generation projects. Mizuho's carbon accounting approach measures emissions from business as well as the degree to which business activities contribute to reducing CO_2 emissions. Mizuho has been disclosing the results of its carbon accounting since 2006 and has been utilizing these results as information for future management to support the movement toward a decarbonized society. Mizuho Financial Group participated in the SBTi road- testing program to enhance its evaluation system and support efforts to reduce GHG emissions.

Application of the SDA for electricity generation for project finance

Mizuho applied the SDA for Mizuho's project finance portfolio of fossil fuel–fired power generation and renewable energy power generation. To apply the SDA for fossil fuel–fired power projects, Mizuho used its loan outstanding data as of March 31, 2019 (the end of FY2018) and annual GHG emission data for each project estimated at the timing of financial close. If not available, Mizuho used the actual Annual Energy Production (AEP) for the project under operation and the estimated AEP for the project under construction. To calculate the annual GHG emission with AEP, Mizuho used the emission factors from JBIC J-MRV guideline, which is based on the latest data edition by IEA. Mizuho is still working to incorporate its renewable energy project portfolio into Mizuho's modeling based on the methodology of SDA.

Based on the data collected from each of its project finance front offices, Mizuho calculated baseline emissions from its project finance portfolio of fossil fuels electricity generation globally. When renewable energy project data are collected, Mizuho plans to improve the modeling, taking these data into consideration in the future.

Project-level Approach

Advantage

Given that Mizuho has engaged in the project finance business globally and has played a lead role in project development, Mizuho has access to GHG emission data at the stage of loan arrangement. Throughout engagement with the borrower and the project due diligence process with external consultants, Mizuho has been able to maintain data accuracy and seek data verification.

Challenges

It was challenging to collect data of annual GHG emission and/or AEP and total project cost of each project. Mizuho communicated with its officers located globally to provide Mizuho with the necessary data, which took more time than expected to collect. Additionally, it was difficult to confirm the accuracy of this data within such a limited time frame and with a limited data infrastructure.

To track progress, Mizuho tries to monitor the continuous emission status of projects during the operation period. However, Mizuho frequently confronts practical difficulties due to the lack of emission data. For example, the project borrower is not obliged to obtain emission data after a project enters into the operation stage. Under such a situation, it is difficult for Mizuho to verify the emission data and reconcile the estimated data with the actual data. Therefore, Mizuho occasionally has to rely on a theoretical calculation method using information on annual energy production and third-party average emission factors.

Conclusions and recommendations

Mizuho recognizes that regarding fossil fuel-fired power projects, it is important to improve the accessibility to the emission data and the quality of the verification process. Taking advantage of its market presence under the project finance arrangement, Mizuho consider it important to seek more practical collaboration with Mizuho's clients to obtain more accurate data, especially at the monitoring stage of each project. Mizuho considers that this engagement to improve data quality would improve the ability to drive GHG emissions reductions.

Even if the quality data issues can be addressed, Mizuho considers that actions taken by FIs have limited ability to directly reduce emissions from electricity generation projects. Given this perceived limitation, Mizuho plans to strategically increase the portfolio of renewable energy projects.

SDA for Corporate Instruments

This methodology covers listed equity, private equity, corporate bonds, and corporate loans. Targets are set on relevant "Required Activities" in Table 5.2, for which specific sectoral decarbonization pathways are available (e.g., electricity, iron and steel, cement, aluminum, pulp and paper, transport, commercial buildings, aviation, FLAG and maritime shipping).

Regarding emissions scopes of portfolio companies that shall be included in the targets, FIs shall refer to the relevant SBTi sector-specific guidance for SDA methods. For instance, FIs' targets on portfolio auto Original Equipment Manufacturers (OEMs) shall include their scope 1 and 2 emissions, as well as scope 3 'use of sold products' emissions of sold vehicles. Specifically, 'use of sold products' targets shall meet the minimum level of ambition determined by the SBTi's Transport sector guidance, covering Well-to-Wheel emissions of sold vehicles. A list of the sector-specific requirements and guidance is available in Section 5 of the Target Validation Protocol.

Please refer to Table 5.3 for target setting resources available for different sectors. A detailed description of the SDA methods per asset class is provided in the Appendices.

Case Study: Applying the SDA and Portfolio Coverage Method to La Banque Postale's Corporate Equity and Bond Portfolios

Context of the study

La Banque Postale is a subsidiary of Le Groupe La Poste, the French national postal services company. La Banque Postale is entrusted with a banking accessibility mission, which guarantees universal and nondiscriminatory access to free, simple, and indispensable banking services for people who are excluded from traditional banking services and who have specific needs.

La Banque Postale is organized around three areas of expertise: (i) retail banking, (ii) life insurance, personal risk insurance, property and health insurance; and (iii) asset management, carried out through the asset management subsidiaries (La Banque Postale Asset Management and Toqueville Finance), which provide savings and investment products to individual customers and legal entities. With aggregated assets under management (AUM) (LBPAM-Tocqueville Finance) of €235 billion as of December 31, 2019, La Banque Postale Asset Management (LBPAM) is the fifth-largest asset management company in France. It offers open funds, dedicated funds, and mandates to its institutional investors, insurers, mutuals, major companies, and distributors. As a full manager, LBPAM operates in all asset classes

As an early adopter of responsible banking, La Banque Postale has always supported asset financing and energy projects on renewable energy development and excluded fossil fuels. In addition, the Bank has measured the exposure of its corporate and investment banking activity to climate risk since 2013 (carbon intensity of corporate issuers). Together, La Banque Postale and La Banque Postale Asset Management place the ecological and energy transition, the fight against global warming, and the

protection of ecosystems at the heart of their strategic concerns. La Banque Postale is engaged in the reduction of its carbon footprint and committed to setting science-based targets through the SBTi in 2017. The climate strategy consulting company, EcoAct, applied the SBTi Finance methods on behalf of La Banque Postale, on selected corporate equity and bond portfolios.

Application of the SDA methodology to the power generation equity and bond portfolios

Application of the methodology and challenges

La Banque Postale chose to assess the alignment of a portion of its investments in the power generation and real estate sector with a well-below 2°C trajectory. The portfolios assessed were bond and equities portfolios from La Banque Postale Asset Management, mainly positioned on green assets to analyze their alignment. This analysis aims at providing La Banque Postale with a long-term target in the investment decision-making choices; that is, deciding whether to invest in a company based on its own trajectory, the trajectory of the portfolio, or to engage with an investee on carbon intensity goals.

The assessment on these equities and bonds portfolios focused on only two sectors, power generation and real estate, following a constraint to have enough sector issuers assessed so as to draw unbiased conclusions. In this case study, La Banque Postale chose to present the results for the power generation sector only. At the end of 2017, these investments represented 8.3% of the value of the equity portfolio studied (8 companies, €47 million) and 3.9% of the corporate bond portfolio studied (12 companies, €42 million). The remaining part of the portfolio focuses on sectors of the economy not included in the SDA methodologies or the sector of the economy where La Banque Postale invests in too few companies for the trajectory to be a meaningful investment decision-making tool.

The assessment focused on financed emissions from investments in electricity production, a sector that is expected to progressively transform to zero-carbon power generation. The data covering 2017 power generation companies' GHG emissions and electricity output were obtained from the public reports of the companies shown in Table B6.1:

Table B6.1: Equities and bonds portfolio

Equities Portfolio	Bonds Portfolio
Acciona SA	Iberdrola International BV
Scatec Solar ASA	Alliander NV
Neoen SA	Engie SA
Voltalia SA	Ren Finance BV
Orsted A/S	Enel SpA
Falck Renewables SpA	Iberdrola Finanzas SA
Iberdrola SA	Terna Rete Elettrica Nazionale SpA

Source: La Banque Postale 2020.

Global sector GHG emissions and output data were directly retrieved from the International Energy Agency Beyond 2°C Scenario (B2DS) as shown in Table B6.2.

Table B6.2: Global activity and emissions intensities in the B2DS

Parameter	IEA Data	Units
Sector activity 2017	2,56E+10	MWh
Sector activity 2030	3,10E+10	MWh
Sector activity 2050	4,43E+10	MWh
Sector intensity 2017	1,36E+00	tCO_{2e}/MWh
Sector intensity 2030	7,15E-01	tCO_{2e}/MWh
Sector intensity 2050	1,07E-01	tCO_{2e}/MWh

Notes: MWh = Megawatts/hour; tCO_{2e} = Tons of CO_2 equivalent.
Source: IEA 2017.

Projecting investees' 2030 production values (in megawatts/hour [MWh]) was challenging as companies generally do not disclose forecasts that far ahead. Therefore, 2030 production values were forecasted as follows:

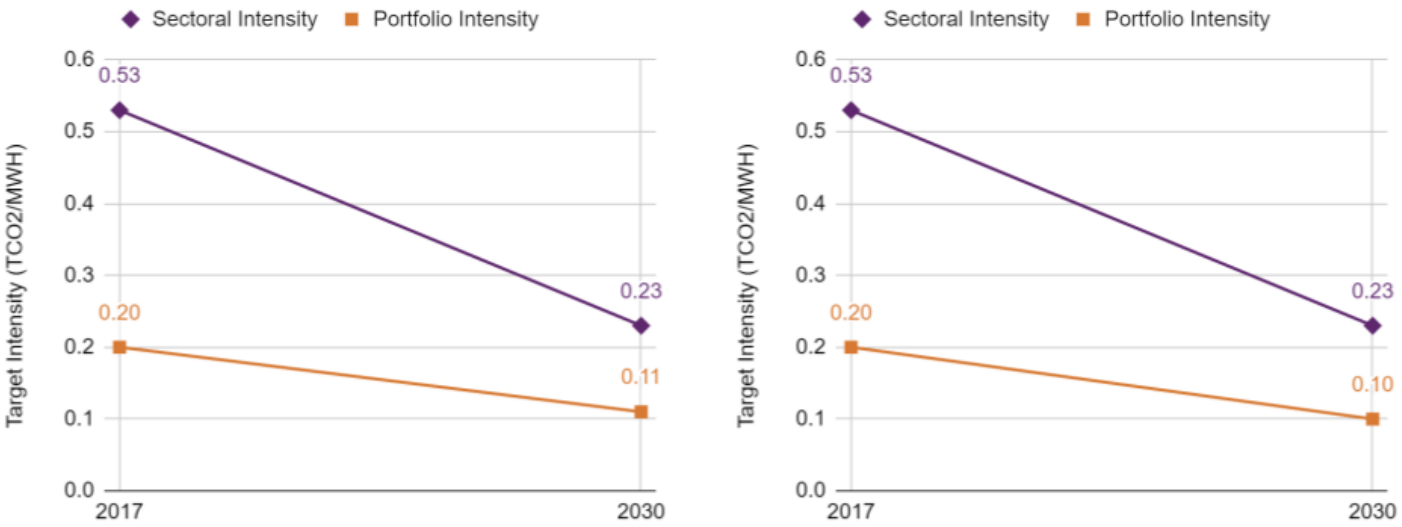
- Sectoral activity growth was extrapolated as the percentage difference between the reference year in 2017 and the year 2030 in the IEA B2DS scenario. This percentage growth (20.8%) was applied to the annual power generation of all companies included in the sectoral analysis.
- Moreover, it was assumed that the ownership values and allocation will remain constant across the period for the portfolios.

Results of the study

After applying the SBTi's SDA to the power generation sector on its equity and bonds portfolio, La Banque Postale was able to draw the two following trajectories allowing the portfolios to remain in line with a WB2C scenario. See Figure B6.1.

Figure B6.1: La Banque Postale's power sector portfolio intensity pathway

La Banque's Postale's power generation portfolio intensity compared to the sectoral intensity in a B2DS.



Source: La Banque Postale 2020.

These intensity reduction trajectories show that La Banque Postale's investments in companies that have large renewable energy installed capacities, have paid off: their intensity in 2017 is already lower than the sectoral intensity of the IEA Beyond 2°C (B2DS) sectoral intensity.

From that base year, the SDA methodology calculates a trajectory for the portfolio: the trajectories show that to converge the sectoral and portfolio trajectories toward 2030, La Banque Postale's projected portfolio needs to decrease its modeled emission intensity by half between 2017 and 2030 (from 0.20 to 0.11 for the equity portfolio and to 0.10 tCO_2/MWh for the bond portfolio).

These trajectories are a powerful indicator and decision-making tool for La Banque Postale: if La Banque Postale wants to stay aligned, its portfolios would need to reach the 2030 target.

Conclusions and recommendations

Applying the SDA approach to La Banque Postale's power generation corporate equity and bond portfolios allowed the bank to measure the current carbon intensity of its portfolios and to define what yearly targets are to be reached until 2030 to keep global warming to WB2C by 2050.

As per the SDA approach, La Banque Postale used the global B2DS pathway scenario to calculate the sector intensity for the target year.

Furthermore, the portfolio's carbon intensity will have to be recalculated periodically. Indeed, investment choices will have to be checked against La Banque Postale's trajectory to assess whether

the portfolio is still aligned with the objectives of the Paris Agreement. However, the changing portfolio's carbon intensities may result in fluctuations of the end target (2030).

Calculating each company's power generation carbon intensity allows for identification of GHG emissions hotspots within the portfolio, which is a first step to implement investment stewardship strategies.

The SBTi framework includes other methods to align the power generation portfolio's carbon intensity with the Paris Agreement, including the Portfolio Coverage Approach, which can reveal additional insights into the investees' 2030 trajectory.

Application of the Portfolio Coverage method to La Banque Postale's corporate equity and bond portfolios

Application of the methodology and challenges

The portfolios studied were bond and equities portfolios from La Banque Postale Asset Management, mainly positioned on green assets for the assessment of their alignment. The portfolio coverage method was conducted on La Banque Postale's corporate equity and bond portfolio, on a scope covering 100% of the value held, as all sectors are included in this method. The study was carried out using public nonfinancial information and the list of companies that published science-based commitments extracted from the SBTi website in March 2020. Companies' scope 1 and 2 emissions were retrieved from nonfinancial databases. Based on this data, five categories of commitments were defined, as shown in Table B6.3.

Table B6.3: Science-based target commitment categories

Status	Category
SBTi: set	1
SBTi: committed	2
Ongoing process	3
No emission reductions initiative	4
No information	5

Source: La Banque Postale 2020.

These five categories allowed us to make predictions on ambitious yet attainable portfolio coverage targets as categories 2 and 3 are likely to set targets within the next five years, while in categories 4 and 5 it is less likely.[57]

[57] Per the criterion for Portfolio Coverage targets, investees' or borrowers' targets shall be approved by SBTi.

Results of the study

After applying these five categories to the equity and bond portfolios, we looked at three different metrics to define coverage: percentage of assets under management, percentage of GHG emissions, and percentage of enterprise values/market capitalization (Table B6.4).[58]

Table B6.4: Five categories used to define coverage

Category	Equity Portfolio			Bonds Portfolio		
	AUM (%)	CO_2 (%)	MCap (%)	AUM (%)	CO_2 (%)	MCap (%)
SBTi: Set	16	14	16	10	29	16
SBTi: Committed	18	19	18	11	17	23
Ongoing process	23	25	23	13	9	9
No emission reductions initiative	1	6	1	4	1	6
No information	***42***	***36***	***42***	***62***	***43***	***46***

Notes: AUM = Assets under management; MCap = Market capitalization; EV = Enterprise value.
Source: La Banque Postale 2020

These metrics allow performance of the portfolios to be measured in terms of investees' engagement as of today. They then serve as a basis to set targets of a percentage of issuers within the portfolio to be covered by a science-based target in the future (e.g., engage with issuers to have a defined percentage of the portfolio covered by a "SBTi target set" within the next five years).

Conclusions and recommendations

La Banque Postale found the portfolio coverage analysis as the friendliest method, for internal and public disclosure purposes, among the three methods (SDA, Portfolio Coverage, and PACTA) included in the SBTi road-testing process. On the one hand, it provides portfolio managers with insightful conclusions regarding current climate performance of investees. On the other hand, it enables FIs to set portfolio coverage targets to work toward a well-below 2°C portfolio alignment and start communicating about them to investees and the general public. Based on these conclusions, La Banque Postale has started working on a hybrid metric combining ownership and emissions indicators to maximize the impact of its investment stewardship strategy and encourage its investees to set their own science-based targets.

5.4.2 Portfolio Coverage for Corporate Instruments

FIs may use the Portfolio Coverage method to set targets on their corporate instrument asset classes, including corporate debt, listed equity and bonds, and private equity and debt (see relevant "Required Activities" in Table 5.2) to drive adoption of science-based targets. This method can be used on its own or with the other three methods to collectively meet the minimum coverage for all "Required Activities."

[58] Financial institutions shall use one of the weighting approaches in the SBTi Finance Tool consistently throughout the target period.

To use the Portfolio Coverage method, FIs commit to engaging with their borrowers and/or investees to set their own science-based targets, which shall be validated by the SBTi,[59] such that the FI is on a linear path to achieve 100% science-based target coverage by 2040. As fulfillment of portfolio coverage targets means that borrowers' and/or investees' science-based targets have been approved by the SBTi, the 2040 timeline has been determined to allow borrowers and/or investees enough time to implement their target to ultimately achieve an economy-wide transition to net zero by 2050. Section 5 of the Target Validation Protocol presents information on the applicability of available science-based target setting methods to various sectors and ongoing sector development work, which can help inform FIs' engagement efforts with borrowers and/or investees. For example, scope 3 targets may be required for specific sectors. Otherwise, if a company's relevant scope 3 emissions are 40% or more of total scope 1, 2, and 3 emissions, a scope 3 target is required. SMEs, however, are not currently required to set scope 3 targets but must commit to measure and reduce their scope 3 emissions.

To define the coverage of the Portfolio Coverage target, FIs shall use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period. As the Portfolio Coverage (PC) method is binary and we're using the Temperature Rating aggregation methods, we can replace the outcome from the Temperature Rating method for the companies, i.e. TS, in the formula with the outcome of the PC-assessment, i.e. 1 if the company has an approved target or 0 if the company does not have an SBTi-approved target. This means that you can use the same weighting methods for both Temperature Rating and Portfolio Coverage. Simply replace TS with PC in the formula. More instructions on applying this method in the SBTi Finance Tool can be found in the SBTi Finance Temperature Scoring and Portfolio Coverage Tool User Guide..

The ambition of the Portfolio Coverage method depends on the FI's starting point. Whereas an FI starting with 10% coverage in 2020 would need to increase coverage by 4.5% per year (90/20 = 4.5), an FI starting with 30% coverage would need to increase coverage by 3.5% per year. An example of a portfolio coverage target could be that "Investment Firm A commits to 32.5% of its eligible equity portfolio by total assets setting SBTi validated targets by 2025".

A science-based target is a useful indicator for investors to understand their borrowers' and/or investees' publicly committed trajectories to mitigate GHG emissions. However, it does not replace a robust assessment of the companies' business model or associated risks. For further recommendations on steps FIs can take to integrate climate change in their organization and achieve their targets in a manner that leads to GHG emissions reduction in the real economy, please refer to Section 7.

[59] This differs from SBTi's latest criteria for companies' supplier engagement targets, where suppliers' targets are not required to be approved but should only be set in line with SBTi's resources. SBTi stepped up the requirement for investee's targets given the rapidly increasing adoption of science-based targets and the SBTi's improved capacity to deliver timely target validations. In addition, requiring SBTi approval ensures that borrowers' and/or investees' scope 3 emissions are addressed as per SBTi's general criteria for companies, where companies must set scope 3 targets if their scope 3 emissions are more than 40% of the total.

Criteria

FI-C17.2 – Portfolio Coverage Targets: FIs' targets to drive the adoption of science-based emissions reduction targets by their borrowers and/or investees are considered acceptable when the following conditions are met:

- Boundary: FIs shall set engagement targets on corporate activities as specified in the Required Activities and Methods Table (Table 5.2).
- Ambition: FIs shall commit to having a portion of their borrowers or investees set their own approved 1.5°C aligned science-based targets such that the FI is on a linear path to 100% portfolio coverage by 2040 (using a weighting approach in the SBTi Finance Tool). For example, an FI starting with 10% coverage in 2020 would need to increase coverage by 4.5% per year ((100% – 10%) / (2040 – 2020)) and reach at least 32.5% (10% + [(2025 – 2020) x 4.5%]) coverage by 2025. FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period. As the Portfolio Coverage (PC) method is binary and we're using the Temperature Rating aggregation methods, we can replace the outcome from the Temperature Rating method for the companies, i.e. TS, in the formula with the outcome of the PC-assessment, i.e. 1 if the company has an approved target or 0 if the company does not have an SBTi-approved target. This means that you can use the same weighting methods for both Temperature Rating and Portfolio Coverage. Simply replace TS with PC in the formula.
- Time Frame: FIs' Portfolio Coverage targets must be fulfilled within a maximum of five years from the date the FI's target is submitted to the SBTi for validation.[60] FIs may also set a second, longer-term 100% Portfolio Coverage target but only if it is in addition to one that meets the aforementioned five-year time frame. The same base year shall be used for all Portfolio Coverage targets. Fulfillment of portfolio coverage targets mean that borrowers' and/or investees' science-based targets have been approved by the SBTi.
- Scope of Borrower and/or Investee Emissions: FIs' borrowers and/or investees shall follow the latest SBTi criteria for companies to set science-based targets. For example, corporate must at a minimum cover 67% of their scope 3 emissions when their scope 3 emissions are more than 40% of total scope 1, 2, and 3 emissions.

Case Study: Eurazeo - Applying the Portfolio Coverage Method

Background on Eurazeo

Eurazeo is a leading global investment company, with a diversified portfolio of €18.8 billion in assets under management, including €12.5 billion from third parties, invested in over 430 companies. With its considerable private equity, venture capital, real estate, private debt, and fund of funds expertise,

[60] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

Eurazeo accompanies companies of all sizes, supporting their development through the commitment of its nearly 300 professionals and by offering deep sector expertise, a gateway to global markets, and a responsible and stable foothold for transformational growth.

Targets proposed by Eurazeo[61]

Below are the preliminary targets Eurazeo intends to set under the SBTi framework. Eurazeo committed to set science-based targets in June 2020, has submitted for validation its scope 1 and 2 targets, and plans to further align its scope 3 targets with the SBTi criteria and recommendations after the framework is launched.

Management company: Eurazeo commits to reduce its scope 1 and 2 GHG emissions 71% per employee and its travel-related emissions 72% by 2030 from a 2017 base year.

Portfolio: Eurazeo commits to screen 100% of emissions of these investments* and will engage companies emitting 30% of these emissions to set reduction targets within the next five years.

**Scope: Until 2025, over a scope of investments made with its own capital, for all asset classes (excluding fund of funds). Beyond 2025, the coverage will progressively expand to third party money–financed assets.*

Why did you set a science-based target?

Eurazeo is strongly aware that climate change is more than ever a major challenge to people, ecosystems, and the economy. Representing 5 to 10% of GDP in Europe and in the United States, Eurazeo believes that private equity has a special role to play in the fight against climate change. Being the first private equity company to commit to a science-based target climate trajectory, Eurazeo hopes to pave the way for numerous other fellow competitors, hence accelerating the transformation to a zero-carbon economy.

To drive effective action against climate change, Eurazeo acts at two different levels.

First, Eurazeo is committed to reducing its direct operational impact mostly related to its buildings and employees travel. Since 2015 it has reduced the direct footprint of its Parisian offices by 73% and aims to go beyond and cover all of its geographies with its science-based target commitment.

Second, Eurazeo acts at its portfolio level. Nonfinancial impact—including CO_2 emissions—of the portfolio companies is measured on a yearly basis and progress plans are implemented and thoroughly monitored. Since 2011, Eurazeo has encouraged its portfolio companies to implement corporate social responsibility (CSR) programs that have enabled them to reduce 1,068,000 metric tons of CO_2 equivalent in emissions through the implementation of operational energy-saving programs.[62] These

[61] These targets have not been approved by SBTi.

[62] Methodological details are available in section 3.4 of Eurazeo's 2019 Universal Registration Document.

programs also helped save more than €243 million in expenditure directly through the reduction of energy and fuel consumptions and indirectly through dedicated programs deployed by each company.

2020 marks a new chapter in the group's combat against climate change. With the acceleration of this crisis, it is now necessary to go beyond its best effort and strengthen its commitment within a science-based target well-below 2°C trajectory.

**France Invest, the French Association of Investors for Growth, brings together private equity companies active in France and the associated professions that support them. Its members play a major role in the growth and transformation of companies and in supporting the French economy.*

What was the process of setting your targets?

Since 2008, Eurazeo has developed robust carbon measurements for its own operational activities and for its portfolio. Scope 1, 2, and 3 emissions are measured for Eurazeo's own activities and for its fully consolidated investments (companies over which the group holds a controlling interest, usually as a result of a majority stake), scope 1 and 2 emissions are measured for its minority investments. These measurements are updated on a yearly basis and validated by statutory auditors. With the constant portfolio evolution, it has been a long process to build the accurate methodologies and tools allowing robust emission measurements.

Did you encounter any challenges?

It is extremely complex to decouple economic growth and ecological impact. Enabling such change at scale necessitates out of the box thinking, boldness, and persistence from all management teams. Implementing such an ambitious trajectory has raised a lot of questions and required a lot of pedagogy to create confidence, alignment, and ultimately commitment.

5.4.3 The portfolio temperature rating approach for corporate instruments

FIs may use the Temperature Rating Approach to address and cover corporate instruments, including corporate debt, listed equity and bonds, and private equity and debt (see relevant "Required Activities" in Table 5.2). 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."

A range of methods currently exist to determine the temperature rating of investment portfolios. The "Alignment Cookbook," published by Institut Louis Bachelier, compares many of these methods to measure the alignment of investment portfolio with temperature trajectories (Raynaud et al. 2020). Currently the SBTi only recognizes the temperature rating methodology co-developed by WWF and CDP for target submissions as it has been created in collaboration with the SBTi, is fully open source, is fully transparent in methodology and output, and has undergone a public consultation process. As

such, only temperature scores calculated based on this methodology (e.g., from the SBTi Finance Temperature Rating tool) are currently recognized by the SBTi for target submissions.

The SBTi will consider the use of alternative methods to determine temperature rating on a case-by-case basis. FIs should contact the SBTi financial sector team before submitting targets set using these alternative methods for validation.

Temperature Rating Methodology

The temperature rating method developed by CDP and WWF is an extension of the Portfolio Coverage approach to enable FIs to assess the current ambition of portfolio companies based on their public GHG reduction targets (including science-based targets and any other valid public GHG targets that meet the method criteria). This method enables the assessment of ambition of any corporate GHG emissions reduction targets against a wider range of temperature outcomes and allows FIs to understand the overall temperature rating of their portfolios and take actions to move portfolio companies toward better temperature ratings (e.g., 2°C, well below 2°C (WB2C), 1.5°C). The method is open source and has gone through a separate consultation process.

The latest version of the methodology can be found here.

Criteria

FI-C17.3 – Portfolio Temperature Rating Targets: FIs' targets to align the Temperature Rating of their portfolios with the temperature goals set out in the Paris Agreement are considered acceptable when the following conditions are met:

- Boundary: FIs shall set portfolio Temperature Rating targets on corporate activities as specified in the Required Activities and Methods Table (Table 5.2).
- Ambition: FIs shall align their portfolio scope 1 + 2 temperature score with a minimum 1.5°C scenario and in addition align their portfolio scope 1 + 2 + 3 temperature score with a minimum well-below 2°C scenario by 2040. FIs shall commit to reducing their portfolio temperature scores such that the FI is on a linear path to the stated goal by 2040. Separate targets for scope 1 + 2 and for scope 1 + 2 + 3 shall be set.

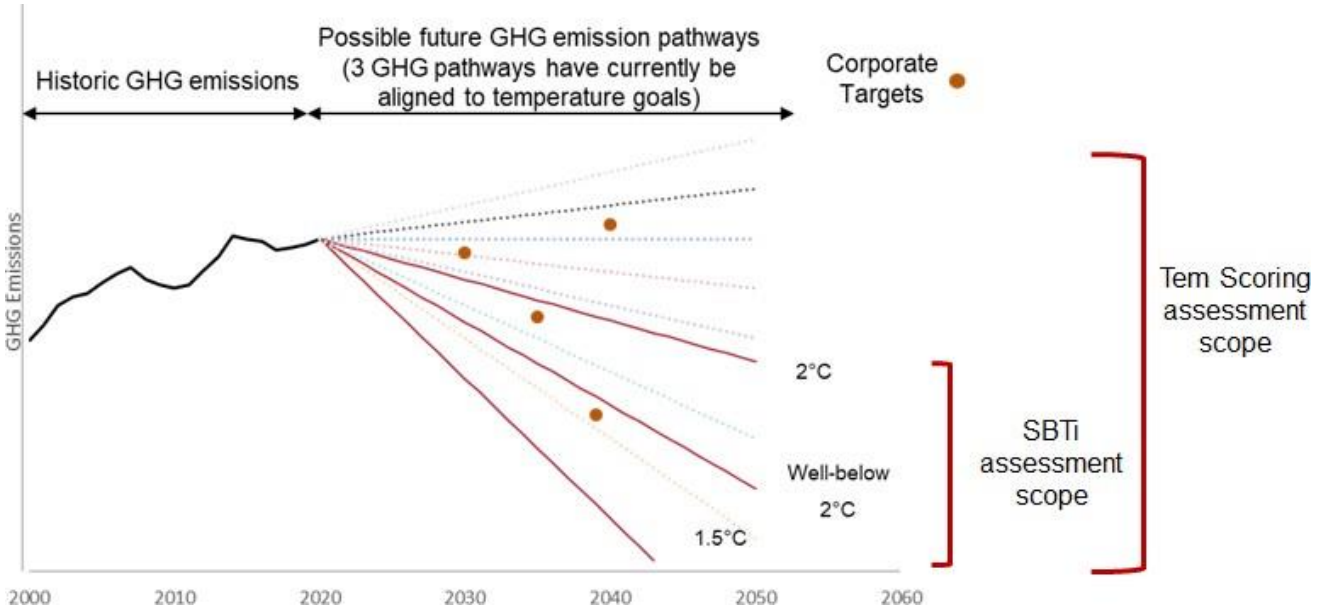
  For example, an FI setting a Temperature Rating target with a base year of 2021, target year of 2027, starting portfolio scope 1 + 2 temperature score of 2.8°C, starting portfolio scope 1 + 2 + 3 temperature score of 3.0°C, and a temperature alignment goal of 1.5°C for both scope 1 + 2 and scope 1 + 2 + 3 would need to reach at least a 2.39°C portfolio scope 1 + 2 temperature score [2.8°C – (2.8°C – 1.5C) / (2040 – 2021) * (2027 – 2021)] and a 2.53°C portfolio scope 1 + 2 + 3 temperature score [3.0°C – (3.0°C – 1.5°C) / (2040 – 2021) * (2027 – 2021)].

FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

- Time frame: Portfolio Temperature Rating targets must be fulfilled within a maximum of five years from the date the targets are submitted to the SBTi for an official validation.[63] The same base year shall be used for all Temperature Rating targets.
- Scope of Borrower and/or Investee Emissions: Temperature scores are calculated for FIs' borrowers' and/or investee's scope 1 + 2 and for scope 1 +2 +3 emissions, for both of which FI must set targets on.

As illustrated in Figure 5.3 below, the Temperature Rating method covers a broader group of companies than the strictly SBTi-approved Portfolio Coverage method, enabling the assessment of any public GHG emissions reduction target that meets the protocol criteria.

Figure. 5.3: Overview of the temperature rating method



Source: CDP and WWF 2020.

The method is composed of three distinct components that will allow FIs to first quantify the temperature score of their portfolio:

1. **Target-level protocol**: The target protocol converts individual targets of various formats into temperature scores. This is achieved by generating simple regression models for estimated warming in 2100 from climate scenarios with short, medium, and long-term trends in metrics like absolute emissions or emissions intensities. Regression models are generated based on

[63] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

scenarios in the Intergovernmental Panel on Climate Change (IPCC) special report on 1.5°C (SR15) scenario database (CDP and WWF 2020). In addition to defining methods for disclosed targets, a default scoring approach is applied to all nontarget disclosing companies.

2. **Company-level protocol**: Since companies may have multiple climate targets, covering different GHG emission scopes and time frames, a protocol is used to aggregate all target data to produce scores at a company level. This protocol defines the minimum quality criteria for determining the acceptability of a target to be scored and the steps required to identify and aggregate multiple targets to produce an overall company score. Following the SBTi corporate criteria, only forward-looking ambition is considered when assessing the targets, and past performance is not credited.
3. **Portfolio-level protocol**: The company scores are then aggregated to generate scores at a portfolio level. This consists of weighting company scores on the basis of GHG emissions and economic indicators to generate an overall weighted score for a specific portfolio. FIs shall use one of the weighting approaches in the SBTi Finance Tool consistently throughout the target period. More instructions on applying this method in the SBTi Finance Tool can be found in the Portfolio Coverage and temperature rating discussion included in Appendix F.

Aligning current temperature scores to temperature goals:

Base year temperature scores are produced at a scope 1 + 2 and a scope 1 + 2 + 3 level for each portfolio. FIs must then formulate targets to align this temperature to the desired temperature outcome, for example, 1.5°C. Table 5.4 presents the key steps to generate temperature scores and align targets with long-term temperature goals.

Table 5.4: Key steps to generate temperature scores under the portfolio temperature rating method

Step 1. Base Year Temperature Score	
Types of portfolio scores	Two portfolio-level temperature scores shall be generated based on company targets and/or default scores: • Scope 1 + 2 score (°C) • Scope 1 + 2 + 3 score (°C)
Boundary	The portfolio must reflect the holdings on a given date (e.g., first or last day of financial or calendar year).
	In addition to the two scores generated, FIs must provide the following information when submitting targets for an official validation: • The percentage of portfolio GHG emissions that are covered by GHG targets and the percentage of portfolio GHG emissions that are assessed using default score; and/or

	• The percentage of portfolio invested and/or loan value that is covered by GHG targets and the amount of portfolio invested and/or loan value that is assessed using default scores. Example: 30% of the portfolio's GHG emissions or invested/loan value are covered with valid targets, with the remaining 70% scored using default scores from borrowers/investees with no valid targets.
Step 2: Targets Setting	
Minimum ambition thresholds	The scope 1 + 2 portion of the portfolio must be aligned to at least a 1.5°C score, and the scope 1 + 2 + 3 portion must be aligned to at least a well-below 2°C (1.75°C) score by 2040.
Target time frame	Targets must be within five years of the year the targets are submitted to the SBTi. This means that the company has effectively five years to engage companies to set targets or to adjust the portfolio holdings so the portfolio temperature is aligned to a linear pathway that will reach in the temperature goals by 2040.
Target wording	Two targets must be set for each portfolio, addressing both operational (scope 1 + 2) and value chain (scope 1 + 2 + 3) emissions of the borrowers/investees. **Scope 1 + 2 target wording**: *FI A commits to align its scope 1 + 2 portfolio temperature score by [metric] within [asset class or sector] from X.XX°C in [base year] to X.XX°C by [target year].* **Scope 1 + 2 + 3 target wording**: *FI A commits to align its scope 1 + 2 + 3 portfolio temperature score by [metric] within [asset class or sector] from X.XX°C in [base year] to X.XX°C by [target year].*
Step 3: Temperature Rating	
Boundary	Each reporting year, and the target year temperature score must also be calculated on a given date in the calendar year or financial year, consistent with the approach used to calculate the base year temperature score.
Alignment ambition	A linear approach to 2040 is used to determine the minimum ambition required per year. A linear annual temperature reduction

	(LATR is generated based on the base year temperature score and the desired temperature goal in 2040. The minimum ambition must be at least 1.5°C by 2040 for scope 1 + 2 and well-below 2°C (1.75°C) for scope 1 + 2 + 3. LATR = (Base Year TS – Long-term TS) / (Long-term Target Year – Base Year). Where, LATR = Liner annual temperature reduction (°C/year) TS = Temperature score (°C) A company looking to be 1.5°C aligned by 2040 starting from a portfolio S1 + 2 temperature score of 2.8°C in a 2021 base year would have to reduce its portfolio score by at least the following amount each year: LATR = (2.8°C – 1.5°C)/(2040 – 2021) = 0.0684°C/year Therefore, if an FI sets a maximum five year target (from the target submission date), the maximum temperature of the portfolio in 2027 would be: 2.8°C – (2027 – 2021) *0.0684°C = 2.39°C
Outputs	Each year leading to the target year, the following data points should be disclosed by the FI: 1. Percentage of portfolio GHG emissions covered by targets and covered by default scores and/or 2. Percentage of portfolio invested value covered by targets and covered by default scores
Recalculation	The types of default scores must remain consistent across sectors. If changes to these models are implemented over the target period, the company will have to re-baseline the temperature of the fund. This will be based primarily on the sector-specific models that are modified over time.
Alignment options	The temperature score of any given portfolio can be aligned to a lower temperature score to achieve a target through the following hierarchy of actions: 1. **Engagement**: Engage existing borrowers/investees to set more ambitious targets, which would translate to lower temperature scores

	2. **Adjustment**: FIs can adjust the portfolio holdings, moving the fund's capital to borrowers/investees with more ambitious targets 3. **Divestment**: FIs can remove borrowers/investees with no/low ambition targets and replace them with companies that have more ambitious targets The SBTi recommends that FIs focus on direct engagement as a measure that can most effectively lead to emission reductions on the ground, while recognizing that the latter two indirect strategies shall remain as complementary available measures.

Source: Authors 2020.

Case Study: Amundi - Application of the Temperature Rating Method

Background on Amundi

Amundi is Europe's largest asset manager by assets under management, ranking among the top 10 global players, offers its 100 million clients—retail, institutional, and corporate—a complete range of savings and investment solutions in active and passive management, in traditional or real assets. Amundi clients benefit from the expertise and advice of 4,500 employees in nearly 40 countries. Created in 2010 and listed on the stock exchange in 2015, Amundi currently manages over €1.5 trillion of assets.

Using the temperature rating methodology developed by WWF and CDP, which is now incorporated in the SBTi Finance Tool, Amundi determined the temperature of four of its portfolios. This pilot was a first step in demonstrating how to apply this method to an investment fund and to encourage corporates and financial players to take action using this approach.

Temperature rating of Amundi's portfolio

Amundi first selected four equity funds: one generalist fund and three thematic funds for responsible investing for which results are displayed in Table B8.1 below. The first step was to identify target and GHG emission data for all portfolio companies. This was done by using data disclosed to CDP as part of its 2019 disclosure process. When including both approved science-based targets and targets disclosed through CDP, between 35 and 65% of funds contained no targets. This meant that the default scoring approach used to assign temperatures to companies with no valid public targets did have a significant influence on the results.

The fund with the lowest default score coverage, Amundi Global Equity Sustainable Income Fund, also obtained a lower temperature score, as it relied less on the high default scores of 3.2°C. While the default score can heavily influence the final portfolio result, it is also an effective way to identify which companies to engage with in order for them to set targets and ultimately lower the portfolio score.

Table B8.1: Temperature ratings for a selection of Amundi funds

Fund Name	Temperature Rating (Scope 1 + 2)	Temperature Rating (Scope 1 + 2 + 3)
CPR Invest – Climate Action	2.3°C	2.7°C
CPR Invest – Food for Generations	2.6°C	2.6°C
Amundi Global Ecology	2.6°C	2.6°C
Amundi Global Equity Sustainable	2.2°C	2.7°C

Source: Amundi Asset Management 2020.

Amundi observed that funds' current temperatures range from 2.2°C to 2.7°C. From this observation it can be seen that many companies are setting ambitious public targets, in addition to science-based targets, but that much remains to be done to achieve a trajectory in line with the Paris Agreement. This approach enabled Amundi to rate companies with ambitious targets, and importantly, to identify companies that do not have valid public targets that can be scored.

As part of its environmental, social, and corporate governance (ESG) research toolbox, the Temperature Rating Approach will bolster Amundi's forward-looking assessment capabilities to identify priorities and the degree of action required, notably through engagement with companies across the investment universe to set more ambitious, science-based emissions reduction targets. As companies make commitments, it will be possible to build portfolios that are more in line with the Paris Agreement.

Outcomes and target setting

The temperature rating provides a useful metric to deploy engagement with issuers on climate targets. Indeed, results show that the mobilization of all portfolio companies is imperative if we want to go further, with corporate engagement being essential to achieve this.

Conclusions and recommendations

The results of the temperature rating exercise showed the extent of target setting within the given portfolios and determined how far these portfolios are from the long-term temperature goals set out in the Paris Agreement.

A key challenge for Amundi now is to build coherent strategies that foster climate action using this temperature data. Indeed, in addition to its clear engagement purpose, the temperature rating can provide a useful signal for issuer selection when combined to other climate-related metrics. While the methodology will be subject to future developments and improvements, currently deploying such metric is the first necessary step toward setting meaningful climate targets on funds.

5.4.4 Fossil fuel finance targets approach

For FIs' portfolio companies in the fossil fuel sector, the SDA method will only be available after the SBTi Oil & Gas sector guidance is published. In the meantime, FIs may set Portfolio Coverage or Temperature Rating targets. For Portfolio Coverage, FIs may set targets but the validation of oil and gas companies is currently paused until the SBTi Oil & Gas sector guidance is published. Alternatively, FIs may use the Fossil Fuel Finance Targets method based on the Fossil Fuel Finance Position Paper to set targets on relevant "Required Activities" in Table 5.2 that are related to the fossil fuel sector at the company, project, and portfolio level. Any out-of-scope activities (e.g., securities and/or insurance underwriting) related to the fossil fuel sector shall also be disclosed. Targets shall cover the scope 1 + 2 +3 emissions of FIs' fossil fuel exposures.

The SBTi theory of change holds that FIs are essential for providing capital and engaging fossil fuel companies to transition to a 1.5°C pathway. Credible targets require both the immediate cessation of financial support of the expansion of unabated fossil fuel production capacity (from the time of target publication) and FIs using their influence to align companies with a 1.5°C transition. The SBTi recognizes that the emissions impact of divestment from fossil fuel assets is not always clear or consistent. As such, the SBTi is focused on client and investee engagement as the "first-best" option for FIs to support climate stabilization. If FI fossil fuel company counterparties do not align with 1.5°C transition pathways within a set amount of time, then the proposed criteria require phaseout and divestment.

To use the Fossil Fuel Finance Targets method, FIs commit to publicly disclose their exposure to fossil fuels across all the financial services they provide. FIs also commit to establish a policy to immediately cease new financial support to companies and projects that add to the unabated capacity of fossil fuel assets. In addition, FIs shall engage existing fossil fuel company counterparties to achieve 1.5°C transition using quantitative and qualitative criteria and public transition plans. Further, FIs shall set clear goals to phaseout financial support to any projects and/or companies that are unable or unwilling to follow a 1.5°C transition within a pre-defined time frame.

FI-C17.4 – Fossil Fuel Finance Targets: For FIs' portfolio companies in the fossil fuel sector, the SDA method will only be available after the SBTi Oil & Gas sector guidance is published. In the meantime, FIs may set Portfolio Coverage or Temperature Rating targets. For Portfolio Coverage, FIs may set targets but the validation of oil & gas companies is currently paused until the SBTi Oil & Gas sector guidance is published. Alternatively, FIs may use the Fossil Fuel Finance Targets approach as a fourth-target setting option to address financial flows (i.e., financial activities or services, including but not limited to loans, investments, asset management, and securities and insurance underwriting) to the fossil fuel sector. FIs' targets that use the Fossil Fuel Finance Targets approach are considered acceptable when they meet the following requirements:

- Boundary: FIs shall set targets on activities related to the fossil fuel sector as specified in the Required Activities and Methods Table (Table 5.2). Any out-of-scope activities related to the fossil fuel sector shall also be disclosed.
- Disclose: FIs shall publicly disclose information on an annual basis to provide a sufficient level of transparency to aid stakeholders' understanding of (i) the GHG impact of the financial services provided; and (ii) action being taken to reduce/eliminate emissions from fossil fuel activities at a group level and with subsidiary level granularity. The following datapoints shall be disclosed annually for all fossil fuel activities covered, beginning in the target submission (i.e., for the base year of the target):
  - Absolute emissions (scope 1+2+3) per GHG from fossil fuel exposures across all financial flows; and
  - Aggregated financial exposures (monetary amounts and final investment decisions) across all financing and facilitation activities; and
  - Forward-looking plans of fossil fuel portfolio companies.
- Arrest: FIs shall implement the immediate cessation, upon publication of the FI's science-based target, of new financial flows via a public commitment according to Table 5.5, including the cessation of all:
  - New financial flows to the coal value chain (see Annex 2 of the Fossil Fuel Finance Position Paper) for both companies and projects, with the exception of new financing for permanent decommissioning of production activities and capacity.
  - New financial flows to all unabated oil and gas value chain-associated activities (see Annex 2 of the Fossil Fuel Finance Position Paper) at the project level.
  - New financial flows provided to companies that are involved in expanding production and/or capacity of any applicable oil and gas value chain associated activities.
- Transition: FIs shall establish near-term targets, which must be fulfilled within a maximum of five years from the date the FI's target is submitted to the SBTi for validation, for all financial flows to existing fossil fuel activities at the company level as well as at the portfolio level[64]:
  - Company level: to engage fossil fuel counterparty companies to transition along 1.5°C pathways by establishing 2030 quantitative public targets, including absolute, intensity, and capex metrics that cover the scope 1, 2, and 3 emissions of the fossil fuel companies; and set clear commitments for no new expansion and the phasing down/out of production along approved 1.5°C pathways with low/no overshoot.
  - Portfolio level: for no new or increased portfolio exposure in terms of financed and facilitated emissions from fossil fuel activities that are not clearly aligned with a 1.5°C transition.
  - Additionally, a transition of activities to reduce methane emissions from all fossil fuels by at least 75% by 2030 is required as a milestone for near-term targets.
- Phaseout: FIs shall commit to phasing out all financial activities linked to unaligned companies and projects according to the time frame and regional criteria outlined in Table 5.5.

[64] For example, for targets submitted for an official validation in the first half of 2023, the valid target years are 2027–2032 inclusive. For targets submitted in the second half of 2023, the valid target years are between 2028 and 2033 inclusive.

For the engagement of fossil fuel companies receiving existing financial flows, FIs shall phaseout at the latest after two years if the engagement efforts fail to bring the project/company into alignment (or at the next roll-over date after this two-year period, if applicable). The FI engagement period should begin as soon as the science-based target is published.

- Scope of Borrower and/or Investee Emissions: Targets shall cover the scope 1 + 2 + 3 emissions of FIs' fossil fuel exposures.

Table 5.5: Fossil Fuel Finance Target requirements per fossil fuel and financing type

		Project	Company
Coal	New financial flows	No new financial flow shall be provided to any part of the coal value chain, with the exception of new financing for permanent decommissioning	No new (or increased) financial flows shall be provided to coal companies involved in any part of the coal value chain, with the exception of new financing for permanent decommissioning
	Existing financial flows	• Phaseout all existing financial flows for coal projects: for projects in high- and high-middle income countries, exit by the end of 2030 at the latest; • All others, reduce exposure by 50% by 2030 and exit by the end of 2040 at the latest	• For companies who are active in high- and high-middle income countries, exit by the end of 2030; • All others, exit by the end of 2040
Oil	New financial flows	No financial flows to support new unabated upstream, midstream, and downstream oil projects	No new (or increased) financial flows if the company is planning new unabated capacity additions across the oil value chain
	Existing financial flows	• For projects located in the wealthiest group of 'producer nations', output of oil and gas needs to be cut by 74% by 2030, with complete phaseout by 2034; • For the middle-income group with medium capacity for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043; • For the poorest group with lowest capacity, a 14% cut is required by 2030, with all production ended by 2050	• For companies operating in the wealthiest group of 'producer nations', output of oil and gas needs to be cut by 74% by 2030, with complete phaseout by 2034; • For the middle-income group with medium capacity for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043; • For the poorest group with lowest capacity, a 14% cut is required by 2030, with all production ended by 2050
Gas	New financial flows	No new financial flows to new unabated upstream, midstream, and downstream gas projects, including no financial flows to new unabated baseload natural gas-fired	No new (or increased) financial flows if the company is planning new unabated capacity additions across the gas value chain

		power generation or in infrastructure using natural gas as a fuel to produce hydrogen	
	Existing financial flows	• For projects located in the wealthiest group of 'producer nations', output of oil and gas needs to be cut by 74% by 2030, with complete phaseout by 2034; • For the middle-income group with medium capacity for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043; • For the poorest group with lowest capacity, a 14% cut is required by 2030, with all production ended by 2050	• For companies operating in the wealthiest group of 'producer nations', output of oil and gas needs to be cut by 74% by 2030, with complete phaseout by 2034; • For the middle-income group with medium capacity for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043; • For the poorest group with lowest capacity, a 14% cut is required by 2030, with all production ended by 2050

Source: Authors 2023.

5.5 Approaches to Setting Targets on the Rest of the Scope 3 Categories

For FIs to focus their efforts on their investment and lending activities, the SBTi only recommends but does not require that FIs measure emissions and set targets on scope 3, categories 1–14.

Recommendations and Additional Guidance

FI-R9 – Measuring Emissions and Setting Targets for Scope 3, Categories 1–14: It is recommended but not required for FIs to measure and set target(s) on categories 1–14 emissions as defined by GHGP Corporate Value Chain (Scope 3) Accounting and Reporting Standard. When submitting categories 1-14 targets for validation, FIs shall include a complete emissions inventory following the minimum boundary for each category in conformance with the GHGP Scope 3 Standard. Optional targets on these categories must meet the scope 3 criteria in the latest SBTi criteria for companies (e.g., including 6, 13-14, 18-20) to be approved by the SBTi.

For FIs interested in submitting targets on categories 1–14, they must submit a complete emissions inventory in line with the minimum boundary in line with the GHGP Scope 3 Standard and ensure that these targets meet the scope 3 criteria in the latest SBTi general criteria (including 6, 13-14, 18-20) for them to be approved and published. FIs may use the SBTi Target Setting tool to develop these targets.

In terms of applicable methods, the absolute contraction and supplier engagement approaches can be used to set targets on most categories. The absolute contraction method has been introduced in Section 4.3 on scope 1 and 2 target setting. For categories 1–14, FIs may then consider setting absolute targets in line with a well-below 2°C scenario (e.g., 2.5% linear annual reduction), given that scope 3 emissions can be more difficult to reduce as compared to scope 1 and 2 emissions. Requirements for supplier engagement target are detailed in C19 of the SBTi corporate criteria.

Relevant SDA pathways may also be applied to categories such as upstream transportation and distribution (transport), business travel (transport), employee commuting (transport), and upstream leased assets (building services). However, given that the application of SDA requires more input data than absolute contraction, FIs should weigh the amount of effort toward setting SDA targets against the significance of these categories.

FIs may combine targets on multiple scope 3 categories. For example, an FI may set one single upstream supplier engagement target on category 1—purchased goods and services, and category 4—upstream transportation and distribution, that engages relevant suppliers covering both categories.

5.6 Coal Phaseout and Fossil Fuel Disclosure

Fossil fuel combustion is the largest source of GHG emissions and the central driver of climate change. Fossil fuels are also the dominant source of energy for the global economy. FIs seeking to align with the Paris Agreement should explicitly and transparently address the role of fossil fuels in their investment and lending portfolios. In recognition of the complex and societally embedded nature of fossil fuels, the SBTi formulated two fossil fuel-related recommendations (FI-R10 and FI-R11) for FIs if the Fossil Fuel Finance Targets Approach is not used.

The first recommendation relates to the adoption of a thermal coal phaseout policy. The IPCC 1.5°C emission pathways indicate that emissions from coal should reduce by four-fifths in 2030 relative to 2010 (IPCC 2018). Recent research on energy technologies shows that the share of uncompetitive coal plants worldwide is on track to increase rapidly to 60% in 2022 and to 73% in 2025 (Rocky Mountain Institute 2020). The same report indicates that the trend is not limited to developed countries. In China and India, for example, 95% and 85%, respectively, of the coal fleet may become unprofitable by 2025. FIs should thus reduce their exposure to thermal coal as quickly as possible, to reach zero by 2030 to avoid stranded assets, detrimental climate impacts, and related losses. The phaseout of thermal coal financing is intended to accelerate energy transition and does not preclude support for zero-carbon transformation of existing facilities. Moreover, effective coal phaseout requires consideration of a just transition to ensure viability and long-term stability (see Jakob et al. 2020).

The second recommendation regards disclosure and supports consistent understanding of the full range of FIs' fossil fuel investments and lending activities. Fossil fuel investment disclosure preserves credibility and creates an initial mechanism for FIs to help address justice and equity components of climate action.

Recommendations and Additional Guidance

FI-R10 – Phaseout of thermal coal financing: If the Fossil Fuel Finance Targets Approach is not used, FIs should establish a policy within six months from the time of target approval that they will phaseout financial support to thermal coal across all their activities in line with a full phaseout by 2030 globally. Notably, this includes immediately ceasing all financial or other support to thermal coal companies* that

are building new infrastructure or investing in new or additional thermal coal expansion, mining, production, utilization (i.e., combustion), retrofitting, or acquiring of coal assets.

** Coal companies are defined as companies with greater than 5% of revenues from thermal coal mining, exploration and drilling, mining services, processing, trading, transport and logistics, equipment manufacturing, operations and maintenance (O&M) services, engineering, procurement and construction (EPC) services, transmission and distribution of coal-fired electricity, coal to liquids (Ctlg) and coal to gas (CtG).*

FI-R11– Disclosure of Fossil Fuel Investments and Lending: If the Fossil Fuel Finance Targets Approach is not used, FIs with approved science-based targets should annually disclose the annual investments (listed equity, private equity, corporate bonds, and private debt), direct project financing and lending to fossil fuel (oil, gas, and thermal coal) projects and companies* in U.S. dollar amount (or other currencies) (See FI-R13 for recommendations on where to disclose).

FIs that fail to phaseout coal financing or disclose fossil fuel investments and lending make themselves susceptible to risk of stranded assets and reputational damage.

** This includes:*

- *Companies that have activities (i.e., identified as share of revenues) in the exploration, extraction, refining, transportation and distribution, storage, retailing, marketing, trading, or power, heat, or cooling production from oil and gas. FIs should disclose the threshold used to delineate oil and gas companies; the SBTi recommends a 5% threshold and for the threshold to not exceed 30%.*
- *In line with FI-R10, companies with greater than 5% of revenues from thermal coal mining, exploration and drilling, mining services, processing, trading, transport and logistics, equipment manufacturing, operations and maintenance (O&M) services, engineering, procurement and construction (EPC) services, transmission and distribution of coal-fired electricity, coal to liquids (Ctlg) and coal to gas (CtG).*

6 HOW TO COMMUNICATE SCIENCE-BASED TARGETS AND TRACKING PROGRESS

Given the importance of transparency to stakeholders on the actions of FIs in reducing GHG emissions, the SBTi provides specific requirements and guidance on how FIs communicate their science-based targets and strategies to achieve their science-based targets. FIs should not make claims about emission reductions attributed to these strategies or related financial products without credible evidence to support these claims should not make claims about emission reductions attributed to these strategies or related financial products without credible evidence to support these claims.

The SBTi requires FIs to develop target language in the target submission form to the SBTi and the target will be used for public communication once targets are approved.

FIs shall formulate target language for the following:

- A scope 1 and 2 target using the target language template in the financial sector target submission form.
- Targets to cover any optional scope 3, category 1–14 to be approved by the SBTi.
- A headline target for portfolios that sets out how much of their total portfolio is covered (see FI-C18 for the calculation) and relevant exclusions, the purpose of which is to simplify the communication of multiple asset-level targets.
- Target language for asset-level targets using the specific target language templates.

At the time of target submission, FIs shall submit a brief summary of the strategy and actions the FI will implement to reach their science-based target(s) and why they selected these actions. This summary shall be provided by the FIs with their target submission and will be published, along with the science-based targets, on the SBTi website upon target approval. Target language must be agreed upon in order for the target submission to be validated. The target language must be published on the SBTi website within six months of the completion of the validation process or must be revalidated in order to remain approved. The target language must be the same in the FI's own communications but they are welcome to add additional details. Target language disclaimers can only include links to the FI's website or own publication.

The detailed target language template is provided in Table 6.1 below and additional guidance on formulating target language is included in the financial sector target submission form and shall be followed by FIs when setting targets.

Table 6.1: Target language template for FIs

Scope 1 and 2 Targets
Absolute target: FI A commits to reduce absolute scope 1 and 2 GHG emissions [XX]% by [target year] from a [20xx] base year.

Intensity target: FI A commits to reduce scope 1 and 2 GHG emissions [XX]% per [unit] by [target year] from a [20xx] base year.

Renewable energy procurement target: FI A commits to increase active annual sourcing of renewable electricity from [XX]% in [base year] to [XX]% by [target year] and to continue active sourcing of 100% renewable electricity through [target year].
or
FI A commits to maintain zero absolute scope 1 GHG emissions through [target year] and commits to increase active annual sourcing of renewable electricity from [XX]% in [base year] to [XX]% by [target year]. or
FI A commits to continue active annual sourcing of 100% renewable electricity through [target year].

Scope 3 Portfolio Targets – Headline Target
FI A's portfolio targets cover [XX]% of its total investment and lending by [unit] as of [base year].[1] As of [base year], required activities made up [XX]% of FI A's total investment and lending by [unit] while optional activities made up [XX]% and out of scope activities made up [XX]%. *The unit selected should be financed emissions (if quantified) or otherwise linked to the asset classes covered. For example, asset managers should use assets under management while private equity firms should use invested capital. Other FIs can use total assets. For FIs that have activities that span across both investments and lending, they may also add a further breakdown of % coverage of their investment or loan portfolio individually.* *Separately, banks that do not include their asset management divisions shall include the following note after the headline target:* [1] These targets and coverage % do not include third-party asset management activities. Third-party asset management activities made up X% of total investment, lending, and asset management activities by [metric].

Scope 3 Portfolio Targets – Asset Class Target		
Asset Class	**Method**	**Target Output Example**

Real estate	SDA	FI A commits to reduce its real estate [investment / loan] portfolio GHG emissions [XX]% per square meter by [target year] from a [20xx] base year. or FI A commits to maintain the emissions intensity of its real estate investment/loan portfolio at or below [the base year emissions intensity] $kgCO_2e/m2$ from [base year] through 2030 and only finance 1.5°C aligned real estate assets.* * *Please see Appendix B for more details (e.g., eligibility conditions for setting a maintenance target).*
Residential mortgages (consumer loan)	SDA	FI A commits to reduce its mortgage portfolio GHG emissions [XX]% per square meter by [target year] from a [20xx] base year.

Electricity generation project finance	SDA	FI A commits to continue providing electricity generation project finance for only renewable electricity through 2030. or FI A commits to reduce its electricity generation project finance portfolio GHG emissions [XX]% per kWh by [target year] from a [20xx] base year. or FI A commits to maintain the emissions intensity of its electricity generation project finance portfolio at or below [the base year emissions intensity] gCO_2e/kWh from [base year] through 2030 and only finance 1.5°C aligned electricity generation projects.* * *Please see Appendix C for more details (e.g., eligibility conditions for setting a maintenance target).*
Corporate instruments (equity, bonds, loans)	SDA	FI A commits to reduce GHG emissions from the [XX] sector within its [asset class] portfolio [XX]% per ton of [metric] by [target year] from a [20xx] base year.
	Portfolio Coverage	FI A commits to [XX]% of its [eligible] [asset class] portfolio by [unit] setting SBTi validated targets by [target year] from a [20xx] base year.

	Temperature Rating	FI A commits to align its scope 1 + 2 portfolio temperature score by [unit] within the [XX] sector of its [asset class] portfolio from [X.XX]°C in [base year] to [X.XX]°C by [target year]. FI A commits to align its scope 1 + 2 + 3 portfolio temperature score by [unit] within the [XX] sector of its [asset class] portfolio from [X.XX]°C in [base year] to [X.XX]°C by [target year].
	Fossil Fuel Finance Targets	FI A commits to publicly disclose on an annual basis the total exposure, absolute GHG emissions, and portion of its fossil fuel portfolio aligned to 1.5°C transition pathways. FI A commits to immediately end all new company- and project-level financing for non-aligned upstream, midstream, and downstream oil and gas and all coal (unless for the purpose of permanent decommissioning). FI A commits to transition its fossil fuel portfolio using [both company/project and portfolio level] metrics. FI A commits to reduce the absolute methane emissions from its fossil fuel portfolio by [≥75%] by 2030. FI A commits to phaseout all financial flows to unaligned fossil fuel companies and unabated fossil fuel projects by [target year].
Action Plan to Achieve Targets		

FI A will implement the following strategy and actions to achieve its targets:

- Example: FI A aims to steer its [XX dollar amount] corporate equity, bonds, and loan book in power generation, steel, cement, and aviation through actively supporting clients' zero-carbon transformation. For example, it will offer more favorable interest rates to investees that set and stay on track to meet ambitious climate goals. FI A selected these actions because [add reasons].

Source: Authors 2020.

The SBTi recognizes that there is a lack of clarity about which FI actions could lead to GHG emissions in the real economy. The SBTi's annual disclosure requirement is intended to help identify the most effective actions to realize GHG emissions reductions in the real economy and lead to further progress in this area.

The SBTi welcomes collaboration with other climate initiatives that seek to develop methods or tools that enable the measurement of the impact of climate actions (see also Section 7. How to achieve science-based targets). We also encourage FIs to engage with relevant service providers to develop such tools and adjust their strategies according to the findings of these analyses.

Given that current methods do not cover all asset classes or sectors on FIs' portfolios and that the target boundary requirement remains flexible on certain financial products, FIs are required to disclose the coverage of their total investment and lending activities by science-based targets in the target language (FI-C18) using an economic or emissions metric that is representative of the magnitude of their main business activities. This disclosure requirement is intended to enhance the transparency and comparability of portfolio targets. Given that this version of the criteria allows banks to submit targets without their asset management divisions, banks shall also be explicit about such exclusions in the target wording. All other FIs must include their asset management businesses in their scope 1, 2, and 3 target boundaries. In addition, if an FI is involved solely or mainly in optional asset classes, it should contact the SBTi to discuss a minimum target coverage boundary of these asset class(es) for the portfolio targets to be considered credible.

Criteria

FI-C18 – Disclosure of Target(s) Portfolio Coverage: At the time of target announcement and along with approved targets, FIs shall disclose the percentage of their total investment and lending activities covered by portfolio targets on the SBTi website, in a metric representative of the magnitude of FIs' main business activities, which may involve any combination of lending, own investments, and asset management (on behalf of third parties). Examples include: total financed emissions associated with investment and lending activities (if quantified), or any combination of total balance sheet assets, total investments, total lending book, and total assets under management, as relevant. FIs are strongly

recommended to disclose a full GHG emissions inventory for their portfolios, covering all activities for which a GHG accounting method is available at the time of target submission.

The formula below will be used to calculate the percentage of activities covered by targets:

% coverage = All financing covered by targets / All required, optional, and out of scope asset classes

Out of scope asset classes include those listed as such in Table 5.2 and all other tangible assets that are held, owned, controlled, or managed by the FI, such as cash and deposits at central banks. Intangible assets (e.g., goodwill, deferred tax assets) may be excluded from the denominator. For example, asset managers will need to cover all assets managed under discretionary mandates while assets administered under advisory and/or execution-only mandates will need to be included in the denominator even if targets are not required.

FI-C19 – Implementation Reporting: At the time of target submission, the FI shall submit a brief summary of how it intends to meet its scope 3 portfolio targets in conformity with the template provided in the target submission form. This disclosure is intended to create transparency. The content of the summary will not be used as a basis for validation of targets. At the time of target announcement, the summary of how the FI intends to achieve its targets shall be made public.[65]

6.1 Tracking and Reporting Target Progress

This section presents recommendations on tracking and reporting progress of portfolio targets set using SDA, Portfolio Coverage, Temperature Rating, and Fossil Fuel Finance Targets Approaches. FIs should take these recommendations into consideration for the annual disclosure of target progress required by the criteria.

6.1.1 Tracking Progress Against SDA Targets

FIs should track and disclose progress against their SDA targets on an annual basis. The tracking metric is emissions per activity unit relevant to the sector (e.g., $kgCO_2$ per kWh, $kgCO_2$ per tons of steel, $kgCO_2$ per m^2), combined with the percentage of portfolio outstanding value in the specific asset class/sector. To measure annual progress, FIs should use the GHG accounting methods developed by the PCAF. These methods enable FIs to calculate the absolute emissions per asset class at a specific point in time. The absolute emissions is then converted to emissions intensity using the physical activity data that are linked to the loans and investments (e.g., the amount of kWh, tons of steel, or m^2 that FIs have financed). The result should be compared with the emissions intensity of the previous year.

[65] Financial institutions will have opportunities to review the summary language before the SBTi publishes it on the website

6.1.2 Tracking Progress Against Portfolio Coverage Targets

FIs should report the percentage of relevant asset class(es) covered by companies with approved science-based targets on an annual basis, using the same weighting approach chosen for the base year consistently throughout the target period. FIs may further indicate whether they are on track to meet the targeted coverage of companies set out for the five-year target period. If FIs choose to do so, they should provide evidence to support any statement about whether they are on or off track and clearly state any assumption used. An example of such assumptions could be that the same progress achieved in the first year will be achieved in the remaining four years: FI A projects that it is currently on track to meet the five-year target.

In addition to reporting on the percentage of companies with approved science-based targets, FIs may also report the coverage of companies committed to the SBTi or the increase in the number of companies measuring and reporting scope 1, 2, and 3 emissions to show incremental progress of portfolio companies.

6.1.3 Tracking Progress Against Temperature Rating Targets

Each reporting year, the FI should disclose both portfolio temperature ratings (scope 1 + 2 rating and the scope 1 + 2 + 3 rating). In addition, when submitting targets for official validation, and when reporting and tracking progress against targets, FIs must disclose the following information:

- The percentage of portfolio GHG emissions that is covered by public targets and the percentage of portfolio GHG emissions that is assessed using default scores in the reporting year; and
- The percentage of portfolio invested value that is covered by public targets and the percentage of portfolio invested value that is assessed using default scores in the reporting year.

For more details on the reporting requirements, please see Section 5.4.3.

6.1.4 Tracking Progress Against Fossil Fuel Finance Targets

Each reporting year, the FI shall publicly disclose information to provide a sufficient level of transparency to aid stakeholders' understanding of (i) the GHG impact of the financial services provided; and (ii) action being taken to reduce/eliminate emissions from fossil fuel activities at a group level and with subsidiary level granularity. The following datapoints shall be disclosed annually for all fossil fuel activities covered:

- Absolute emissions (scope 1+2+3) per GHG from fossil fuel exposures across all financial flows; and
- Aggregated financial exposures (monetary amounts and final investment decisions) across all financing and facilitation activities; and

- Forward-looking transition plans of fossil fuel portfolio companies.

Criteria

FI-C20 – Tracking and Reporting Target Progress: After target approval, the SBTi requires annual disclosure of scope 1 and 2 GHG emissions, disclosure of progress against all approved targets in the relevant metric, and disclosure of actions/strategies taken during the year to meet scope 3 portfolio targets. If optional targets on scope 3 categories 1–14 as described in FI-R9 are submitted and approved by the SBTi, their progress shall be included in the disclosure of progress as well. FIs are strongly recommended to annually disclose a full GHG emissions inventory for their portfolios, covering all activities for which a GHG accounting method is available at the time of target submission.

6.2 Target Recalculation and Validity

As additional methods and the latest climate science become available, FIs shall continue to follow best practices and ensure that their targets remain relevant. Therefore, per FI-C21 – Mandatory Target Recalculation, FIs must review, and if necessary, recalculate and revalidate their targets, at a minimum, every five years. FIs with approved targets that require recalculation must follow the most recent applicable criteria for the financial sector at the time of resubmission.

FIs should also recalculate targets, as needed, to reflect significant changes that would compromise relevance and consistency of the existing target. Examples of significant changes that should trigger a recalculation are included in FI-R14 – Triggered Target Recalculation in Section 3.8. If FIs set intensity targets and there are significant changes in the projection of the related activity, this should trigger a target recalculation and resubmission of the target to the SBTi.

To institutionalize the practice of target adjustments, FIs should establish a base-year recalculation policy that sets out a qualitative or quantitative significance threshold to trigger a recalculation of targets. Examples of changes that could trigger a target recalculation include updates in climate science, availability of higher quality investee data, and significant changes to the FI such as a merger or acquisition.

Criteria

FI-C21 – Mandatory Target Recalculation: To ensure consistency with the most recent climate science and best practices, targets must be reviewed, and, if necessary, recalculated and revalidated, at a minimum, every five years. FIs with an approved target that requires recalculation must follow the most recently applicable criteria at the time of resubmission.

FI-C22 – Target Validity: Target language must be agreed upon in order for the target submission to be validated. FIs with approved targets must publish their target on the SBTi website within six months of the approval date. Targets unannounced after six months will have to go through the approval process again, unless a different publication time frame was agreed with the SBTi.

7 HOW TO ACHIEVE SCIENCE-BASED TARGETS

There are numerous actions that FIs can use to achieve their portfolio science-based targets. Chapter 7 builds on the SBTi's criteria and recommendations for target setting and reporting, and further recommends steps that FIs can take to fully integrate climate change in their organization and services and achieve their targets in a manner that leads to GHG emissions reduction in the real economy.

7.1 Integration of Climate Change in Governance and Decision-Making

FIs should integrate climate change across their institution. This can include the following:

- **Adoption of climate-related investment principles**. These should recognize that portfolio alignment with the Paris Agreement will contribute to investing in the best interests of FIs' beneficiaries or clients.
- **Establishment of a climate governance structure**. FIs should make portfolio alignment with the Paris Agreement a board priority—including explicit attribution of this responsibility within the board. They should also put governance structures in place that ensure proper support and implementation of the policy—including incentive schemes, commitment of resources, capacity building, and involvement of beneficiaries or clients.
- **Integration of climate change in the investment and/or lending policy**. FIs should adopt an investment and/or lending policy that reflects and aligns with their climate-related investment principles. This can include—depending on the type of FIs—investment/lending targets, strategic asset allocation, engagement objectives, selection/screening criteria and incentives for service providers based on climate performance, and performance measurement and reporting.
- **Adjustment of strategic asset allocation to harness climate-related opportunities**. FIs should consider climate risks and opportunities in strategic asset allocation (SAA), including increasing their exposure where feasible to alternative asset classes that are more likely to have a direct positive climate impact on the real economy—such as infrastructure (e.g., grids and renewable energy), real estate (highly energy-efficient and resilient buildings), and private equity (renewable and energy efficiency companies).
- **Adoption of additional sector-specific policies**. FIs should extend their investment policy to sectors and technologies that pose particular climate-related risks or offer particular opportunities. These are most notably:
    - Sectors where GHG-intensive companies have a significant potential to offer alternative solutions and thus reduce their emissions—such as power utilities, industrial sectors (steel, cement, chemicals), and automotive; and
    - Sectors that are deemed to shrink and ultimately disappear with the energy transition (e.g., coal, oil, and gas), but where some companies still have the potential to make a timely shift to other business models.

The sector policies should define criteria that allow the FI to identify to what extent the companies in its portfolio are able and willing to align their business model with the Paris Agreement, set out a strategy as to how the FI will urge companies to adopt 1.5°C transition plans through active ownership, and identify at which point exposure reduction/divestment is desirable in light of the inability or unwillingness of a company to transition in a timely manner.

- **Development of methods or tools that enable the measurement of the impact of climate actions**. There currently is insufficient clarity about which FI actions lead to GHG emissions in the real economy. FIs should engage with relevant service providers to develop tools that allow the FI to build a better understanding of the impact of their actions on GHG emissions, and adjust their strategies according to the findings of these analyses.

7.2 Engaging Key Stakeholders: Companies, Service Providers, and Policymakers

Generating impact in the real economy requires all relevant stakeholders to move at the same time. Hence FIs should leverage the influence they have over companies, policymakers, and financial service providers. This will ensure that the rules of the game in which FIs operate are supportive of their own climate actions.

FIs should work collectively with their peer FIs to learn, seek advice, share best practice, and, most importantly, increase the impact of engagement activities with portfolio companies and policymakers. They should engage in FI coalitions and participate in and drive coalitions that promote the alignment of portfolios with the Paris Agreement (see Table 1.1 for more details).

7.2.1 Company engagement

FIs should develop an engagement strategy to achieve alignment of their portfolio companies' business models with the Paris Agreement—through the adoption and publication of time-bound 1.5°C transition plans composed of the following elements:

- A commitment to align business models with the Paris Agreement and, more concretely, a time-bound climate science–based target built on forward-looking climate scenario analysis. If FIs set science-based Portfolio Coverage targets (i.e., targets to engage borrowers/investees to set approved science-based targets), all companies in the boundary of these targets shall have approved science-based targets by 2040 in line with the Portfolio Coverage target criterion.
- Capital management plans to end capital expenditure for new high-carbon projects, increase capital expenditure for low- and zero-carbon projects, and create a clear timeline for the closure of existing high-carbon assets. This could include cash returns through buybacks or dividends.
- The disclosure of the target and transition plan and alignment with TCFD recommendations. Such information should be published in mainstream financial reports (integrated reporting).

- A commitment to review and ratchet up targets and transition plans in light of the evolving climate science, in particular the development of more detailed 1.5°C scenarios driven by the Paris Agreement.
- A public commitment to support policies that aim to reduce emissions in line with the Paris Agreement, be transparent about lobbying activities and related expenditures, and exit third-party organizations (e.g., business and trade associations) that promote policies that pose a risk to the Paris Agreement.

Given the urgency to tackle climate change, FIs should have an escalation process in place for when engagement does not lead to significant results within set time frames (6, 12, 24, 36 months), where a range of options are available to FIs: open letters, filing/supporting shareholder resolutions, and voting at annual general meetings (AGMs), end support to companies' efforts to raise capital (notably through corporate bonds), and ultimately divestment. Figure 7.1 below gives a potential timeline for such an escalation process.

Figure 7.1: Escalation process in case of unsuccessful engagement

Note: AGM = Annual general meeting.
Source: WWF 2019.

7.2.2 Policy engagement

Regulations and government policies are key drivers of systemic change. The most climate-aware FIs should engage with policymakers to accelerate the adoption and implementation of climate-friendly policies.

Strengthening long-term investor involvement in the “rules of the game” that govern the financial system is a strategic area of interest: given the high urgency of the climate challenge, FIs should engage with policymakers in favor of the proper implementation of the Paris Agreement—as the best pathway to mitigate their climate-related risks, maximize their positive contribution to climate goals, protect the long-term value of their assets, and invest in the best interest of members and beneficiaries.

FIs should engage with policymakers to ask for the following items:

- Climate and energy policies and regulations that drive a timely implementation of the Paris Agreement and its embedded climate targets;
- Adequate climate and wider ESG corporate disclosure policies and regulations to ensure that relevant climate and ESG data become available to investors—in particular by integrating the TCFD recommendations into national legislation, with an emphasis on forward-looking climate scenario analysis; and
- Financial policies and regulations that drive better understanding of climate-related risks and opportunities for FIs, through the assessment of climate and wider ESG risks for investors and their mitigation, with the ultimate goal of portfolio alignment with the Paris Agreement.

7.2.3 Service provider engagement

FIs that understand climate-related financial risks and opportunities will find it necessary to address the need to align their investments with the Paris Agreement, together with their service providers. However, there are many reasons why the investment supply chain may not act in accordance with asset owners’ interests on climate issues, including commercial conflicts of interests, time horizons, and cultural norms. Therefore, asset owners need to closely monitor all their service providers, including their investment consultants, index providers, proxy voting advisors, sell side analysts and credit rating agencies, remuneration consultants, and auditors.

In many cases, FIs rely on **investment consultants** to develop their investment strategies, climate strategies, select service providers (e.g., investment managers), etc. Therefore, investment consultants operate at a critical interface in the investment ecosystem, and FIs can push them to drive innovation within the financial community. The following actions are recommended for FIs:

- Ensure that investment consultants address climate-related risks and opportunities, adapting their core services accordingly, as well as demonstrating a robust track record that shows capacity to assess and address climate-related issues.

- Require investment consultants to advise so as to help them develop climate-related strategies (principles, policies, targets, processes, and portfolio implementation) that will align investments with the Paris Agreement over time.
- Ask investment consultants to allocate dedicated time for interaction and discussion on long-term risks and opportunities—particularly related to climate change—and to adjust remuneration accordingly.
- Ask investment consultants to assess the climate-related performance of other service providers (notably investment managers) and suggest engagement approaches for accelerating their climate-related efforts.
- Publicly signal their climate-related requirements for investment consultants to urge them to act to avert a potential devaluation of their reputational capital.

Index providers (e.g., MSCI, FTSE, S&P, etc.) provide the investment community with a standard to quantify and understand the performance of markets and asset classes. Market capitalization-weighted indexes are replicated by passive investors, and used as allocation guidelines for sector diversification by the majority of investors. Analysis indicates that indexes usually reflect business-as-usual scenarios, where for instance high-carbon sectors (e.g., oil and gas) are overweighed in terms of achieving the Paris goal, and they lack a good indication of energy technology exposure. The measurement of relative risk is also related to these indexes, further limiting the possibility to allocate investments in line with climate goals, and away from the current unsustainable business-as-usual market (2dii 2014). FIs should drive demand to index providers to tackle these shortcomings in the design of indexes. This issue is critical for passive investors that rely on indexes to define their default capital market exposures. The following actions are recommended for FIs:

- Require index providers to disclose how their existing products align with the Paris Agreement, using forward-looking climate scenario analysis.
- Require index providers to develop new products that reflect the performance of markets in a 1.5°C transition, to help asset owners benchmark their own investment portfolios against the Paris Agreement.
- Publicly signal their climate-related requirements for index providers to urge them to act to avert a potential devaluation of their reputational capital.

Proxy voting advisors (e.g., ISS, Glass Lewis, Manifest, etc.) consult with FIs to decide how to vote on matters that require shareholder approval at annual general meetings (and extraordinary general meetings) of their portfolio companies. As shareholder resolutions are a crucial tool for engagement with portfolio companies (see Section 7.2.1 on company engagement above), it is important for FIs to interact with proxy voting advisors, with the objective of improving their climate-related advice. The following actions are recommended for FIs:

(i) Ensure that proxy voting advisors address climate-related risks and opportunities and adapt their core services to align with the Paris Agreement.

(ii) Request their proxy voting advisors so that voting activities are wholly consistent with the climate objectives of the FI and support resolutions that call for the adoption of 1.5°C transition plans.
(iii) Publicly express their support for climate-related shareholder resolutions at portfolio companies.

7.3 Public Disclosure of Climate Actions

FIs should publicly disclose their climate decisions and activities to increase impact. The SBTi criteria for FIs require that FIs annually disclose the actions or strategies that have been taken during the year to reach their science-based targets after target approval. The section below can help FIs frame their reporting to avenue(s) of their choice for the public disclosure of their climate action (e.g., annual report, stand-alone reports, communication on the website, press releases, social media, etc.).

Depending on the FI, public disclosure of climate actions should cover the adoption of climate-related policies for companies, the integration of the policy in mandates to investment managers and other service providers, a regular assessment of engagement impact, the filling of or support to relevant shareholder resolutions, and divestment decisions if engagement is not deemed relevant or does not deliver within set time frames.

By signaling (i.e., making public) key climate-related decisions and activities, FIs will significantly amplify their impact. Given the climate urgency, the signaling effect is critical to raise the awareness of peer FIs, companies, service providers, policymakers, and other stakeholders. It emphasizes the importance of the issue and helps to accelerate efforts from the abovementioned stakeholders.

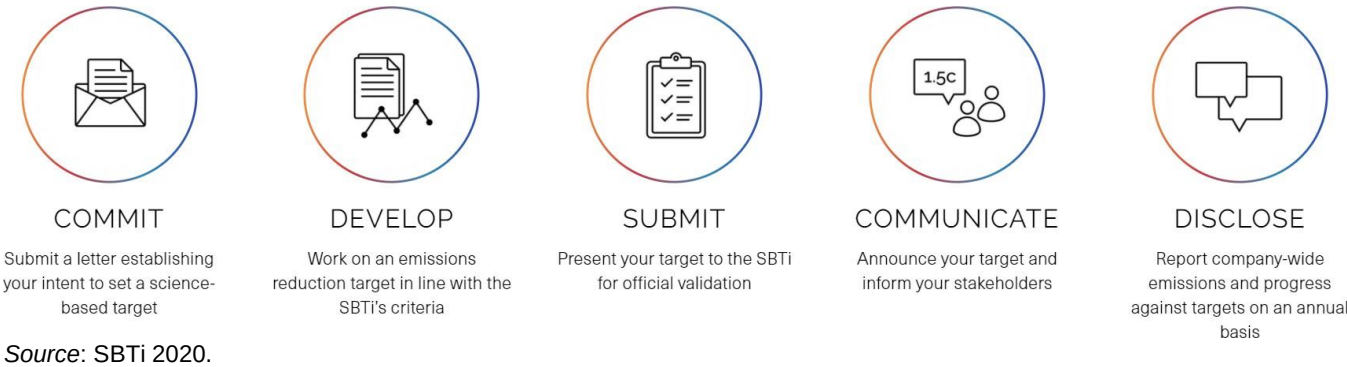
Signaling is particularly critical for a meaningful engagement strategy. FIs should disclose which companies they are engaging with, what their specific demands are, and publish at regular intervals an assessment of the engagement impact. This will increase pressure on corporations and drive deeper and faster changes. The Climate Action 100+ initiative is a promising step toward such joint and public shareholder engagement—and an implicit recognition that bilateral engagement behind closed doors will not have enough impact to get high-carbon companies to shift their business model at the pace and scale required by the Paris Agreement.

FIs should also indicate the names of companies from which they have divested or decided not to invest in, following the example of FIs in countries like Denmark and Norway. For very liquid asset classes, such as public equity and corporate bonds, the rapid exchange of assets can quickly cancel out potential impact of divestment on oil and gas producers. Therefore, public signaling is critical for amplification.

8 THE SBTi CALL TO ACTION PROCESS: COMMIT, DEVELOP TARGET, VALIDATE, ANNOUNCE, DISCLOSE

This section outlines the four different steps for FIs to take in the SBTi Call to Action (C2A) process, from publicly committing to the SBTi to having approved targets announced (See Figure 8.1).[66]

Figure 8.1: The SBTi call-to-action process



Source: SBTi 2020.

Step 1: Commit to Set a Science-based Target

How to commit

FIs that wish to commit to set a science-based target should register online and submit the commitment letter. Signing the commitment letter indicates that your institution will work to set a science-based emissions reduction target aligned with the SBTi's criteria for FIs.

We Mean Business (WMB), a coalition of organizations working with thousands of the world's most influential businesses and investors, provides a platform for businesses and investors to be recognized for their climate action. Through the WMB campaign, FIs can commit to setting science-based targets as well as other actions such as procure 100% of electricity from renewable sources or put a price on carbon.

By default, FIs that commit to the SBTi count toward the WMB campaign. However, FIs that commit to set science-based targets through the WMB Commit to Action campaign are required to sign the SBTi commitment letter to be formally recognized by the initiative.

Benefits of Committing

Signing the commitment letter indicates the FI will work to set a science-based emissions reduction targets aligned with the SBTi's target setting criteria for FIs. If the FI already set its own targets, the

[66] Please see https://sciencebasedtargets.org/step-by-step-process for more details.

letter confirms the FI's interest in having its existing targets verified against a set of criteria developed by the SBTi or developing new targets that will align with these criteria.

After an FI submits its commitment letter, it will be recognized as "Committed" on our Companies Taking Action webpage, as well as the WMB and CDP websites. Companies that are engaging in the UN Global Compact will also be recognized on their website. The list of committed companies is updated every week. Companies that have committed will receive a "Communications Welcome Pack" with more information on how to communicate their commitment.

Step 2: Develop a Target

Starting from January 31, 2023, FIs will have up to 24 months to complete the following steps once they sign the commitment letters:

(i) Develop science-based targets aligned with the SBTi criteria for FIs.
(ii) Submit the targets to the SBTi for an official validation by booking a target validation slot via the SBTi booking system and uploading a completed target submission form.

During this period, the commitment will be listed on the SBTi Target Dashboard as "active." A company's commitment is fulfilled when the company submits a target within the commitment time frame and, after completion of the validation process, has a target that complies with the latest SBTi criteria and guidance and is published on the SBTi website. We encourage FIs to start this process and submit your targets for validation as early as possible. If an FI fails to complete all the above outlined steps by the end of the 24 months, it will be assigned a status of "removed commitment" on the SBTi Target Dashboard, downloadable data, and other channels as appropriate. Companies with a "removed commitment" status will be changed to "target set" upon successful validation of their targets. While companies with a removed commitment are not permitted to commit to the same status again, they are still welcome and strongly encouraged to continue to submit targets for validation.

The SBTi will not grant extensions beyond the 24 months' timeline because FIs can submit targets for validation and be added to the website with the status "targets set" independent of their commitment status. Please refer to the Commitment Compliance Policy for more information.

Targets have to be in line with the criteria for FIs for qualifying targets as "science-based." The SBTi has developed a suite of tools and guidance to help FIs understand how to meet these criteria.

Step 3: Submit the Targets for a Validation

How Company Information is Treated

The SBTi safeguards the confidentiality of all information provided by the FI to assess its targets. This means that information provided will be used in accordance with the target validation service contract that FIs are asked to sign before target assessments commence.[67]

Paid Target Validation Service

The SBTi has implemented a paid service for target validations since 2019. This enables the initiative to provide a faster target validation process and additional feedback to companies. As of February 2022, FIs are also required to use the paid validation service. Find out more about the SBTi target validation service here.

A validation team consisting of a lead reviewer (LR) and an appointed approver (AA) is assigned for each target submission. The LR performs the desk review of the submission, prepares the deliverables (target validation report and certificate, if approved), organizes a feedback call if necessary, and acts as the point of contact between the company and the SBTi throughout the validation process. The AA acts as a peer reviewer on the completed desk review. The LR will be the main point of contact between the company and the SBTi. In cases where the company is re-submitting targets, the same validation team is assigned whenever possible to ensure continuity.

Target Submission Form for FIs

FIs that wish to submit targets for validation should download the latest Target Submission Form and Guidance for FIs and fill it out as clearly, completely, and accurately as possible. It is highly recommended that FIs consult the submission form guidance available within the document to complete the form, including the guidance on target language and summary of actions to achieve targets, before filling out the form. Additional documents should be attached only if they are directly related to the information requested.[68]

On the SBTi Target Submission Form for FIs, FIs are required to fill out Table 4 “Portfolio Target Coverage Overview” with all of their assets, lending and investments (including assets managed by or on behalf of third parties) as of the selected base year. For example, asset managers will need to provide a breakdown of assets administered under advisory and/or execution-only mandates even if targets are not required. According to criteria FI-R3, the base year should be the most recent year for which data is available. FIs must reference the corresponding year of the information and the metric used for the value column (e.g., invested capital, assets under management, total assets, etc.) as per the example further below.

FIs must also fill out Section 6 “Supporting documentation” of the submission form and attach documents and/or provide links to public references (e.g. financial statements) so that the information provided on Table 4 can be reconciled to consolidated balance sheet totals. Any discrepancies

[67] SBTi no longer accommodates requests for signing of Non-Disclosure Agreements (NDAs) as they can take up to six months to complete. The target validation contract should be sufficient to serve confidentiality purposes.
[68] Financial institutions should reference the specific page numbers, figures, or text that is being referred to in accompanying documents. Missing, unclear, or erroneous information will result in the validation process being delayed.

between Table 4 and the supporting documents must be thoroughly described in Section 6.2 of the submission form.

Table 4: Submission form for FIs: Portfolio target coverage overview

Asset Class List all Asset classes on the balance sheet.	Activities Describe the breakdown of activities associated with each asset class.	Value: Total assets 2021	% total lending and investment List the value of this activity as a % of total investment and lending activities.	Mandatory Note if this asset class is considered mandatory by the SBTi.	Covered by target(s)? Note if activity is covered by a target (Yes/No).	% of Activity covered Within asset class activity, note the % that is covered by a target.	Target Setting Method Note the target setting method used.	Description & Rationale for exclusion If this activity is not covered by a target, please explain why the activity is out of scope
Project finance	Electricity project finance	100	2.5%	Yes	Yes	100%	SDA	NA
	Other Project finance	5	0.1%	No	No	NA	NA	Out of the SBTi framework scope
Equity	Listed Equity	486	11.9%	Yes	Yes	100%	Portfolio Coverage	NA
	ETFs	49	1.2%	Yes	Yes	100%	Portfolio Coverage	NA
	REITS	3	0.1%	Yes	Yes	100%	Portfolio Coverage	NA
	Funds of funds with look-through	36	0.9%	Yes	Yes	100%	Portfolio Coverage	NA
	Funds of funds with no look-through (hedge funds)	15	0.4%	Optional	Yes	100%	Portfolio Coverage	NA
	Derivatives	60	1.5%	No	No	NA	NA	Out of the SBTi framework scope
Bonds	Sovereign and Government Bonds	8	0.2%	No	No	NA	NA	Out of the SBTi framework scope
	Agency Bonds	4	0.1%	No	No	NA	NA	Out of the SBTi framework scope
	Corporate Bonds	20	0.5%	Yes	Yes	100%	Portfolio Coverage	NA
	Securitized fixed income	2	0.0%	No	No	NA	NA	Out of the SBTi framework scope
Private Equity	Private Equity funds	2	0.0%	Optional	Yes	100%	Portfolio Coverage	NA
	Private Debt	10	0.2%	Optional	No	NA	NA	Optional in SBTi framework
Corporate Loans	Corporate loan:	1,200	29.5%	Yes	Yes	75%	SDA	NA

	commercial real estate							
	Corporate loan: electricity generation	340	8.3%	Yes	Yes	100%	SDA	NA
	Corporate loan: fossil fuel sector	90	2.2%	Yes	Yes	100%	Portfolio Coverage	NA
	Corporate loan: other sectors	110	2.7%	Yes	Yes	100%	Portfolio Coverage	E.g., 20% excluded because...
	Corporate loan: SMEs	230	5.6%	Optional	No	NA	NA	Optional in the SBTi framework
	Corporate loan: short term loans (<1 year)	10	0.2%	No	No	NA	NA	Out of the SBTi framework scope
Others	Direct Real Estate Investments	5	0.1%	Yes	Yes	100%	NA	NA
Consumer Loans	Residential Mortgages	762	18.7%	Optional	Yes	100%	NA	Optional in the SBTi framework
	Personal credit loans	91	2.2%	No	No	NA	NA	Out of the SBTi framework scope
Cash and cash equivalents		431	10.6%	No	No	NA	NA	Out of the SBTi framework scope
Other (specify, i.e. Intangible assets, Goodwill)		4	0.1%	No	No	NA	NA	Out of the SBTi framework scope
Total		4,073	100%					
% Required covered with targets			59.8%					
% Optional covered with targets			19.1%					
Total Coverage			78.9%					

It is the FI's responsibility to ensure the integrity of the information provided. Once the form is completed, FIs should send the submission form in Word format, together with any supporting documents through the SBTi booking system.

Once targets are submitted to the SBTi, the validation team will assess the targets submitted in accordance with the SBTi Target Validation Criteria and Recommendations for FIs described in Section 3 of this guidance.

Step 4: Announce the Targets

Once targets are approved by the SBTi, the FI will receive an approval e-mail with a validation report and a certificate. A target publication date will be chosen and suggested to the FI. If the FI would like to request a different publication date, it can coordinate with the SBTi communication team included in the decision e-mail. Please note that FIs must publish their targets on the SBTi website within six months from the approval date or must have their targets revalidated by the SBTi to ensure the targets still meet relevant criteria. A "Welcome Pack" will be sent to the FI, which outlines how the targets can be showcased or communicated, how the SBTi logo may be used, and how the SBTi approval may be referenced. Once timing is agreed, the FI will be listed as having an "approved target" on our Companies Taking Action webpage as well as on our partners' websites at WMB and CDP. FIs that are engaging in the UN Global Compact will also be recognized on this website.

Step 5: Target Disclosure

Following approval, FIs shall disclose their scope 1 and 2 GHG emissions, progress against all approved targets in the relevant metric,[69] and actions/strategies taken during the year to meet scope 3 portfolio targets on an annual basis. Recommendations for reporting include annual reports, sustainability reports, your company's website, and disclosure through CDP.

[69] See Section 6.1 on guidance to disclose progress against targets.

9 DISCUSSION AND AREAS FOR FURTHER RESEARCH

The methods, criteria, tools, and case studies presented in this document provide a framework for guiding FIs' Paris Agreement climate alignment activities. Since publication in October 2020, this framework has provided a foundation for developing and evaluating FIs' SBTi target submissions. These targets are intended to catalyze broader financial sector climate action and support measurable emission reductions in the real economy.

As a voluntary initiative, the SBTi provides a transparent platform for companies and FIs to set targets with the understanding that these entities have information and resources to achieve emission reductions in their specific realms of influence. Within the enabling role that FIs can play in zero-carbon transformation, outstanding questions remain regarding target design, implementation strategies, policy linkages, and quantification of emissions impacts:

- Criteria described in this document present minimum requirements for **target design** across a range of FIs and activities. Beyond minimum requirements, there is a need for more research on the links between existing design approaches, including green investment, engagement, and divestment targets. As FI targets become more prevalent and the understanding of target design improves, the SBTi expects to update its criteria.
- In addition to target design, there are open questions on **target implementation strategy** options, trade-offs, and effectiveness. Rather than prescribing particular implementation strategies and mitigation levers, the SBTi preserves credibility and expands the evidence base by requiring FIs to annually report on their chosen mitigation activities and progress toward targets.
- In addition to company- and institution-specific situations, the trade-offs and effectiveness of particular implementation strategies and mitigation options are also influenced by **policy linkages**. Policymakers are increasingly steering FIs' climate activities through a range of mandatory and voluntary programs. Science-based targets are now linked to public policy initiatives in the US, UK, Norway, and Japan.[70] However, beyond the voluntary support and referencing illustrated in Japan, for example, the link between institution-level science-based targets and government climate programs is yet to be clearly developed.
- Finally, a broad area that would benefit from further research revolves around data and methods for **quantifying the emission impacts** of FIs' investment and lending portfolios. Impacts are contingent on assumptions regarding additionality and attribution that are not widely agreed upon at this point (see Cummis et al. 2018; Kölbel et al. 2019). The 2020 SBTi finance framework provides a foundation for further research to better understand and resolve these questions.

[70] See more information about science-based targets and public policy in the US, UK, Sweden, and Japan.

Following the launch of the framework, the SBTi financial sector team conducted a virtual roadshow to present the resources to FIs, related peer initiatives, and other stakeholders. The SBTi finance team also trained the SBTi TVT on the criteria, tool, and related resources for FI target validation.

From 2021, the SBTi elaborated on the framework with a planned Phase II project focused on net-zero targets for FIs, resources for additional asset classes and activities (perhaps including underwriting and sovereign debt), a revised multimethod tool, and updates to the criteria and reporting guidance related to the research questions described above. The SBTi net-zero framework for FIs is intended to complement the SBTi net-zero framework for companies and include a definition of net-zero for FIs, principles for validating net-zero targets, case studies, and guidance on how science-based targets can be used as milestones to reach net-zero. A central consideration for FIs' net-zero targets is the treatment of mitigation options including decarbonization, CO_2 removals, and offsetting with carbon credits. Through clear and robust net-zero targets, FIs can provide proof of concept for broader credit and offsetting mechanisms described in Article 6 of the Paris Agreement.[71] For updates on the FINZ Standard project, please see the FINZ webpage for more details.

Long-term climate stabilization at the 1.5°C level of the Paris Agreement may require the development of a new financial system centered on carbon pricing and tradable permits. While increasing instability, most recently related to the global COVID pandemic, is accelerating a focus on ESG issues among FIs, new systems take time to establish. In the near term, the resources described in this guidance document are intended to augment the enabling role of FIs to more effectively connect climate insights and capital.

[71] See https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf for full text of the Paris Agreement, including Article 6.

APPENDICES

This document includes eight appendices describing application of the SDA for mortgages, real estate, electricity generation project finance, corporate instruments, and the Temperature Rating method. The sixth appendix provides instructions for using the tool to apply the Temperature Rating and Portfolio Coverage method (the full method description is included in Section 5.4.2). The remaining appendices summarize the revisions in Version 2.0 of this guidance and acknowledgements.).

A. SDA for Residential Mortgages (consumer loans)

Prepared by technical partner of the SBTi financial sector project, Guidehouse, Inc.

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Summary

Table A1: Summary of the SDA for residential mortgage

Category		Framework
Scope	Target audience	The target audience for this target setting framework are FIs with portfolios of residential mortgages.
	Asset class	Residential mortgage (consumer loans)
	Sectors	Targets are set at portfolio emissions for residential buildings. For a target to qualify, it has to be set for a minimum share of the mortgage portfolio emissions, as defined in the SBTi Target Validation Criteria for FIs.
Mechanics	Inputs – data	Annual emissions data can be sourced and estimated from disclosure of buildings' energy-related emissions or energy performance; or public database on buildings' emissions or energy performance, including the energy consumptions of the household. When using buildings' energy performance data, emissions factors are required to convert energy use (i.e., for heat and electricity) into emissions.
	Inputs – pathways	Science-based targets are based on a global sectoral decarbonization pathway in line with keeping global warming to 1.5°C. Targets set using regional pathways will be assessed against global pathways. Targets set using regional pathways can be accepted if they are equally or more ambitious than targets set using global pathways.

	Attribution approach	When calculating financed emissions, a building's annual emissions are attributed to the mortgage provider using a loan-to-value approach. Thus, the attribution is equal to the ratio of the outstanding amount at the time of GHG accounting to the property value at loan origination.[a]
	Outputs	The output will be an emission intensity (per floor area) target at the mortgage portfolio level. Example: FI A commits to reduce its mortgage portfolio GHG emissions XX% per square meter by 2030 from a 2020 base year.
	Portfolio weighing	Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

Note: [a] PCAF 2020.
Source: Guidehouse 2020.

Scope

Some of the data and examples found in this appendix are based on a global sectoral decarbonization pathway in line with keeping global warming to WB2C, which was the minimum ambition level required in Version 1.1 of this guidance. Please note that the minimum ambition level required in the current version of this guidance (Version 2.0) is to use a global sectoral decarbonization pathway in line with keeping global warming to 1.5°C.

This methodology covers science-based targets for the portfolios of FIs consisting of mortgages. A mortgage is defined as any lending agreement to purchasing a building 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. As mortgages are **mainly applied for the purchase of a residential building**, the scope of the methodology is on residential buildings, defined as buildings for a single-family or multifamily that are used primarily for human dwelling (i.e., apartments and houses) (IEA 2013).

This methodology presents a sector-based approach to set a science-based target for the scope 3, category 15 (investment) emissions for FIs. When accounting for the financed emissions of a mortgage portfolio, these emissions are based on the energy-related emissions of the residential building (including the energy consumption of the household), which cover the following:

- Direct emissions from on-site fuel combustion for space heating, water heating, cooking, etc.
- Indirect emissions from purchased energy (electricity, steam, heat, and cooling) for space heating, water heating, space cooling, lighting, cooking, appliances, and miscellaneous equipment (i.e., including the energy use of the household).

The embodied emissions of the buildings' materials are not currently included due to high data uncertainty. It is recognized, though, that as new residential buildings become more energy efficient, these emissions could become a sizable portion of buildings' life-cycle emissions (e.g., emissions from

materials and construction could range from 35 to 51% depending on the building type) (RICS 2017). When robust approaches and data to measure buildings' embodied emissions are developed, the target setting for mortgage portfolios could expand its coverage to include them.

For setting targets on a mortgage portfolio, the SBTi endorses the SDA. The SDA was developed by CDP, WRI, and WWF together with technical partner Guidehouse. In the SDA, emissions reduction targets are assessed based on sectoral emissions reduction pathways, using the absolute emissions and activity data projection from IEA ETP. The initial SDA publication does not include emissions reduction pathways for the residential buildings, but this method extends SDA's sector coverage by using IEA's modeled data for residential buildings (SBTi 2015).

Mechanics

Data input

The first step of the science-based target setting process is defining the baseline emissions of the residential mortgage portfolio for which a target will be set. The PCAF provides GHG accounting methodologies for various asset classes, including residential mortgages. When disclosure of buildings' energy-related emissions is not available, emissions should be calculated based on (average) asset-level energy use and emission factors (PCAF 2020). In principle, setting science-based targets for residential mortgage portfolios requires the following data points:

- Data to estimate buildings' direct energy-related emissions (i.e., energy performance certificates or labeling, or average/estimated building energy consumption linked to on-site fuel combustion);
- Data to estimate buildings' indirect energy-related emissions, including emissions-related energy consumptions of the household (i.e., energy performance certificates or labeling, or average/estimated building energy consumption linked to purchased electricity, steam, heat, and cooling);
- Floor area[72] of current properties; and
- Portfolio growth rate in target year (optional).

There are two approaches to sourcing data to establish the baseline:

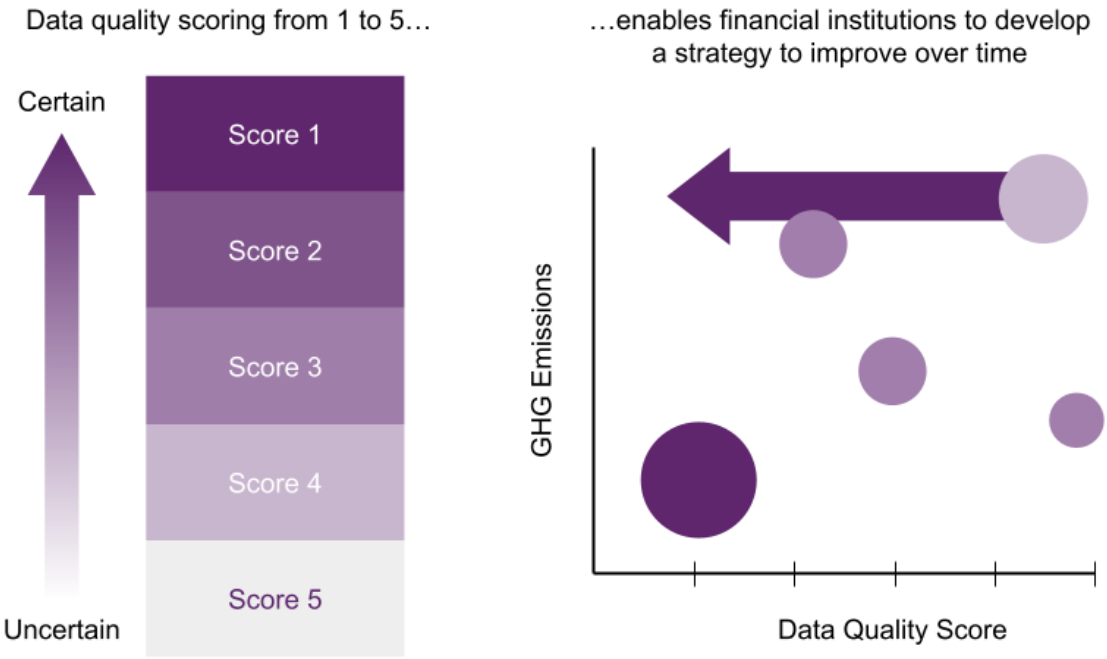
1. **Direct disclosure of buildings' energy performance**. Annual energy use of buildings can be sourced from actual energy consumption collected from mortgage clients when FIs have implemented such data collection systems.[73] Alternatively, annual energy use can be estimated based on energy performance certificates or labeling, which mandatory disclosure is in place in some countries. Floor area data could also be found as part of the legal documents and property registrations.

[72] Floor area here refers to the total building area as defined in IEA's Energy Technology Perspectives 2017 (IEA 2017). Financial institutions could possibly apply a different definition of floor area as long as it is consistent with the scenarios used to derive the decarbonization pathway(s).
[73] Some financial institutions are already using data analytics to measure emissions of their clients. See example here.

2. **Public database on average buildings' energy performance**. There are also some sources available to estimate the energy consumption in the case of limited data availability. Average building energy efficiency in the region is available in publicly available databases such as the IEA Data and Statistics, EU Buildings Database, which covers service and residential buildings in Europe; or the EIA Residential Energy Consumption Survey 2015, which covers residential buildings in the United States. It is important to note that using regional averages requires fewer resources on collecting data but does not reflect portfolio-specific performance nor improvement over time.

Measuring financed emissions of the mortgage portfolio to set the baseline should rely on asset-level data as much as possible, filling in any data gaps with regional proxies. While data availability varies across regions, FIs can assess the specificity and accuracy of the available data using a data hierarchy (see, for example, Figure A1) and explore ways to improve data quality over time. For example, one may focus on moving from sector average data to building specific energy-use data by refining the mortgage application process in countries with the most mortgage exposure. Any significant changes to the portfolio emissions should result in recalculation of the target baseline as defined in the SBTi Target Validation Criteria for FIs.

Figure A1: Generic Data Quality Scorecard for Portfolio Emissions[74]



Sources: PCAF 2019b, 2019c, and PCAF 2020.

[74] For a residential mortgage specific score card, refer to the PCAF's Global GHG Accounting and Reporting Standard (PCAF, 2020)

To translate the emissions intensity targets into an absolute target, FIs have to project the annual percentage of the activity growth of their portfolio (Compound Annual Growth Rate [CAGR]) toward the target year (i.e., preferably measured in m^2, kWh, ton of products). FIs can project this in three ways:

1. By using the activity growth projection in the climate scenario (default growth projection). For instance, for residential buildings, this is 2.16% annually in m^2 gross floor area from 2020 toward 2030 (see Table A2 and Table A3);
2. By using the growth of their portfolio over the past 5–10 years; and
3. By using the growth projections of the specific business departments and extrapolating this toward the target years, if this growth projection is too short term.

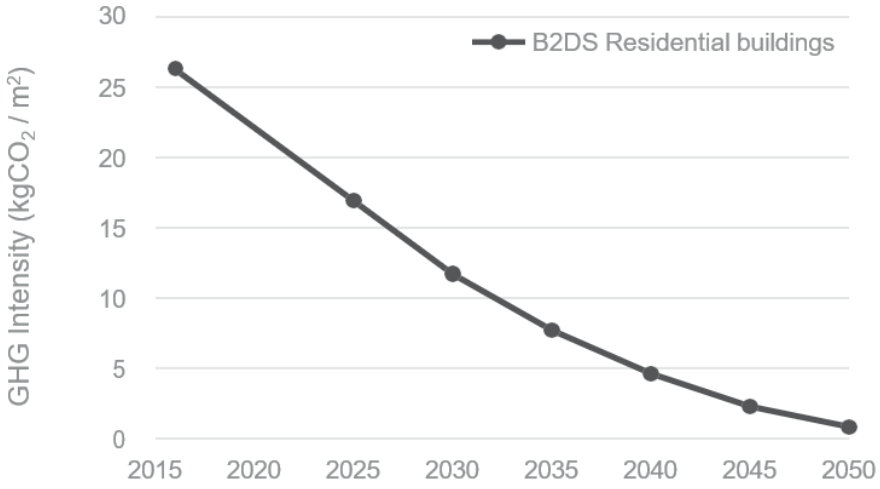
Decarbonization pathway

By applying the SDA, the final emissions targets (expressed in emissions intensity per m^2 or in absolute emissions for the mortgage portfolio) shall be consistent with keeping global warming to 1.5°C.

The IEA models the building sector into subsectors (residential and services buildings) based on sectoral growth and technology development trajectory. Figure A2 illustrates the Beyond 2 Degrees Scenario (B2DS) emissions intensity pathways for residential buildings. The emissions trajectory of a mortgage portfolio shall continuously decline from the base year toward the target level, even if the emissions are below the pathway benchmark. The calculation method for the intensity pathway will be further explained in the instructions for implementation below. Note that IEA only provides pathways in a five-year interval; thus, an FI may derive the pathway data through interpolation if the target year falls in between these five-year intervals. Also see Table A1 and Table A2 for the data of the global B2DS pathways.

In addition, building emissions often vary across regions due to differences in emissions trajectory, climatic zone, existing building performance and stock, urban planning and development, etc. Therefore, FIs may use regional emission pathways to assess their targets. Targets modeled using regional emission pathways will be assessed against global pathways.

Figure A2: Global decarbonization pathway for residential buildings



Source: IEA 2017.

Attribution approach

This method proposes to attribute the building's annual emissions to the mortgage provider using a loan-to-value approach. Thus, the attribution is equal to the ratio of the outstanding amount at the time of GHG accounting to the property value at loan origination. Using a fixed property value at loan origination avoids changes in attributed emissions performances due to fluctuating property values. This approach is consistent with the GHG accounting method for mortgages developed by the PCAF (PCAF 2020). To align with a decarbonization pathway, this methodology requires using the same attribution to gross floor area of the buildings in the mortgage portfolio to derive the emissions intensity metric (e.g., tCO_2/m^2).

Outputs

The output will be an emission intensity target (per m^2 floor area) at the mortgage portfolio level. FIs can decide to translate this emissions intensity target per m^2 floor area into an absolute target by taking the growth projection in m^2 floor area of their mortgage portfolio toward the target year into account.

The target language template is: *FI A commits to reduce its mortgage portfolio GHG emissions XX% per square meter by 2030 from a 2020 base year.*

Portfolio weighting

Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

Instructions for Implementation

Calculating the base year absolute emissions

The first step is to calculate the GHG emissions intensity of the mortgage portfolio in the base year. Specifically, this involves the following steps:

1. Collecting or estimating the annual energy consumption of residential buildings, including the energy consumption of the household in the mortgage portfolio for which the FI seeks to set a target.
2. Calculating the base year scope 1 and 2 emissions per residential buildings using fuel- and energy-specific emissions factors, such as those provided by the IEA or national energy agencies.
3. Attributing the annual scope 1 and 2 emissions per building based on the ratio between the outstanding amount versus the total property value at time of origination.
4. Summing up all attributed scope 1 and 2 emissions per building to derive the total annual scope 1 and 2 emissions of buildings in the mortgage portfolio.

Base year absolute emissions should be assessed at a fixed point in time in line with the financial reporting cycle.

Calculating the base year emissions intensity

Translating the absolute emissions in the base year into an emissions intensity at portfolio level involves the following steps:

- Collecting the gross floor area of residential buildings (in m^2) for which the FI seeks to set a target.
- Attributing the gross floor area per building (in m^2) based on the ratio between the outstanding amount versus the total property value at time of origination.
- Summing up the attributed gross floor area per building to derive total gross floor area at portfolio level.
- Dividing the total annual scope 1 and 2 emissions of buildings in the mortgage portfolio by the total gross floor area at portfolio level.

Defining the science-based target

Science-based targets on mortgages shall be set at the portfolio level, in alignment with the global decarbonization pathway for residential buildings. Based on the SDA approach, the current emissions intensity of a mortgage portfolio shall converge to the same level as the sectoral decarbonization pathway by 2050.

The emission intensity target is defined as a decrease in emissions per floor area (tCO_2 / m^2). The minimum level of emission intensity decrease is derived from the global decarbonization pathway for the residential buildings. The SBTi Target Setting tool (see Table 5.3) is available for the purpose of modeling SDA mortgage targets. The tool presents two options for projecting target year output in square meter:

- Fixed market share, which assumes that the portfolio grows at the same rate as the sector. This option is suitable for FIs who have difficulties projecting their portfolio growth.
- Target year output. This option enables FIs to input their own projected output in the target year in square meter.

Specifically, the following formula is used to calculate the emission intensity target for a mortgage portfolio when 1) the FI selected the "Fixed market share" option or 2) the FI selects the "Target year output" option **and** the projected growth of the mortgage portfolio (measured in growth of floor area) towards the target year is **lower or equal** to the sectoral growth as predicted by the IEA:

$$Portfolio\ intensity\ target_{real\ estate} = PI_{b,i} - SI_{2050,i} \times \frac{SI_{t,i} - SI_{2050,i}}{(SI_{b,i} - SI_{2050,i})} + SI_{2050,i}$$

Where:

- SI and PI are the sectoral and portfolio emissions per floor area,
- i the subsector for buildings (i.e. residential or service),
- b the base year, and
- t the target year.

For portfolios growing at a rate lower than the sector growth as predicted by the IEA, the market share factor included in the original SDA formula published in the original Nature Climate Change Publication (Krabbe et al. 2015) is removed to prevent results that would lead to increase in emissions intensity in the accompanying target setting tool.

When the FI selects the "Target year output" option **and** projects a growth (measured in growth of floor area) that's higher than the sectoral growth, the following formula applies. This formula is the same as the original SDA formula published in Nature Climate Change (Krabbe et al. 2015):

$$Portfolio\ intensity\ target_{real\ estate} = PI_{b,i} - SI_{2050,i} \times \frac{SI_{t,i} - SI_{2050,i}}{(SI_{b,i} - SI_{2050,i})} \times \frac{PA_{b,i}/SA_{b,i}}{(PA_{t,i}/SA_{t,i})} + SI_{2050,i}$$

Where:

- SI and PI are the sectoral and portfolio emissions per floor area,
- SA and PA the sectoral and portfolio total floor area,
- i the subsector for buildings (i.e. residential or service),
- b the base year, and
- t the target year.

Portfolios growing at a rate higher than the sector rate are subject to a stricter intensity reduction pathway to discount the growth in market share.

This approach allows FIs to converge their emissions intensity for the mortgage portfolio to the sectoral pathway in 2050, taking into account its base year performance relative to sector intensity in 2050, and

the decarbonization level of the sector in the target year.[75] Box A1 below shows an example calculation of an intensity target for a mortgage portfolio based on this formula.

Box A1: Example on setting an intensity target for a mortgage portfolio

Assume an FI has a global mortgage portfolio of residential buildings. Based on annual energy consumption, building certificates and other data the scope 1 + 2 emissions of these buildings are assessed. The emission intensity of the portfolio is 37 $kgCO_2/m^2$ for the total floor area of 0.95 million m^2 in 2017. The projected portfolio growth rate toward 2030 is 2% annually (CAGR), which is lower than the sectoral growth rate.

Based on the IEA ETP B2DS, the global decarbonization pathway for residential buildings has approximately:

a. 25 $kgCO_2/m^2$ at 193,862 million m^2 2017
b. 12 $kgCO_2/m^2$ at 257,077 million m^2 2030
c. 0.81 $kgCO_2/m^2$ at 339,220 million m^2 2050

To set an intensity target for 2030 converging to the 2050 sectoral emissions level:

$$Intensity\ target\ =\ PI_{b,i} - SI_{2050,i} \times \frac{SI_{t,i} - SI_{2050,i}}{(SI_{b,i} - SI_{2050,i})} + SI_{2050,i}$$

$$Intensity\ target\ = (37 - 0.81) \times \frac{12 - 0.81}{(25 - 0.81)} + 0.81$$

$$Intensity\ target\ =\ 17.55\ kgCO_2/m^2$$

Since this portfolio started with an emission intensity higher than the sector level in 2017, this approach allows the portfolio to stay at an intensity higher than the sectoral pathway to reduce its emissions at a faster pace, converging to the sectoral level by 2050.

Taking the annual growth projections of 2% toward 2030, the mortgage portfolio will correspond to a total floor area of 1.2 million m^2 in 2030. The emissions intensity targets can be translated into an absolute emissions target of 21.6 kton CO_2 in 2030.

Note: CAGR = Compound Annual Growth Rate.
Source: Guidehouse 2020.

[75] See the SDA methodology paper for more details (SBTI 2015).

IEA ETP 2017 B2DS pathways – mortgage

Table A2 and Table A3 show the global floor area projections and emissions intensities pathway for residential buildings based on the IEA ETP 2017 data.

Table A2: Emission intensity

($kgCO_2/m^2$)

Region	Subsector	2016[a]	2025	2030	2035	2040	2045	2050
WORLD	Residential Building	26.30	16.92	11.71	7.69	4.60	2.26	0.81

Source: IEA ETP 2017.

Table A3: Gross floor area

(Million, m^2)

Region	Subsector	2016[a]	2025	2030	2035	2040	2045	2050
WORLD	Residential Building	189,288	230,454	257,077	275,529	295,306	316,502	339,220

Note:

- The 2016 data points are estimated based on the 2014 and 2025 data points provided by IEA, assuming linear interpolation between the years.

Source: IEA ETP 2017.

B. SDA for Real Estate

Prepared by technical partner of the SBTi financial sector project, Guidehouse, Inc.

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guidehouse.com March 2021

Summary

Category		Framework
Scope	Target audience	The target audience for this target setting framework are FIs with portfolios of real estate loans and investments.
	Asset class	Real estate loans and investments (including REITs).
	Sectors	Targets are set at portfolio emissions for service and residential buildings. For a target to qualify, it has to be set for a minimum share of the real estate portfolio emissions, as defined in the SBTi Target Validation Criteria for FIs.

Mechanics	Inputs – data	Annual emissions data can be sourced and estimated from direct disclosure of buildings' energy-related emissions or energy performance; or public database on buildings emissions, energy performance and energy consumption of tenants. When using buildings' and tenants' energy performance data, emissions factors are required to convert energy (i.e., for heat and electricity) use into emissions.
	Inputs – pathways	Science-based targets are based on a global sectoral decarbonization pathway in line with keeping global warming to 1.5°C. Targets set using regional pathways will be assessed against global pathways. Targets set using regional pathways can be accepted if they are equally or more ambitious than targets set using global pathways.
	Attribution approach	Emissions associated with real estate loans and investments should be attributed proportionally to the FIs based on the ratio between the outstanding amount versus the total property value at time of origination.[a] When CRE is fully financed by an asset owner, 100% of the building's emissions are attributed to the asset owner. When CRE is jointly financed by a group of asset owners, the attribution is based on the share invested by each asset owner.[a]
	Outputs	The output will be an emission intensity target (per gross floor area) at the portfolio level. Example: FI A commits to reduce its real estate portfolio GHG emissions intensity XX% per square meter by 2030 from a 2020 base year.
	Portfolio weighting	Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

Note:
[a] PCAF 2020.
Source: Guidehouse 2020.

Scope

Some of the data and examples found in this appendix are based on a global sectoral decarbonization pathway in line with keeping global warming to WB2C, which was the minimum ambition level required in Version 1.1 of this guidance. Please note that the minimum ambition level required in the current version of this guidance (Version 2.0) is to use a global sectoral decarbonization pathway in line with keeping global warming to 1.5°C.

This methodology covers science-based targets for the portfolios of FIs consisting of real estate loans and investments. Real estate loans and investments are defined as the allocation of capital to finance the purchase of a property with a commercial purpose, including real estate investment trust (REIT), etc. **Both residential and service buildings under real estate loans and investments are included in this methodology**. Residential buildings refer to private dwellings such as apartments and houses,

whereas service buildings include properties related to trade, finance, retail, public administration, health, food and lodging, education, and commercial services (IEA 2013).

This methodology presents a sector-based approach to set a science-based target for scope 3, category 15 (investment) emissions for FIs. When accounting for the financed emissions of real estate loan and investment portfolio, these emissions are based on the energy-related emissions of the buildings, and the energy consumptions of the tenants (often accounted under scope 3):

- Direct emissions from on-site fuel combustion for space heating, water heating, cooking purposes in the full building; and
- Indirect emissions from purchased energy (electricity, steam, heat, and cooling) for space heating, water heating, space cooling, lighting, cooking, appliances, and miscellaneous equipment. These indirect emissions include energy use by tenants.

The embodied emissions of the buildings' materials are not currently included due to high data uncertainty. Therefore, this method is not applicable to construction or rehabilitation of properties. It is recognized, though, that as new buildings become more energy efficient, these emissions could become a sizable portion of buildings' life-cycle emissions (e.g., emissions from materials and construction could range from 35 to 51% depending on the building type) (RICS 2017). When robust approaches and data to measure buildings' embodied emissions are developed, the target setting for real estate could expand its coverage to include these emissions.

For setting targets on a commercial real estate portfolio, the SBTi endorses the SDA. The SDA was developed by CDP, WRI, and WWF, together with technical partner Guidehouse. In the SDA, emissions reduction targets are assessed based on sectoral emissions reduction pathways, using the absolute emissions and activity data projection from IEA ETP.

Mechanics

Data input

The first step of the science-based target setting process is defining the base year emissions intensity (kg CO_2/m^2) of the commercial real estate portfolio for which a target will be set. A 2020 report by the Partnership for Carbon Accounting Financials (PCAF) detailed the carbon accounting methodology for various asset classes, including commercial real estate. When direct disclosure of buildings' energy-related emissions and tenants' energy-related emissions are not available, emissions should be calculated based on (average) asset-level and average tenants energy use and emission factors (PCAF 2020). In principle, setting science-based targets for real estate portfolios requires the following data points:

- Data to estimate buildings' direct energy-related emissions (i.e., energy performance certificates or labeling, or average/estimated building energy consumption linked to on-site fuel combustion);

- Data to estimate buildings' indirect energy-related emissions (i.e., energy performance certificates or labeling, or average/estimated energy consumption linked to purchased electricity, steam, heat and cooling, including the energy consumption of the tenants);
- Outstanding loan or investment amount of properties;
- Property values at the time of investment;
- Building type (i.e., residential or service);
- Floor area[76] of current properties; and
- Portfolio growth rate in target year (optional).

When there is no disclosure of building's energy-related emissions by, for instance, the tenant or property manager, there are two approaches to estimate these emissions for establishing the baseline:

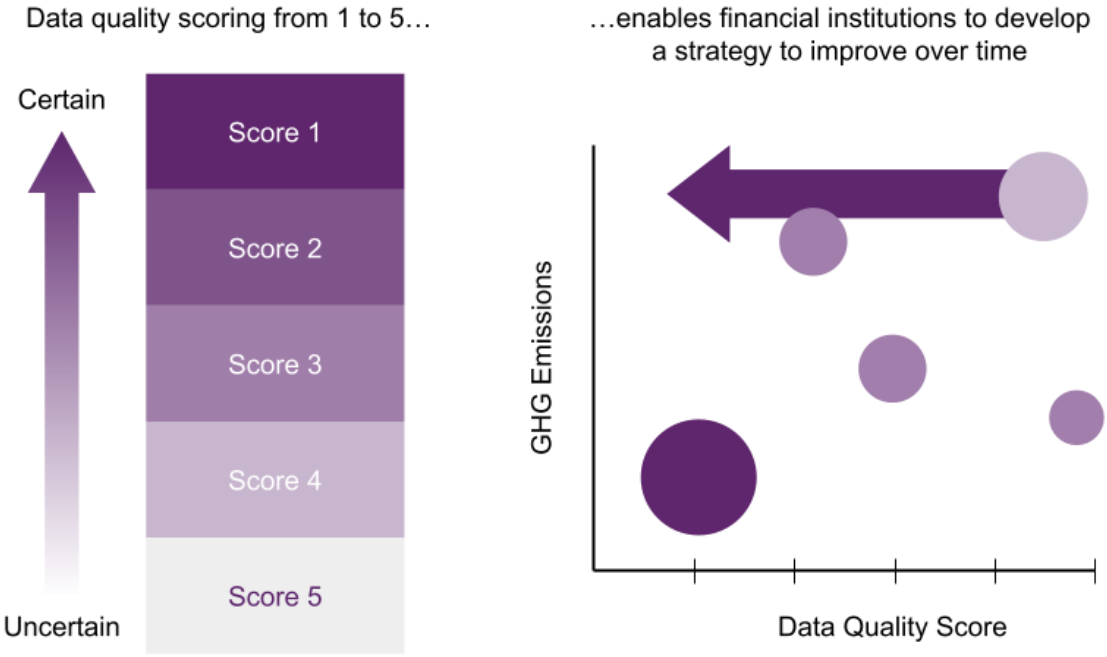
1. **Based on buildings' energy performance (asset-level data).** Annual energy consumption of buildings and tenants can be sourced from energy bills collected from tenants when FIs have implemented such data collection systems. Alternatively, annual energy consumption can be estimated based on energy performance certificates or labeling, a mandatory disclosure that is in place in some countries. Floor area data can be found as part of the legal document and property registration of the real estate.
2. **Public database on average buildings' energy performance.** There are also some sources available to estimate the energy consumption in the case of limited data availability. Average building energy efficiency in the region is available in publicly available databases such as (i) the Global Services Real Estate Sustainability Benchmark (GRESB) (global service buildings, but subscription is required), (ii) EU Buildings Database (service and residential buildings in Europe), (iii) EIA Residential Energy Consumption Survey (residential buildings in the United States), and (iv) EIA Commercial Buildings Energy Consumption Survey data but does not reflect performance specific to the portfolios nor improvement over time.

Measuring financed emissions of the commercial real estate portfolio to set the baseline should rely on asset-level data as much as possible, filling in any data gaps with regional proxies.

While data availability varies across regions, FIs can assess the specificity and accuracy of available data using a data hierarchy (see, for example, Figure B1) and explore ways to improve data quality over time. For example, one may focus on moving from sector average data to building-specific energy-use data by refining the due diligence or loan application process in countries with the most real estate exposure. Any significant changes to the portfolio emissions should result in recalculation of the target baseline as defined in the SBTi Target Validation Criteria for FIs.

[76] Floor area here refers to the total building area (gross floor area) as defined in IEA's Energy Technology Perspectives 2017 (IEA 2017). Financial institutions could possibly apply a different definition of floor area as long as it is consistent with the scenarios used to derive the decarbonization pathway(s).

Figure B1: Generic data quality scorecard for portfolio emissions[77]



Sources: PCAF 2019b, 2019c, and PCAF 2020.

To translate the emission intensity targets into an absolute target, FIs have to project the annual percentage of the activity growth of their portfolio (Compound Annual Growth Rate [CAGR]) toward the target year (i.e., preferably measured in m^2, kWh, ton of products). FIs can project this in three ways:

1. By using the activity growth projection in the climate scenario (default growth projection). For instance, for residential buildings, this is 2.16% annually in m^2 gross floor area from 2020 toward 2030, and for service buildings this is 2.15% annually in m^2 gross floor area from 2020 toward 2030 (see Table B2 and Table B3).
2. By using the growth of their portfolio over the past 5–10 years.
3. By using the growth projections of the specific business departments and extrapolating this toward the target years (if this growth projection is too short term).

Decarbonization pathway

By applying the SDA, the final emission targets (expressed in emissions intensity per m^2 or in absolute emissions for the real estate portfolio) have to be consistent with keeping global warming to 1.5°C.

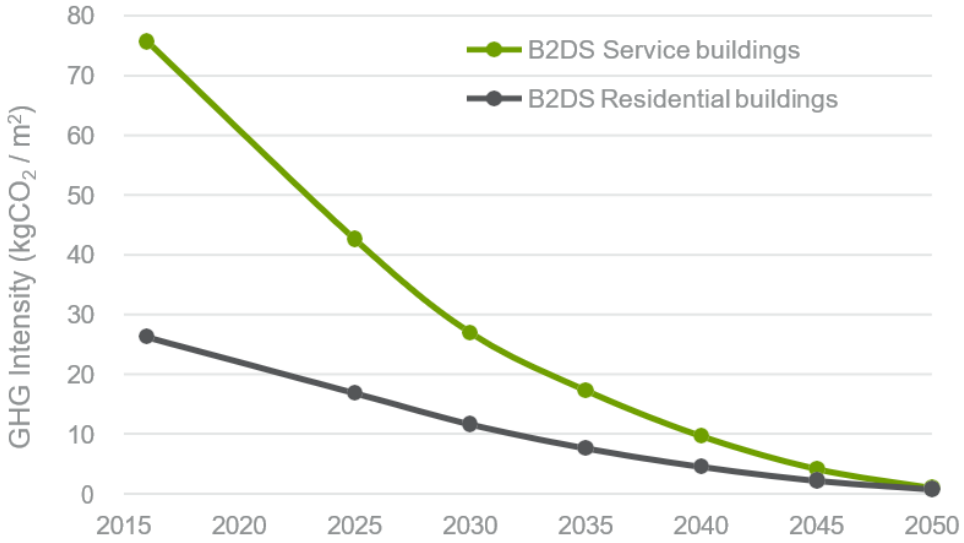
The IEA models the building sector into subsectors (residential and services buildings) based on sectoral growth and technology development trajectory. Figure B2 illustrates the B2DS emissions intensity pathways for residential and service buildings. The emissions trajectory of a commercial real

[77] For a commercial real estate specific score card, refer to the PCAF's Global GHG Accounting and Reporting Standard (PCAF, 2020)

estate portfolio shall continuously decline from the base year toward the target level, even if the emissions are below the pathway benchmark. The calculation method for portfolio emission intensity pathway is explained further in the instructions for implementation below. Note that IEA only provides the data of ETP pathways in a five-year interval; thus, FIs may derive the pathway data through interpolation if the target year falls in between these five-year intervals. Also see Table B2 and Table B3 for the data of the global ETP B2DS pathways.

In addition, building emissions often vary across regions due to differences in emissions trajectory, climatic zone, existing building performance and stock, urban planning and development, etc. Therefore, FIs may use regional emission pathways to assess their targets. Targets modeled using regional emission pathways will be assessed against global pathways.

Figure B2: Global decarbonization pathway for buildings



Note: B2DS = Beyond 2°C Scenario.
Source: IEA 2017.

Attribution approach

This methodology attributes emissions associated with commercial real estate loan and investments proportionally based on the ratio between the outstanding loan or investment amount versus the total property value at the time of loan or investment origination. When the commercial real estate investment is fully financed by an asset owner, 100% of the building's emissions are attributed to the asset owner. When the investment is jointly financed by a group of asset owners, the attribution is based on the share invested by each asset owner. This approach is consistent with the GHG accounting method for real estate developed by the Partnership for Carbon Accounting Financials (PCAF 2019b, 2019c, and PCAF 2020). To align with the IEA decarbonization pathway for the building

sector, this methodology requires using the same attribution to the gross floor area of the buildings in the real estate portfolio in order to derive the emissions intensity (e.g., tCO_2/m^2).

Outputs

The output will be an emissions intensity target (per m^2 floor area) at the commercial real estate portfolio level, split between residential and service buildings if relevant to FIs. FIs can decide to translate this emissions intensity target into an absolute target by taking into account the growth projection in m^2 floor area of their real estate portfolio toward the target year.

The target language template is: *FI A commits to reduce its real estate portfolio GHG emissions XX% per square meter by 2030 from a 2020 base year.*

FIs that meet the following conditions may set an emissions intensity maintenance target up to 2030 for an investment/lending portfolio of real estate assets:

i. a portfolio emissions intensity that is at or below the 2030 sector intensity level in a 1.5°C aligned pathway for the real estate sector (e.g., 19 $kgCO_2e/m2$ for service buildings and/or 10 $kgCO_2e/m2$ for residential buildings globally), and
ii. a commitment to maintain the base year portfolio emissions intensity through 2030 and only finance new 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., highly energy efficient 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 only 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 FIs that have already achieved, at a portfolio level, the emissions intensity required to align with the 2030 sector intensity level in a 1.5°C pathway. It is meant to encourage financial institutions to maintain the enabling role they play in decarbonizing the real estate sector towards net-zero by only financing 1.5°C aligned real estate assets. Nevertheless, the SBTi strongly encourages these financial institutions to further reduce their portfolio's emissions intensity. Additional follow-on targets must be aligned with the upcoming SBTi FI Net-Zero Standard to ensure that all post 2030 targets are compatible with net-zero pathways. Please see Table 6.1 for target language examples.

The target language template is: *FI A commits to maintain the emissions intensity of its real estate investment/loan portfolio at or below [the base year emissions intensity] $kgCO_2e/m^2$ from [base year] through 2030 and only finance 1.5°C aligned real estate assets.*

Portfolio Weighting

Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

Instructions for Implementation

Calculating the base year absolute emissions

The first step is to calculate the annual GHG emissions of the commercial real estate portfolio in the base year. Specifically, this involves the following steps:

1. Collecting or estimating the annual energy consumption of buildings (including the energy consumption of the tenants) for which the FI seeks to set a target, if relevant, split between residential and service buildings in the portfolio.
2. Calculating the base year scope 1 and 2 emissions and scope 3 tenant's energy-related emissions per building using fuel- and energy-specific emissions factors, such as those provided by the IEA or national energy agencies.
3. Attributing the annual scope 1,2 and scope 3 tenant's energy-related emissions per building based on the ratio between the outstanding amount versus the total property value at time of origination.
4. Summing up all scope 1,2 and scope 3 tenant's energy-related emissions per building to derive the total annual absolute emissions of buildings in the real estate portfolio.

Base year absolute emissions should be assessed at a fixed point in time in line with the financial reporting cycle.

Calculating the base year emissions intensity

Translating the emissions in the base year into an emissions intensity at portfolio level involves the following steps:

- Collecting the gross floor area of buildings (in m^2) for which the FI seeks to set a target which, if relevant, is split between residential and service buildings in the portfolio.
- Attributing the gross floor area per building (in m^2) based on the ratio between the outstanding amount versus the total property value at time of origination.
- Summing up the attributed gross floor area per building to derive total gross floor area at portfolio level.
- Dividing the total annual absolute emissions at portfolio level by the total gross floor area at portfolio level.

Defining the science-based target

Science-based targets on real estate investments shall be set at the real estate portfolio level, in alignment with the global decarbonization pathway for residential and/or service buildings. Based on the SDA approach, the current emissions intensity of a real estate portfolio shall converge to the same level as the sectoral decarbonization pathway by 2050.

The emission intensity target is defined as a decrease in emissions per floor area (tCO_2/m^2). The minimum level of emission intensity decrease is derived from the global decarbonization pathway for the residential and service buildings.

A SBTi Target Setting tool (see Table 5.3) is available for modeling SDA real estate targets. The tool presents two options for projecting target year output in square meter:

- Fixed market share, which assumes that the portfolio grows at the same rate as the sector. This option is suitable for Fis who have difficulties projecting their portfolio growth.
- Target year output. This option enables Fis to input their own projected output in the target year in square meters.

Specifically, the following formula is used to calculate the emission intensity target for a commercial real estate portfolio when 1) the FI selected the "Fixed market share" option or 2) the FI selects the "Target year output" option **and** the projected growth of the real estate portfolio (measured in growth of floor area) towards the target year is **lower or equal** to the sectoral growth as predicted by the IEA:

$$Intensity\ target_{real\ estate} = PI_{b,i} - SI_{2050,i} \times \frac{SI_{t,i} - SI_{2050,i}}{(SI_{b,i} - SI_{2050,i})} + SI_{2050,i}$$

Where:

- SI and PI are the sectoral and portfolio emissions per floor area,
- i the subsector for buildings (i.e. residential or service),
- b the base year, and
- t the target year.

For portfolios growing at a rate lower than the sector growth as predicted by the IEA, the market share factor included in the original SDA formula published in the original Nature Climate Change Publication (Krabbe et al. 2015) is removed to prevent results that would lead to increase in emissions intensity in the accompanying target setting tool.

When the FI selects the "Target year output" option **and** projects a growth (measured in growth of floor area) that's higher than the sectoral growth, the following formula applies. This formula is the same as the original SDA formula published in Nature Climate Change (Krabbe et al. 2015):

$$Portfolio\ intensity\ target_{real\ estate} = PI_{b,i} - SI_{2050,i} \times \frac{SI_{t,i} - SI_{2050,i}}{(SI_{b,i} - SI_{2050,i})} \times \frac{PA_{b,i}/SA_{b,i}}{(PA_{t,i}/SA_{t,i})} + SI_{2050,i}$$

Where:

- SI and PI are the sectoral and portfolio emissions per floor area,
- SA and PA the sectoral and portfolio total floor area,
- i the subsector for buildings (i.e. residential or service),
- b the base year, and

- t the target year.

Portfolios growing at a rate higher than the sector rate is subject to a stricter intensity reduction pathway to discount the growth in market share.

This approach allows Fis to converge their emissions intensity for the real estate portfolio to the sectoral pathway in 2050, taking into account its base-year performance relative to sector intensity in 2050, and the decarbonization level of the sector in target year. Box B1 below shows an example calculation of an intensity target.

Box B1: Example on setting an intensity target for a real estate portfolio

Assume an FI has a global commercial real estate portfolio of various service buildings. Based on energy consumption, building certificates, or other data, the emissions of these buildings are assessed. Taking the attribution factor per building into account, the emission intensity of the portfolio is 117 $kgCO_2/m^2$ for the total floor area of 2.4 million m^2 in 2017. The projected annual portfolio growth rate toward 2030 is 2% (CAGR), which is lower than the sectoral growth rate.

Based on the IEA ETP B2DS, the global decarbonization pathway for service buildings has the following approximate emissions:

a. 71 $kgCO_2/m^2$ at 47,404 million m^2, in 2017
b. 27 $kgCO_2/m^2$ at 62,760 million m^2 2030
c. 1 $kgCO_2/m^2$ at 81,039 million m^2 2050

To set an intensity target for 2030 converging to the 2050 sector level:

$$Intensity\ target\ = PI_{b,i} - SI_{2050,i} \times \frac{SI_{t,i} - SI_{2050,i}}{(SI_{b,i} - SI_{2050,i})} + SI_{2050,i}$$

$$Intensity\ target\ = (117 - 1) \times \frac{27 - 1}{(71 - 1)} + 1$$

$$Intensity\ target\ = 44\ kgCO_2/m^2$$

Since this portfolio started with an emission intensity higher than the sector level in 2017, this approach allows the portfolio to stay at an intensity higher than the sectoral pathway to reduce its emissions at a faster pace, converging to the sectoral level by 2050.

Taking the annual growth projections of 2% toward 2030, the commercial real estate portfolio will correspond to a total floor area of 3.1 million m^2 in 2030. The emissions intensity targets can be translated into an absolute emissions target of 136.6 kton CO_2 in 2030.

Note: CAGR = Compound Annual Growth Rate.
Source: Guidehouse 2020.

IEA ETP 2017 B2DS pathways – real estate

The following tables provide the global emissions intensities and the global gross floor area pathways based on the IEA ETP 2017 data.

Table B2: Emissions intensity

($kgCO_2/m^2$)

Region	Subsector	2016[a]	2025	2030	2035	2040	2045	2050
WORLD	Service Buildings	75.64	42.56	26.97	17.33	9.71	4.21	1.00
WORLD	Residential Building	26.30	16.92	11.71	7.69	4.60	2.26	0.81

Source: IEA ETP 2017.

Table A3: Gross floor area

(Million, m^2)

Region	Subsector	2016[a]	2025	2030	2035	2040	2045	2050
WORLD	Service Buildings	46,292	56,296	62,760	66,901	71,316	76,022	81,039
WORLD	Residential Building	189,288	230,454	257,077	275,529	295,306	316,502	339,220

Note:

- The 2016 data points are estimated based on the 2014 and 2025 data points provided by IEA, assuming linear interpolation between the years.

Source: IEA ETP 2017.

C. SDA Electricity Generation Project Finance

Prepared by technical partner of the SBTi financial sector project, Guidehouse, Inc.

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November 2020

Summary

Table C1: Summary of the SDA for electricity generation project finance

Category	Framework

Scope	Target audience	The target audience for this target setting framework are FIs with project finance portfolios in the power sector.
	Asset class	Project finance for electricity generation.
	Sectors	Targets are set at portfolio emissions for project finance for the power sector. For a target to qualify, it has to be set for a minimum share of the financed emissions from portfolio of electricity generation project finance, as defined in the SBTi Target Validation Criteria for FIs.
Mechanics	Inputs – data	Annual emissions data can be sourced and estimated from direct disclosure of projects' GHG emissions or fuel use; or public database on average emissions factors for power generation.
	Inputs – pathways	Science-based targets are derived from a global sectoral decarbonization pathway in line with keeping global warming to 1.5°C. Targets set using regional pathways will be assessed against global pathways. Targets set using regional pathways can be accepted if they are equally or more ambitious than targets set using global pathways.
	Attribution approach	The FI accounts for a portion of the annual emissions of the financed project determined by the ratio between the institution's outstanding amount (numerator) and the total equity and debt of the financed project (denominator).[a]
	Outputs	The output will be an emission intensity target (gCO_2/kWh) at the portfolio level. Example: FI A commits to reduce its electricity generation project finance portfolio GHG emissions XX% per kWh by 2030 from a 2020 base year.
	Portfolio weighting	Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

Note:
[a] PCAF 2020.
Source: Guidehouse 2020.

Scope

Some of the data and examples found in this appendix are based on a global sectoral decarbonization pathway in line with keeping global warming to WB2C, which was the minimum ambition level required in Version 1.1 of this guidance. Please note that the minimum ambition level required in the current version of this guidance (Version 2.0) is to use a global sectoral decarbonization pathway in line with keeping global warming to 1.5°C.

This methodology covers science-based targets for the financial portfolios of FIs consisting of project finance for electricity generation. Project finance is defined as equity or loan (including mezzanine debt)

with known use of proceeds that are designated for a clearly defined activity or set of activities, that is, the construction and operations of a project to generate electricity.

The scope of the methodology covers projects contributing to electricity generation from fuels such as oil, coal, natural gas, nuclear, biomass and waste, hydro, geothermal, wind, solar photovoltaics (PV) and concentrate solar power (CSP), ocean, hydrogen, and other (IEA 2017). Treatment of investments leading to negative emissions from the power sector, such as bioenergy with carbon capture and storage (BECCS) and carbon capture and storage (CCS) are currently out of scope. This topic will be revisited once the GHGP removal guidance is developed and as part of the SBTi's net-zero target discussion.

Project finance for other types of projects (other than in the fossil fuel sector) are currently out of scope in this methodology and will be considered in the future.

This methodology details how to align emissions of the underlying projects in the power sector with a zero-carbon transformation pathway toward 1.5°C. It applies the decarbonization pathway of power generation to the portfolio of underlying projects and is applicable to pathways from any transition scenarios available in the market.[78]

The emissions subject to target setting are scope 1 and 2 emissions from the underlying projects:

- Scope 1: Direct emissions from on-site fuel combustion for electricity generation.
- Scope 2: Indirect emissions from project's own use of purchased steam, heat, and electricity for electricity generation, if any.

Note that Scope 3 emissions (such as embodied carbon in materials and emissions from waste) are not included in this methodology due to high data uncertainty. When robust approaches and data to measure scope 3 emissions of these projects are well developed, the target setting for electricity generation portfolios could expand its coverage to include scope 3 emissions.

Published WB2C alignment methodologies for project finance are currently spread across research on different project types. Some existing work focuses on the necessary capacity for certain technologies and the required amount of investment per sectors for the alignment. For setting targets on an electricity generation project finance portfolio, the SBTi endorses the SDA. The SDA was developed by CDP, WRI, and WWF, in partnership with their technical partner, Guidehouse. In the SDA, emissions reduction targets are assessed based on sectoral emissions reduction pathways, using the absolute emissions and activity data projection from IEA ETP. In the SDA a decarbonization pathway for the power sector is included (IEA 2017). In June 2020, the SBTi, with technical support from Guidehouse, published a quick start guide for electric utilities to set 1.5°C- aligned science-based targets using the SDA (SBTi 2020e).

[78] For example, the Energy Technology Perspectives (ETP) and World Energy Outlook (WEO) by the International Energy Agency (IEA), International Renewable Energy Agency (IRENA) Remap, Greenpeace Advanced Energy [R]evolution, etc. (TCFD 2017).

Mechanics

Data input

The first step of the science-based target setting process is defining the baseline emissions of the portfolio of electricity generation projects for which a target will be set. PCAF's Global GHG Accounting and Reporting Standard provides GHG accounting methods for various asset classes, including project finance. According to the Standard, project's emissions should be calculated based on asset-level energy use and emission factors. These emissions are attributed to the FI by the ratio between the institution's outstanding amount (numerator) and the total equity and debt of the financed project (denominator) (PCAF 2020).

In principle, setting science-based targets for electricity generation project finance portfolios requires the following data points:

- Scope 1 emissions from electricity generation projects;
- Scope 2 emissions from electricity generation projects;
- Outstanding loan or investment per project;
- Total project size per project (equity, debt, and mezzanine);
- (Estimated) annual electricity production per project (kWh); and
- (Estimated) future electricity production of portfolio (kWh) or portfolio growth target (percentage) toward the target year (optional).

There are two approaches to sourcing data to measure emissions:

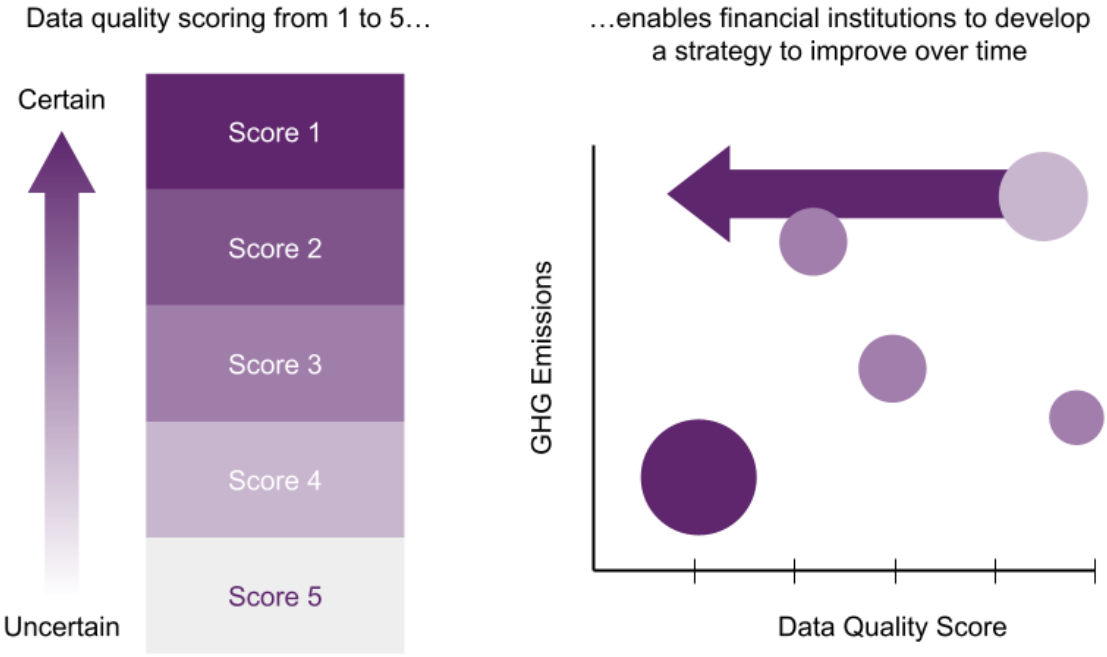
1. Disclosure of projects' energy use or GHG emissions. Fuel type, annual electricity generation (e.g., MWh), annual GHG emissions, installed capacity (e.g., MW) or operating hours of electricity generation projects are often included in project descriptions. Actual annual fuel use and emission data of each project are most accurate and effective to reflect any improvement over time.
2. Public database on average emissions factors for power generation. Sources such as IEA, national energy agencies, or utilities often provide average emission factors for electricity generation by regions or fuel type. FIs could use these proxies to estimate the emissions for power generation projects if they have the annual output (e.g., MWh) of projects by fuel type or region. Using regional averages requires fewer resources on collecting data but does not reflect performance specific to the portfolios nor improvement over time.

Science-based target analysis for electricity generation projects should rely on asset-level data as much as possible and fill in any data gaps with regional proxies.

While data availability varies across regions, FIs could assess the specificity and accuracy of the available data using a data hierarchy (e.g., Figure C1 explores ways to improve data quality over time). For example, one may focus on moving from sector average data to region- or project-specific energy use data by refining the due diligence or loan application process in countries with the most project

finance exposure. Any significant changes to the portfolio emissions should result in recalculation of target baseline as defined in the SBTi Target Validation Criteria for FIs.

Figure C1: Generic data quality scorecard for portfolio emissions[79]



Sources: PCAF 2019b, 2019c, and PCAF 2020.

To translate the emissions intensity targets into an absolute target, FIs have to project the annual percentage of the activity growth of their portfolio (Compound Annual Growth Rate [CAGR]) toward the target year (i.e., preferably measured in m^2, kWh, ton of products). FIs can project this in three ways:

1. By using the activity growth projection in the climate scenario (default growth projection). For instance, for electricity generation projects, this is 1.69% in kWh from 2020 toward 2030 (see Table C2).
2. By using the growth of their portfolio over the past 5–10 years.
3. By using the growth projections of the specific business departments and extrapolating this toward the target years, if this growth projection is too short term.

Decarbonization pathway

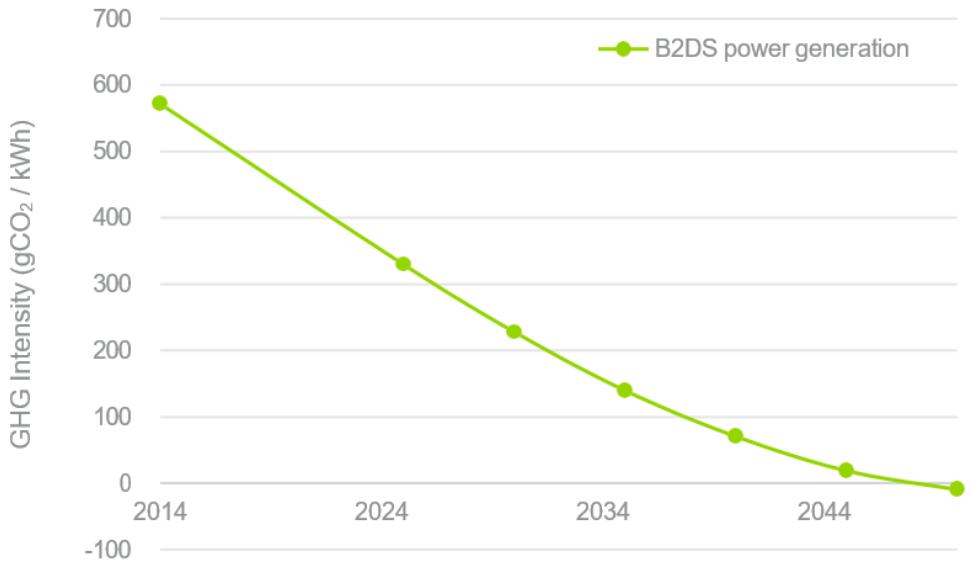
By applying the SDA, the final emission targets, expressed in emissions intensity (gCO_2 /kWh), have to be consistent with keeping global warming to 1.5°C.

[79] For a project finance specific score card, refer to the PCAF's Global GHG Accounting and Reporting Standard (PCAF, 2020)

The SDA for the power sector details how to align emissions of investments in electricity generation projects with a decarbonization pathway toward 1.5°C. The IEA models the power sector based on sectoral growth and technology development trajectories. Figure C2 illustrates the emissions intensity pathways for the power sector in the B2DS.

The emissions intensity trajectory of a project portfolio in the power sector shall continuously decline from the base year toward the target level, even if the emissions are below the pathway benchmark. This calculation method will be explained further in the instructions for implementation. Note that IEA only provides pathways in a five-year interval: FIs may derive the pathway data through interpolation if the target year falls in between these five-year intervals. See Table C2 for the data on the global B2DS pathway.

Figure C2: Global decarbonization emission pathway for the power sector



Source: IEA 2017.

Attribution approach

Attribution of projects' emissions to a financial portfolio is based on the ratio of outstanding loan or investment over the total project size on an annual basis (e.g., 2018 project emissions x 2018 year-end outstanding loan/project's total size [equity + debt]) (PCAF 2019b, 2019c, and PCAF 2020). This approach is consistent with the GHG accounting method for project finance developed by the Partnership for Carbon Accounting Financials (PCAF 2020). To align with a decarbonization pathway, this methodology requires using the total electricity output (e.g., kWh) to derive the emissions intensity of electricity generation projects (i.e., gCO_2/kWh).

Outputs

The output will be an emissions intensity target (in gCO_2/kWh) at the portfolio level of all electricity generation projects. FIs can decide to translate this emissions intensity target per kWh into an absolute target by taking the growth projection in kWh of FIs' electricity generation project portfolio toward the target year into account.

The target language template is: *FI A commits to reduce the GHG emissions of its electricity generation project finance portfolio XX% per kWh by 2030 from a 2020 base year.*

FIs that already only finance renewable electricity projects in the base year may set targets to continue doing so. For the purposes of target validation, the SBTi will use the same definition of renewable electricity as the RE100 initiative.

The target language template is: *FI A commits to continue providing electricity generation project finance for only renewable electricity through 2030.*

Separately, FIs that meet all the following conditions may set an emissions intensity maintenance target up to 2030 for an electricity generation project finance portfolio:

i. a portfolio emissions intensity that is at or below the 2030 sector intensity level in a 1.5°C aligned pathway for the power sector (100 gCO_2e/kWh);
ii. at least 80% renewable or other zero-emissions electricity generation project financing; and
iii. a commitment to maintain the base year portfolio emissions intensity through 2030 and only finance 1.5°C aligned electricity generation projects.
    - Where 1.5°C aligned financing for the power sector is defined as a commitment to only finance new capacity from zero-emission sources and/or additional exposure to existing capacity if the infrastructure has an emissions reduction plan consistent with limiting warming to 1.5°C with no or limited overshoot.

This maintenance target aims to accommodate FIs that have already achieved, at a portfolio level, the emissions intensity required to align with the 2030 sector intensity level in a 1.5°C pathway. It is meant to encourage FIs to maintain the enabling role they play in decarbonizing the power sector towards net-zero by only financing 1.5°C aligned electricity generation such as the development and operation of renewable and zero-emission electricity generation projects. Nevertheless, the SBTi strongly encourages these FIs to further reduce their portfolio's emissions intensity and set a target to continue only financing renewable electricity projects. Additional follow-on targets must be aligned with the upcoming SBTi FI Net-Zero Standard to ensure that all post 2030 targets are compatible with net-zero pathways.

The target language template is: *FI A commits to maintain the emissions intensity of its electricity generation project finance portfolio at or below [the base year emissions intensity] gCO_2e/kWh from [base year] through 2030 and only finance 1.5°C aligned electricity generation projects.*

Portfolio weighting

Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

Instructions for Implementation

To assess the science-based targets for electricity generation project finance, FIs can use the SDA in the general Science-based Target Setting Tool (Version 2.1) that is available on the Science Based Targets website. The quick start guide for electric utilities to set 1.5°C aligned science-based targets using the SDA (SBTi 2020e) is also a valuable resource.

As input into this tool, base year financed emissions and base year output should be calculated following the instructions below.

Calculating the base year financed emissions

The first step is to calculate the annual financed GHG emissions of the portfolio of electricity generation projects in the base year. Specifically, this involves the following steps:

1. Collecting or estimating the fuel and energy use of each electricity generation project in the portfolio for which the FI seeks to set a target.
2. Calculating the base year scope 1 and 2 emissions per project using fuel- and energy-specific emissions factors, such as those provided by the IEA or national energy agencies.
3. Attributing the annual scope 1 and 2 emissions per project based on the ratio between the institution's outstanding amount (numerator) and the total equity and debt of the financed project (denominator). The result is financed emissions of the FI's project finance portfolio.
4. Summing up all scope 1 and 2 financed emissions per project to derive the total annual scope 1 and 2 financed emissions at portfolio level.

Base year financed emissions of all electricity generation project finance in the portfolio should be assessed at a fixed point in time in line with the financial reporting cycle.

Calculating the base year output

Next to emissions, base year output should also be provided as input in the Science-based Target Setting Tool. Calculating the base year output should involve the following steps:

- Collecting or estimating the annual electricity generated (in kWh) of the portfolio of electricity generation projects for which the FI seeks to set a target.
- Attributing the annual electricity generated (in kWh) based on the ratio between the outstanding amount versus the total project size (equity + debt).
- Summing up the attributed annual electricity generated (in kWh) per project to derive total annual electricity generated (in kWh) at the portfolio level.

Defining the science-based target

Science-based targets shall be set at the electricity generation project portfolio level, in alignment with the decarbonization pathway for power generation. Based on the SDA approach, the base year emissions intensity of an electricity generation project finance portfolio shall converge to the same level as the power decarbonization pathway by 2050.

The emission intensity target is defined as a decrease in emissions per electricity production (gCO_2/kWh). The minimum level of emission intensity decrease is derived from the global decarbonization pathway for the power sector.

The following formula is used to calculate the emission intensity target for an electricity generation project finance portfolio when the projected growth of the project finance portfolio (measured in kWh) towards the target year is lower or equal to the sectoral growth as predicted by the IEA (Table C2).[80]

$$Portfolio\ intensity\ target_{power\ generation} = PI_b - SI_{2050} \times \frac{SI_t - SI_{2050}}{(SI_b - SI_{2050})} + SI_{2050}$$

Where:

- SI and PI are the sectoral and portfolio emissions per kWh;
- b the base year; and
- t the target year.

When the projected growth of the project finance portfolio (measured in kWh) towards the target year is higher than the sectoral growth, the following formula applies:

$$Portfolio\ intensity\ target_{power\ generation} = PI_b - SI_{2050} \times \frac{SI_t - SI_{2050}}{(SI_b - SI_{2050})} \times \frac{(PA_b/SA_b)}{(PA_t/SA_t)} + SI_{2050}$$

Where:

- SI and PI are the sectoral and portfolio emissions per kWh,
- SA and PA the sectoral and portfolio total kWh,
- b the base year, and
- t the target year.

This approach allows FIs to converge their emissions intensity for their electricity generation project portfolio to the sectoral pathway in 2050, taking into account its base year performance relative to sector intensity in 2050, and the decarbonization level of the sector in the target year.[81]

[80] After the publication of the SDA in Nature Climate Change, the SBTi simplified the formula by removing the correction factor for changes in market share to prevent a potential increase of emissions intensity when growth is projected lower as sectoral growth. This adjustment is documented in Box 4 in the Foundations of science-based target setting paper.

[81] See the SDA methodology paper for further details (SBTi 2015).

Box C1: Example on setting an intensity target for an electricity generation project finance portfolio

Assume an FI has a project finance portfolio of various electricity generation projects.

Based on electricity output and fuel type, the emissions of these projects are assessed. The emission intensity of the portfolio is 600 gCO_2/kWh for the total electricity production of 15 TWh in 2017. The annual projected portfolio growth rate for 2030 is 1% (CAGR), which is lower than the sectoral growth rate.

Based on the IEA ETP B2DS, the global decarbonization pathway for power generation has approximately:

- 497 gCO_2/kWh at 25,062 TWh in 2017
- 229 gCO_2/kWh at 30,959 TWh in 2030
- -8 gCO_2/kWh at 44,321 TWh in 2050

To set an intensity target for 2030 converging to the 2050 sectoral emissions level:

$$Intensity\ target\ = (PI_b - SI_{2050}) \times \frac{(SI_t - SI_{2050})}{(SI_b - SI_{2050})} + SI_{2050}$$

$$Intensity\ target\ = (600 - [-8]) \times \frac{(229 - [-8])}{(497 - [-8]))} + [-8]$$

$$Intensity\ target\ = 227\ gCO_2/kWh$$

Since this portfolio started with an emission intensity higher than the sector level in 2017, this approach allows the portfolio to stay at an intensity higher than the sectoral pathway to reduce its emissions at a faster pace, converging to the sectoral level by 2050.

Note: CAGR = Compound Annual Growth Rate.
Source: Guidehouse 2020.

Global pathways – project finance

Here are the global emissions intensities pathways based on the IEA ETP 2017 and SBTi 1.5°C power pathway data:

Table C2: Global electricity production and emission intensity

Power Generation	2014	2025	2030	2035	2040	2045	2050
Production (TWh)	23,819	28,377	30,959	33,825	37,015	40,481	44,321
IEA ETP 2017 Emission intensity (gCO_2/kWh)	572.02	330.18	228.79	140.69	71.91	20.35	-8.02
SBTi 1.5°C Emission intensity (gCO_2/kWh)	464.12	246.87	100	54.50	18.39	8.78	0.51

Source: IEA ETP 2017, SBTi 1.5°C power pathway.

D. SDA for Corporate Instruments

Prepared by technical partner of the SBTi financial sector project, Guidehouse, Inc.

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Summary

Table D1: Summary of the SDA for corporate debt and equity

Category		Framework
Scope	Target audience	The target audience for this target setting framework are FIs with portfolios of financial assets issued by companies.
	Asset class	Corporate loans, listed equity and bonds, and private equity and debt.
	Sectors	Targets are set at individual sector level within the portfolio, for which specific SDA are available (i.e., electricity, iron and steel, cement, aluminum, pulp and paper, transport, buildings, aviation, FLAG and maritime shipping).
Mechanics	Inputs – Company data	The SDA requires physical activity and emissions data per sector. Activity and GHG emissions data can be sourced from direct emission disclosures by issuers/clients; and/or business intelligence databases (e.g., asset-level data). Total emissions and activity data are required for the Aviation, FLAG, and Maritime shipping SDA tools. If activity data is not available or FIs use a different emissions intensity unit, they will not be able to set a SDA target and should use the Portfolio Coverage or Temperature Rating method instead.
	Inputs – scenarios	Global decarbonization pathways of the sectors for which targets will be set, e.g., the IEA ETP 2017 B2DS scenarios are the basis of the SDA.
	Attribution approach	As a basic attribution principle, the FI accounts for a portion of the annual emissions of the financed company determined by the ratio between the institution's outstanding amount (numerator) and the value of the financed company (denominator) as follows[a]: • For listed companies the attribution is the ratio of outstanding amount versus the Enterprise Value Including Cash (EVIC[82]). • For private companies the attribution is the ratio of outstanding amount versus the total balance sheet (i.e., equity + debt).

[82] EVIC is defined as: The sum of the market capitalization of ordinary shares at fiscal year-end, the market capitalization of preferred shares at fiscal year-end, and the book values of total debt and minorities' interests. No deductions of cash or cash equivalents are made to avoid the possibility of negative enterprise values.

	Outputs	The output will be an emission intensity target at the portfolio level. Example: FI A commits to reduce CO_2e emissions from the steel sector within its listed equity portfolio XX% per ton of steel by 2030 from a 2020 base year.
	Portfolio weighting	Within a sector of an asset class, FIs may use one of the weighting approaches in the SBTi Finance Tool (listed in Appendix E) consistently throughout the target period.

Note:
[a] PCAF 2020.
Source: Guidehouse 2020.

Scope

Some of the data and examples found in this appendix are based on a global sectoral decarbonization pathway in line with keeping global warming to WB2C, which was the minimum ambition level required in Version 1.1 of this guidance. Please note that the minimum ambition level required in the current version of this guidance (Version 2.0) is to use a global sectoral decarbonization pathway in line with keeping global warming to 1.5°C, when available.

This methodology covers science-based targets for the financial portfolios consisting of corporate debt, listed equity and bonds, and private equity and debt. The methodology presents a sector-based approach to set a science-based target for the scope 3, category 15 (investments) emissions for FIs. When accounting for the emissions of a portfolio of listed equity, private equity, corporate bonds, and corporate loans, these emissions are based on the scope 1 and 2 emissions of the assets in each sector covered.

- Scope 1: Direct emissions from sources (i.e., on-site fuel combustion) owned or controlled by the company (i.e., investee or borrower).
- Scope 2: Indirect emissions from purchased energy (electricity, steam, heat, and cooling) by the company (i.e., investee or borrower).
- Scope 3, where relevant: FIs shall refer to the relevant SBTi sector-specific guidance for inclusion of portfolio companies' scope 3 emissions in targets. For instance, the scope 3 'use of sold products' emissions of auto manufacturers shall be included in FIs' targets (see Section 5), shown in Table 6 of the Science Based Target Setting Manual.[83]

Sector targets are set at individual sector level within the portfolio, for which specific SDAs are available. It is expected that there will be portions of the portfolio that are not covered by the SDA.

[83] The Global GHG Accounting and Reporting Standard for the financial industry provides methods for measuring emissions associated with these asset classes. It includes scope 1 and 2 emissions for all sectors and the phase-in of scope 3 emissions for business loans and listed equity and corporate bonds, in line with the recommendation for the EU Benchmark by the EU Technical Expert Group (TEG) on sustainable finance sector list. In practice this means a gradual phase-in of scope 3 emissions of borrowers and investees over five years. Starting with the most carbon-intensive sectors (oil, gas, and mining) from 2021.

Mechanics

Data Input

To assess the SBTs for a portfolio of corporate instruments, FIs can use the SDA in the general Science Based Target Setting Tool Version (2.1), or the specific SDA Transport Tool is available on the Science Based Targets website. In addition, the quick start guide for electric utilities to set 1.5°C aligned SBTs using the SDA (SBTi 2020e) is a valuable resource for corporate instruments to electric utilities.

As input into these tools, base year emissions and base year activity/output should be calculated following the instructions below.

The first step of the process is defining the base year emissions of the portfolio for which a target will be set. PCAF's Global GHG Accounting and Reporting Standard details the emissions accounting methods for various asset classes, including listed equity and corporate bonds, and business loans and unlisted equity (PCAF 2020).

In principle, setting an science-based target for these asset classes requires the following data points:

- Company's disclosed annual scope 1 and 2 emissions, and scope 3 emissions where relevant (e.g., company sustainability report or verified third-party data providers); alternatively, company physical activity data that serves to estimate scope 1 and 2 emissions, and scope 3 emissions where relevant, in the base year.
- Annual activity or output data per company in the base year (e.g., MWh, building gross floor area, ton-km transported, passenger-km traveled, ton of product, etc.).
- Outstanding amount (equity and/or debt) per company.
- Enterprise value including cash (EVIC) or balance sheet total per company;.
- Portfolio growth rate per sector in target year.

When direct disclosure of scope 1 and 2 emissions (and scope 3 emissions where relevant) is not available, emissions can be calculated via two approaches (PCAF 2020):

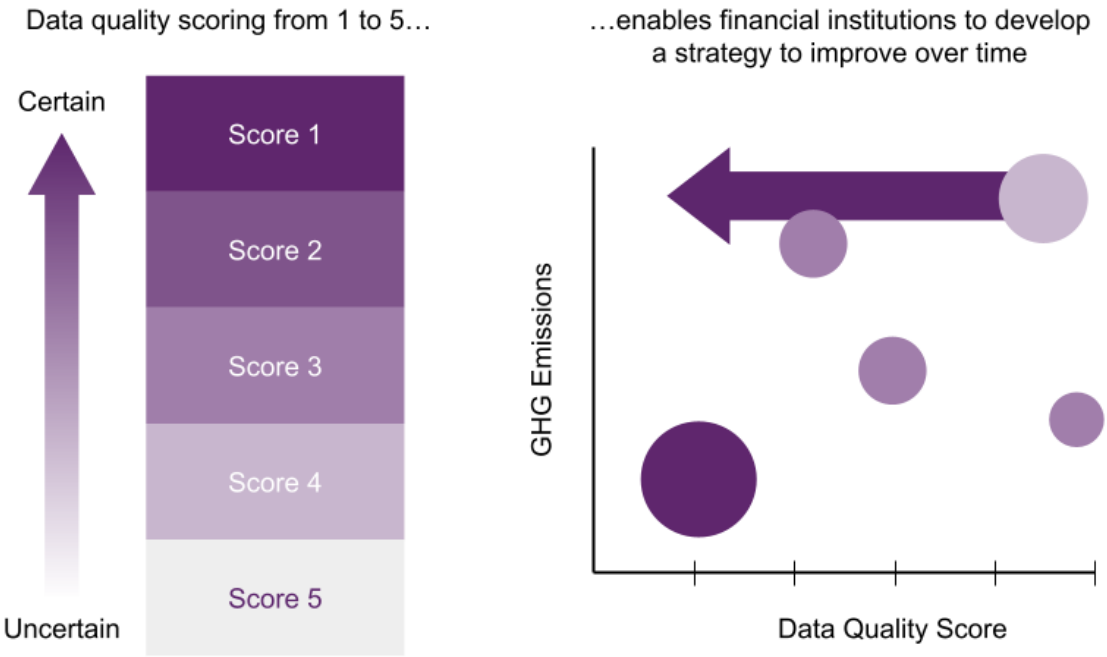
- **Approach 1: Physical activity-based emissions**: Primary physical activity data of the investee or borrower (e.g., MWh of natural gas consumed or ton of steel produced) are converted to emissions, using verified emission factors expressed per physical activity (e.g., tCO_2e/MWh or tCO_2e/t of steel), issued or approved by a credible independent body.
- **Approach 2: Economic activity-based emissions**: Economic activity data of the investee or borrower (e.g., EUR of turnover or EUR of asset) are converted to emissions, using official statistical data and/or acknowledged environmentally extended input-output (EEIO) tables

providing region-/sector-specific average emission factors expressed per economic activity (e.g., tCO_2e/EUR of revenue or tCO_2e/EUR of asset).[84]

It is important to note, that from a data quality perspective, approach 2 is preferred when emissions disclosure is not available to the FI.

While data availability varies across regions, FIs can assess the specificity and accuracy of the available data using a data hierarchy (e.g., Figure D1) and explore ways to improve data quality over time.

Figure D1: Generic data quality scorecard for portfolio emissions[85]



Sources: PCAF 2019b, 2019c, and PCAF 2020.

Decarbonization Pathway

By applying the SDA, the final emissions targets expressed in emissions intensity (e.g., CO_2 per kWh, ton of product, etc.) shall be consistent with keeping global warming to 1.5°C at minimum. When a 1.5°C pathway for a sector is not available, a WB2C pathway may be used instead.

[84] Sampling tests based on actual data on company level, which is extrapolated to portfolio level, can help test the accuracy of calculations based on this data from statistics and/or EEIO tables. This may also be used to refine the data for specific sectors or regions, if the reporting financial institution has a strong presence in and specific knowledge of the respective sector and/or region. National agencies and regional data providers or statistical offices in individual regions may assist reporting financial institutions and investee companies in various regions in finding regional and more relevant financial and/or emissions data information.

[85] For corporate debt and equity specific score cards, refer to the PCAF's Global GHG Accounting and Reporting Standard (PCAF, 2020).

The SDA uses the B2DS scenarios developed by the IEA (2017), which are compatible with the Representative Concentration Pathway (RCP) 2.6 scenario from IPCC Fifth Assessment Report (AR5).[86] The SDA assumes global convergence of key sectors' emissions intensity by 2050. For example, the emissions intensity of steel production in China, the United States, and Brazil is assumed to reach the same level in 2050, regardless of its current diversity.[87] Regional pathways have not been incorporated into the SDA method.

Currently, the SDA provides sector-specific pathways for the following homogenous and energy-intensive sectors[88]:

- Power generation
- Iron and steel
- Cement
- Aluminum
- Buildings
- Passenger and freight transport
- Pulp and Paper
- Aviation
- FLAG
- Maritime shipping

The IEA models these sectors based on sectoral growth and technology development trajectories. The emissions and sector activity growth projections from the B2DS will serve as the basis to derive the relevant targets for each sector under the selected asset class unless a SBTi 1.5°C pathway is available. Figure D2 illustrates the emission intensity pathways for the power sector in the B2DS.

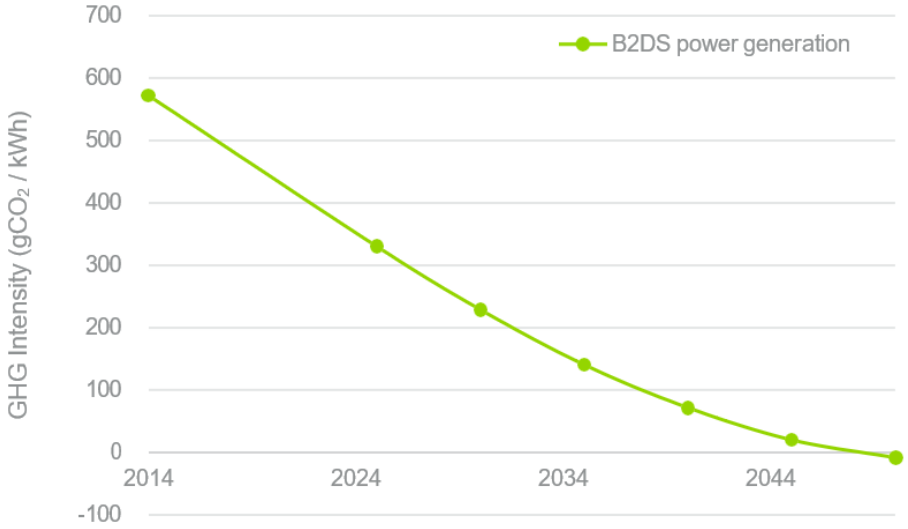
In this example, the emissions intensity trajectory of the power utilities in the portfolio shall continuously decline from the base year toward the target level, even if the emissions are below the pathway benchmark. Note that IEA only provides pathways in a five-year interval, FIs may derive the pathway data through interpolation if the target year falls in between these five-year intervals.

[86] The B2DS scenarios are emissions scenarios modeled by IEA. Based on this scenario data, sectoral emissions intensity pathways are derived.

[87] For specific values and background, see Krabbe et al. 2015.

[88] The SDA sectors are drawn from the International Energy Agency (IEA). An appendix of the SDA user guidance maps the IEA sectors against common industrial classification systems: https://sciencebasedtargets.org/resources/legacy/2015/05/Sectoral-Decarbonization-Approach-Report.pdf.

Figure D2: Global decarbonization emission pathway for the power sector



Source: IEA 2017.

Attribution approach

Setting the emissions baseline requires the allocation of companies' (i.e., investees or borrowers) emissions and activity data to the FIs. In line with GHGP and the Partnership for Carbon Accounting Financials (PCAF), emissions should be allocated to FIs based on their proportional share of investment in the investee.[89]

For listed companies, the attribution is calculated by the ratio of outstanding investment versus the Enterprise Value Including Cash (EVIC).

- **Outstanding investment (numerator):** The actual outstanding investment (if listed equity or bonds) or loan amount (if corporate loan).
- **Company value (denominator):** The Enterprise Value Including Cash (EVIC) of the respective company. In case elements of the enterprise value are not available, for example, due to data issues, the total balance sheet value expressed as the sum of total company equity and debt is used.

For private companies, the attribution is the ratio of outstanding investment or outstanding loan versus the total balance sheet (equity + debt):

1. **Outstanding investment (numerator):** The actual outstanding investment (if private equity) or loan amount (if corporate loan).

[89] This differs from a portfolio weight approach that works by applying the portfolio weight of each investment to the emissions intensity of the underlying company. For example, if 10% of the total equity portfolio in assets under management (AUM) is invested in Company A, the emissions intensity of the portfolio is calculated by applying the 10% to the emissions intensity of Company A, etc., and summing up all allocated emission intensities of the companies in the portfolio. This approach is often used for (ESG-) benchmarking of funds. However, this approach deviates from accounting principles in the GHG Protocol and the Partnership for Carbon Accounting Financials (PCAF).

2. **Company value (denominator):** The total balance sheet value expressed as the sum of total company equity and debt.

The Global GHG Accounting and Reporting Standard for the financial industry (PCAF 2020) aligns the definition of EVIC with the definition provided by the following:

- The Technical Expert Group on sustainable finance set up by the European Commission (EU TEG) in its "Handbook of Climate Transition Benchmarks, Paris-aligned Benchmark and Benchmarks' ESG Disclosure" (December 2019) (Hoepner et al. 2019).
- The (draft) "Supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards minimum standards for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks," which has defined that the EVIC should be used to determine the GHG intensities for the benchmarks.

After applying the attribution factor to both absolute emissions, the same attribution factor should be applied to calculate the total activity or output of the portfolio companies in a specific sector. These total activity or output data are needed as input into the SBTi tools to calculate the emissions intensity in the base year (i.e., the ratio of absolute emissions to activity data, for example, ton CO_2e/kWh, ton CO_2e/ton of steel, etc.).

Method output

The output will be a percentage reduction in emissions intensity relative to a specific activity or production output of the companies in the portfolio (e.g., ton CO_2e per MWh, per ton of steel, etc.).

Sample target outputs could be, as follows:

- FI A commits to reduce CO_2e emissions from the power sector within its corporate loan portfolio XX% per kWh by 2025 from a 2019 base year.
- FI B commits to reduce CO_2e emissions from the steel sector within its listed equity portfolio XX% per ton of steel by 2025 from a 2019 base year.

E. Temperature Rating Method

This method is an open-source framework to enable the translation of corporate GHG emissions reduction targets into temperature scores at a target, company, and a portfolio level. The method can be used to generate temperature scores for individual targets to translate target ambition to a common intuitive metric.

The method provides a protocol to enable the aggregation of target-level scores to generate a temperature rating for a company based on the ambition of its GHG emissions reduction targets. Finally, the method defines a series of weighting options that can enable FIs and others to produce portfolio-level temperature ratings.

Codeveloped by CDP and WWF, in collaboration with the SBTi, the methodology is transparent, public/open source, and science-based. The methodology:

- Enables assessment of corporate emissions reduction targets.
- Enables comparison of relative ambition of corporate emissions–reduction targets.
- Provides a framework for building engagement strategies.
- Helps with strategic security selection and allocation decisions.

The target protocol represents the first step of the process, which is to convert individual targets of various formats into temperature scores. This is achieved by generating simple regression models for estimated warming in 2100 from climate scenarios with short-, medium-, and long-term trends in metrics like absolute emissions or emissions intensities. Regression models are generated based on scenarios in the IPCC SR15 scenario database (CDP and WWF 2020). In addition to defining methods for disclosed targets, this step outlines the methodology used to define a default score to be applied to all companies that do not disclose any emissions reduction targets publicly.

Since many companies have multiple climate targets, covering different scopes and time frames, a protocol is then used to aggregate all target data into scores at a company level. This protocol defines the minimum quality criteria for determining the acceptability of a target to be scored and the steps required to identify and aggregate multiple targets to produce an overall company score.

The final step is used to weight company scores when assessing an index or portfolio of companies, such as in the context of financial portfolios.

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

- Option 1: Total Assets emissions weighted temperature score (AOTS).
- Option 2: Revenue owned emissions weighted temperature score (ROTS).
- Option 3: EV + Cash emissions weighted temperature score (ECOTS).
- Option 4: Enterprise owned emissions weighted temperature score (EOTS).
- Option 5: Market owned emissions weighted temperature score (MOTS).
- Option 6: Total emissions weighted temperature score (TETS).
- Option 7: Weighted average temperature score (WATS).

The SBTi encourages FIs to use this hierarchy when deciding which aggregation method to use. While we understand that data limitations may prevent using certain aggregation methods, FIs should engage with companies to improve data availability to allow the use of more robust aggregation methods.

Table E1 below provides a description and formula for calculating the portfolio temperature scores using each of these options. When using these portfolio weighting options for the Portfolio Coverage (PC) method, the outcome from the Temperature Rating method (i.e., TS) can simply be replaced with the outcome of the PC assessment (i.e., 1 if the company has a SBTi validated target or 0 if the company does not have a SBTi validated target, since the PC method is binary).

Table E1: Portfolio weighting options

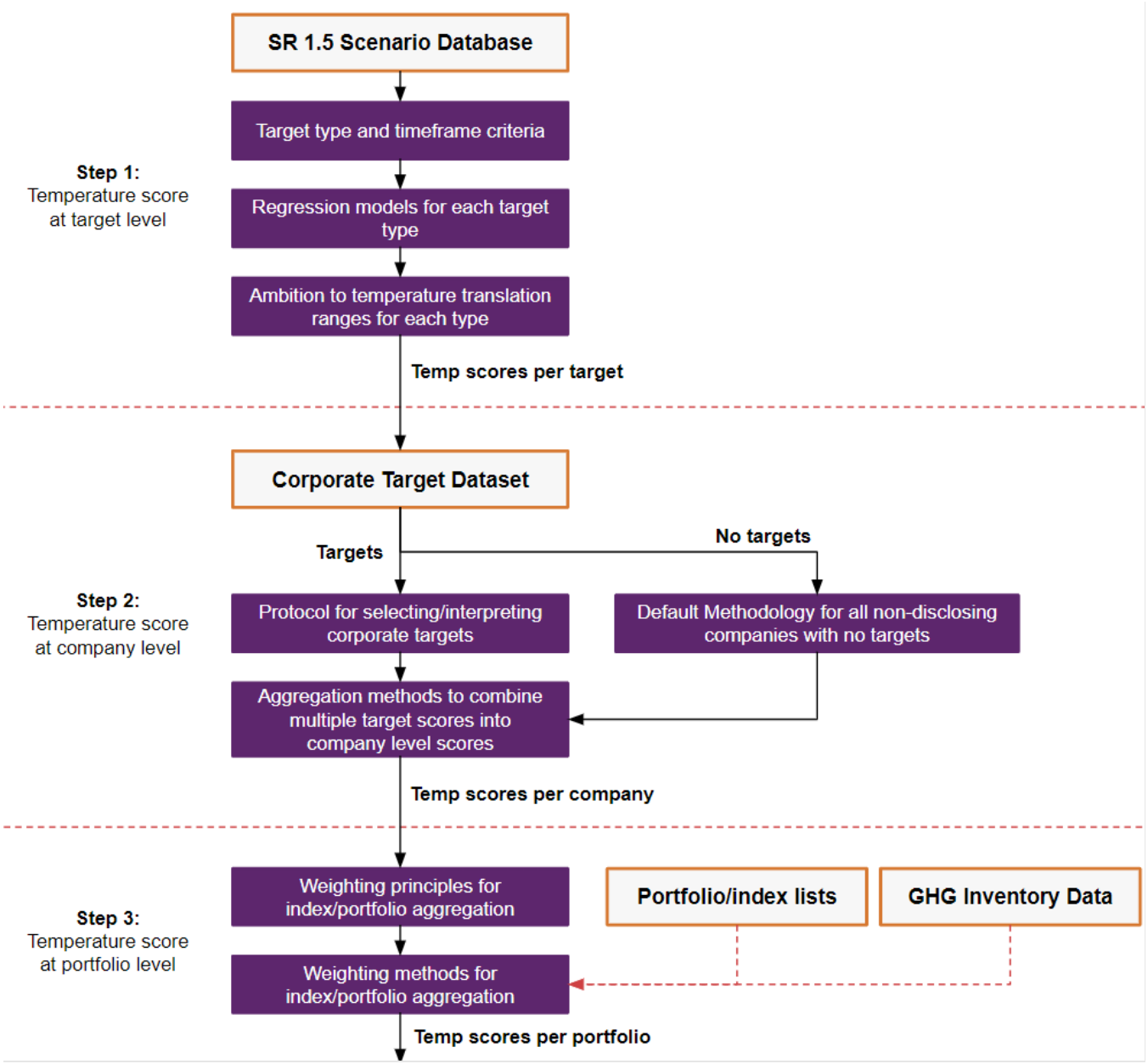
Option	Method	Temperature Score Formula (where TS=Company Temperature Score)
Total assets emissions weighted temperature score (AOTS)	Temperature scores are allocated based on a total assets ownership approach.	$\sum_{n}^{i}\left(\left(\frac{\frac{Investment\ value_i}{Company\ total\ assets} \times Company\ emissions_i}{Total\ assets\ owned\ emissions}\right) \times TS_i\right)$
Revenue owned emissions weighted temperature score (ROTS)	Temperature scores are allocated based on the share of revenue.	$\sum_{n}^{i}\left(\left(\frac{\frac{Investment\ value_i}{Company\ revenue} \times Company\ emissions_i}{Total\ revenue\ owned\ emissions}\right) \times TS_i\right)$
Enterprise value + cash emissions weighted temperature score (ECOTS)	Temperature scores are allocated based on an enterprise value (EV) plus cash and equivalents ownership approach.	$\sum_{n}^{i}\left(\left(\frac{\frac{Investment\ value_i}{Company\ enterprise\ value + cash} \times Company\ emissions_i}{Total\ enterpise\ value + cash\ owned\ emissions}\right) \times TS_i\right)$
Enterprise Owned emissions weighted temperature score (EOTS)	Temperature scores are allocated based on an enterprise ownership approach.	$\sum_{n}^{i}\left(\left(\frac{\frac{Investment\ value_i}{Company\ enterprise\ value} \times Company\ emissions_i}{Portfolio\ market\ value\ owned\ emissions}\right) \times TS_i\right)$
Market owned emissions weighted temperature score (MOTS)	Temperature scores are allocated based on an equity ownership approach.	$\sum_{n}^{i}\left(\left(\frac{\frac{Investment\ value_i}{Company\ market\ cap} \times Company\ emissions_i}{Portfolio\ market\ value\ owned\ emissions}\right) \times TS_i\right)$

Total emissions weighted temperature score (TETS)	Temperature scores are allocated on historical emission weights using total company GHG emissions.	$\sum_{n}^{i}\left(\frac{Company\ emissions_i}{Portfolio\ emissions} \times TS_i\right)$
Weighted average temperature	Temperature scores are allocated based on portfolio weights. *For instance, if a company is allocated 10% of the overall invested value, it is weighted at 10%.*	$\sum_{n}^{i}(Portfolio\ weight_i \times TS_i)$

Sources: Temperature Rating Methodology, CDP Worldwide and WWF International 2020.

Figure E1 presents an overview of how the three protocols fit together to form the temperature rating methodology.

Figure E1. Temperature Rating Methodology Overview



Sources: Temperature Rating Methodology, CDP Worldwide and WWF International 2020

The full methodology can be found here.

F. The SBTi Finance Temperature Rating and Portfolio Coverage Tool

Based on the Temperature Rating method, developed by CDP and WWF, this tool helps companies and FIs to assess the temperature alignment of current emissions reduction targets, commitments, and investment and lending portfolios. They can for instance use this information to develop their own GHG emissions reduction targets for official validation by the SBTi, develop engagement strategies, and help with strategic security selection and allocation decisions.

This section provides a nontechnical introduction and overview of what the tool is for, the types of outputs it delivers, what data are required, how it works, and where you can find more information and documentation to start using the tool.

Why Has the SBTi Built this Tool?

There has been a growing interest in methods to measure the alignment of companies and investment portfolios with the Paris Agreement. The success of the SBTi has seen a rapid growth in the number of companies with emissions reduction targets approved by the SBTi, and therefore, a growing number of companies claiming alignment to the long-term temperature goals set out in the Paris Agreement.

The SBTi has developed a codebase to function as a calculator for the Portfolio Coverage and Temperature Rating methods. This tool is fed with the necessary data to generate temperature scores at the company and portfolio level, in addition to providing analytics on target setting and company emissions reduction ambitions. It also gives users access to what-if analysis, to aid their decision-making process. The code reflects the logical steps that are outlined in the publicly available temperature rating methodology, developed by CDP and WWF.

The tool was created to enable the widespread implementation of the method by data providers and FIs, to work with any data source and in most IT environments. For each method, the tool provides the following outputs:

- Portfolio coverage: Generate the percentage of the portfolio currently covered by SBTi-approved targets.
- Temperature rating: Generate the current temperature score of the portfolio (in addition to the individual temperature scores of the portfolio companies). It also enables the generation of a series of what-if scenarios to showcase how this temperature score could be reduced.

Why Have We Built the SBTi Finance Tool in this Way?

To help FIs fight climate change, the SBTi wants the tool to be accessible, useful, and widely used by finance professionals and other users. If it is easy to access, not seen as a compliance tool only used once a year, but a tool to support the investment process, it will more likely be utilized widely. Therefore, when the SBTi started the development process, we set up a list of requirements for the tool. Some of the high-level requirements were, as follows:

- Distribution—most investment professionals should have easy access to the tool.
- Transparent—with full output audit trail and open methodology.
- Data agnostic—to be used with any data provider or an institution's own data lake.
- Any infrastructure—to be integrated with service providers' or homegrown decision support solutions.
- Workflow tool—to be integrated in investment professionals' daily workflow.
- Data security—to make sure financial portfolio data are not compromised.
- Scale—to be able to use the tool at scale for many portfolios and aggregated on FI level.
- Continued development—ensure enhancement of the method and tool for future requirements.

Given these requirements, the SBTi determined an open-source Python-based solution to be most appropriate. Such a tool can be integrated into existing solutions, in many cases making use of the same secure infrastructure as inhouse or commercial applications. As the tool pulls data from existing integration of data providers and/or internal data lakes, there is no need to go outside this infrastructure to access or deliver necessary data. Hence, no data that are not already within the institution's domain need to enter or exit the institution to use the tool. The approach brings the model to the data, rather than the other way around.

The SBTi Finance launched a request for proposal (RfP) for building the codebase to turn the methodology into a calculation engine in early 2020. The selected SBTi Finance Tool development project partners are Ortec Finance and the OS-Climate.

To make sure we built a tool that from the outset could work in as many different environments and for as many different users as possible, we reached out to users and data and service providers and invited them to work with us in our project team. This gave both users and data providers the opportunity to influence the development process and to prepare and develop their own solutions, data, and processes to work with the tool. This has been very helpful in getting their perspectives, to make sure the tool work with as many data providers' data as possible, and that it fits with many users' existing workflow.

A strong confirmation of the various tool use cases is the fact that a number of data/service providers have developed or are in the process of developing various solutions based on the tool and the methodology, to offer their clients. This collaboration also gives the SBTi Finance Tool a wider reach than what the SBTi could have achieved otherwise, and the tool should be available natively in their existing infrastructure for a significant proportion of the FIs globally. This integration should also ensure that the tool can be used at scale, to help large and small FIs alike to quickly analyze all their portfolios' and constituents' temperature scores.

The open-source nature of the codebase means that any user, data or service provider can use the code to build their own applications around the SBTi Finance Tool. It also means that it is available for all users to integrate into their own infrastructure, without any licensing cost. This should also ensure

that the code continues to be developed both by the SBTi, data and service providers, and the open source community.

The tool also provides full transparency with regard to how the tool and methodology fit together through the open-source nature of both the codebase and the methodology. We have also provided easy to use functionality to extract every single data point generated by the tool, to provide a full audit trail, and transparency into how the temperature score is calculated.

During Summer 2020 we ran a public beta-testing phase, open to any organization or individual. The beta-testing phase included more than 110 registered beta testers. Users provided feedback on the tool's functionality, documentation requirements, performance, and usability. This feedback has been incorporated in the final release version.

Altogether, our conversations with users and data providers and the feedback from 110 beta testers indicates that the development process and the structure of the SBTi Finance Tool has the potential to become an integrated experience and that it could become as natural for a portfolio manager or analysts to use as their discounted cash flow model or attribution report. In turn, this should ensure that portfolio and company temperature scores stay top-of-mind for finance professionals and that this ultimately leads to more efficient engagement processes and GHG emissions reductions in the real economy.

What Can You Use the SBTi Finance Tool For?

The SBTi Finance Temperature Rating and Portfolio Coverage Tool enables analysis of companies, sectors, countries, investment strategies, and portfolios to understand how they contribute to climate change. You can, for example:

- Measure your portfolio's current temperature score.
- Identify the biggest contributors on an individual company, country, and sector basis.
- Use the tool as an aid for strategic allocation and securities selection decisions.
- Analyze what effect changes in your portfolio might have on the portfolio temperature score.
- Model impact of engagement on your temperature score; that is, how your score can improve if you are able to convince an investee company to set or improve GHG emissions reduction targets.
- Identify which company engagements would have the biggest impact on your portfolio's temperature score.
- Plan engagement strategies based on your modeling.
- Fulfill regulatory reporting criteria, for example, Article 173 in France and the EU Disclosure regulation, regarding current portfolio alignment with the Paris Agreement.
- Help you to create an action plan for reaching your emissions reduction target.

Given these possible insights, as confirmed by our beta-testing survey, the tool is relevant for a wide range of stakeholders, for instance:

- Portfolio managers—to support strategic allocation decisions and input into ESG discussions with corporate management.
- Financial analysts—to use the temperature score as an input into the cost of capital for valuation modeling.
- ESG analysts—to plan and execute corporate engagement strategies.
- Risk managers—for input into climate-related risk models.
- Compliance officers—for EU Disclosure Regulation and Article 173 reporting.
- Data and service providers—to provide company temperature scores and portfolio analytics for their users.
- Chief investment officers (CIOs)—to help to understand the portfolios' ESG position.
- Nongovernmental organizations (NGOs)—for further research to enhance climate-related methodologies.

What Outputs Does the Tool Generates?

The temperature score can be calculated for all time frames (short-, medium-, long-term) and scope (scope 1, 2, 3) combinations covered by the SBTi methodology. Table F1 provides an overview of the six temperature ratings that can be generated.

Table F1: Six categories for each company based on GHG emission scope coverage and target time frame

	Short-term 2021-2024	Mid-term 2025-2035	Long-term 2035-2050
Scope 1+2	Temp score	Temp score	Temp score
Scope 3	Temp score	Temp score	Temp score

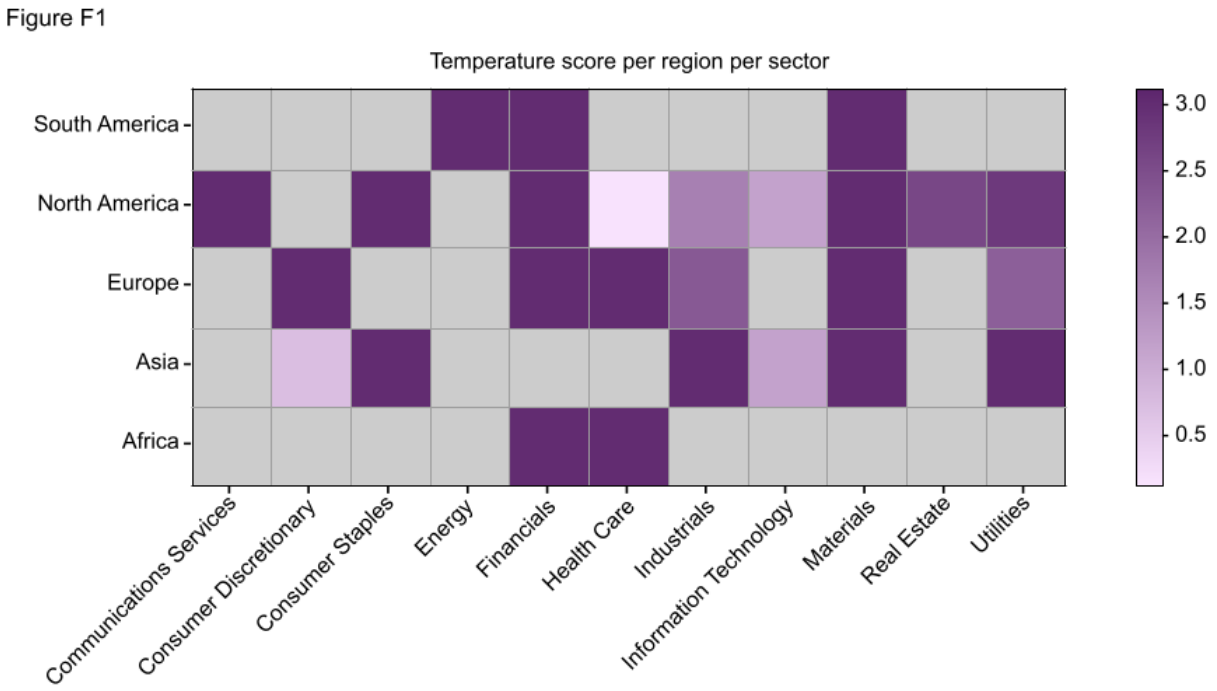
Source: Authors.

The temperature score calculation is available for the following levels:

- Portfolio temperature score: The aggregated score over all companies in the portfolio;
- Grouped temperature score: Using the "group by" option, the user can get the aggregated temperature score per category in a chosen field (e.g., per region or per sector); and
- Company temperature score: The temperature score of an individual company.

Figure F1 below provides illustrative outputs for grouped temperature scores by region and sector. These insights help inform use cases such as more targeted engagement strategies, aiding securities selection decisions, etc.

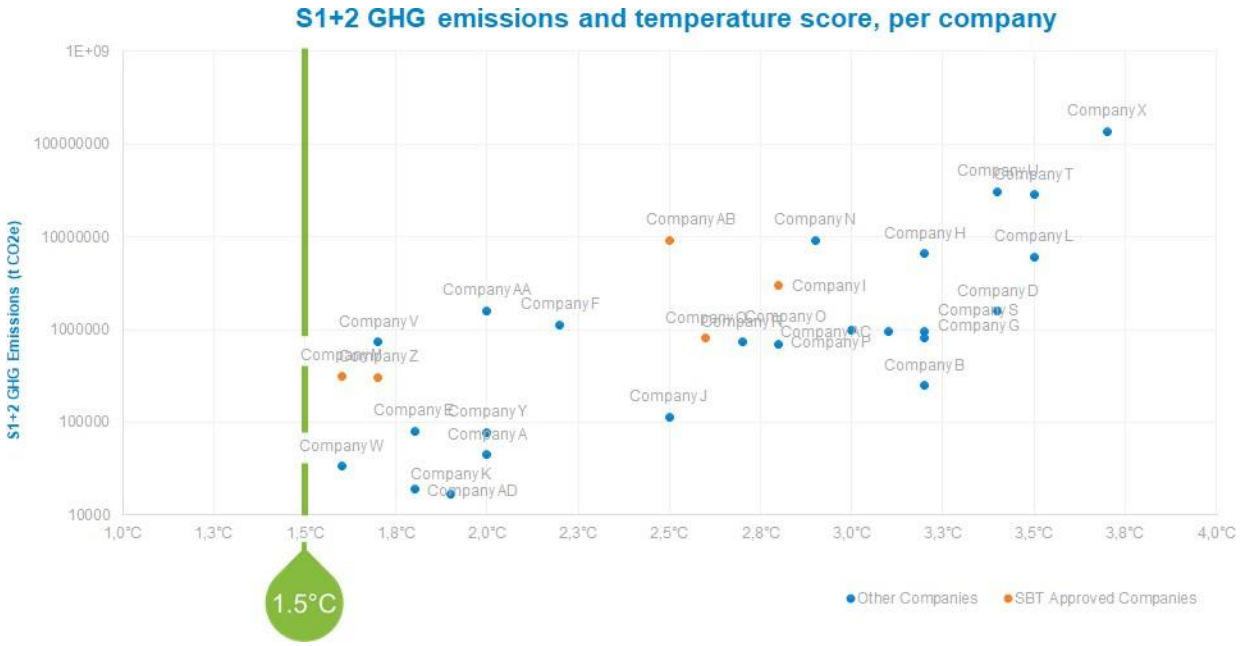
Figure F1: Illustrative output of the temperature score on portfolio level, grouped by region and sector



Source: Authors.

Figure F2 provides a visualization of the outputs when looking at the temperature score per company. This level of granularity of the tool enables users to zoom in on individual scores, for example, for informing engagement and/or monitoring temperature score progress of investees.

Figure F2: Illustrative visualization of the temperature score outputs per company



Source: Authors.

For the portfolio temperature score and the grouped temperature score, additional more granular information is reported about the composition of the score:

- Contributions: The level to which each company contributes to the total temperature score based on the chosen aggregation method. This value is split up into company temperature score and relative contribution (e.g., the weight of the investment in the company relative to the total portfolio when using the WATS aggregation method).
- The percentage of the score that is based on targets vs. the percentage based on the default score.
- For the grouped temperature scores: The percentage each group contributes to the portfolio temperature score. For example, how much each region or sector contributes to the total score.

Table F2, taken from a Jupyter Notebook implementation of the tool (please refer to the technical documentation for executing your own rungs of the Jupyter Notebook) highlights the companies with the highest contribution to the portfolio temperature score and at the same time displays ownership and portfolio weight to give the user an indication of where an engagement may be more successful, purely from a quantitative perspective.

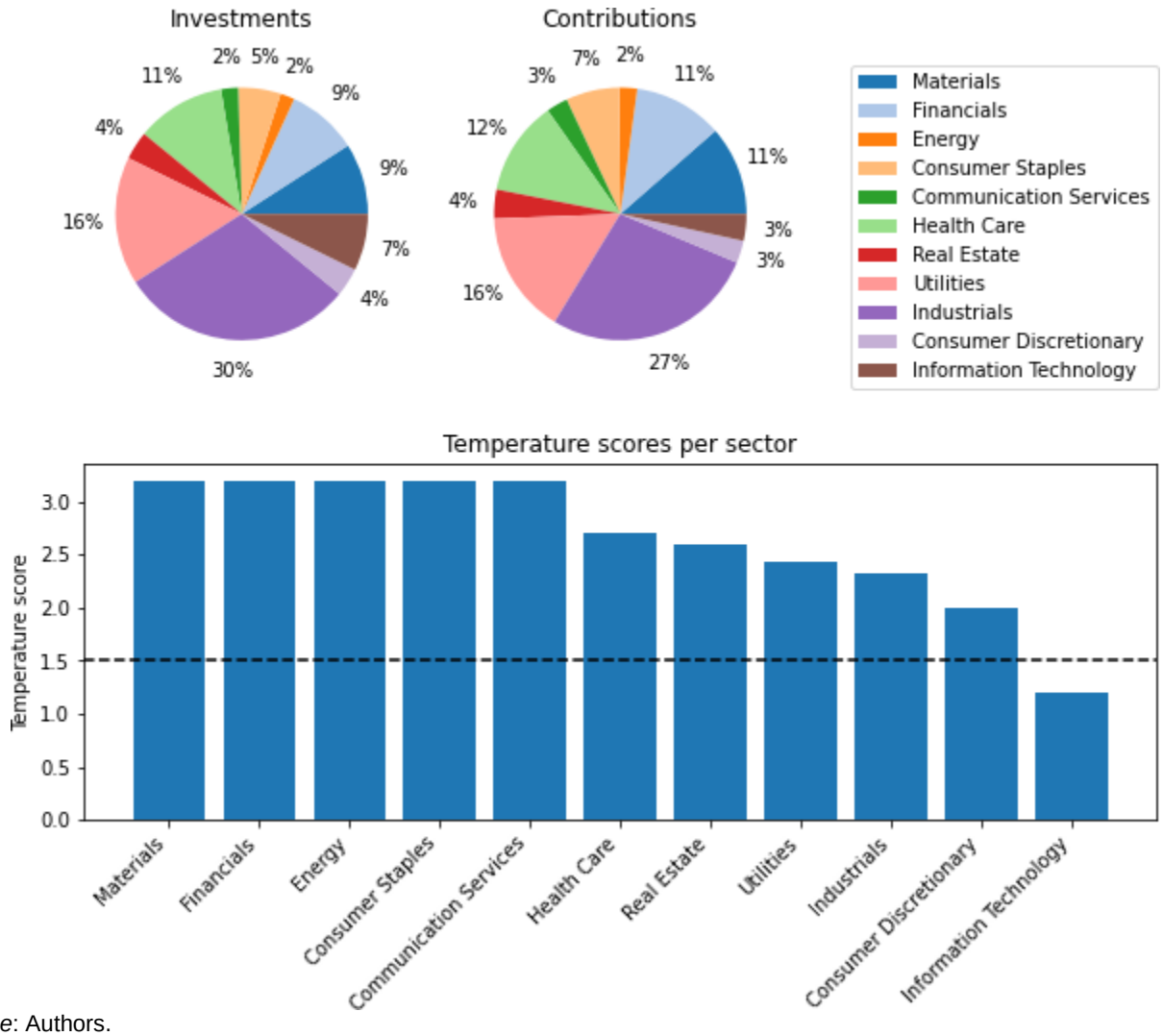
Table F2: Illustrative output table of the temperature score and contribution analysis on company level

company_name	sector	contribution	temperature_score	ownership_percentage	portfolio_percentage
Company N	Health Care	9.541310	3.20	0.189087	7.818182
Advanced Micro Devices, Inc	Industrials	4.926672	2.03	0.334454	6.363636
Company Q	Communication Services	2.662691	3.20	4.811121	2.181818
Dell Technologies	Financials	2.218909	3.20	0.290669	1.818182
Company AE	Industrials	2.218909	3.20	0.213551	1.818182
Company I	Consumer Staples	2.218909	3.20	0.328780	1.818182
Company AF	Consumer Staples	2.218909	3.20	0.974571	1.818182
Company F	Industrials	2.218909	3.20	0.109647	1.818182
Capgemini Group	Consumer Discretionary	2.218909	3.20	0.323925	1.818182
L'Oréal	Utilities	2.218909	3.20	0.400563	1.818182

Source: Authors.

Figure F3 depicts similar analysis in a more visual format. What can be seen in the figure is the relative contributions to the sector temperature scores.

Figure F3: Illustrative visualization of the temperature score outputs and contribution results grouped per sector



Source: Authors.

For the company temperature scores, you can let the tool generate all underlying data, which provides full transparency and gives the user the full audit trail for how the final temperature score has been calculated. This data output provides:

- portfolio data;
- financial data;
- GHG emissions;
- used target and all its parameters; and
- values used during calculation such as the linear annual reduction (LAR), mapped regression scenario, and parameters for the formula to calculate the temperature score.

You can also anonymize the output data, which removes all names and identifiers. This is particularly useful for sharing results of your temperature score without having to reveal your holdings, for example, for submitting your temperature score to the SBTi TVT to get your own GHG emissions reduction target approved. At the same time, it provides the opportunity to audit the scores during the validation process.

For more detailed examples, please see Jupyter notebook examples found at the Github repository here.

What Data are Needed to Use the Tool?

The tool itself is data agnostic and has no built-in databases. This means that users need to import all needed data to perform the analysis and can use any data source with the necessary data available. These data can come from a variety of sources but must be inputted in the required formats. The data providers we have worked with during the development have built or are in the process of building solutions to help with this process. Four types of data are needed to run the tool. These are described in the Table F3.

Table F3: Overview of data inputs

Portfolio holdings	• Company name • ISIC sector classification • ISIN and/or FIGI, if available. Other company identifier can also be used together with ISINs or FIGIs and are required to match identifiers from the three data sources below. • Market value of portfolio position for each company, using one common portfolio currency
Corporate GHG targets	This refers to the data required to analyze corporate GHG emissions reduction targets, including: a. Target types (absolute/intensity) b. Base year c. Target year d. Scope coverage e. Boundary coverage within scope f. Percentage achieved g. Intensity activity (if appliable)
Corporate GHG emissions data	Scope 1 + 2 and scope 3 emissions data, reported or modeled
Corporate financial data	Seven weighting options are currently available to aggregate company scores to produce portfolio scores. Depending on the option chosen, the following data may be required: • Invested value (holdings)

	• Market capitalization • Enterprise value • Cash and equivalents • Total assets • Revenue

Notes: ISIC = International Standard Industrial Classification; ISIN = International Securities Identification Number; FIGI = Fiscal Instrument Global Identifier.
Source: Authors.

Refer to the data requirements section at the tool's technical documentation webpage and the full methodology for temperature rating.

Where Can I Find the Data?

Commercial data providers such as Bloomberg, CDP, ISS, MSCI, TruCost, and Urgentem can provide some or all the data needed for the SBTi Finance Tool.

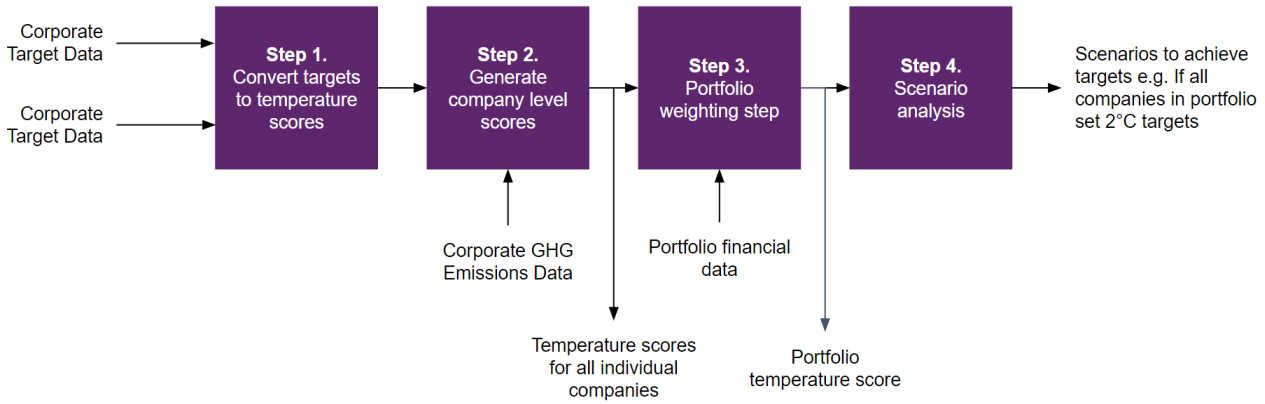
There is also a free data set available with corporate GHG targets data on the SBTi's website. This includes data of all the companies that have set emissions reduction targets that have been approved by the SBTi and is updated on a weekly basis. You can download an Excel-file with the data here: https://sciencebasedtargets.org/companies-taking-action.

It is likely that your portfolio includes companies that are not in the list of companies with SBTi-approved targets, but that have publicly announced targets. Commercial data providers such as those listed above can provide target data for these companies.

Overview of How the Tool Works

The calculation methodology consists of four key steps (Figure F4), each requiring specific data points that are inputted at the beginning of the process. These data points are then used to convert the corporate GHG emissions reduction targets into temperature scores at the company and the portfolio level.

Figure F4: Data points for the four-step process



Source: Authors 2020.

Step 1: Converting publicly stated targets to temperature scores. The targets are first filtered and are, if valid, translated to a specific temperature score based on the relevant regression model (Section 1.3 in the methodology). The sector classification of the company is used to ensure that the target is correctly mapped to the appropriate regression model. For example, a target for power generation must be mapped to the power sector pathway and corresponding regression model. This process enables the translation of target ambition over a certain target time period into a temperature score. For example, a 30% reduction target in absolute GHG emissions over 10 years can be converted into a temperature score of 1.76°C. It should be noted that those companies without a valid target are assigned a default temperature score (Section 1.4 in the methodology), rather than being excluded from the analysis.

Step 2: Aggregate across targets (if applicable) to a company-level temperature score. Reported corporate GHG emission data are employed to aggregate company-level temperature scores.

Step 3: Aggregate individual company temperature scores to portfolio-level scores. All the individual temperature scores per company in a portfolio are then combined with portfolio financial data to generate scores at the portfolio level.

Step 4: Run what-if analysis via the scenario generator. After the initial score calculations, a scenario generator can be used to determine how certain actions, for example, engagement, can change the portfolio temperature score over time. When running these what-if scenarios, the temperature score is recalculated with the assumption that, based on various engagements, some or all the companies in the portfolio decided to set (more ambitious) targets. The following what-if analyses are included in the tool in Table F4:

Table F4: What-if analysis options

Scenario 1	In this scenario, all companies in the portfolio that did not yet set a valid target have been persuaded to set 2.0°C targets. This is simulated by changing all scores that used the default score to a score of 2.0°C.
Scenario 2	In this scenario all companies that already set targets are persuaded to set WB2C targets. This is simulated by setting all scores of the companies that have valid targets to at most 1.75°C.
Scenario 3	In these scenarios the top 10 contributors to the portfolio temperature score are persuaded to set 2.0°C targets. • Scenario 3a: All top 10 contributors set 2.0°C targets. • Scenario 3b: All top 10 contributors set WB2C, i.e., 1.75°C targets.
Scenario 4	In this scenario the user can specify (by adding "TRUE" in the engagement targets column in the portfolio data file) which companies it wants to engage with to set 2.0°C or WB2C targets. • Scenario 4a: All companies that are marked as engagement targets set 2.0°C targets • Scenario 4b: All companies that are marked as engagement targets set WB2C targets.

Source: Authors.

How can I Run the tool?

The SBTi Finance Tool has been built as an open-source, data-agnostic tool and works with input data from any data provider and in many different IT infrastructures.

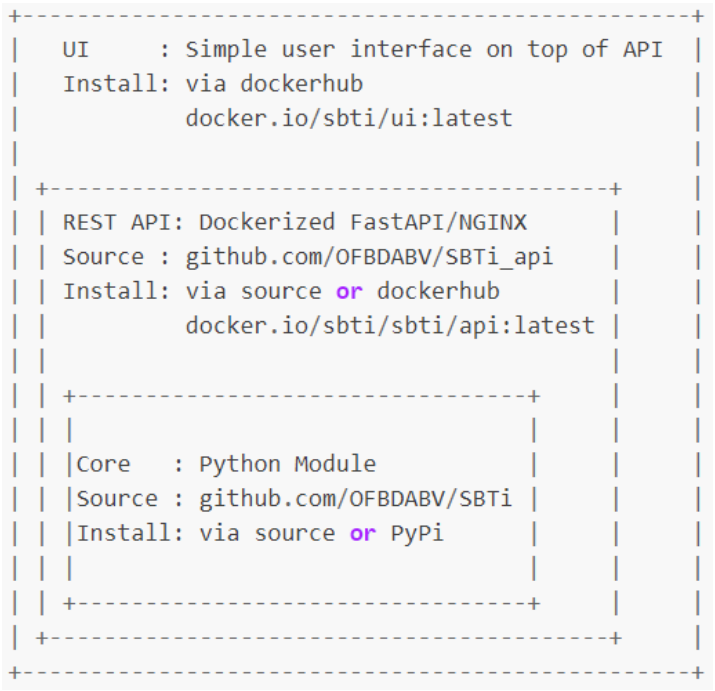
As such, the SBTi Finance Tool for temperature rating and portfolio coverage can be used in several ways, depending on the specific preferences of the user.

If you are unsure whether the tool will be useful for your application and workflow, or you would first like to run some examples to get a better idea of how the tool works and what types of outputs it generates, the '1_analysis_example' notebookhttps://github.com/ScienceBasedTargets/SBTi-finance-tool/blob/main/examples/1_analysis_example.ipynb offers a quick and no-code opportunity for such testing. The notebook combines text and code to provide a testing environment for your research, to give you an understanding of how the tool can help you analyze companies' and portfolios' temperature scores, and to aid your engagement and investment decisions. The notebook is loaded with example data, but you can also use your own data. For your first test, you can simply run the code cells one by one in the current sequence, to get an understanding of how it works. If you are not familiar with Notebooks, please refer to this introduction.

Technical Structure

Figure F5 provides an overview of the different parts of the full tool kit and their dependencies:

Figure F5: Overview of the tool kit



Source: Authors.

As shown above, the Python code forms the core codebase of the SBTi Finance Tool. The Python package is recommended if users would like to integrate the tool in their own codebase. In turn, the second option is running the tool via the application programming interface (API) if users' preference is to include the tool as a Microservice in their existing IT infrastructure in the cloud or on premise. The development project also included the creation of a simple user interface (UI), which can be used for easier user interaction in combination with the API.

The SBTi tool enables three main ways of installing and/or running the tool:

1. Users can integrate the **Python package** in their codebase. For more detailed and up-to-date information on how to run the tool via the Python package, please consult the "Getting Started Using Python" section in the technical documentation.
2. The tool can be included as a Microservice (**containerized REST API**) in any IT infrastructure (in the cloud or on premise). For more detailed and up-to-date information on how to run the tool via the API, please consult the "Getting Started Using REST API" section in the technical documentation. Optionally, the API can be run with a frontend UI. This simple user interface makes testing by nontechnical users easier. For more detailed and up-to-date information on how to use the UI as a frontend to the API, please consult the "Getting Started Using REST API" section in the technical documentation.

3. During the development of this tool, we have worked with several data and service providers to the financial and ESG markets, some who have or are in the process of implementing the tool and methodology into their commercial solutions. These providers include Bloomberg, CDP, ISS, MSCI, Ortec Finance, TruCost, and Urgentem. Making use of their solutions can for some users be the easiest way to integrate the tool into existing infrastructure and workflow, to analyze portfolios' and companies' temperature scores.

Given the open-source nature of the tool, the community is encouraged to make contributions (refer to "Contributing" section to further develop and/or update the codebase. Contributions can range from submitting a bug report, to submitting a new feature request, all the way to further enhancing the tool's functionalities by contributing code.

For more information on the tool, illustrative use cases, as well as how to install and run the tool, please consult the tool's technical documentation webpage.

G. Summary of Version 2.0 Revisions

The SBTi has published a draft version 2 of the *NT Framework* that incorporates the above fossil fuel finance items as well as harmonizes scope 1 and 2 near-term target time frames and ambition with the SBTi *Corporate Net-Zero Standard Criteria*, by requiring 1.5°C aligned scope 1 and 2 targets with a 5-10 year timeframe. This is compared with the previous FI near-term guidance, which required well-below-2°C scope 1 and 2 targets of 5-15 years. This increase in ambition is also in line with demand from FIs – more than 96% of FIs with validated near-term targets are 1.5°C. These organizations can–and already are–aligning their climate ambition and action with climate science. The below table summarizes the proposed criteria changes, which also include an increase in ambition for scope 3, category 15 targets, in the *NT Framework* Version 2.

Criteria	***NT Framework* v1.2**	***NT Framework* v2.0**
FI-C6	Targets must cover a minimum of 5 years and a maximum of 15 years from the date the target is submitted to the SBTi for assessment.	Scope 1 and 2 targets must cover a minimum of 5 years and a maximum of 10 years from the date the target is submitted to the SBTi for assessment. The choice of base year shall be representative of the FI's activities and shall be no earlier than 2015.
FI-C8	At a minimum, scope 1 and 2 targets will be consistent with the level of decarbonization required to keep global temperature increase to well-below 2°C compared to preindustrial temperatures, though FIs are encouraged to pursue greater efforts toward a 1.5°C trajectory. Both the target time frame ambition (base year	At a minimum, scope 1 and 2 targets will be consistent with the level of decarbonization required to keep global temperature increase to 1.5°C compared to preindustrial temperatures. Both the target time frame ambition (base year to target year) and the forward-looking

	to target year) and the forward-looking ambition (most recent year to target year) must meet this ambition criteria.	ambition (most recent year to target year) must meet this ambition criteria.
FI-C17.1	Portfolio SDA targets must meet minimum ambition indicated by sector-specific methods for well-below 2°C pathways. FIs, however, are encouraged to set portfolio SDA targets that meet the minimum ambition indicated by sector-specific methods for 1.5°C pathways, where available.	Portfolio SDA targets must meet minimum ambition indicated by sector-specific methods for 1.5°C pathways. When a 1.5°C pathway for a sector is not available, a well-below 2°C pathway may be used instead.
FI-C17.3	FIs shall align their portfolio scope 1 + 2 temperature score with a well-below 2°C scenario and in addition align their portfolio scope 1 + 2 + 3 temperature score with a minimum 2°C scenario by 2040.	FIs shall align their portfolio scope 1 + 2 temperature score with a minimum 1.5°C scenario and in addition align their portfolio scope 1 + 2 + 3 temperature score with a minimum well-below 2°C scenario by 2040.
FI-C17.4	n/a	*FIs may use the Fossil Fuel Finance Targets approach as a fourth target setting option to address financial flows (i.e., financial activities or services, including but not limited to loans, investments, asset management, and securities and insurance underwriting) to the fossil fuel sector.*

Clarifications have also been made in the *NT Framework* V2 draft to improve interpretation and application, helping aid target setting. The clarifications primarily concern definitions, coverage criteria, use of methods and target options, as well as an updated target language template. A full summary of these changes is provided below.

Location in *FI Guidance*	**Revisions**
Title	Added “Near-Term” to the title to better differentiate from the FI Net-Zero Standard, which is currently under development.
Version #	Changed to 2.0, to be effective September 2023.
Throughout	Updated tables/references/links for sector guidance and corporate criteria documents.
Footnote #1, #69	Updated for more recent news.

Glossary	Added/updated terms (e.g., commercial real estate loans, corporate bonds, fund of funds, hedge fund, listed equity, private debt, private equity).
Section 1.1	Replaced list of committed FIs with FIs with validated targets.
Section 1.2	Added general target setting approach for real-economy companies that have some financial activities.
Section 1.4.1	Updated figures.
FI-C5	Added “Multiple subsidiaries within a group may submit targets but must do so separately and their target language must explicitly state the specific target setting entity.”
Footnote #12	Reiterated that if an FI is involved solely or mainly in optional asset classes, it should contact the SBTi to discuss a minimum target coverage boundary of these asset class(es) for the portfolio targets to be considered credible.
FI-R1, Footnote #13	• Updated with language from the SBTi FLAG sector guidance. • Added recommendation to set a Portfolio Coverage target on companies with Forest, Land & Agriculture related emissions that toal 20% or more of overall emissions across scopes.
FI-R4	Noted that long-term targets will only be validated in accordance with the FINZ Standard upon its publication.
Footnote #15, 30, Section 4.3.1	Added details from the Target Validation Protocol on the minimum ambition required for near-term scope 1 and 2 targets.
Footnote #17, 19, 20, 21, 47, 60, 63	Updated valid target year examples and requirement on most recent inventory years in line with the SBTi Corporate Criteria / Target Validation Protocol.
FI-C13	Added guidance on scope 2 accounting approach when setting renewable energy procurement targets.
FI-C14	• Noted requirement for FIs with zero scope 1 emissions and a renewable energy procurement target to also set a target to maintain zero scope 1 emissions. • Noted the SBTi will use the same definition of renewable electricity as the RE100 initiative for target validation purposes.
FI-C17	• Noted requirement that all SDA, Portfolio Coverage (PC), and Temperature Rating (TR) targets shall each use the same base years. • Noted that a second, longer-term 100% PC target is allowed if in addition to one that meets the specified criteria (e.g. time frame). • Added more details on calculating the minimum ambition of PC/TR targets.
FI-R9	Noted a complete emissions inventory must be provided if setting scope 3 categories 1-14 target(s) and that scope 3 categories 1-14 targets should be set separately from scope 1 and 2 targets.

FI-R12	Added a consistency recommendation (same base and target years) for scope 3 targets.
FI-C18, FI-C20	• Added details on how to calculate overall % coverage. • Added recommendation for FIs to annually disclose a full GHG emissions inventory for their portfolios, covering all activities for which a GHG accounting method is available at the time of target submission.
FI-C23	Noted that target language must be agreed upon in order to be validated.
Section 4.3.1	Deleted option to set an economic intensity scope 1 and 2 target, in line with what is allowed in the SBTi Corporate Criteria / Target Validation Protocol.
Footnote #36	Added reference to the development of “meta-criteria” as part of the FINZ Standard.
Table 5.1, 6.1; Section 5.4.1; Appendix B, C	Updated target language examples, adding two options for electricity generation project finance targets, one for real estate assets, and one for fossil fuel finance targets.
Section 5.3	Added clarifications: • For corporate loans (other than to the electricity generation sector), coverage can be based on loan value or financed emissions. If using financed emissions, the scope 1, 2 and 3 emissions of portfolio companies in the automotive and fossil fuel sectors shall be included in the calculation while the scope 1 and 2 emissions of portfolio companies in all other sectors shall be included. • Targets can be set on loan outstanding or loan commitment amounts. • General purpose long-term loans to FIs, real estate investment trusts (REITs), real estate companies and infrastructure companies all fall under the 67% coverage requirement for corporate loans to other sectors (other than electricity generation) and shall be covered accordingly. • The coverage requirement for listed equity and corporate bonds applies to securities in both the trading book and banking book, including those with a remaining maturity of less than one year. • Infrastructure project finance and investments in infrastructure assets are currently out of scope; however, loans to and investments in infrastructure companies are in scope. • Investments managed (on behalf of third parties) under advisory or execution-only mandates are optional. • All other FIs (other than banks) must include their asset management businesses in their scope 1, 2, and 3 target boundaries.

	• Each loan/investment can only be covered by one target method; the boundaries of each target must be clearly defined (e.g., by sector and/or asset class). • List of asset classes that can be grouped together under one target. • For investments via funds, FIs must set a target on the underlying holdings.
Table 5.2	Added more granular specifications for each asset class (by sector, listed vs. private companies, corporate vs. SME, short vs. long-term loans, direct investments vs. via funds); a separate real estate asset class and fossil fuel project finance sub-asset class; and new footnotes, including: • In case of any ambiguity, the stricter criteria apply. • The PC+TR methods are available for the fossil fuel sector until the SBTi Oil & Gas sector guidance is published. Alternatively, FIs may now also set fossil fuel sector targets that meet the criteria in the SBTi Fossil Fuel Finance Position Paper. • "Corporate" includes FIs for the purposes of this table. • The 67% minimum coverage requirement for long-term corporate loans applies to companies in all sectors (including fossil fuel, which has a 95% minimum coverage requirement, and commercial real estate loans, which have a 67% minimum coverage requirement, that fall within the 67%) other than electricity generation, not per sector, and is based on loan value or financed emissions. Commercial real estate loans must also separately meet a 67% minimum coverage requirement based on base year activity or financed emissions. • Optionality for investments via funds restricted to cases where the investment strategy precludes transparency on the underlying holdings (e.g., some hedge funds). • Commercial real estate loans refer to all loans related to real estate assets (residential and service) that are not provided to consumers.
Section 5.4.1, Table 5.3	• Updated in line with the new SBTi sector guidances. • Added "Total emissions and activity data are required for the Aviation, FLAG, and Maritime shipping SDA tools. If activity data is not available or FIs use a different emissions intensity unit, they will not be able to set an SDA target and should use the Portfolio Coverage or Temperature Rating method instead."
Section 5.4.2	Noted examples of when scope 3 targets are required for portfolio companies.
Section 5.4.4, Table 5.5	Added Fossil Fuel Finance Targets approach

Section 6	• Reiterated that validated science-based targets must be published on the SBTi website within 6 months. • Noted that target language must be the same in FIs' communication but they are welcome to add additional details (disclaimers can only include links to their website/publications). • Added disclosure requirements for fossil fuel finance targets.
Table 6.1	Added example of renewable electricity procurement target and other language that needs to be included in target publications: • "As of [base year], required activities made up [XX]% of FI's total investment and lending activities by [unit] while optional activities made up [XX]% and out of scope activities made up [XX]%." • For banks that don't cover their asset management activities: "These targets and coverage % do not include third-party asset management activities."
Section 8	• Summarized and linked to the new SBTi Commitment Policy. • Deleted references to the Business Ambition for 1.5°C (BA1.5) campaign since it has closed. • Added some instructions for the SBTi target submission form for FIs (e.g., Table 4 of the submission form must be reconciled to consolidated balance sheet totals).
Appendices	• Noted that TR weighting approaches are also available to SDA and PC. • Created hierarchy of the weighting approaches. • Updated links of TR resources. • Added summary of Version 2.0 revisions. • Moved Acknowledgements section to Appendix H, with an addition to primary authors.

Please refer to the *NT Framework* V2 draft for more information. We invite you to share your feedback on the proposed criteria via the survey by August 14, 2023.

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